Effectiveness of a Social Health Security Program in improving financial risk protection against the health expenditures of the insured populations in four districts of Nepal: A mixed method study

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ประสิทธิผลของโครงการประกันสังคมในการปรับปรุงการป้องกันความเสี่ยงทางการเงินต่อค่าใช้จ่ายด้านสุขภาพ ของผู้ประกันตนในสี่เขตของเนปาล: การศึกษาแบบผสมผสาน

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วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาสาธารณสุขศาสตรดุษฎีบัณฑิต
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กาจ บาฮาดูร์ กูรัง : ประสิทธิผลของโครงการประกันสังคมในการปรับปรุงการป้องกันความเสี่ยงทางการเงินต่อค่าใช้จ่ายด้านสุขภาพของผู้ประกันตนในสี่เขตของเนปาล: การศึกษาแบบผสมผสาน. (Effectiveness of a Social Health Security Program in improving financial risk protection against the health expenditures of the insured populations in four districts of Nepal: A mixed method study) อ.ที่ปรึกษาหลัก : อเลชซิโอ พันซ่า

ความเป็นมา: ประเทศที่มีรายได้ต่ำและปานกลาง (LMICs) ที่นำเรื่องการประกันสุขภาพแห่งชาติ (NHI) มาใช้เพื่อสร้างความคุ้มครองสุขภาพถ้วนหน้า ประสบกับอุปสรรค ทำให้ไม่สามารถบรรลุผลลัพธ์ตามที่คาดหวัง โครงการประกันสุขภาพแห่งชาติของเนปาลซึ่งเริ่มดำเนินการในปี 2559 ประสบกับความท้าทายในการดำเนินงานหลายประการ อันเนื่องจากมีปัจจัยนำเข้าและกระบวนการ ส่งผลให้เกิดผลลัพธ์เชิงลบ เช่น การเลือกระบบประกันที่ไม่พึงประสงค์ การให้บริการด้านสุขภาพที่ไม่ดีเท่าที่ควร การลงทะเบียนต่ำในครัวเรือนที่ยากจน และการไม่ต่ออายุสมาชิกฯรายปีในการประกันสุขภาพต่ำ ซึ่งยังขาดการวิจัยในปัญหาเหล่านี้ การศึกษานี้จึงมีวัตถุประสงค์สองประการ 1) การประเมินกระบวนการโดยศึกษาเจาะลึกปัจจัยนำเข้า กระบวนการ การดำเนิน อุปสรรคมีทำให้เกิดปัญหาคอขวด 2) ประเมินผลลัพธ์ของการดำเนินงานโครงการประกันสุขภาพแห่งชาติ ในเรื่องความตั้งใจต่ออายุสมาชิกรายปีของสมาชิกฯ และลดค่าใช้จ่ายการรักษาพยาบาลที่ต้องจ่ายเองและภาวะล้มละลายจากค่าใช้จ่ายด้านสุขภาพ

วิธีการศึกษา: การศึกษาแบบผสมผสานโดยเก็บข้อมูลเชิงคุณภาพและเชิงปริมาณ เก็บข้อมูล 2 ระยะ โดยระยะที่ 1เก็บข้อมูลเชิงคุณภาพ และเชิงปริมาณ ในเรื่องผลลัพธ์ ในประเด็นความตั้งใจในการต่ออายุสมาชิกฯ ระยะที่ 2 เก็บข้อมูลเชิงปริมาณ ในเรื่องค่าจ่ายสุขภาพที่ต้องจ่ายเองในแต่ละเดือน และภาวะล้มละลายจากค่าใช้จ่ายด้านสุขภาพ การเก็บข้อมูลเชิงคุณภาพใน 4 เขต (Kathmandu, Bhaktapur, Chitwan and Kaski) ของประเทศเนปาล โดยการสัมภาษณ์เชิงลึก 28 คน การสนทนากลุ่ม 6 ครั้ง การวิเคราะห์ใช้ทฤษฎีฐานราก ข้อมูลเชิงปริมาณเก็บรวบรวมใน 3 อำเภอ (Bhaktapur, Chitwan and Kaski) ซึ่งเป็นอำเภอเดียวกับการศึกษาเชิงคุณภาพ สัมภาษณ์โดยการสุ่มตัวอย่างสมาชิกปัจจุบันของโครงการประกันสุขภาพแห่งชาติ จำนวน 182 คน และสมาชิกฯ ที่ไม่ได้ต่ออายุ 61 คน

การวิเคราะห์ข้อมูลใช้สถิติการถดถอยแบบตัวแปรเดียวและหลายตัวแปรเพื่อหาความสัมพันธ์ระหว่างตัวแปรตามและตัวแปรอิสระ ข้อมูลเชิงปริมาณในการประเมินผลลัพธ์ ในเรื่อง ในเรื่องค่าจ่ายสุขภาพที่ต้องจ่ายเองในแต่ละเดือนและภาวะล้มละลายจากค่าใช้จ่ายด้านสุขภาพ ในเขต Kaski

สุ่มตัวอย่างอย่างง่าย ในกลุ่มทดลอง 100 ครัวเรือนโดยวัดก่อน และหลังการมีโครงการประกันสุขภาพแห่งชาติ รวมทั้งสุ่มตัวอย่างกลุ่มควบคุม 125 ครัวเรือน (โดยทำการสัมภาษณ์ในเวลาเดียวกันที่เก็บข้อมูลหลังการดำเนินโครงการประกันสุขภาพแห่งชาติ ในกลุ่มทดลอง) Wilcoxon Signed Rank และ Sum Test, Mcnemar and chi-sqaure test ชิวิเคราะห์ค่าจ่ายสุขภาพที่ต้องจ่ายเอง และภาวะล้มละลายจากค่าใช้จ่ายด้านสุขภาพเปรียบเทียบ ก่อน และหลังการมีโครงการฯ และเปรียบกับกลุ่มควบคุม

ผลลัพธ์: จากการศึกษาเชิงคุณภาพ พบว่าปัญหาหลักของปัจจัยนำเข้า ยังมีความท้าทายอันได้แก่ แนวทางการดำเนินงานยังไม่เพียงพอ บทบัญญัติของพระราชบัญญัติขัดแย้งกัน การประกันสุขภาพแห่งชาติขาดแนวทางขององค์กร และทรัพยากรบุคคลไม่เพียงพอ

ปัญหาหลักของปัญหาคอขวด ได้แก่ ความยุ่งยากในการลงทะเบียนผู้เอาประกันภัย การไม่สามารถเลือกผู้ให้บริการด้านสุขภาพซึ่งปัจจุบันมีการแข่งขันกันสูง และการเลือกซื้อบริการประกันภัยสุขภาพอย่างรอบคอบ การศึกษาเชิงปริมาณเกี่ยวกับความตั้งใจที่จะต่ออายุสมาชิกฯรายปี พบว่า ครัวเรือนที่มีรายได้ต่อเดือนสูง มีอัตราการต่ออายุสมาชิกภาพต่ำ (adjusted OR: 0.14, 95% CI: 0.03-0.58)

สำหรับความพึงพอใจในบริการสุขภาพโดยรวมของหัวหน้าครัวเรือนสูง (adjusted OR:3.59, 95%CI: 1.23-10.43) และพบว่าหลังการเป็นสมาชิกฯ ความถี่ของการไปใช้บริการสุขภาพสูงขึ้น (adjusted OR: 10.09, 95% CI: 1.39-73.28) มีโอกาสต่ออายุการเป็นสมาชิกสูง เมื่อเปรียบเทียบค่าจ่ายสุขภาพที่ต้องจ่ายเอง และภาวะล้มละลายจากค่าใช้จ่ายด้านสุขภาพ ของผู้ป่วยนอก และผู้ป่วยโรคเรื้อรัง โดยวัดก่อนและหลังมีโครงการฯ พบว่าค่าใช้จ่ายดังกล่าวเพิ่มขึ้น จาก 1,700 รูปี เป็น 3,900 รูปี (p: 0.027) และ 1,500 รูปี เป็น 2000 รูปี (p:0.058) ตามลำดับ เมื่อเปรียบเทียบค่ารักษาพยาบาลในโรงพยาบาลก่อนและหลังมีโครงการฯ พบว่า ลดลงมากกว่าครึ่ง จาก 30,000 รูปี เป็น 13,000 รูปี หากแต่ไม่พบความสำคัญอย่างมีนัยสำคัญทางสถิติ (p: 0. 465) อุบัติการณ์ CHE เพิ่มขึ้นสูงสุด 8% ที่เกณฑ์ 40% สำหรับค่าใช้จ่ายผู้ป่วยนอกและโรคเรื้อรัง แต่ลดลงสูงสุด 5% ที่เกณฑ์ 10% สำหรับค่ารักษาในโรงพยาบาลตั้งแต่ก่อนถึงหลังการแทรกแซง อุบัติการณ์ ของภาวะล้มละลายจากค่าใช้จ่ายด้านสุขภาพ เพิ่มขึ้นสูงสุด 8% ที่เกณฑ์ 40% สำหรับค่าใช้จ่ายผู้ป่วยนอกและโรคเรื้อรัง ลดลงสูงสุด 5% ที่เกณฑ์ 10% สำหรับค่ารักษาในโรงพยาบาลเมื่อเปรียบเทียบ ก่อนถึงหลังการมีโครงการฯ

สรุป: ปัญหาคอขวดในการดำเนินการของโครงการฯ เกิดจากปัจจัยนำเข้า กระบวนการ ส่งผลในทางลบต่อผลผลิต เช่น ผู้ประกันตนปฏิเสธที่จะต่ออายุกรมธรรม์ ความครอบคลุมครัวเรือนที่ยากจนอยู่ในระดับต่ำ และการป้องกันความเสี่ยงทางการเงินอยู่ในระดับต่ำ

สาขาวิชา สาธารณสุขศาสตร์ ลายมือชื่อนิสิต .....

ปีการศึกษา 2564 ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

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KEYWORD: Health Insurance Health financing Universal Health Coverage Input and Throughput renewal enrollment Out-of-pocket health expense catastrophic health expense equitable health distribution

Gaj Bahadur Gurung : Effectiveness of a Social Health Security Program in improving financial risk protection against the health expenditures of the insured populations in four districts of Nepal: A mixed method study. Advisor: Alessio Panza, M.D.

Background: Most low and low-middle income (LMICs) countries adopting National Health Insurance (NHI) programs to achieve Universal Health Coverage are struggling to implement the program and thus have failed to achieve the expected outputs. The Nepal NHI program initiated in 2016 has experienced numerous implementation challenges, due to inadequate inputs and throughput, resulting in negative output such adverse selection, poor health service delivery, low enrollment of the poor household and low annual non-renewals of the NHI membership. However, there is a lack of research that focuses on these problems. So, this study has two objectives. Firstly, delved into the NHI program's inputs and throughputs/implementation bottlenecks called as process evaluation. Secondly, evaluate the NHI outcomes on intention of existing NHI members to renew their annual membership and reduced monthly out-of-pocket (OOP) and catastrophic health expense.

Method: This was a mixed method study with qualitative and quantitative data. The data were collected in two phases. The first phase concurrently collected qualitative data and quantitative with outcome on intention to renew. The second phase collected the quantitative data with outcome to reduce monthly out-of-pocket and catastrophic health expense.

The qualitative data was collected in four districts (Kathmandu, Bhaktapur, Chitwan and Kaski) of Nepal through 28 in-depth interviews, six focus group discussions. The analysis employed the Grounded Theory. The quantitative data was collected in three districts (Bhaktapur, Chitwan and Kaski), same districts from the qualitative study. A random sample of 182 current NHI members and 61 non-renewed NHI members were interviewed. The study employed univariate and multivariate regression to assess the associations between dependent and independent variables. A quantitative data for outcome evaluation to measure OOP and catastrophic health expense was based on one district (Kaski). A random sample of 100 pre-post household (HH) intervention group and125 HH control group (only recruited corresponding in time to the post intervention survey) was interviewed. The Wilcoxon signed rank and sum test, Mcnemar and chi-sqaure test was employed to measure the OOP and catastrophic expense between pre-post intervention group and with the control group.

Result: The main NHI program input challenges identified, through qualitative study, were insufficiently defined NHI implementations guidelines, conflicting Act clauses, a lack of HIB organizational guidelines, and inadequate human resources. The major throughput bottlenecks were difficulty enrolling the insurees, the inability to select the health providers competitively and to act as a prudent purchaser of the services. The quantitative study, on intention to renew the NHI annual membership, showed that the HH with high monthly income had lower odds of renewing their membership (adjusted OR: 0.14, 95% CI: 0.03-0.58). Similarly, HH with overall health service satisfaction (adjusted OR:3.59, 95%CI: 1.23-10.43) and increased frequency of visits after NHI membership (adjusted OR: 10.09, 95% CI: 1.39-73.28) had high odds of renewing their membership. The quantitative study, on monthly OOP and catastrophic health expense, showed that the total outpatient OOP and chronic illness cost has increased from NRs 1700 to NRs 3900 (p: 0.027) and NRs 1500 to NRs 2000 (p:0.058) respectively from pre to the post-intervention group. The hospitalization cost was reduced by more than half from NRs 13000 in the post intervention as compared to NRs 30000 in the pre-intervention group but the difference was not statistically significant (p:0. 465). The CHE incidence had increased by maximum 8% at 40% threshold for outpatient and chronic illness expense but has decreased by maximum 5% at 10% threshold for the hospitalization expense from pre to the post-intervention

Conclusion: The NHI program's implementation bottlenecks caused by inadequate inputs and throughputs led to negative outputs such as insured persons refusal to renew insurance policies, low coverage of poor households and low financial risk protection. The program's sustainability might be at stake if the discussed problems, low renewals, low-quality health services persist, and are further exacerbated by the COVID-19 situation in the country. In spite of the said limitations, the study analyzes programmatic opportunities and offers practical recommendations for policymakers and programmers to strengthen the NHI program. Upon effective implementation, the NHI, the first-ever national health risk-pooling program, will pave the path to universal health coverage in Nepal.

Field of Study:	Public Health	Student's Signature .....
Academic Year:	2021	Advisor's Signature .....

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CHAPTER 1

INTRODUCTION

1.1 Background and Rationale

Universal Health Coverage (UHC) is the most powerful approach of providing financial risk protection from health costs and ensuring the access of the marginalized and left out populations to the essential quality health services states the WHO World Health Report 2010 (WHO, 2010b). The report also explained the three key barriers, particularly for the developing countries, to attain UHC. The problems included lack of adequate resources allocated for the health within the national budget or any other financing for health, overreliance on direct payment from the patient, mainly as Out-Of-Pocket (OOP) expenses, exacerbating their economic condition and pushing them towards the vicious cycle of poverty and lastly the inefficient and inequitable use of resources. The above WHO mentioned three barriers dampened the Nepal health system (WHO, 2010b).

In relation to the first UHC problem as explained above, the Nepal government has not been able to prioritize health within the government budget. The allocation to health was 4% in 2017/18 (UNICEF, 2021) and spending on health, as a share of the Gross Domestic Budget was 1.9% in the fiscal year 2017/18 (NHSSP, 2018). The studies suggested that both allocation and spending had to be around five percent of the GDP to achieve UHC. In particular, the external development partners' contribution to national health budget was around twenty percent and the support was likely to decrease as Nepal graduated to Lower Middle Income from Low Income countries in 2020 (WorldBank, 2020a). In addition, the Ministry of Health poor budget absorption capacity, which was only 83% as compared to 88% national absorption rate, negatively affects the resource allocation to health by the government. Both health budget allocation and MoH absorption capacity increased since 2020 which was attributed primarily by COVID-19 prevention and treatment budget (UNICEF, 2021).

The second UHC problem on financial risk protection is about safeguarding the people against the financial hardship associated with paying for health services (Saksena et al., 2014). Financial hardship is due to the catastrophic health expenses, defined as high OOP that the household forgoes the consumption of other necessary goods and services (please refer to LR section 2.5.4 for catastrophic expenses calculation). The recent Nepal National Health Account 2012/13-2015/16 stated that household OOP contribution was 55.4% of the total health expenses, which was almost 2.5 times more than the 20% of what WHO suggested. The study stated that OOP expenses occurred as payment to the private providers by both poor and rich groups (Adhikari, 2015). The health expenses was catastrophic at a spending of 10% or 25% of the total household consumption as per Nepal National Health Account. 10.7% and 2.4% of the household in Nepal face catastrophic expenses at 10% and 25% respectively. While different other studies (see literature review section 2.5.4) suggested catastrophic spending as 10%, 20%, 30% and 40% of the household's non-subsistence income. The National Health Sector Strategy 2016-2020 argued that even common health problems like flu/cold/fever were found to generate catastrophic spending among the poorer populations.

The inequity in utilization of the health resource in Nepal was quite rampant. The 2016/17 Annual Report of Department of Health Services (DoHS, 2017) stated that equitable access to the services as aspired by the constitution was a key issue and to substantiate, about a half of under 5 children and women of reproductive age were undernourished whereas the problem of obesity was growing among urban population. WHO Country Cooperation Strategy 2018-2022 analyzed the data from 2016 Demographic Health survey (DHS) and stated that trend data from the past three DHS showed that while the inequality in several outcome indicators by poverty groups declined, the gap remained sizeable. For example, 89% of women in the wealthiest quintile delivered with a skilled provider, compared with 34% in the poorest. The strategy document also presented the equity issue by analyzing the health services coverage in seven states of Nepal. For instance, ANC visits coverage was 67.3% in state 5 vs 36.2% in state 2.

Efficiency in health care services largely depends on the use without waste of available resources, mainly of the drugs, human resource and their management. However, there were persistent issues of resources waste with the absence of and low skill levels of health workers, stock-out of drugs and commodities, and poorly maintained infrastructure and equipment in Nepal.

There was a systematic and integrated approach to strengthen the health system of Nepal since 2000. The key guiding strategy document for the integrated approach was the National Health Sector Program (NHSP-I) and Strategy developed for 2004-2009 in the spirit of Poverty Reduction Strategy Paper, Millennium Development Goals and the Tenth national Five-Year Plan 2002-7. The NHSP-I was also the first step towards Sector Wide Approach (SWAp) in health, envisioning bringing different actors, both national and international including the donors, of health reform under the single umbrella of Ministry of Health. The second NHSP -II was from 2010-2015 and the third NHSP-III was implemented from 2016-2020. In spite of challenging and fragile health systems, the NHSPs yielded numerous positive health outcomes. The increased life expectancy from 68.5 years in 2015, under 5 t0 70.7 years in 2020, infant mortality rate from 35.8 per 1000 live birth in 2015 to 28 per 1000 live birth in 2019, maternal mortality ratio from 258 per 100000 live birth in 2015 to 239 per 100000 live birth in 2019 were few outstanding outcomes (NPC, 2020).

Similarly, the health sector in Nepal received stewardship at the policy level and ii progressive. The latest Constitution of Nepal 2015 (GoN, 2015) has guaranteed that every citizen shall have the right to free basic health services from the State, no one shall be deprived of emergency health services, and that every citizen shall have equal access to health services. The health policies of Nepal were progressive over the years. The national health policy 2014 replaced the policy of 1991 with the assumption that previous policy was insufficient to ensure citizen's rights to quality health care. Interestingly the new constitution of Nepal was still in draft when the new health policy was formulated. Other newer policies included Revised National Health Policy 2018, Public Health Service Act 2017, Disability Management Policy 2017, National Blood Transfusion Policy 2014, Urban Health Policy-2014, National Oral Health Policy 2013 and National Health Laboratory Policy 2013 (NHSSP-III, 2018).

One of the most progressive programs initiated by the MOH to achieve the universal health coverage was the National Health Insurance (NHI), initially named as National Health Security Program. The NHI Policy was formulated in 2014 (GoN, 2014) followed by the commission of the independent implementing structure called Social health Security Development Committee in 2015, later converted into autonomous body called Health Insurance Board (HIB) in 2017, and the program was initiated in 2016 with piloting in three districts. The NHI Act was formulated in 2017 (GoN, 2018b) and revised Operational Guideline in 2018 (GoN, 2018a) strengthening the program. The key features of the program include 1. A central pooling mechanism funded through government tax and premium collected through mandatory enrolment (explained below), 2. Benefit package of NRs 100,000 (USD$: 841.9; PPP$ 2951.6) for a typical five-member family upon annual payment of NRs 3500 (USD$: 29.5; PPP$: 103.30) premium, and 3. Purchase of the health services through public providers using a fee for service (inpatient and diagnostic services) and case-based payment (outpatient and emergency services) (GoN, 2018a). The program was expanded to all districts as of 2022 (based on enquiry with HIB).

A semi-structured literature search was conducted using PubMed and Google to identify the scientific articles, media articles, reports, and grey literatures on national health insurance of Nepal and global studies from July-August 2021. The key words used were ‘Nepal’, ‘national health insurance’, ‘evaluation study’ and ‘national health security program’, ‘health financing’, ‘universal health coverage’, ‘out of pocket expenses’ and ‘low-middle income countries’. No limits were set as to the study design and methodology utilized but the search was confined within Nepal and published from 2013 to 2020 July. The search resulted in five published research articles, four published analysis papers, two unpublished research report, five media articles and one blog for Nepal NHI program. All of them were considered for review due to limited number of articles for Nepal. In addition, the HIB website became the major source of information related to NHI updates and policies. One policy titled National Health Insurance Policy, one act titled National Health Insurance Act, three annual progress reports (2016, 2017, 2018) and three guidelines (Operating rule and Standard Operating Procedure manual and communication strategy) were retrieved

from HIB website. Besides, 650 study articles and analysis were identified for NHI program in LMICs. 20 studies were reviewed together with five policy documents from the UN agencies

The identified articles, report and grey literatures highlighted that Nepal NHI program could help achieve UHC by reducing the OOP, catastrophic expenses, increase the accessibility to the health service for the poorest population, enhance quality of health services beyond essential package. On the hind-side, they stated the program was facing high non-renewal amongst enrolled members, unable to enroll rich and healthy population resulting in adverse selection, unable to reach poorest populations, inadequate human resource and required expertise at HIB, lack of clear and sustained source of revenue for the risk pool, clear reimbursement mechanism and poor health service delivery. They pointed out that weaker health systems of Nepal, as explained above, as the major hindrance to the effective implementation of the insurance program. The experts even argued that health system strengthening should move along with the roll-out of NHI by strengthening demand and supply side (Mishra et al., 2015).

Inspite numerous challenges faced by the NHI program since its inception in 2016, there had not been any evaluation studies within five years of implementation. Different low and middle-income countries have initiated NHI programs with various models (incremental, or one-go model) but all needed evaluations studies to adjust and evolve them. The number of scientific studies on Nepal NHI were sparse and no study delved into the details of governance, organization, implementation or on the programmatic outcome such as economic or health benefits. In addition, none of the Nepal NHI studies were qualitative in nature. The WHO Organizational Assessment for Improving and Strengthening Health Financing (OASIS) framework (WHO, 2010a) suggests that quantitative studies cannot explain implementation bottlenecks.

Two clear research gaps identified from the systematic review process, to strengthen the National Health Insurance Program of Nepal, were the lack of both process and outcome evaluation of the program. This research, therefore, aimed at a *process and outcome evaluation of the National Health Insurance Program focusing on assessing*

implementation bottlenecks, examining whether the NHI program has reduced OOP expenses to improve financial equity outcomes for the insured populations.

This research is a 'first time' in Nepal since the implementation of NHI program in 2016. The research results envisioned providing programmatic and policy level recommendations to strengthen the program towards achieving UHC.

1.2 Research question

1. To what extend the implementation of NHI Program is in-compliance with the Standard Operating Procedures (SOP) and Operational Rules (OR)?

2. How is the implementation process of the Nepal NHI Program?

Specific questions

   a. How do the national contexts like political support, financing and health system affect the implementation of Nepal NHI program?
   b. How do the challenges and inadequacy at the NHI input level affect the throughput?
   c. What are the implementation bottlenecks of the NHI program at the throughputs level of the program?

3. What is the effectiveness of the Nepal NHI program?

Specific questions

   a. What is its effectiveness measured as intention of renewing annual membership among insured persons?
   b. What is its effectiveness as difference in monthly OOP health expenses before and after intervention in the intervention group?
   c. What is its effectiveness as difference in monthly OOP health expenses between intervention and control group after intervention?
   d. What is its effectiveness as difference in catastrophic health expenses before and after intervention in the intervention group?

e. What is its effectiveness measured as reduced catastrophic health expenses between intervention and control group after intervention?
f. What is its effectiveness as equitable distribution of health expenses across wealth quintiles of the insured persons before and after intervention in the intervention group?

1.3 Research Objectives

The first general objective is to assess the implementation of NHI Program in-compliance with the Standard Operating Procedures (SOP) and Operational Rules (OR).

The second general objective is to evaluate the implementation process of Nepal NHI program.

Specific objectives

a. To assess the effect of national context like political support, financing and health system on the implementation of Nepal NHI program.
b. To assess how the challenges and inadequacy at the input level affect the throughput.
c. To explore the implementation bottlenecks of the NHI program at the throughputs level of the program

The third general objective is to evaluate the effectiveness of the Nepal NHI program
Specific objectives

a. To assess the NHI effectiveness as intention of renewing annual membership among insured persons.
b. To assess the NHI effectiveness as difference in monthly OOP health expenses before and after intervention in the intervention group.
c. To assess the NHI effectiveness as difference in monthly OOP health expenses between intervention and control group after intervention.

d. To assess the NHI effectiveness as difference in catastrophic health expenses before and after intervention in the intervention group
e. To assess the NHI effectiveness as reduced catastrophic health expenses between intervention and control group after intervention.
f. To assess the NHI effectiveness as equitable distribution of health expenses across wealth quintiles of the insured persons before and after intervention in the intervention group.

1.4 Research hypotheses

1 The Nepal NHI Program has been implemented in-compliance with the Standard Operating Procedures (SOP) and Operational Rules (OR).

2 The Nepal NHI implementation process captures the context, political support, financing, program inputs and throughputs.

3 The Nepal NHI program is effective in renewing the members' annual NHI membership, reducing the monthly health OOP and catastrophic expense of the insured populations and equitable distribution of the health expense.

1.5 Conceptual framework: Outcome evaluation- NHI members' intention to renew NHI annual membership

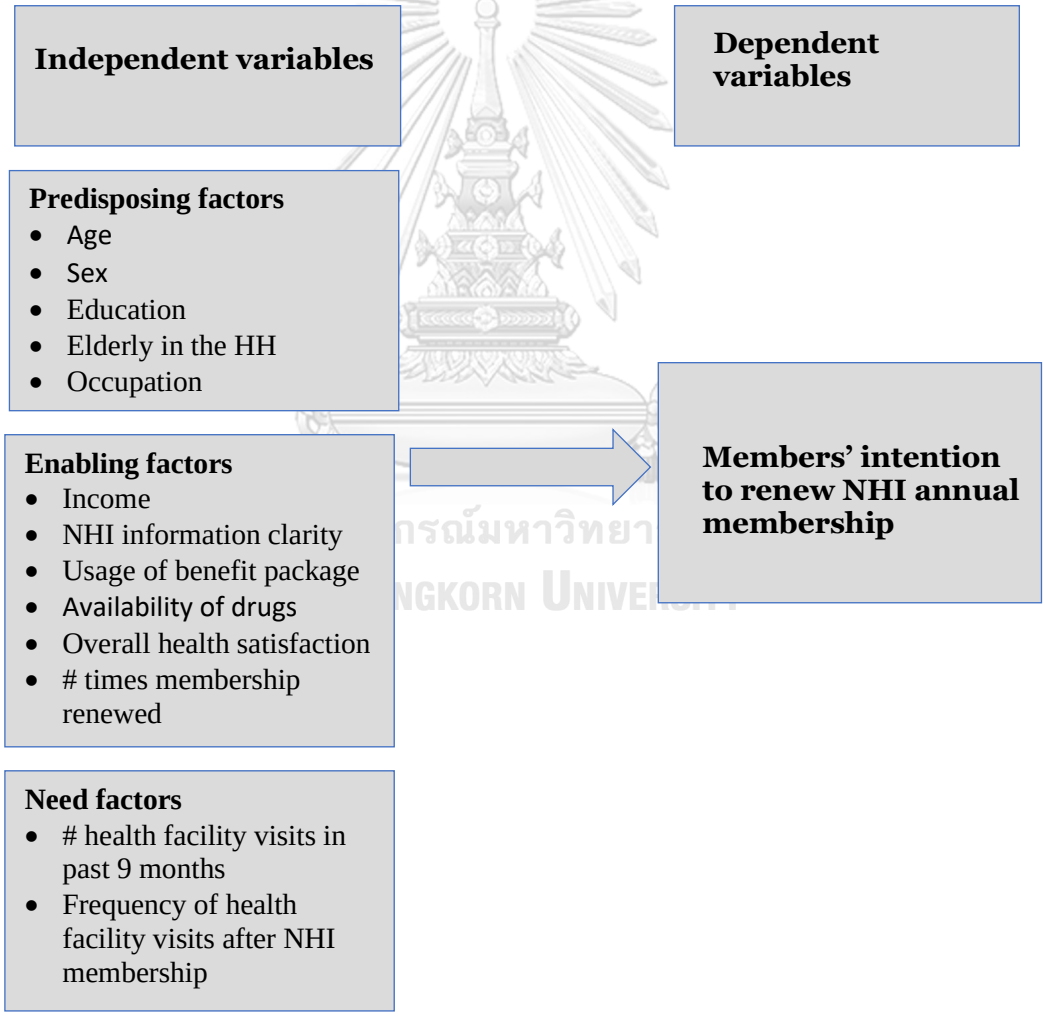

Figure 1: Conceptual framework on process evaluation- member's intention to renew NHI annual membership

1.5.1 Operation definitions

Predisposing factors

Age: refers to the self-reported completed age of last birthday of the participant at the time of interview.

Sex: refers to self-reported by respondents as male, female and others.

Education: refers to the self-reporting of the highest level of education that the participant had attained at the time of interview. The options are never been to school, primary-high school and College or University.

#of elderly per household: refers to the self-reported presence of elderly individuals above 60

Occupation: refers to the self-reported type of job during the time of interview. It is categorized into formal and informal employment.

Formal employment refers the remunerative work done with government registered public or private (proft or non-profti) entities with secured employment contracts, benefits, social protection and pays tax.

Informal employment refers to all *remunerative* work (i.e., self-employment and wage employment) that is not registered, regulated, or protected by existing legal or regulatory frameworks and *non-remunerative* work undertaken in an income-producing enterprise. These workers do not have secure employment contracts, workers' benefits, social protection, or representation. (ILO 2020)

Enabling factors

Income: refers to the self-reported amount of monthly income earned by the whole family.

NHI information clarity: refers to the self-reported clarity and accuracy of the information in the first time. The options are binary; yes or no.

Usage of benefit package: refers to the self-reported information on the usage of benefit package by the HH members on the first year. The options are up to 50% and above 50%.

Availability of drugs: refers to the self-reported information on the availability of drug during every visit to the health facility. The options are binary; yes or no.

Overall health satisfaction: refers to the self-reported information on respondents' satisfaction with health services. The options are binary; yes or no.

 # times membership renewed: refers to the self-reported number of times annually renewed by the HH in the NHI program. The options are 0-time, 1 time and 2 times.

Need factors

 # health facility visits in past 9 months: refers to the self-reported number of times HH members visited the health facility in last nine months.

Frequency of health facility visits after NHI membership: refers to the self-reported frequency of visits to the health facility after becoming the NHI members

1.6 Conceptual framework: Outcome evaluation: Reduced monthly OOP and catastrophic health expense

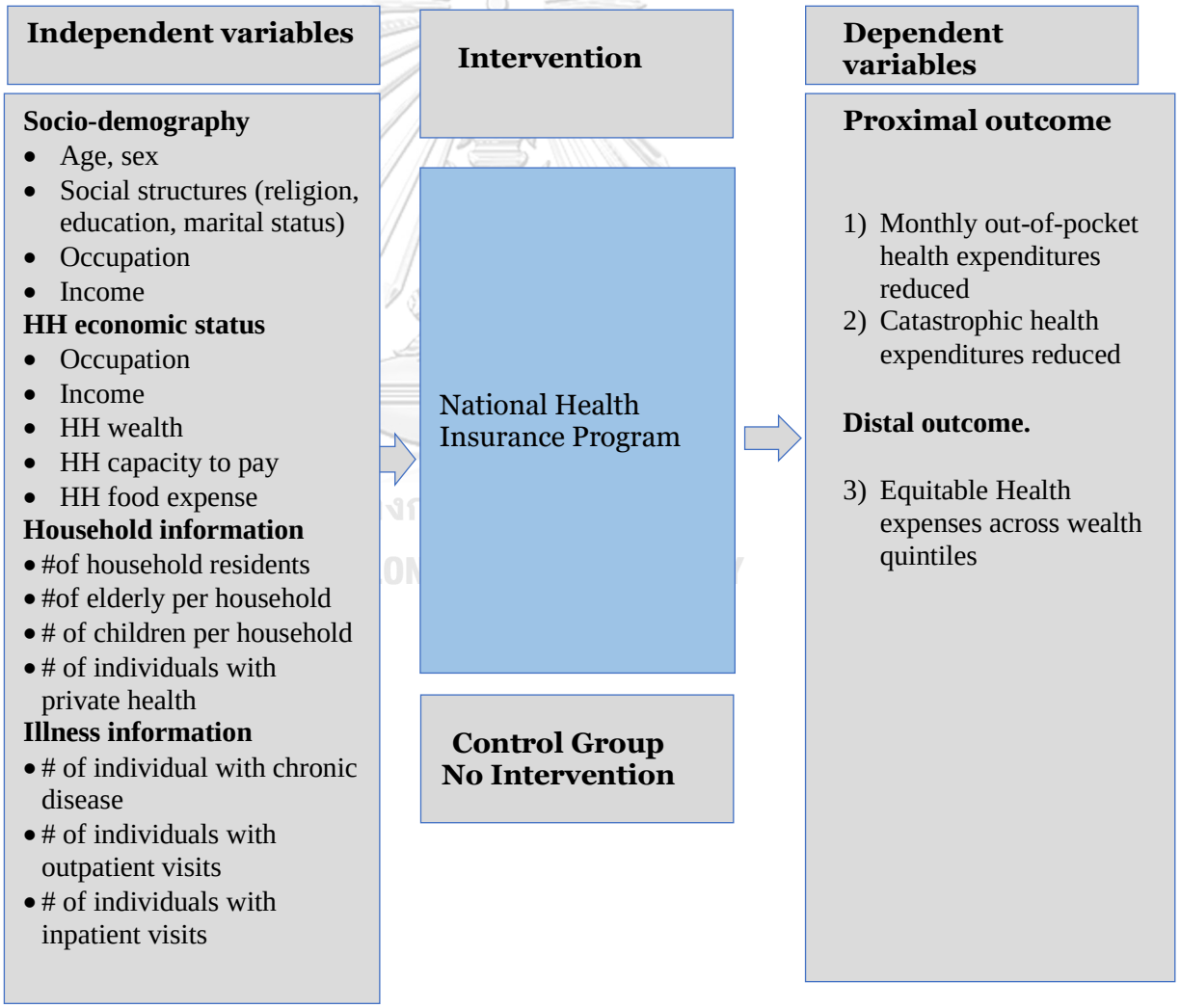

Figure 2: Conceptual framework on NHI Outcome evaluation

1.6.1 Operational definition

Socio-demography

Age: refers to the household head self-reported completed age of last birthday of the participant at the time of interview.

Sex: refers to household head self-reported by respondents as male, female and others.

Religion: refers to household head self-reported by respondents from the options including Hinduism, Buddhism, Islam, Kirat, Christianity and Others.

Education: refers to the household head self-reporting of the highest level of education that the participant had attained at the time of interview. The options are no education (never been to school), literate (never been to school but can and write simple Nepali language), primary school (Grade 1-5), Middle school (Grade 6-9), high school (Grade 10-11) and College or University and above.

Marital status: household head self-reported marital status during the time of interview. The options include Never married, Currently married, Divorced, Separated and Widowed

HH economic status

Occupation: household head refers to the self-reported type of jobs during the time of interview. It is categorized in 3 occupations as listed in Part 1 Household information (Annex # 2.6)

Income: refers to the household head self-reported amount of monthly income earned by the whole family.

HH wealth: refers to the household head self-reported wealth owned by the HH. It is categorized into 22 items as listed in the question Part 9 of the questionnaire (Annex 2.6)

HH capacity to pay: refers to the household head self-reported non-food expense of the whole HH; calculated by deducting the food expense from the total HH expense

HH food expense: refers to the household head self-report food expense of the whole HH; calculated after deducting the monetary value of the food produced by the family or food received as donations from the total HH food expense.

HH information

#of household residents: is defined as in the year 2016 Nepal Demographic and Health Survey and refers to the house hold head self-reported number of persons in the household including household head and family members as well as guests who sleep and eat at the house.

#of elderly per household: refers to the house hold head self-reported number of elderly individuals above 60 with or without income (pension)

# of children per household: refers to the house hold head self-reported number of children below 18 and not earning money

# of individuals with private health insurance: refers to the head of house hold self-reported number of individuals with private health insurance

HH Illness information

# of individual with chronic disease: refers to the household head self-reported number of household individuals any of 17 chronic diseases as listed in question Part 6 of the questionnaire (Annex 2.6)

# of individuals with outpatient visits: refers to the household head self reported number of household individual making outpatient visits in the health facility in the past 30 days prior to the data collection.

# of individuals with inpatient visits: refers to the household head self-reported number of household individual making in-patient visits in the health facility in the past 365 days prior to the data collection.

Proximal Outcome

Monthly OOPhealth expenditures: is defined as in/by (Munisamy, 2015) and refers to the head of household self-reported quantifiable out-of-pocket monetary expenses in local currency incurred in the pursuit of medical related expenses by members of the household in the month (outpatient visit cost) and a year (in-patient visit cost) previous to the data collection. They include medical and non-medical cost. The medical cost includes purchase of over-the-counter medications, visits and treatment at official medical institutions including the cost of transport to said institutions, costs of visit and treatment of traditional medical centers and other unspecified cost related. The non-medical costs include visiting traditional healers, Ayurveda and home remedy.

'*Out-of-pocket'* refers to expenditures after deducting third party payments like insurance and/or free medical services or free medications

Catastrophic health expenditures: is defined as in/by (O'Donnell et al., 2008) refers to the head of household self-reported' out-of-pocket health care spending of all household members for outpatient and in-patient visits in excess of the threshold of 10, 20, 30 and 40% of the *'Capacity to pay*' (CTP). CTP is the total household expenditures minus food expenditures

Equitable Health expenses: Refers to the distribution of health expenses (monthly out-of-pocket health expenses and catastrophic expenses) proportionate to the household 'capacity to pay' (CTP), which is different by economic quintiles; poorest being the first and richest being the fifth quintile.

CHAPTER 2

LITERATURE REVIEW

The literature review presents theories, concepts and existing scientific discourse employed that guided the study as a whole and in particular to develop the study methodology. It also offers detailed information for all the study operational definitions. The key broader issues outlined in the literature review include concept of Universal Health Coverage, health financing and measurement, health system strengthening, explanations to the Nepal health system based on WHO health system building blocks, health context and information on Nepal NHI program and finally methodological issues.

2.1 What is Universal Health Coverage?

WHO has defined UHC as "ensuring that all people can use the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship." (WHO, 2010b) The former WHO Director General Margaret Chan's asserted that universal health coverage is "the single most powerful concept that public health has to offer", attests to the increasing worldwide attention given to universal coverage—even for less affluent countries—as a way to reduce financial impoverishment caused by health spending and increase access to key health services.

The UHC concept, however, is not new as it evolved in Europe in the 19th century with Bismarck introduction to the Social Health Insurance. The WHO 1948 constitution and the 1978 Alma Ata Declaration implicitly stressed for "Health for all" which later WHO explicitly adopted UHC in 2005 and 2010 report proposed for the health financing to achieve UHC.

The UHC three main concepts as presented in figure 3 are populations coverage, services covered and financial risk protection (WHO, 2010b).

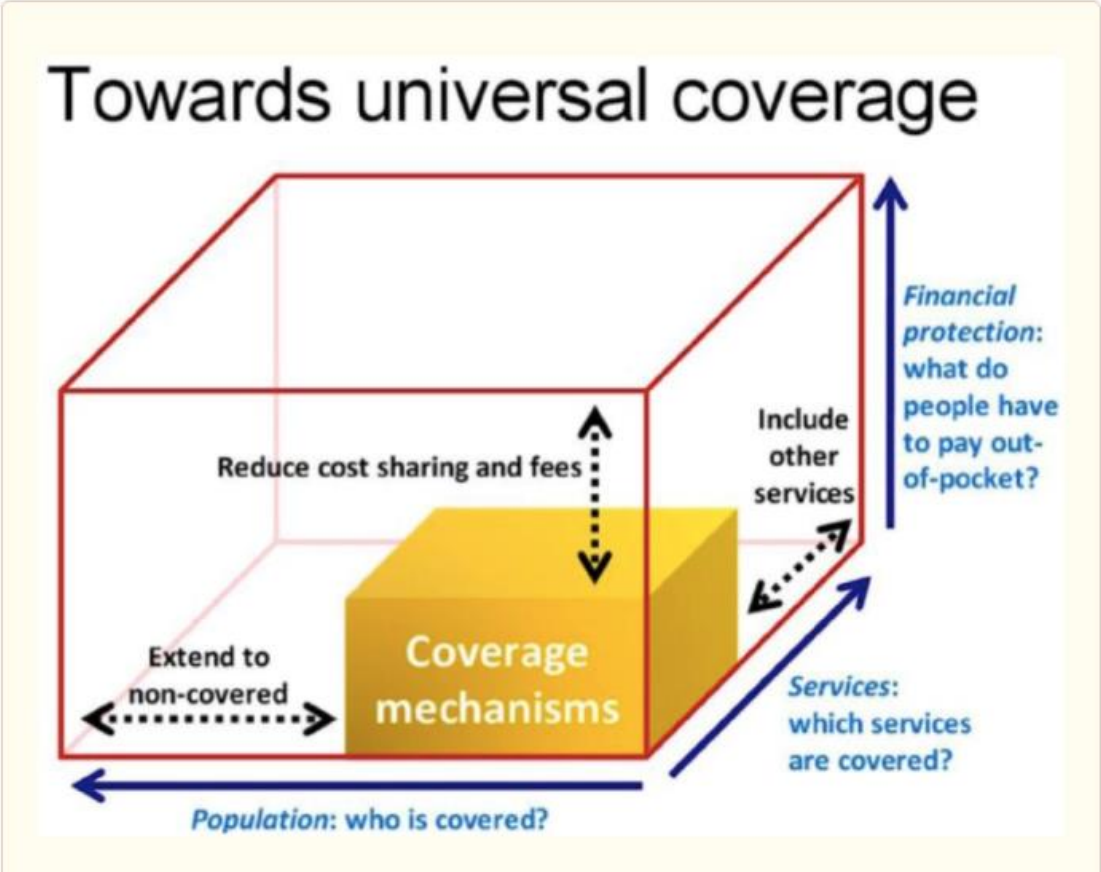

Figure 3: Three dimensions of UHC

2.2 Health Care Financing

Health financing is much more than a matter of raising money for health. It is also a matter of who is asked to pay, when they pay, and how the money raised is spent (WHO, 2010b). The key aspects of health care financing are generating and securing the resources for health, develop the appropriate channels of pooling the sources and buy the health services for the people in need.

The aim of financing is to protect the people from the financial risk protection, which is concerned with safeguarding people against the financial hardship associated with paying for health services (Saksena et al., 2014). The consequences on the lack of financial risk protection are the catastrophic health expenditure, occurs due to high out-of-pocket (OOP) payments (see section 2.3.4 for measurement details) which further lead the household into impoverishment.

Below are the key health care financing aspects; namely revenue generation, pooling and purchasing.

2.2.1 Revenue generation

Revenues are the sources of funding to finance the health care in any country. Different countries have different approaches of generating revenue at domestic level, including there are also external donors providing such required support. The common sources of the domestic revenue include tax, investment income, formal sector payroll, house-hold premium and government contribution. (Lagomarsino et al., 2012) has compiled few developing countries efforts on various types of revenue generation.

	Year of reform	Revenue generation (sources of revenue ordered by proportion of contribtuion)	Risk pooling		Service delivery		
			Single	Multiple	Primarily public	Mixed	Primarily private
Intermediate-stage reform countries							
Ghana (NHIS)[25]	2003	Value-added tax, investment income, formal-sector payroll contributions, household premiums	×			×	
Indonesia* (BPJS)[26]	2004	General government revenues, formal-sector payroll contributions		×		×	
Philippines (PhilHealth)[27]	1995	General government revenues, formal-sector payroll contributions, household premiums	×			×	
Rwanda (Mutuelles)[28]	2000	Donor funding, general government revenues, household premiums, formal-sector payroll contributions		×	×		
Vietnam (VSS)[29]	2002	General government revenues, formal-sector payroll contributions	×		×		
Early-stage reform countries							
India* (RSBY)[30]	2008	General government revenues		×			×
Kenya* (NHIF)[31]	2002	Formal-sector payroll contributions, household premiums		×		×	
Mali* (Mutuelles)[32]	2009	General government revenues, household premiums		×	×		
Nigeria* (NHIS)[33]	2009	Formal-sector payroll contributions, general government revenues, household premiums, donor funding		×		×	

For purposes of this table, we focus on the main national-level schemes. NHIS=National Health Insurance Scheme. BPJS=*Badan Penyelenggara Jaminan Sosial* (social security administrative body). PhilHealth=Philippine Health Insurance Corporation scheme. Mutuelles=community-based health-insurance schemes. VSS=Vietnam Social Security. RSBY=*Rashtriya Swasthya Bima Yojna* (national health insurance programme). NHIF=National Hospital Insurance Fund. *Countries that are working to expand existing pools to include new populations, or are merging existing pools to create one pool.

Table 1: **Structure of health financing reforms in nine developing countries**

Figure 4: Health reform financing in developing countries

2.2.2 Pooling

Pooling is basically the management of the revenues generated via different sources. It implies collecting the revenues and transferring to the service providing organizations via different mechanisms. Different countries have different methods of

pooling however the essence and objectives remain the same. It is argued that risk pooling in health care embody equity and efficiency considerations (Smith & Witter, 2004). The equity notion emphasizes on the re-distribution of resources for the health care. It argues that an individual should not assume all the risk associated with their health care expenditure needs. People differ based on wealth, vulnerability to disease and access to the services. The pooling implies transfer of resource for health care from health to sick, rick to poor and productive to non-productive as depicted in the figure 7 below.

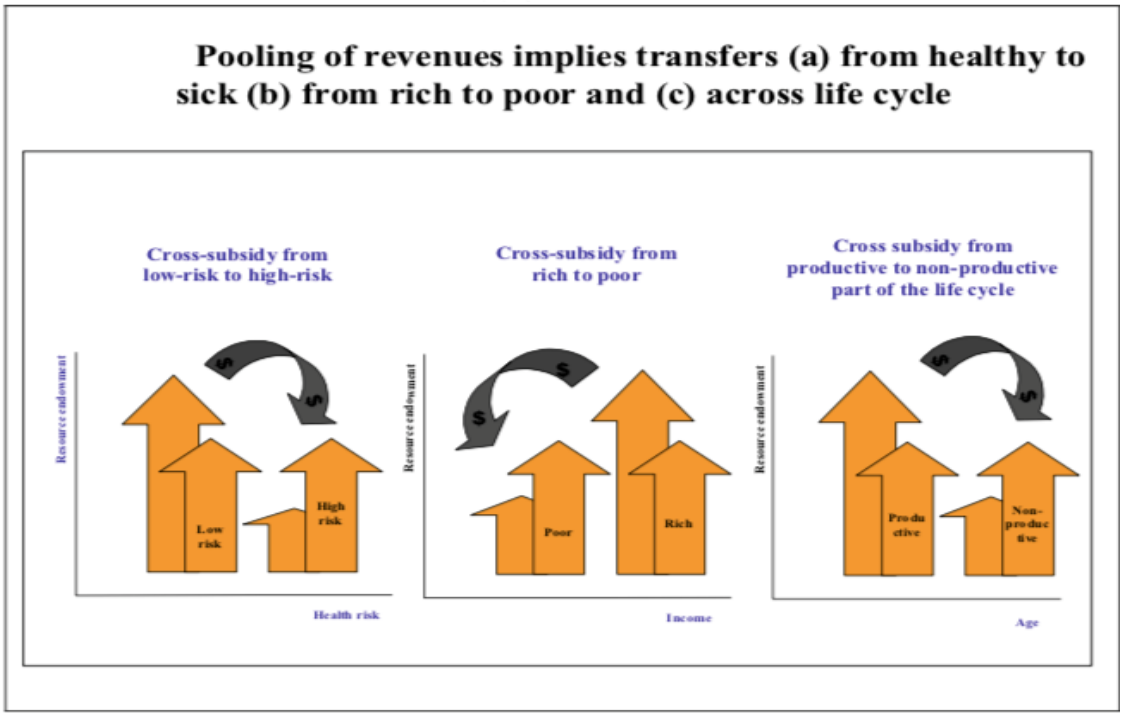

Figure 5: Concept of pooling in health financing

The efficiency arguments assumes that pooling can lead to major improvements in population health, can increase productivity, and reduces uncertainty associated with health care expenditure.

(Smith & Witter, 2004) explained four classes of risk pooling as follows

No risk pool: It implies no pooling and all health expenditure liability lies with the individual.

Fragmented risk pools: The fragmented risk pool is a differentiated approach and denotes a series of independent risk pools based on geography, employment, health status and personal choice. Such risk pools have been practiced in the developed countries but with lots of cautions, as it has numerous negative repercussions. The variations for the fragmentation are large and expenditure varies based on variation. Without effective transfer of resources from one pool to another, there is a huge missed opportunity for equity. For instance, if a pool is full of sick and elderly populations the expense is high and it will charge high to its members unless there are additional subsidies.

Integrated risk pool: The risk pool was developed to mitigate the problems of fragmented risk pool. It does not imply eliminating the fragmented pool but enhances the coordination and transfer of resources from low spending pool to high spending pool.

(Smith & Witter, 2004) suggested that the operation of a system of transfers between risk pools might take the form of central collection of revenues, and disbursement to risk pools on the basis of estimated spending need. While in some systems, the revenues are collected by the pools themselves but allow for the financial transfers from low-need pools to high-need pools on the basis of needs, without the intervention of a central intermediary.

In line with the similar theory of pooling risk the major approaches to risk pooling used by the developing countries are the incremental approach, which starts with different pools for different target populations and expands or combines them over time; and the single-pool approach, in which one risk pool is designed to cover all populations—rich and poor, formal and informal (Lagomarsino et al., 2012). This implies moving from fragmented to integrated and gradually to unitary risk pool as explained below. The countries include India, Kenya, Nigeria and Indonesia. The vivid example comes from Indonesia in November, 2011, where Indonesia passed an ambitious law that requires a merger of all five existing government risk pools into one universal programme, *Badan Penyelenggara Jaminan Sosial* (social security administrative body), to promote cross-subsidization, decrease administrative costs,

and reduce inequalities in benefits.

Unitary risk pool: Unitary pool is an ideal and desirable under which all expenditure liability is transferred to a single national pool though there are numerous administrative problems with the operations of the centralized system. As the risk pooling becomes progressively more integrated, the uncertainty associated with health care expenditure can be reduced. The countries like Ghana, Philippines and Vietnam have followed the single risk pool (Lagomarsino et al., 2012)

The figure below depicts the approach of countries with the pooling of risk

	Who is covered?		What is covered?		How much is covered?	
	Population(s) targeted by health insurance	Population enrolled (% of total)	Scope of services	Births attended by skilled health staff (% of total)*	Out-of-pocket expenditure as % of THE in 2010†	Decrease in out-of-pocket expenditure as % of THE since reform[21]†
Intermediate-stage reform countries						
Ghana (NHIS)[58]	Entire population targeted	54%	Comprehensive	57%	27%	4%
Indonesia‡ (BPJS)[26,59]	Entire population targeted	63%	Comprehensive	75%	38%	2%
Philippines (PhilHealth)[47]	Entire population targeted	76%	Inpatient, with outpatient for poor people	62%	54%	−4%
Rwanda (Mutuelles, RAMA, MMI)[60]	Entire population targeted	92%	Comprehensive	52%	22%	3%
Vietnam (VSS)[29]	Entire population targeted	42%	Comprehensive	88%	58%	6%
Early-stage reform countries						
India§ (RSBY)[11,12]	People below the poverty line	8%	Inpatient (with pilot outpatient)	53%	61%	2%
Kenya (NHIF)[31]	Formal sector, expanding to informal sector	20%	Inpatient (with pilot outpatient)	44%	43%	2%
Mali‡ (Mutuelles, RAMED, AMO)[44]	Entire population targeted	3%	Comprehensive	49%	53%	−1%
Nigeria (NHIS)[33]	Civil servants, expanding to informal sector	3%	Comprehensive	39%	59%	3%

THE=total health expenditure. NHIS=National Health Insurance Scheme. BPJS=*Badan Penyelenggara Jaminan Sosial* (social security administrative body). PhilHealth=Philippine Health Insurance Corporation. Mutuelles=community-based health-insurance schemes. RAMA= *La Rwandaise d'Assurance Maladie* (Rwanda health insurance scheme). MMI=Military Medical Insurance. VSS=Vietnam Social Security. RSBY=*Rashtriya Swasthya Bima Yojna* (national health insurance programme). NHIF=National Hospital Insurance Fund. RAMED=*Régime d'Assistance Médicale* (non-contribution medical assistance system). AMO=*Assurance Maladie Obligatoir* (mandatory health insurance). *Data retrieved from World Bank world development indicators database. †Data retrieved from WHO global health expenditure database. ‡Legislation to create the programmes in Indonesia and Mali has recently been passed and implemention is at an early stage. §For the purposes of this table, we use coverage of national-level health insurance schemes in India (RSBY and the civil servant scheme); there are several state-level schemes also providing coverage for poor people that are not included.

Table 2: Three dimensions of coverage in nine developing-country health insurance reforms

Figure 6: Dimensions of insurance coverage

2.2.3 Purchase

WHO 2010 defines purchasing is the process of paying for health services. The three main ways to do this are direct allocation of government budget to its health service providers, setting up a semi/autonomous agency to purchase the services on behalf of the populations and thirdly is the OOP. Many countries use a combination. Either paid by the government or separate agency there are different ways countries have adopted to purchase the services and make payments. They are as follows (Barber et al., 2019)

Budget based

Line-item budget: Line-item budgets specify detailed amounts for each line item (i.e., personnel, medicines, supplies, etc.) based on the previous year's budget allocation.

Global budget: A global budget provides fixed funding for a specific population group and offers more flexibility in allocating resources.

Activity based

Fee for service: FFS is typically based on a schedule that lists the prices for individual services, with the definition of services based on established classification codes, such as the Current Procedural Terminology.

Per-diem: Per- diem payments offer a fixed amount per day of hospital or residential care regardless of care provided or costs incurred.

Diagnosis Related Groups (DRG): DRG payments group patients with similar clinical characteristics, use cost information to determine weights based on average treatment costs, and apply a conversion factor to generate a price for each DRG.

Population based

Capitation: Capitation is a population-based payment, whereby a fixed payment is made prospectively for a defined benefits package per person for a period, regardless of the services provided.

Consolidated

Bundled episode: A bundled payment methodology involves combining, or blending, the payments for physicians, hospitals, and other health care provider services into a single amount.

Global Capitation: Under global capitation, one payment is made to an integrated health system that is responsible for delivering the primary and referral service package to a relatively large defined population.

2.3 Financial risk protections and its measurement

Financial risk protection is one of three pillars of UHC, which implies safeguarding people against the financial hardship associated with paying for health services by reducing the OOP and catastrophic expense. Out of numerous approaches, NHI is one of the effective measures to protect the insured populations from the catastrophic expense through risk pooling and pre-payment.

While the concept of the catastrophic expense as the high OOP is clear, its application has varied in terms of how a household's available resources are calculated and how much of these resources have to be spent on health to cause a catastrophic event (Saksena et al., 2014). Often a household's non-food expenditure is chosen as the denominator as the food expenditure should not be considered as being part of the resources available to contribute to health and is adopted by WHO as net of basic food spending. The household's total expenditure is also taken as denominator as its easy to calculate but such measure could be pro-rich if the threshold for financial catastrophe is set relatively low.

Health spending is taken to be catastrophic when a household must reduce its basic expenditure over a period of time to cope with health costs (Xu et al., 2003). The concept of catastrophe expense is not homogenous and depends on the economic condition. For a rich family the expensive surgery may not be catastrophic because

the portion of money spent for the surgery may be negligible to the income of the family, while common illness could be financially disastrous if the family income is very weak. Out-of-pocket expense refers to the total expense incurred in the health expense like investigation, lab, drugs, travel etc after deducting the payment from third party such as insurance, subsidies, free health services etc.

In-spite broader recognition of the catastrophe expense as a desirable objective of health policy, there is no consensus on the threshold proportion of household expenditure (Xu et al., 2003). In past studies, the threshold has varied from 5% to 20% of total household income. While the current studies have started using a higher threshold of payments of at least 40% of a household's capacity of pay, which is not the same household income. Capacity to pay is defined as the remaining money with the family after spending on basic need, food in particular. There are two indicators to measure the concept of catastrophic expenditures (Saksena et al., 2014). The first is the incidence of catastrophic health expenditures, which is a headcount indicator calculated as the proportion of households in a population whose health expenditures exceed this critical point. The second, though less widely used, is the catastrophic overshoot, which captures the extent to which health expenditures exceed the defined threshold.

The table 4 below summarizes different approaches adopted to calculate OOP and catastrophic expense.

Table 1: Methodology for measuring OOP and CHE

	Article/book title and writer	**Study design/data source/variables**	**OOP Measurement**	**CHE Measurement**	**Statistical analysis**
1	Household catastrophic health expenditure: a multi-country analysis Xu K. et.al 2003	Review of the data from 128 countries	OOP health payment: direct made by HH at the point of service use and deducted any reimbursement from health insurance scheme.	40% of a HH's capacity to pay (CTP) ** (detailed explained below the table)	Uncertainty interval (bootstrap method) Multivariate ordinary-least-squares-regression for cross country analysis

2	Cumulative incidence, distribution and determinants of catastrophic health expenditure in Nepal: Results from the living standards survey Ghimire M. et.al 2018	Nepal Living Standards Survey-III 2010/11 Sample size: 5988 HH Independent Variables: - Household roster - HH housing expense - Access to facilities - Food and non-food expenditure - Illness and injury cost Dependent variables • CHE • Expense re-call period: Food- 7 days Non-food- 30 days Infrequent non food-12 months Chronic illness- 12 months Acute illness and injury-30 days	OOP health payment: direct payment (registration, diagnosis, consultation, surgery, medicine and transportation) made by HH at the point of service use	If OOP is equal to or more than 40% CTP (capacity to pay)- the healthcare expense is CHE. Steps: same as above	Univariate analysis to assess the relationship between dependent and independent variable Multivariate analysis HH weight was used for the data analysis.
3	OOPhealth expenditure among insured and uninsured patients in Vietnam (2019)	Cross sectional study to compare OOP among insured and uninsured. Data source: World Bank Survey "The 2015 Vietnam District and Community Health Facility"	OOP in the past 12 months- calculated as the total expense including direct cost (user fees, examination, diagnostic test and medicine) and non-direct cost (travel, accommodation and	NA	Ordinary least square (OLS) to predict the insurance effect on OOP for in and outpatient health care services.

		78 district hospitals, 246 comune health stations (CHSs) in 6 provinces selection purposefully Independent variables Health insurance status Income status Socio-demographic characteristics (age, sex, education, occupation and marital status) Individual variables Dependent variable OOP for inpatient and outpatient services with recall period of 12 months	unofficial payment such as gift)		
4	Utilization of health care and burden of OOPhealth expenditure in Zimbabwe: Results from a national household survey (2018)	A national cross-sectional household survey Sample size: 7135 HH A two stage sampling process: enumerate areas (stratified) and HH level (systematic) Independent variables HH Characteristics (location, size) Income Consumption (one-	Outpatient visit (# of visits, types of care, disease categories): 4 weeks recall period (max of 4 visits recorded) Expense: registration, consultation, drugs, food, transportation and in-kind payment OOP expense for each visit: sum of all spending categories and average of each visit. The result was then extrapolated to	Estimated as the share of HH that spent more than 25% of total consumption on OOP expense Incidence of CHE at cut-off of 10% of total consumption (the % is used for tracking the progress towards SDGs) The poverty	Calculation of utilization of inpatient and outpatient services by age, gender and expenditure quantile. Calculation of total OOP health expenditure, incidence of catastrophic health spending and poverty head count. Logistic regression to estimate the determinants of catastrophic health

		month recall period for spending 37 items Monthly income and consumptions were extrapolated to obtain annual HH income and consumption	52 weeks to obtain the annual OOP for outpatient. Inpatient visit: 12 months recall time with max two visits (other variables remain same) Total OOP cost: outpatient and inpatient.	headcount index is used to measure the impact of health spending on poverty (with and without OOP)	spending.
5	The impact of out-of-pocket payments on health care inequity: The case of national health insurance in South Korea (2014)	Data source: The fourth Korean National Health and Nutrition Examination Survey of Korea's Center for Disease Control and Prevention Recall period: 2 weeks for outpatient expense and 12 months for the hospitalization cost	Outpatient and Inpatient cost were provided separately without adjusting weeks into 12 months or vice versa.	10%, 20%, 30% and 40% of capacity to pay (income remained after subsistence needs had been met: total HH exp-food exp)	ANCOVA
6	Measuring out-of-pocket payment, catastrophic health expenditure and the related socioeconomic inequality in Peru: A comparison between 2008 and 2017	Data source: National Household Survey on Living Conditions and Poverty (2008 and 2017) Recall period: 4 weeks for outpatient, 3 months for dental, child health care and 12 months for the hospitalization	OOP is the sum of all payments disbursed by a member of the HH for the health services OOP monetary value was converted to constant prices using the consumer price index	40% of capacity to pay (income remained after subsistence needs had been met: total HH exp-food exp)	OOP was expressed as median and interquartile range

** HH CTP: Effective income (EXP) remaining after basis subsistence need

EXP: Total HH consumption expenditure

Subsistence need/expense (SE): HH food expense (whose food share was in the 45th to 55th percentile range (used in preference to that for one HH at the 50th percentile)

CTP: EXP-SE45-55

Subsistence expenditure was adjusted for the HH size according to a consumption equivalent scale

eqsize=hhsizeβ,

where eqsize is number of consumptions-equivalent in the HH

hhsize is actual HH size

β is household multiplier effect and the value was 0.56 (95% CI 0.556-0.572) based on the regression model from 59 countries. It implies that food consumption increases with additional HH members but that the increase in consumption is less than proportional to the increase in HH size.

A HH was deemed poor if its total expense was less than the basic SE. If the food expense was lower than this threshold, the HH's observed food expense was used to define its basic SE and thus CTP= total expense-food expense.

2.4 Equity in health care

Health equity means that everyone has a fair and just opportunity to be as healthy as possible. This requires removing obstacles to health such as poverty, discrimination, and their consequences, including powerlessness and lack of access to good jobs with fair pay, quality education and housing, safe environments, and health care (Braveman et al., 2017).

Health equity is multi-dimensional and covers different dimensions as follows

• Health outcomes

• Health care utilization

• Subsidies received through the use of services

• Payments people make for health care (directly through out-of-pocket payments as well as indirectly through insurance premiums, social insurance contributions, and taxes)

The figure below portrays the national geographical health equity scenario on health care utilization across seven provinces in Nepal as an example (WHO, 2018). While equity dives deeper and wider into utilization by the poor vs rich, gender disparity, rural vs urban and so on.

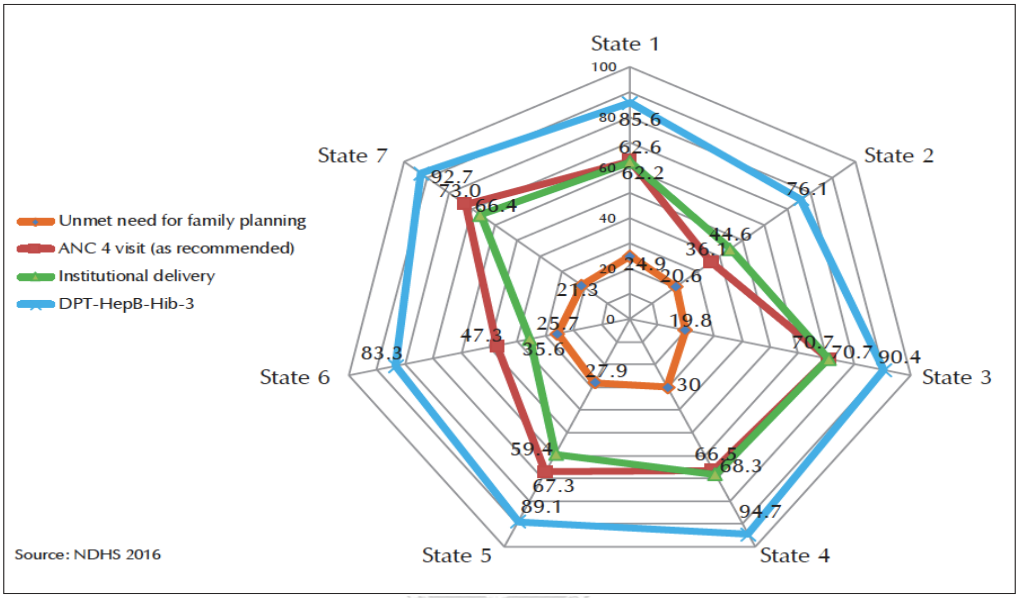

Figure 7: Health service coverage in Nepal seven states

So this section narrows down the concept to health equity to financing, which is one of the research objectives too. It explains some of concepts and measurement of health equity in-terms of distribution of out-of-pocket and catastrophic expense across different income quintile groups and access to the financial protection schemes like NHI.

Equity in financing is related to financial protection and is measured through following indicators (Adhikari et al., 2002)

Indicators of the level of health care expenditure

1. Total expenditure on health as % of GDP
2. General government expenditure on health as % of GDP
3. General government expenditure on health as % of total government expenditure

4. Per capita government expenditure on health at average exchange rate (US$)
5. Per capita government expenditure on health (PPP $)

Indicators of the source of funds for health care
6. General government expenditure on health as % of total expenditure on health
7. Private expenditure on health as % of total expenditure on health
8. External resources for health as % of total expenditure on health
9. Out-of-pocket expenditure on health as % of total expenditure on health
10. Out-of-pocket expenditure on health as % of GDP
11. Private prepaid plans on health as % of total expenditure on health

Measuring the indicators mentioned above are generally accounted in the national health accounts, which are done once in every ten years, but depends from countries. In particular measurement of the out-of-pocket expense and catastrophic expense at the household level has been evolving and also has numerous challenges at the data collection. The different methods employed for calculating OOPexpense and catastrophic expense can be found in table 1.

2.5 Concept of Health System Strengthening

WHO stated that a "*health system consists of all organizations, people and actions whose primary intent is to promote, restore or maintain health. This includes efforts to influence determinants of health as well as more direct health-improving activities. A health system is therefore more than the pyramid of publicly owned facilities that deliver personal health services. It includes, for example, a mother caring for a sick child at home; private providers; behaviour change programmes; vector-control campaigns; health insurance organizations; occupational health and safety legislation. It includes inter-sectoral action by health staff, for example, encouraging the ministry of education to promote female education, a well known determinant of better health." (WHO, 2007a)*

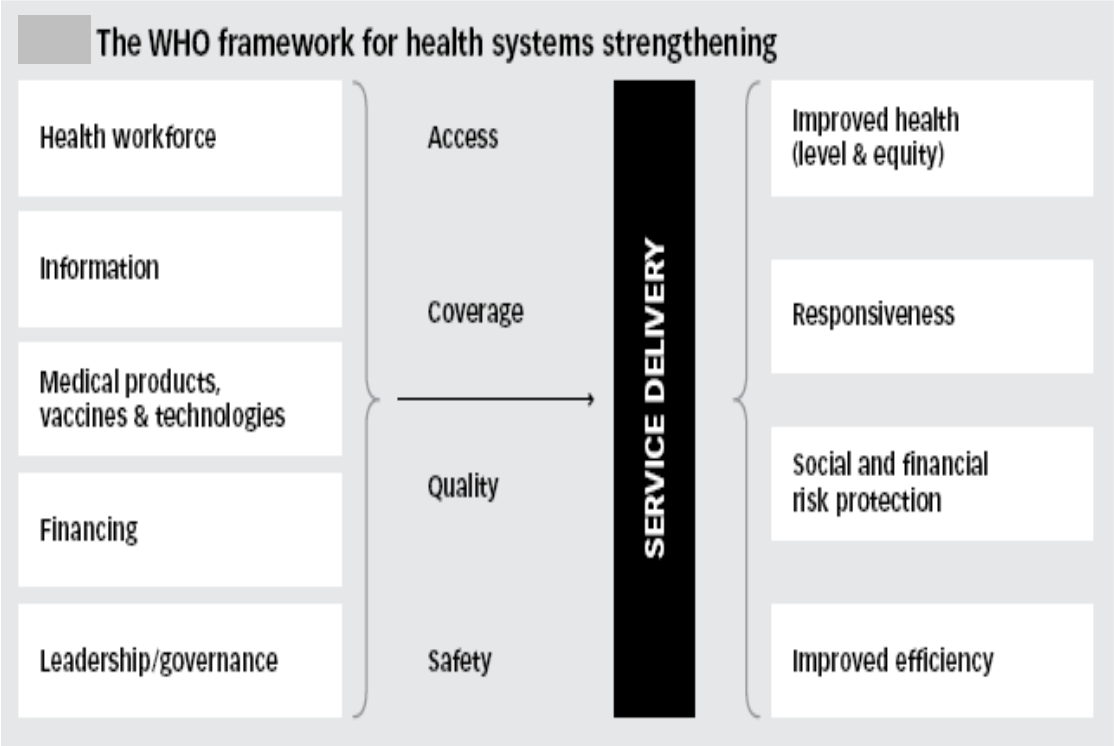

Figure 8: WHO framework on Health System Strengthening 2000

As depicted in the figure above the ultimate outcomes of the health system are improved health level and equity, in a way that are responsive and efficient and protect the people from the financial burden incurred due to health expenditures. While the intermediate goal is to increase the access and coverage to quality and safer health services.

The elements on the left hand side of the figure above are called system building blocks. Leadership and governance provides stewardship and direction to the overall health system by developing strategic policies, framework, coordination, accountability and put health at the center of the development.

Health workforces are the first point of contact for the patient seeking services and they are responsive, fair and efficient to achieve the best health outcomes possible, given available resources and circumstances (WHO, 2007b). Information provides evidence and road map for strategic planning. A well-functioning health information system is one that ensures the production, analysis, dissemination and use of reliable and timely information on health determinants, health systems performance and

health status. [SEP] Medicines and vaccines are the tools to save life and a good health system should ensure '*equitable'* access to the life saving drugs and technologies. And finally WHO argues that good health financing system raises adequate funds for health, in ways that ensure people can use needed services, and are protected from financial catastrophe or impoverishment associated with having to pay for them. The proposed research aims to evaluate the financing of the health in Nepal aimed at safeguarding the people from the catastrophic health expenditures incurred due to health expense.

In-spite WHO framework on health system different countries have evolved their health system through years of experiment and reflection. There are two health-system models that emerged the system building blocks in specific ways (and countries such as Japan, Canada, and France subsequently created variants) (Lagomarsino et al., 2012). The UK's (Beveridge) National Health Service model relies on general taxes, one national risk pool, and publicly provided services available to all. By contrast, Germany's (Bismarck) social health insurance model relies on household premiums and payroll taxes, many risk pools, and services purchased largely from private providers available to those who enrolled.

2.6 Health system in Nepal:

2.6.1 Historical background, policy context

The modern historical timeline of health system in Nepal can be broadly categorized before and after 1990, the year, which marked the beginning of modern Nepal with restoration of democracy through mass movement (Rai et al., 2001). Nepal got its first independence from 104 years of Rana family rule in 1951 and until 1950, there were only a handful of doctors to treat the 8 million Nepalese, and the first General Health Plan in Nepal was introduced as an integral part of the First Five Year (developmental) Plan in 1956. Most Nepalese lived and died away from any formal healthcare and the government's first Five Year Plan in 1956 listed 34 hospitals with just 625 beds, 24 dispensaries and 63 Ayurvedic pharmacies (*aushadhalaya*) (Heydon, 2015). Health personnel consisted of basic level health workers, compounders, who distributed medicines and gave injections, dressers who attended

to wounds and about 50 doctors who had trained in India.

The other historical initiatives were the establishment of Malaria Eradication Organization in 1955, and introduction of the Family Planning, the Leprosy and Tuberculosis, and the Smallpox Eradication programs in 1958, 1966 and 1968, respectively (Rai et al., 2001). The Family Planning Program was converted into the Family Planning and Maternal Child Health Board in 1968 and the General Health Plan in 1956 marked the national progress in the health sector with the aim of providing basic health services to every Nepalese citizen.

The health as a major focus for foreign aid in Nepal came later with Primary Health Care (PHC) in the 1978 where Nepal became one of the signatories to the Alma Ata declaration (Heydon, 2015). Nepal became committed to providing PHC to its citizens and was widely supported by the donors provided with money, goods and expertise and had considerable influence on policies and plans. Interestingly the Nepalese government was already committed in the 1960s to a more community health approach and wanted to move away from vertical to integrated programmes.

The National Health Policy of 1991 marked the beginning of the modern health system in Nepal with the primary aim of expanding PHC services to rural and disadvantaged populations (Chand & Kharel, 2015). The government aimed to set up a health facility for every village development committee (VDC), the lowest governance body in the districts, and a PHC Centre with a birthing facility for every electoral constituency. The government has been successful in mobilizing Female Community Health Volunteers (FCHV) for basic health care services such as distribution of contraceptives, folic acid, Vitamin A and oral rehydration packets and together with the Health Posts has been at heart of PHC work in Nepal(Khatri et al., 2017).

In 1997 the Nepalese Ministry of Health and Population formulated Second Long Term Health Plan (1997–2017) focused on improving the health status of women and children; the rural population; the poor; the underprivileged; and the marginalized (WHO, 2007b). The plan has spelled out the need for redirecting resources from high-

expense, low-impact interventions to the low-cost high-impact essential health care services (EHCS), while improving effectiveness and efficiency. Guided by both the National Health Policy of 1991 and the Second Long Term Health Plan 1997-2017 (SLTHP), the first Nepal Health Sector Implementation Plan (NHSP-I) 2004-2009 was formulated. This strategy formulation was conducted against the backdrop of Nepal's commitments on delivering the Poverty Reduction Strategy (PRS) and the Millennium Development Goals (MDGs) and was the beginning of the Sector Wide Approach (SWAp) Program to strengthen the health system of Nepal. The second Implementation plan (NHSP-II) was developed from 2010-2015 and seen as an extension of the previous one, albeit with greater emphasis on partnerships, mitigating access barriers and promoting equity and inclusion, local governance, and decentralized service delivery.

The Maoist party led civil war ended in 2006 which led the series of national policy and governance changes not limited to the new national constitution, new federal system etc. The political waves brought drastic changes to the Nepal and health sector is one of them leading to the development and adoption of the new National Health Policy in 2014. The new policy stated that *the national health policy 2014 is a complete revision of the national health policy 1991 and has been introduced to promote, preserve, improve and rehabilitate the health of the people by preserving the earlier achievement appropriately addressing the existing and newly emerging challenges and by optimally mobilizing all necessary resource through a publicly accountable efficient management (MoHP, 2014).*

NHSP-III (2015-2020) was then developed to translate the essence of National Health Policy 2014 into actions and is recognized as the strategy that will guide the sector, taking into account multi-sector collaboration to address social determinants of health, over the next five-year period.

2.6.2 Health work force

The health resources for Nepal include different categories of health professionals ranging from doctors, nurses, paramedics, mid-level health professionals of different

specialty of health sciences, public health professionals and researchers. The community health workers and volunteers are also very important human resources for health.

Health Service Act (1997) provides policy guidance and political support to the development and management of the health work force of Nepal employed by Ministry of Health. The act has been amended almost five times including the recent one in 2010 and appears to have a degree of flexibility that makes it responsive to a dynamic and evolving health system and to a diverse and multicultural health workforce. The act makes provisions for the management of health workers employed by the MoHP and provides guidance on the recruitment, deployment, promotion, and discipline of health workers.

Similarly the government developed 2003- 2017 Strategic Plan for Human Resources (MoHP, 2012) for Health and intended for following objectives

- Specify the direction and growth of human resource growth,
- Outline human resource objectives for the medium term, and
- Identify short- term policy actions for the MoHP.

The other key national guidelines included National Health Sector Plan I, II and III. Consistently the national plans have made efforts to strengthen the situation of the health work force in Nepal, however the problem still persists in-terms of inequitable distribution of the health workers across the country with high concentration at the urban cities. For example the Human Resources for Health Strategic Plan 2011-2015 by Ministry of Health and Populations stated that out of a national stock of 8,335 medical doctors, only 1,112 are in government facilities. Two thirds of these are working in the Kathmandu valley or in other cities.

The principal agency for the management of health care delivery and provision of health services is the MoHP, through the Department of Health Services DoHS, headed by the Director General. The MoHP administers services through Regional Health Directorates and District Health Offices. There are over 1,300 health

management boards/committees responsible for the management of hospitals and other health facilities. The private for profit and notforprofit sectors health provide health services through 17 NGO run hospitals, 17 eye hospitals, 87 private hospitals and nursing homes, 39 pharmaceutical industries of Nepali origin and 240 foreignbased pharmaceutical companies, 40 diagnostic laboratories and research centres, and two radiotherapy facilities.

The key challenges outlined by WHO in management of the health workers in Nepal are as follows

- Mal-distribution of staff, especially in rural areas;
- Poor staff performance in terms of productivity, quality, availability and competency;
- Fragmented approach to HR planning, management and development;
- Imbalance between supply and demand, and narrow skill mix;
- Limited HRH financing;
- Low attraction / retention in public service, and brain drain;
- Unstable political situation;
- Possible transition in government structure.

The mid-term review of the previous sector strategy, Nepal Health Sector Programme (NHSP)-II, expressed concerns about health workforce management in Nepal and identified it as a “bottleneck” to progress in both access and quality of public health services. There are high proportions of vacancies and absenteeism coupled with mal-distribution of the workforce and lack of up-to-date data on the current stock and distribution. The sector is also facing a shortage of health workers in relation to the size of the population.

2.6.3 Information system

The sources of health sector information in Nepal include routine information systems, population and health facility based surveys, disease surveillance and civil registration and vital statistics (CRVS). Key systems include the Health Management

Information System (HMIS), the Human Resource Information System (HuRIS), the Health Infrastructure Information System (HIIS), the Training Information Management System (TIMS), the Logistical Management Information System (LMIS), the Transactional Account and Budget Control System (TABUCS), the Web-based Leprosy Reporting and Management System (WeBLeRS), the Ayurveda Reporting System (ARS) and the Drug Information Network (DIN).

WHO (WHO, 2007b) stated that the information and surveillance system is fully committed to surveillance of priority diseases including routine system is in place and is strengthened by the supportive reporting systems. However, the system is suffering a shortage of technical manpower resulting in deficiencies in data management analysis, interpretation and decision making. Due to insufficiently concerned health workers at the local level, there is low sensitivity in relation to outbreaks and also implementation plans need to be much sharpened. Frequently, feedback from community-level health workers and volunteers is missing. It is important to have regular re-orientation training on technical know-how and to identify modalities for increasing their motivation through appropriate incentive schemes. Strengthening of the district-level laboratory system is essential for rapid diagnosis and effective supervision.

Apart from the routine data collection system, the following national level surveys were conducted or initiated in 2072/73 (MoHP, ND)

*Nepal Health Facility Survey: T*he Nepal Health Facility Survey (NHFS), 2015, was the first comprehensive national-level health facility survey in Nepal. It assessed the delivery of health care services in formal sector health facilities and examined their preparedness to provide quality child health, family planning, maternal and newborn care, HIV, sexually transmitted infections, non-communicable diseases, and tuberculosis care.

Nepal Demographic Health Survey: NDHSs have since been carried out in Nepal every five years. The third and fourth NDHSs were completed in 2006 and 2011 while the fifth NDHS (2016) is underway with the final report expected in October

2017 SEP

Micronutrient surveys: In 2015, MoH has initiated a new National Micronutrient Survey. This cross-sectional, population based survey will provide representative estimates for all five development regions and three eco-regions in the country. The survey will additionally provide information on priority indicators for national supplementation and fortification interventions, and other key nutrition interventions.

2.6.4 Infrastructure (medicines and technology)

Department of Drug Administration (DDA) under the Ministry of Health is the key agency to regulate and promote the innovation of the production of the medicine. It was established in in 1979 A.D under Ministry of forest & soil conservation and went under Ministry of Health and population in 1984. The role of DDA is to regulate all functions relating drugs like misuse and abuse of drugs and its raw materials, to stop false and misleading advertisement and make available safe, efficacious and quality drugs to the general public by controlling the production, marketing, distribution, sale, export, import, storage and use of drugs. The overall activities are described in the table below:

Nepal has promulgated the Drug Act 1978, to prohibit the misuse or abuse of medicines and allied pharmaceutical products as well as false or misleading information relating to efficacy and use of drugs and to regulate and control the production, marketing, distribution, export, import, storage and utilization of those drugs which are not safe for the public use, efficacious and of standard quality. To implement & fulfill the aim and objectives of Drug Act 1978 and various regulations are made under it.

Under the Drug Act 1978, the following rules/regulations & codes have been implemented as supporting tools for the active enforcement of Drugs Act, 1978.

- Drug advisory committee & consultative council regulation, 1980
- Drug registration regulation, 1981

- Inquiry & inspection regulation, 1983
- Drug standard regulation, 1984
- Drug donation guidelines have been implemented for the quality assurance of donated drugs
- Drug sales & distribution codes, 2014
- Good practice codes for drug production, 2015
- Medicine registration guidance, 2016

The National Drug Policy was then promulgated by the government in 1995 to complement the National Health Policy 1991. This policy has far positive impact on the development of the pharmaceutical industry and gradual improvement in the pharmaceutical sector of the country (WHO, 2007b)

The regular activities of DDA as per the annual report 2016 of the DoH are as follows

- Raises awareness on the rational use of medicines via different media.
- Publishes the Drug Bulletin of Nepal.
- Audits and inspects domestic pharmaceutical industries for WHO Good Manufacturing Practice compliance.
- Inspects retail and wholesale pharmacies for compliance with the regulatory framework.
- The risk-based post marketing quality analysis of medicines available in the market.
- Inspecting foreign manufacturers prior to registering them for importation purposes.
- Examining the training of veterinary drug sellers.
- Pre-marketing medicine analysis for marketing authorization and approval
- Auditing domestic manufacturing laboratories for compliance with good laboratory practices.
- Taking legal and administrative action for the violation of regulatory

standards.

- Recalling sub-standard medicines from the market.

The key challenges as per the same annual report of DoH are

- Taking legal action against regulatory non-compliance.
- Lack of a mechanism (legal and organizational) for regulating HTP.
- Information management and transparency
- The illegal import of medicines due to open border with India and the regulation and control of substandard, spurious, falsely-labelled, falsified and counterfeit medical products.
- The lack of human and technological resources.
- Regional harmonization and uniformity, MRH and SRA collaboration.
- Pharmacy vigilance and post-marketing surveillance
- Medicine price regulation and transparency
- Good governance and accountability
- The ethical promotion of medicinal products.
- The regulation of nutraceuticals and feed supplements for humans and animals.

Nepal has long history of use of the natural herb to treat the people and the Ministry of Health has aimed to promote such practice through the department of Ayurveda. Ayurveda is an ancient medical system. The sources of Ayurveda medicine are medicinal herbs, minerals and animal products. The system works through simple and therapeutic measures along with promotive, preventive, curative and rehabilitative healthcare (DoHS, 2017)

The Department of Ayurveda (DoA) manages the delivery of Ayurveda services and promotes healthy lifestyles through its network of facilities. The department is responsible for programming, the management of information and supervision, and the monitoring and evaluation of Ayurveda programmes.

However the department has numerous significant challenges including the lack of

adequate financial and infrastructural support, lack of human resource, weak reporting system and its gradually fading away on the context of the modern medicines.

2.6.5 Financing

The overall macroeconomic situation of Nepal is slowly improving with average growth of Gross Domestic Product (GDP) 4.3% over the last five years, i.e. from 2010 to 2014. The share of public spending in GDP has increased from 21.8% in 2010 to 23% in 2014, which indicates a growing fiscal space. Similarly the government spending on the health has increased over the time, though not very significant and with some fluctuation over the time as depicted in the figure below, cited from (Dulal et al., 2014)

Table 4. Health Sector Budget.

	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Percent of MoHP budget of national budget	5.2*	4.9*	5*	5.3*	6*	6.3*	6.8*	6.33	6.24	8	7	4.99	6.51
						6.41 ◆	7.2 ◆	6.3 ◆	6.2 ◆	7.0 ◆			
										7.05 Δ	6.48 Δ	5.72 Δ	6.69 Δ

Source

*Healthcare Financing in Nepal, Ministry of Health and Population

Government of Nepal and RTI International, May 2010, https://www.rti.org/pubs/41_nepal_healthcarefinancing.pdf. pg.9

w Budget Analysis FY 2009□10, Kathmandu, Nepal, p.11

Annual Report, DoHS (2009/2010, 2010/2011, 2011/2012).

Δ Kedar Bahadur Adhikary, Progress on Public Financial Management , HRFMD MoHP. http://www.nhssp.org.np

Figure 9: Health Budget of Nepal

The NHSP III strategy plan however has stated that the contribution of the donors (External Development Partners-EDPs) during NHSP I and II has remained almost one third of the total MoHP expenditure, highest being 42% in 2009/10 and lowest being 25% in 2013/14. The report is also wary of the fact that as Nepal plans to graduate to LMIC by 2022 and coupled with the fact that the overall poverty incidence of Nepal is decreasing, it is likely that in future EDPs' investment in health may decrease. This gap is then expected to be filled through increased government investment in health. However, in the aftermath of the earthquake –with anticipated increase in fiscal deficit for few years to come – it is very taxing for the government

to fulfil this gap alone

The NHSP III plan stated that compared to NHSP I period, the share of national expenditure to MoHP has declined during NHSP II. This is linked with low absorption rate of the MoHP (83%) for the last five years (2009- 2014) as compared to the overall national absorption rate of 88% - underscoring the need for a collective effort to further increase public financing in health as well as better management of the available financial resources. The plan further explained that the underlying factors for low budget absorption of the MoHP are mismatch between needs and planning, delays in authorization of expenditure, weak institutional capacity of MoHP and poor expenditure reporting for activities directly funded by the EDPs.

MoHP and the NHSP have designed various interventions to increase the utilization of priority interventions (free care, safe delivery, uterine prolapse, etc.) and provide financial protection to the poor and selected target groups. But despite this remarkable progress, OOP, which is the most unfair and regressive way of funding health services, still constitute the largest (49%) source of funding in Nepal. In the absence of comprehensive regulatory fee structure, citizens face unfair prices and/or inappropriate, inadequate or unnecessary care when seeking care.

(Adhikari et al., 2002) argued that OOP payments were the principal source of financing for health care (at almost half of total financing in 2012). This was around the low-income average but high in global terms (where the average was 21%). It was also well above the 20% limit suggested by the 2010 World Health Report to ensure that financial catastrophe and impoverishment as a result of accessing health care become negligible and private health insurance was negligible in Nepal in 2012. The NHSP III plan further added that the heavy reliance on OOPpayments poses not only financial barriers for the utilization of health services, but as people are forced to spend a substantial share of their income, it even can cause financial impoverishment. A study carried out in Kathmandu valley found that non- communicable diseases – such as diabetes, asthma and heart disease – were often associated with catastrophic spending in the poorest households added the NHSP III plan .

As a new reform agenda to reduce the OOP expenditure, the government formulated the National Health Insurance Policy in 2014 followed by the establishment of autonomous entity called Social Health Security Development Committee to implement the policy. As of April 2018 the Health Insurance has been expanded to 25 Districts, covering 4,13,884 people (5% of population) and paying out USD 5.2 Million in claims to health facilities. The detail of the health insurance plan, policies and implementation status has been explained in depth in sections below.

2.6.6 Governance and leadership

Ministry of Health (MoH) has been the leading government agency in Nepal playing a dual role of regulating the health sector and delivering health services. The figure below depicts the national structure of MoH headed by the Minister and administered by the Secretary. Regulatory functions include development of required policies, strategies, act and laws as required to govern the health sector and regulation of the existing structures at the central level. The regulatory functions are carried out mainly by divisions within the MoH as depicted in figure 3 and through central level professional and institutional councils, such as, Nepal Medical Council. Besides these, Department of Drug Administration also functions as a regulatory body for production and supply of medicines and other health products. The other two departments of the MoH, namely Department of Health Services and Department of Ayurveda, manage delivery of the health services at the central level while district level (public) health offices and wide network of public health facilities including autonomous and semi-autonomous hospitals deliver health services to the people. Further, national level centres work closely with district health offices to deliver a wide-range of health services directly to the people.

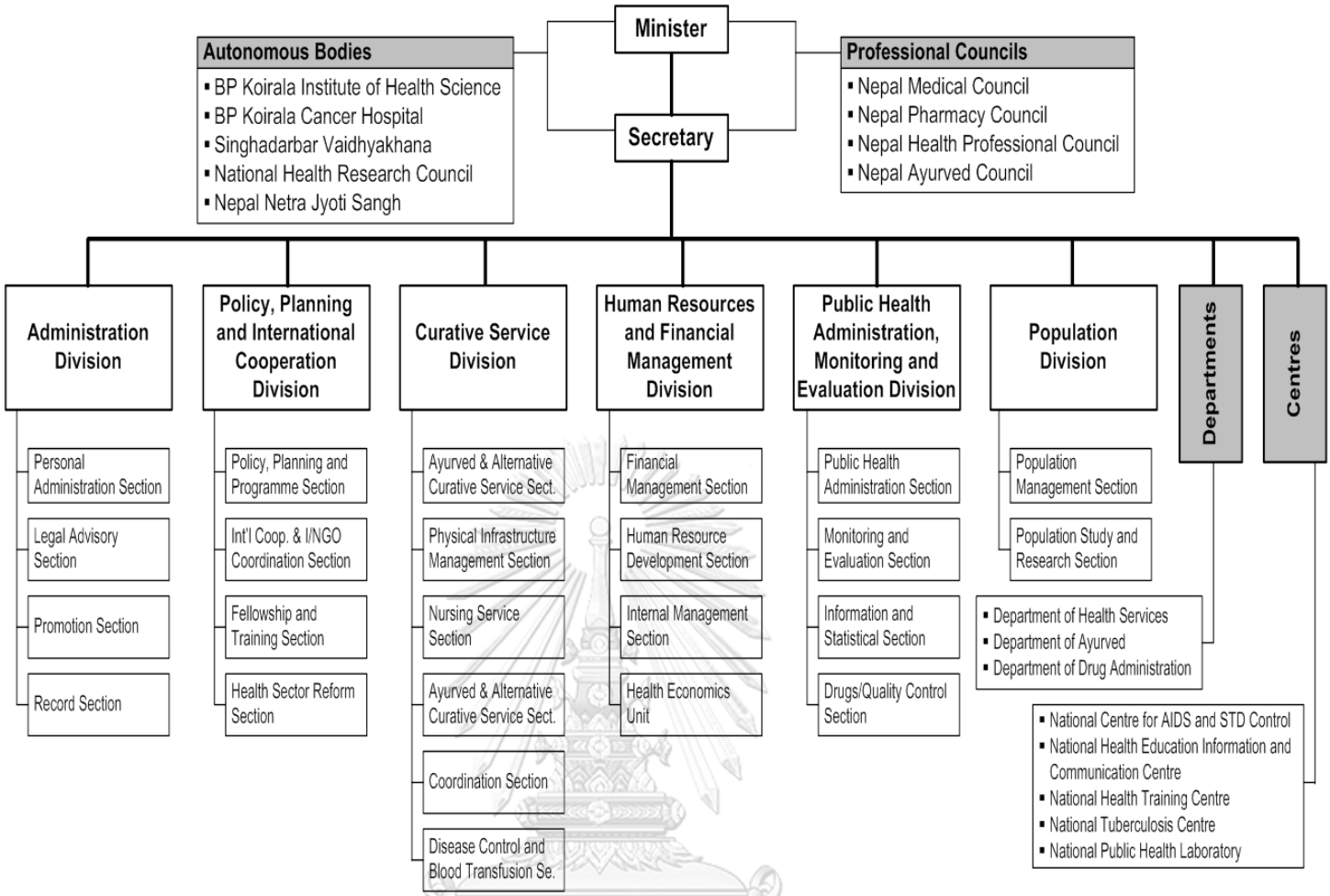

Figure 10: Structure of Ministry of Health in Nepal

2.6.7 Service Delivery

Department of Health Services (DoHS) under the Ministry of Health heads the component of service delivery. The overall purpose of the Department of Health Services (DoHS) is to deliver preventive, promotive and curative health services throughout Nepal. The figure 4 portrays the structure of DoHS. The primary health care is delivered through Primary Health Care-Clinic, Health Center, Health Post and Sub Health Post at the Electoral Constituency and VDC level. While the zonal and district hospitals serve as the secondary level of health care system and the Central and Regional Hospitals constitute the tertiary level. As per the annual report 2017 of DoHS (DoHS, 2017) and as reflected in the figure x the main institutions that delivered basic health services are the 104 public hospitals, the 303 private hospitals,

the 202 primary health care centres (PHCCs) and the 3,803 health posts. Primary health care services were also provided by 12,660 primary health care outreach clinic (PHCORC) sites. A total of 16,134 Expanded Programme of Immunisation (EPI) clinics provided immunisation services. These services were supported by 49,523 female community health volunteers (FCHV). The information on the achievements of the public health system, NGOs, INGOs and private health facilities were collected by DoHS's Health Management Information System (HMIS).

The DoHS website stated that according to the institutional framework of the DoHS and MoHP, the health post (from an institutional perspective) is the first contact point for basic health services. However, in reality, the Health Post is the referral centre of the volunteer cadres of Traditional Birth Attendants and Female Community Health Volunteers as well as a venue for community-based activities such as PHC outreach clinics and EPI clinics. Each level above the HP is a referral point in a network from HP to PHCC, on to district zonal and regional hospitals, and finally to specialty tertiary care centres in Kathmandu. This referral hierarchy has been designed to ensure that the majority of populations receive public health and minor treatment in places accessible to them and at a price they can afford. Inversely, the system works as a supporting mechanism for lower levels by providing logistical, financial, supervisory, and technical support from the centre to the periphery.

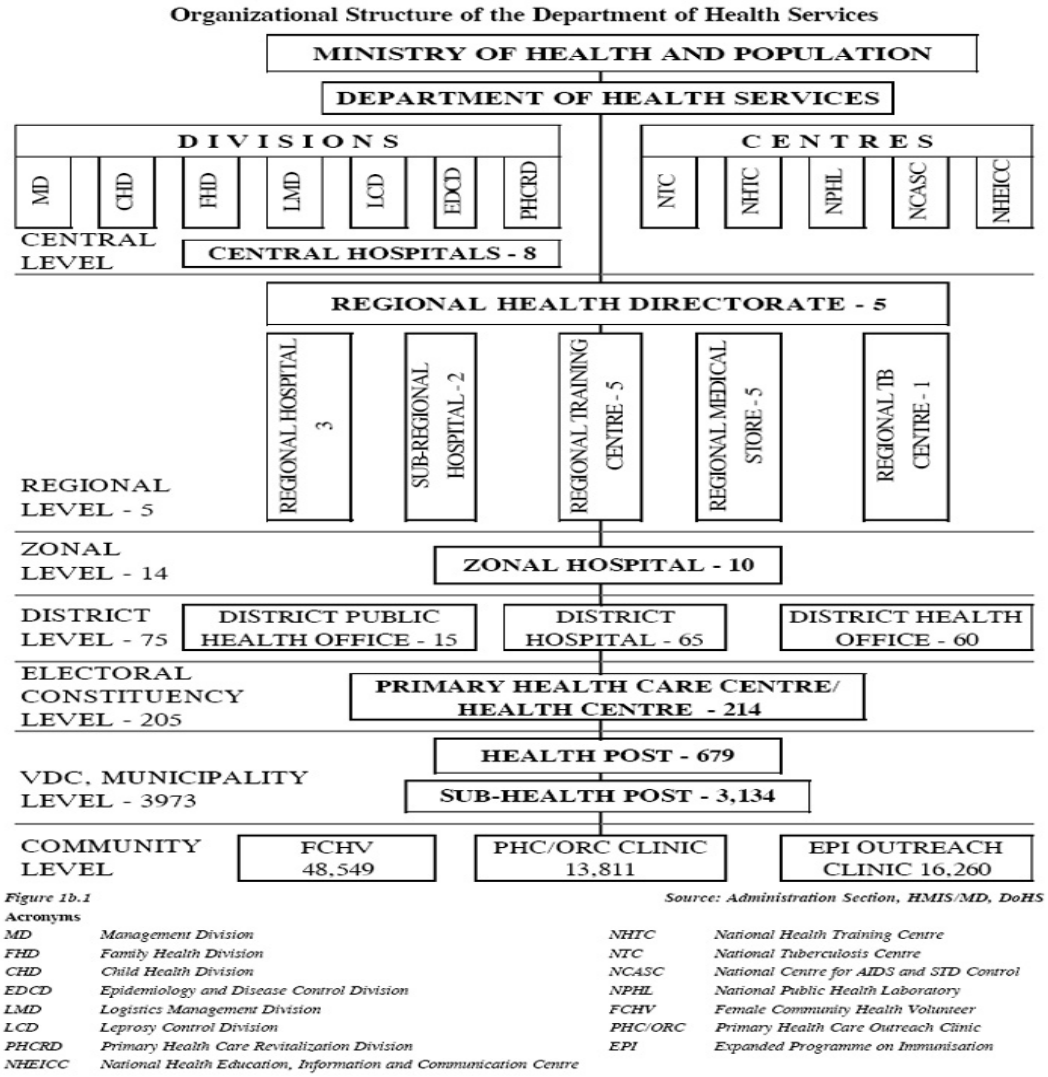

Figure 11: DoHS structure

The DoHS has seven divisions with distinct functions, responsibilities and structures

- Child Health Division: Child Health Division is one of the divisions of Department of Health Services which responsible to provide a broad array of programs in order to improve the availability of and access to high quality preventive and primary health care for all children in close collaboration with the other divisions and different supporting actors and stakeholders.

- Family Health Division: Family Health Division (FHD) is responsible for improving overall quality of life of the whole family by improving the health status of mothers, neonates and children and by increasing access and utilization of quality family planning and safe motherhood services closer to rural households in full participation and involvement of community in public health activities.

- Primary Health Service Revitalization Division
  Ministry of Health and Population has established a separate department called Primary Health Service Revitalization Division to magnify the work on the primary health care. With new department the government aim to to make essential healthcare services available to all people through primary healthcare centers, decentralize health systems management to encourage greater people participation, promote and facilitate public-private/NGO partnerships in the delivery of health services, and to improve the quality of healthcare through total quality management of human, financial and physical resources.

- Epidemiology and Diseases Control Division (EDCD): EDCD has four sections. Epidemiology Section is responsible for planning, implementation, monitoring and evaluation of surveillance, prevention and control activities of outbreak prone disease and mobilization of RRT. Disease control Section is responsible for planning, Implementation, monitoring and evaluation of surveillance, prevention and control activities of vector borne diseases specially Malaria, kalazar,dengue and lymphatic fileriasis. Disaster management section is responsible for preparation and response for health problems or events related to disasters and its consequences. Zoonotic disease sub-section is responsible for prevention and control of snake bites, rabies and other zoonotic diseases

- Management Division: Management Division (MD) is responsible for planning, integrated supervision, information management, building

construction and maintenance of public health institutions, monitoring and evaluation of health programmes and quality assurance of health services. These functions are carried out in close coordination with each of the respective programme divisions within the DoHS. Management Division aims to establish of a functional linkage among different information systems through appropriate use of technology to foster better use of information for monitoring and planning.This Division is also responsible for the management of mental, oral and ENT health and nursing programme. Impoverished Citizen Treatment Fund which has a provision for the free treatment to impoverished citizens is also managed by the MD and hence reimburses to the concerned health facilities for the services delivered. This division functions with its six sections and four units and it hosts the Secretariat of Impoverished Citizen Treatment Fund (ICTF).

- Logistic Management Division: Logistics Management Division (LMD) has established under the Department of Health Services in 2050/51 (1993), with a network of central and five regional medical stores as well as district level stores. The major function of LMD is to forecast, quantify, procure, store and distribute health commodities for the health facilities of government of Nepal. It also involves repair and maintenance of bio-medical equipment, instruments and the transportation vehicles.

  The functions and other issues of logistic management division will be discussed in detail under infrastructure.

- Leprosy Control Program Division: Leprosy Control Division is one of the divisions of Department of Health Services which is responsible for planning and implementation of leprosy control programs. It also ensures technical support related to Leprosy control is provided to regional health directorates and district health offices. The division further ensures availability of drugs at all treatment points.

Following the continuous efforts from the government, Ministry of Health, Leprosy Control Division, WHO, district health/ public health office and concerned agencies, leprosy was eliminated at the national level in 2009 and declared so in 2010 with the registered prevalence rate of 0.77 case per 10,000 population. This rate is well below the cut-off point of below 1 per 10,000 population set by World Health Organization, to measure the elimination of leprosy as public health problem.

2.7 Health insurance in Nepal: An effort for Universal Health Coverage by reducing the OOP Expenditure

2.7.1 Policy context

The key guiding national policy for the health insurance in Nepal is National Health Insurance Policy, 2013, which was further strengthened and substantiated through Health Insurance Act 2017. The then Three-Year Development Plan (2010/11-2012/13), the NHSP I, II and corresponding annual workplan and budgets (AWPBs) have stressed the need of national health insurance policy to improve the health outcome of Nepalese people.

The main objective of this policy is to ensure universal health coverage by increasing access to and utilization of necessary quality health services with following specific objectives (NHSSP-III, 2018)

- To increase the financial protection of the public by promoting pre-payment and risk pooling in the health sector
- To mobilize financial resources in an equitable manner
- To improve the effectiveness, efficiency, accountability, and quality of care in the delivery of health care services

The report on Stocktaking the Health Policies of Nepal conducted by NHSP III in 2018 (NHSSP-III, 2018) stated that the insurance policy has not spelled out specific policy statements as such. However, there are strategies defined under each of the objectives, which are listed below.

- Reduce out-of-pocket expenditure at the time of health service use
- Pool and allocate funds in an equitable manner
- Mobilize local community groups to increase the participation of the general public in the programme
- Implement various interventions and activities to gradually improve the health seeking behavior of the people
- Be gradually expanded to cover the whole nation
- Promote prepayment by collecting contributions from households
- Receive specific funding to ensure the participation of poor and target population groups
- Receive additional resources to enable it to be initiated and implemented in a sustainable manner
- Cover every household in Nepal
- Introduce provider payment mechanisms
- Integrate existing social health protection interventions and programmes into the Health Insurance Programme, as feasible
- Develop a national framework to integrate government supported health insurance initiatives and promote complementarity with other private insurance schemes
- Promote the participation of governmental, non-governmental, and community organisations and public-private-partnerships
- Motivate health workers and facilities to provide quality health services
- Develop a system to control moral hazards and other risks that may arise in relation to service providers and service consumers
- Promote output-oriented expenses

The same stocktaking report also had made following critical review of the policy

- The overall thrust of the policy is to enhance financial protection against ill health mainly through the prepayment and risk pooling mechanism.
- This is the first policy in health that introduces the concept of collecting contribution from the households in a prepaid manner.
- It has an overall ambition of universal health coverage though the focus is on ensuring the participation of poor and target population
- The policy has also proposed an autonomous entity for the management of health insurance scheme as an institutional arrangement for the implementation.
- The policy has mentioned integrating the existing social protection schemes into the health insurance and public-private partnership but remains less pronounced as regards to the provision of health services.
- Although it focuses on system reform and equity aspects, it also covers quality of care and multi-sectoral collaboration and hence well aligns with the strategic directions of NHSS.
- This policy defines centralised governance structure for the management of the health insurance scheme and has less clarity on the role of different governments in the federal context.
- There is less clarity on the interface of health insurance with basic health services which are to be provided free of charge as per the constitutional provision and service delivery is the mandate of the local government as per the functional analysis.
- As per the policy thrust, the health insurance programme has already been implemented by establishing a semi-autonomous body called the 'Social Health Security Development Committee'. However, as promised in the policy, an autonomous entity named as the 'National Health Insurance Fund' was supposed to be established.

2.7.2 Implementation Foundation

NHI Program (Operating) Rules endorsed by Ministry of Health in 2015 was the key document for the implementation and the Standard Operating Procedures approved by

the committee in 2016 provided comprehensive and standard manual for operation. The Health Insurance Act formulated in 2017 (GoN, 2018b), however, was the key legal document for the program. Based on the Act, a new Operating Rule was developed in 2018 replacing the SOP and previous Operating Rules. The Principal Researcher did a analysis comparing the Policy, Act and Operational Rule to see the extend to which Policy objective has been translated by the Act and Regulation. The analysis is presented in a table 1 below.

Table 2: National Health Insurance Policy, Act and Regulation- summary

National Health Insurance Policy	**Health Insurance Act**	**Regulations**
Objectives: The main objective of this policy is to ensure universal health coverage by increasing access to and utilization of necessary quality health services. **Specific objectives** 1. To increase the financial protection of the public by promoting pre-payment and risk pooling in the health sector 2. To mobilize financial resources in an equitable manner 3. To improve the effectiveness, efficiency, accountability, and quality of care in the delivery of health care services	**Preamble:** In order to safeguard the fundamental rights of the citizens to receive quality services, increase the financial protection of the public by promoting pre-payment and risk pooling, enhance the capacity and accountability of the health service providers and ensure the access of the health services by the public, the Act was formulated by the Parliament based on the Constitution of Nepal clause 296 and sub-section (1) **Section 1: Initials** Name of the Act: Health Insurance Act 2074 Definitions: 13 definitions (Chair, ED, Fund, xxx, Household, Insure, Board, Ministry, Premium, Members, Service, Service providers-6 types, Health Insurance) Service providers: 1. Public providers including hospitals, teaching hospital, PHCC, health posts, urban clinics 2. Private providers including hospitals, teaching hospitals, nursing homes, polyclinics or clinics 3. Hospitals, teaching hospitals, nursing homes, polyclinics or clinics run by community, micro-credit	The regulation is developed based on the clause 39 of the Act 2074 **Section 1: Initials** Name: Health Insurance Regulation 2075 Definitions:10 definitions (Act, Program, Enrolment Officer, Enrolment Assistant, Identity card, Establishment, First Point of Contact, Bimalekh, Local level, Health workers)

	group and NGOs 4. Pharmacy and rehabilitative care centers 5. Ayurveda hospitals, homeopathy, acupuncture hospital or natural healers. 6. Other service providers as defined	
Strategies: (based on objectives) **Objective 1: 5 strategies** (reduce OOP, equitable pooling, mobilization of community, improve health seeking behaviors and expand the program nationwide) **Objective 2: 4 strategies** (promote prepayment, subsidies for poor and target populations, additional resource for sustainable implementation, include all HH members) **Objective 3: 7 strategies** (provider payment mechanism, existing social health protection program integration, national framework to integrate the existing government supported health insurance program and liaise with private insurance program, promote multi-stakeholders participation, motivate health workers, prevent moral hazard of users and negative behaviors of health workers, promote result oriented expense in health) **16 strategies in total**	**Section 2: Health Insurance Program** **Membership:** All Nepali citizens; newly born, elderly, disabled people should be insured by their guardian, caretakers and parents; foster houses, elderly centers should enroll the children and elderly; security personnel and migrant workers; employees. **Family as an unit** **Services:** Health prevention and promotion services (yoga, nutrition education, health behaviors, psycho-social counseling etc); curative services (vaccinations, reproductive health, safer motherhood etc); treatment services (out-inpatient, emergency, surgeries, drugs, technology etc); rehabilitation services; ambulances and other defined services *Note: The free services will not be affected and duplicated by the insurance program.* **Services not included in the program:** Expensive eyeglasses and hearing aid devices above the defined cost threshold; plastic surgery; artificial fertilization and other defined services. **Contribution amount:** Contribution amount as defined but the amount will be based on the annual income as well. Central, provincial and local government to pay the contribution amount of poor and the targeted populations. **Usage of insurance services:** Only the enrolled populations can use the services.	**Section 2: Enrolment into the Program** **Enrolment unit:** Household of 5 family members will be one unit; additional member will have to pay the additional premium as defined; the security personal and employee will follow the same number of family members as one unit; individual elderly and orphans in the elderly house, foster house, rehabilitation centers will be considered as one unit; individual elderly above 70 years old will be considered as one unit **Submission of the identity card:** The individuals in the foreign employment should provide labor permit from the ministry of labor together with the application. **Enrolment mechanism:** Through enrolment assistant and digital enrolment provision. The id card provided by the GoN and relevant entity will be valid for the enrolment. **Health Bimalekh:** The registered family will be provided with the id card with all the names of the family members; the lost id card can be replaced with 50 NRs; the validity of the card will be one year; if the HH finishes their benefit package before one year, they will have pay on their own after then.

	Contractual agreement with the Board: Service providers need to contract with the Board; the details of the contract will be as defined; the service providers are obliged to provide services as per the contract; the contract will be for five years; the contract should be renewed 3 months before it ends. **Receiving the health services:** The insuree should receive the services from the public providers as the first point of contact; the referral will be made if the first point of contact is unable to provide the services; the service providers should prioritize the referred patients; other issues of receiving services will be as defined. **Payment to service providers:** The payment will be as follows - Capitation fee - Case rate - Service fee - Others as defined **Contract termination:** The contract can be cancelled if - Not renewed before 3 months of the end of the contract - Unable to provide services as per the contract - Repeatedly violate the clause of the contract - Unable to follow the national standard of health services - Fraud and fake documentation - Unable to follow the standards set by the Board - Others as defined Service providers will be provided with an opportunity to provide justification before the termination.	**Selection of service providers:** The member should chose the first point of contact during the registration and the services should be only taken from the selected providers; the referrals will be made to the specific providers if the first point of contact is unable to provide the service; however the member can access any providers within the program during emergency; the members can change their providers through application and the enrolment officer should initiate the change of providers within 3 days of the receipt of the application. **Renewal:** Members have to renew the membership one month before the deadline and it should be renewed within 3 working days. **Change in members:** Any members can change the HH head and HH members through application and it will take 7 working days. **Membership activation time:** The benefit package for the members will be activated after 3 months. **Enrolment Officer EO):** Six roles and responsibilities (renewal, public awareness on NHI, conflict management of the members, support the enrolment assistant, monitor the work of enrolment assistants and other roles as specified by the HIB) **Enrolment assistant (EA):** 1 EA per ward; institutions like army, police etc can appoint their own EA; the recruitment process provided at an annex; the qualification include be a Nepali citizen with education of at least +2 and female community health

		workers; the EA can terminated in-case of low performance but they should be provided an opportunity to say their perspective.
Institutional arrangements **Organizational set up** Create an autonomous National Health Insurance Fund governed by National Health Insurance Board The Board shall constitute of representative from government bodies (NPC, MoH, MOFA, Ministry of Finance, Ministry of Labour and Employment, Ministry of Federal Affairs and Local Development, Ministry of Cooperatives and Poverty Alleviation; a representative from the Health Insurance Board; and a representative from the Social Security Fund), non- governmental and professional bodies, and consumers. **Roles and responsibilities** Pooling funds and payment to service providers; define the benefit package, set the contribution rate, formulate regulations; report to MoH; appoint CEO; mobilize committee form effective implementation; can contract NGOs or cooperative and private companies for specific work; MoH as the contact ministry **Legal arrangement** Separate Act to be formulated; Until the Act Development	**Section 3: Board composition, roles and responsibilities** *Health Insurance Board (HIB) will be created to oversee the national insurance program.* **Board composition:** The board will be as follows - Chair- 1 (nominated by GoN) - Member- 1 (assistant secretary from MoH) - Member-1 (assistant secretary from MoF) - Member- 3 (experts with 5 years experience nominated by MoH; 2 should be women) - Member- 2 (insure nominated by MoH; 1 should be women) - Executive Director- Member secretary The duration of the position will be 4 years subject to renewal for one additional period. **Autonomous HIB:** HIB will be autonomous with its own stamp; can pursue or receive lawsuit independently; can purchase, utilize and sell its property as an individual; the central board will be at Kathmandu and can open up the provincial offices. **Roles and responsibilities of HIB:** Formulation and implementation of the policies, strategies, plan and budget related to national health insurance; define the service standards; define the expense for the services and appropriate payment mechanisms; fund management and investment; get approval on the organizational structure and human resource need with the MoH; monitor the service providers and other as defined.	**Section 3: Services not included in the program** Ambulance: To be provided only during the emergency situation; poor and disabled can be provided with actual travel expense or 2 thousand NRS, whatever is cheaper to reach the providers. Other services not included in the program: expensive eye glass, ear aid, crutch; burn case, serious disability treatment; plastic and cosmetic surgery; tooth extraction, abscess removal from the gum **Section 4: Contribution amount and benefit package** Contribution amount - The specifics of the contribution amount kept in an annex 5 as follows *General population:* 5 family members need to pay 3500 NRs annually while every additional member pays 700 NRs. *Formal employer:* 1% of their initial salary+ additional 1% by the employee. Annual contribution shouldn't surpass 10,000 NRs. For assistants/helper etc if 1% of their monthly salary is lesser than 3500 NRs, the employer has to make it 3500 NRs on their own. For elderly above 70, the premium is 3500 NRs individually. - The contribution amount of the non-government institutions to their employer should not be lower than the contribution from the

Board Act 2013 to be employed; MoH to support the implementation until the Act.	*The HIB can delegate its limited authority to board members, staffs or local offices.* **Board Meeting and Decision:** Minimum annual four meetings to be called by the chair; the secretary member will call for the meeting in the absence of the chair; ED with support from the chair share the meeting agenda, at least, before 3 days of the meeting; the chair will lead the meeting and nominated member will lead the meeting in the absence of the chair; 50% presence will be enough to conduct the meeting; the decision will be based on majority and the chair will make decision if the opinions from the members are 50-50; the experts can be invited in the meeting; the secretary member will validate the decision. **Authority to form committees:** The sub-committees can be created under the leadership of any selected board members and the roles of the committee members will be defined accordingly.	government employer. - If expense of the member is 0, the renewal in the next year will have 10% discount; however it is not refundable and cannot be transferred. - The change in the members due to death/marriage/migration will not allow to refund nor it can be transferred to a new member. Government subsidy: The government (at all level) will contribute the full premium of the following populations: family with poverty card; fully disabled, leprosy patient, PLHIV, MDR-TB; elderly above 70; while 50% premium will be paid off for FCHV. Benefit package: The services within the package will be as stated by the Act (clause 5) and the ceiling amount per year will be as follows: 5 family members can spend upto 1 lakh; every additional member will receive extra 20000 NRs upto maximum 2 lakh; 1 lakh for the elderly; additional 1 lakh for the diseases like cancer, heart disease, kidney disease, head injury, spinal injury, sickle cell anemia, parkinsonism and alzheimer. - In case of newborn, the child will receive the package until the next renewal without any additional contribution. - Incase of elderly, if s/he finishes their individual package, s/he can also use the package of family members if the package remains. - The board can occasionally change the ceiling of the amount and benefit package with consent from the GoN and MoF.

Financial Arrangements	Section 4: Chair, members, ED and the staffs	Section 5: Health service providers selection and payment mechanism
Resource Collection Source of funding would be household contributions; subsidies fund from the government for the poor and targeted populations; initial funding from the government to implement the program; additional funding from organization and individuals; government funds on various social health protections programs **Household Contribution** Household will be unit of enrolment; an appropriate method to determine the HH contribution. **Service purchase and payment system** Provision of contractual arrangement with providers; efficient and effective payment mechanism; measures to make the health providers responsive to the health need of people.	**Qualifications for the chair and members:** Nepali citizen; graduated from any recognized university; working experience of 5 years for the members and 7 years for the chair; the experts should have graduation from medicines, public health, economics or financial management; no criminal records (corruption, rape, human trafficking, illegal drug dealing, corruption, misuse of passport, kidnapping or other unethical crimes); insuree for four consecutive years (this clause wont be applied for the first batch of members); not related to any insurance company as owner, director or significant share owners; not above 65 years old. **Roles and rights of the Chair:** Call the meeting; represent HIB at national and international meetings; evaluate the work of ED, submit the annual report of HIB to the Prime-minister office through MoH; and other defined work. **Executive Director:** The head of operational work of HIB; the duration of the position will be 4 years subject to renewal for one additional period; the salary and other facilities will be as defined. Qualification of the ED: Graduation on relevant subjects with at least 10 years of working experience; no criminal records (see qualification of chairs and members for detail); insuree for four consecutive years; not above 65 years old **Recruitment committee:** Three members committee headed by Chair of Public Service Commission or his/her nominee, an expert with 7 years experience nominated by MoH and Secretary of MoH as member secretary. The selection will be through	**Selection process:** The eligible service providers should submit an application based on given format; HIB will then make the assessment through field visits and the providers will selected if HIB based on the result of the visits; the contract will be developed based on the given format and will be listed as the providers of the program; the contract will be for 5 years and the providers must renew the contract before 2 months of the deadline of the contract; HIB can extend contract based on the monitoring of the providers. **Termination of the providers:** The contract can be cancelled if: the providers did not provide service as per the contract; submission of the fake reports and budget mismanagement; ineffective implementation and unnecessary referral of the patients for the treatment; the providers didn't comply with the findings of the M&E result. - The providers should be given a chance to clarify before the termination; however if the clarification is not satisfactory HIB can cancel the contract for three months or completely terminate the contract. - The providers can reapply for the program with adequate evidence of improvement and HIB can reinstate them as deemed satisfactory. **Providing the services:** The first point of contact should provide the services to the members; If the services are not available at the first

	open competition and the committee will nominate three candidates out of which the GoN will select one. **Roles and rights of the ED:** Submit the policy, strategy, plan and budget of the national health insurance to the board, oversee and ensure the programmatic implementation pertaining to training, research, M&E, communication and coordination; strategize the payment mechanism, contractual agreement with the service providers, service standards and submit to the board; financial management and ensure the regular audits; implement the decision of the board; present annual report to the board **Vacancy of the chair, members and ED:** Resignation; absence in consecutive three meetings without information; criminal cases; end of the term; unethical behaviors harming the reputation of HIB or underperformance and death **Human resource:** HIB will have adequate number of staffs; the recruitment, salary and the facilities will be as defined; HIB can hire external experts as required and HIB will decide the professional fees, qualifications and the facilities of such experts.	point of contact, the members can be referred to other providers; The providers, apart from the emergency, should provide the service based on the referral card only; the providers (who initiated the referral and the referred) should keep all the documents required in the process; the providers have to inform the expense before the treatment; the providers should follow the guideline of the MOH and existing standards if such guidelines don't exist; the providers with specialist delivery services should identify the disease and pursues further treatment. **Payment to the providers:** The payment mechanism is explained in the Act and providers have to claim based on the IT system of HIB; the claim will be assessed by HIB and the disbursement should be done within 15 after the assessment; the rate and process of claim will be as specified by HIB; HIB will not reimburse the claim not specified in the guideline. **Advance for the providers:** HIB can provide advance amount and the amount will be deducted from the claim amount of the providers. **Roles of the service providers:** Treat the members respectfully; provide the quality services based on the package and ensure the availability of such services; arrange platform for enrolment and Q&A; provide reports to HIB; maintain pharmacy and ensure the availability of the drugs.
Health service providers and benefit package	**Section 5: Fund and Account** **Fund:** The national health insurance will	**Section 6: Drugs procurement and distribution** The providers should provide

Health service providers Standardize the health care services covered in the benefit package; ensure the quality of services through performance management of service providers; providers need to ensure the availability of the drugs **Benefit package** Equitable and efficient package; provision of cash free services; a ceiling to be applied for the package; co-payment may be required for referral; arrangement to access the services from listed health facilities	have one Health Insurance Fund and will have funding from the following sources- central, provincial and local government fund; premium amount; fund from national organization and individual; fund from foreign government, organization and individual; profits through investment and other sources. The funding foreign government, organization and individual would require permission from GoN and MOF. The Fund should be deposited in the A class bank of Nepal and the fund will be mobilized through the joint signature of ED and Account head. **Use of fund:** The HIB expense will be borne by the fund; HIB admin expense and program promotion expense should be kept within 12% of the total fund. **Accounting and Audit of the fund:** The financial management of the Fund should be according to the existing law and standards; need to ensure the internal audit as defined; annual audit through the Office of Audit General within three months after the fiscal year; MoH can cross check the accounts of HIB at any time *The fund will not freeze inspite of any existing laws and practice.*	medicines 24 hours and should be dispensed through pharmacy; the pharmacy should meet the standards of GoN; the drugs for the emergency and outpatient will be based on the standards set by HIB. **Section 7: Committees and complaints management** **Provincial health insurance committee:** The provincial government will set up the provincial management committee with set of roles and rights; the committee will decide their working mechanism. **Local health insurance committee:** The local government will set up the local management committee with set of roles and rights; the committee will decide their working mechanism. **Claim assessment committee:** The committee will be created if the claim submitted by the providers through normal platform gets conflicting. The 7 members' committee will be form under consisting of specialist doctor as a coordinator and others (radiologist, pathologist, nursing officer, pharmacist, public health expert and officer level staff from HIB) as the members. **Complaint management:** The members can file complaint against the providers within 90 days to HIB or enrolment officers. The enrolment officer should forward such complaints to the board immediately. **Conflict management committee:** The committee is formed to assess the complaints filed by the members. 3

		members' committee will be formed with lawyer, with 5 years of experience, as chair; health service expert as a member and officer level staff of HIB as member-secretary. The committee can invite experts as necessary and will set up the working mechanism on their own. The roles of the committee include: assess the complaints and provide recommendations to HIB; identify fake complaints and provide recommendations; advise HIB for other similar assessment. **Service quality monitoring and drug pricing:** HIB can create the committee based on clause 17 of the Act.
Good governance and accountability The Board to govern the insurance fund, guideline to developed for the effective implementation; electronic system for the registration, renewal, payment and reimbursement; the health insurance information system to be integrated with national information system; mechanism to identify the poor and handle complaints	**Section 6: Complain, punishment and appeal** **Complain:** The insuree can file complain against the service providers within 90 days to the HIB or any other agencies recognized by HIB- if the providers are not able to provide services as defined in the package; delay in the service and low quality services. **Punishment:** If the service providers are found guilty upon investigation, the service providers should provide 15-20 thousand NRs as compensation to the insuree with complains. If the insure violate the rule of this Act and harm the HIB work- the insure will have compensate the damage in monetary value. If any service providers violate the rule of this Act, HIB can ask for the compensation upto five lakh NRs. **Appeal:** If anyone is not satisfied with the provision of the punishment; they can appeal to the higher court within 35 days.	**Section 8: Miscellaneous** If any board members, staffs or anyone affiliated with the program mismanage the fund will be penalized based on the existing laws of GoN. Monthly reporting: The EA has to submit the monthly report to EA on first week of the month; EA will submit the report to the provincial office on the first week of the month and the provincial office will send it to the HIB central office within first week of the month. Changes in the information and provision of the program: MoH will announce at Rajpatra to make changes based on the request/recommendations from HIB Cancellation: The 2073 regulation of Social Health Security Program has been nullified and replaced with Health Insurance Regulation 2075

Monitoring and Evaluation M&E framework shall be prepared and integrated in national M&E framework; coordination with the regional health directorate and other line agencies for M&E; periodic review of the Insurance program; employ clinical, social and performance auditing for insurance program	**Miscellaneous:** **Conflict management:** Any conflict between HIB, insuree and the service providers, during the program implementation, should be mitigated through dialogue and consensus; if not the conflict management committee will mitigate the conflict. The unsatisfied party can appeal to the district court within 35 days if they are not satisfied with the decision of the committee. **Per-diem:** The members will receive the per-diem for attending the board meeting **Coordination with the GoN:** The HIB should coordinate with the GoN through the MoH. **Direction and guidance:** The MoH can provide necessary guidance to implement this Act and it's the responsibility of HIB to consider the guidance. **Follow the existing law**: Any issues not mentioned in this Act will be according to the existing laws **Can develop law:** The GoN can create necessary laws to implement this Act. **Can develop biniyam**: HIB can create required biniyam based on this Act **Can develop regulation and guide:** HIB can develop regulation and guide based on the developed law and biniyam.	
Risk and Assumptions **Risk** (low enrolment, problem with identification of poor populations, use of technology, moral hazards, shift in patient from public to private facilities, delayed release of the budget for subsidies by the GoN) **Assumptions** (budgetary support for the initial infrastructure, human resource and admin expense for national health insurance fund, need of accreditation of the service provider to ensure quality)		

Analysis

The Act and regulation has translated the first objective of the policy into practice. The evidences include

- Autonomous HIB for pooling the risk and facilitate pre-payment through contribution.
- The benefit package including additional 1 lakh for specific diseases for the financial protection.

The key highlight of the second objective is the premium contribution from the government for the poor populations and targeted population specified in the regulation under section 3.

The third objective for improving the effectiveness and quality of health care services are not defined adequately. For instance the policy has stated for need of accreditation of the service provider to ensure quality, which is captured neither in Act nor the regulation.

The strategies to achieve objective 1 have mixed interpretations and intentions, which are explained below.

The reduction of OOP and financial protection is planned through pre-payment and the benefit package. The additional 1 lakh for the expensive treatment like cancer, kidney etc can provide some relief but the protection against the catastrophic expense is not adequately protected. There are nuances with the catastrophic expense given that even the cold has proved to catastrophic for the poor.

The pooling is not equitable for the informal worker given everyone, except the poor with the poverty card, has to pay the same contribution amount despite their income.

While for the formal worker it is equitable as the contribution amount depends on their salary and specific clause for the assistants and associates.

The mobilization of community intended through FCHV and enrolment assistants, including the provincial and local health insurance committees as stated in the regulation. Though the committees are not yet created.

The health seeking behavior is included within Health prevention and promotion services in an Act, however the implementations of such activities have not taken place.

The strategies to achieve objective 2 primarily has been the contribution from the government for the poor populations with poverty card and targeted populations specified under section 4 of the regulation 2075.

The promotion of the pre-payment has been integrated to the roles of enrolment assistants, officer including the health workers. The additional communication through online and offline media are conducted by HIB, however without proper communication strategy such activities are still ad-hoc and have a chance to be diverted based on the intention and skills of human resource.

The Act has stated that it's the role of HIB for fund investment for the additional resource mobilization but it would need a separate guideline to facilitate and promote the investment work.

The strategies to achieve the objective 3 are either weakly interpreted or they are missed out in the Act and the regulation.

The Act defines the provider payment mechanism in brief and stated as capitation fee, case rate and service fee. The capitation method is prospective and requires costing exercise to establish the fee. The payment method defined in the regulation is merely reimbursement and retrospective. The case rate might indicate Diagnostic Related

Group too but it too requires a robust costing exercise and both the Act, regulation are silent on it. Capitation, DRG are globally renowned approaches for promoting result-oriented expense in health as aspired by the policy which are not captured by the Act and regulation.

The Act and regulation also do not mention anything on the national framework to integrate the existing government supported health insurance program and liaise with private insurance program.

The multi-stakeholder participation is ensured through board members, committees and rights of HIB to collaborate with other agencies for the work.

The other strategies like motivate health workers, reduce negative behaviors of health workers and promote result-oriented expense in health are weakly translated. The Act and regulation have explained the selection and termination process but nothing mentioned about the accreditation process as stated in the policy. The Act has limited the first point of contact to the public providers meaning there are not enough options to make the robust selection- given limited number of public providers.

The regulation has stated the roles of the service providers, which partially has requested the providers to provide quality services in respectful manner. In addition, there are clauses in the sample contract on the quality services. But without accreditation process and robust monitoring process. In-spite policy has pointed out the need of robust M&E and also stated to integrate into the national M&E system, the Act and regulations are very brief on it. The regulation has merely stated that HIB can create a committee for the service monitoring and drug costing, while Act has stated that it's a role of HIB to monitor the service.

Institutional arrangement: The Act has explicitly mentioned about the creation of the autonomous Health Insurance Board with specific authorities. However, there are few clauses in the Act that could undermine the autonomy of HIB. The Act has a few clauses that HIB should get approval from the MoH for the organizational structure and human resource; the coordination with the GoN should be through MoH and HIB

should consider the advise from MoH on any issues. These clauses have paralyzed the HIB in issues of human resource, coordination with the line ministries and most importantly negotiation with the service providers for the quality. These clauses have created some power imbalance between HIB and the service providers- under the MoH.

Similarly, the broader multi-stakeholder board members envisioned by the policy is interpreted into limited stakeholders' board members with heavy dominations from the representatives of MoH.

The roles and responsibilities of HIB as mandated by the policy are well captured by the Act and regulation.

Financial arrangement: The resource collection as envisioned by the policy is well captured by the Act under section 5. The Act also added the clause that MoH can cross-check HIB account anytime.

The Household contribution is defined within the regulation, though the document on the methodology to determine the HH contribution cannot be found. The amount is deemed to be a generous one.

The service purchase mechanism has some confusion between the Act and regulation, as mentioned above in the section of strategies and objectives.

Health service and benefit package: The benefit package is defined in the regulation and an exhaustive list of services with their rates are published in the HIB website.

However the performance management of the service providers is poorly defined. It has been explained in the section of objectives and strategies.

The co-payment has been removed from the program.

Good governance and accountability: The governance and accountability as envisioned by the policy are captured by the Act and regulation, except for integrating the health insurance information system with the national information system and mechanism to identify the poor. The poor identification process has been a hurdle due to slow and flawed process.

M&E: The M&E of the program is inadequately defined in the Act and the regulation. None of the strategies presented in the policy are captured in the Act and regulation.

2.7.3 Health Insurance Board- Organizational structure

The Government of Nepal established social Health Security Development (SHSD) Committee in 9th Feb 2015 to implement the Social Health Security Program.

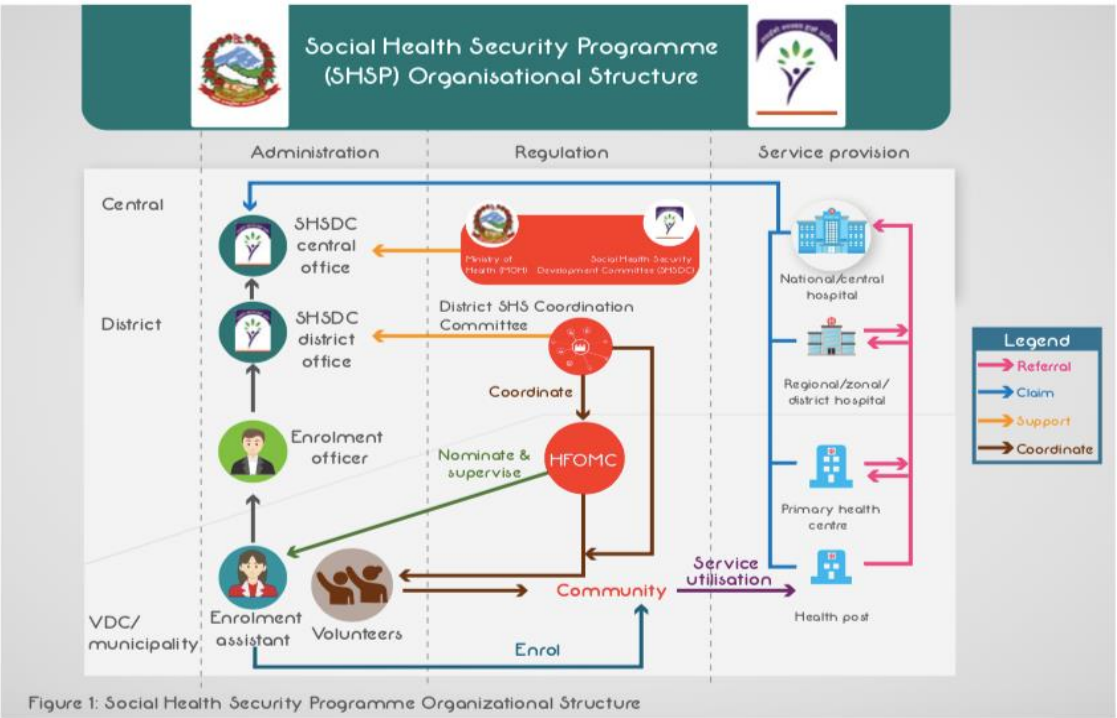

Figure 12: SHSP organizational structure

The Health Insurance Board (HIB), an autonomous body, to manage the national health insurance program, later replaced the SHSDC. The conceptual presented in figure 9 remains same except the name of organization; while figure 10 below depicts

the updated organizational structure.

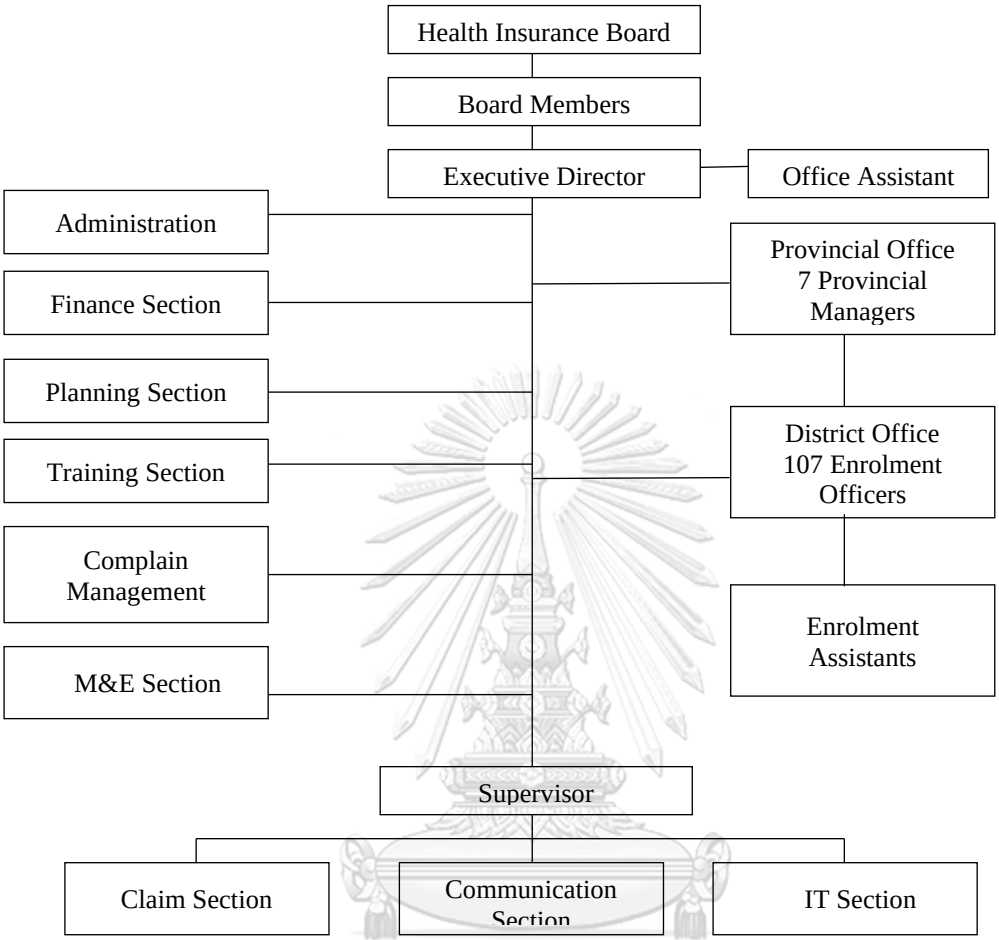

Figure 13: HIB organizational structure

The central office of HIB is based in Kathmandu organizationally headed by Executive Director and governed by the nine board members. Provincial Manager supported by Enrollment Officer, account officer and data entry clerk leads the district HIB offices. A provincial manager manages more than one district, Similarly the coordination body is envisioned for the multi-stakeholder coordination, to create demand etc, however is not functional in majority of the districts.

The key structures at the Palika and municipality level are the enrollment assistants selected by the HIB. The Operational Rules stated having one enrolment assistant per 1,000 families and an additional two enrolment assistants as the back-up. After being trained on the various aspects of the NHI, including the use of the Information Management Information System (IMIS), the enrolment assistants go back to their

respective VDCs/municipalities equipped with a smartphone and information, education and communication (IEC) materials, prepared to enroll families into the programme.

2.7.4 Key Features of the National Health Insurance Program

The key features of the NHI have changed with time; while majority of features remain same (GoN, 2018a)

- It is a mandatory program based on family contributions. It started as the voluntary program.
- Families of up to five members have to contribute NRs 3500 per year and NPR 700 per additional member. Until 2018, the five family members had to contribute NRs 2500 and NRs 425 per additional member.
- It provides subsidized rates for families whose members have a poverty identity card.
- Enrollment continues throughout the year in implemented districts.
- Insurers have to renew their membership through annual contributions.
- Benefits of up to NPR 100,000 per year are available for families of up to five members with an additional NPR 10,000 covered for each additional member. Until 2018, the benefit package was limited to NRs 50,000 per family.
- Insurers have to choose their first service point but can also access services from government PHCCs and hospitals.
- Insurers can access specialized services elsewhere that are not available at the first service point on production of a referral slip from their first contact point.
- It is cash-less system for members seeking health services. Upon presenting their NHI membership ID card at a health facility, members are able to receive the health services and drugs covered by the benefit package without having to pay at any stage.
- For emergencies, insures can access services from any service point without a referral slip.

- The program is IT-based with enrollment assistants using smart phones.
- Purchaser-Provider Split: HIB acts as the service purchaser while government and listed private hospitals provide the services.
- Premium amounts are subsidized by the Government at specified rates for the extremely poor, poor or vulnerable. Such concessions are based on the identification card issued by Ministry of Poverty Alleviation and Cooperatives.

2.7.5 Benefit package

Benefit package is the health services including lab test, diagnosis, drugs, surgeries and special disease related services, which the members can utilize. The utilization however depends on availability of the services in the providers and within the limits of set monetary value, i.e. one lakh (1000USD approx). The referrals are made to fulfill the unavailable services in the first point of contact.

HIB has developed an exhaustive list of all the services within the NHI program and the costing for each service. The summary of the package is presented in the table 1 below.

Table 3: Summarized list of National Health Insurance Benefit Package

List of laboratory tests provided through HIB				
S.N.	**Investigations**	**# of tests**	**Min price**	**Max price**
1	Hematology	13	30	290 (APTT)
2	Biochemistry	57	35	2000 (TORCH)
3	Immunology	33	50	2640 (Thyroglobulin antibody)
4	Bacteriology/parasitology	14	40	200 (numerous tests)
5	Histopathology	10	90	1700 (bone marrow biopsy)
6	Endocrinology	18	310	2200 (C-peptide)
7	Markers	7	900	3150 (tumor marker)

Radiological/other diagnostic services				
1	Radiological tests	60	100	13000 (tumor screening)
2	Ophthalmological Diagnostic Tests	6	200	2500 (probing)
3	Other diagnostic test	6	275	6000 (Urodynamic evaluation)
List of free tests provided by the government not through HIB				
1	Numerous test	8	0	0
List of medical services				
S.N.	Types	# of Medical packages	Min price	Max price
1	Day care	11	100	1750 (physiotherapy package-1 week)
2	Package 1 (poisoning management)	2	2000	2000
3	Package 2 (numerous services)	8	3000	3000
4	Package 3 (numerous services)	7	4000	4000
5	Package 4 (numerous services)	8	5000	5000
6	Package 5 (numerous services)	6	5542	6000
7	Package 6 (numerous package)	5	7000	7000
8	Package 7 (numerous package)	13	8000	8000
9	Package 8 (numerous package)	3	9000	9000
10	Package 9 (numerous package)	5	10000	10000
11	Package 10	3	12000	12000
12	Package 11	4	14000	14000
13	Package 12	3	16000	16000
14	Package 13	4	18000	18000
15	Package 14 (others- not	1	20000	20000

	specific)			
16	Package 15	2	22500	22500
17	Package 16	3	25000	25000
18	Package 17	2	30000	30000
19	Package 18(others- not specific)	1	35000	35000
20	Package 19	2	40000	40000
21	Package 20	2	45000	45000
22	Package 21(others- not specific)	1	50000	50000
23	OPD Package	-	100 (PHC visit)	200 (hospital visit)
24	Emergency package	-	400 per visit	400 per visit
25	Eye hospital OPD package	-	200 per visit	200 per visit
26	Eye hospital emergency package	-	400 per visit	400 per visit
List of cardiac care related services				
1	Cardiac services (numerous services)	36 services	65	60,000
Cancer related services				
1	Cancer services (numerous services)	5 services	500	24,000
List of surgical services				
1	Procedure 1	13 services	65	500
2	Procedure 2	7 services	650	850
3	Procedure 3	9 services	900	1000
4	Minor 1	57 services	1200	2800
5	Minor 2	41 services	3000	4250
6	Minor 3	27 services	4500	5750
7	Minor 4	89 services	6000	8550
8	Minor 5	122 services	9000	12845
9	Intermediate 1	107 services	13500	17100
10	Intermediate 2	122 services	18000	22200
11	Intermediate 3	49 services	22500	26550
12	Major 1	91 services	27000	30600
13	Major 2	148 services	31500	34200
14	Major 3	50 services	36000	43200
15	Supramajor 1	24 services	45000	52200

16	Supramajor 2	16 services	54000	58500
17	Supramajor 3	3 services	63000	63000
18	Supramjor 4	9 services	70000	72000
19	Supramajor 5	3 services	75600	81000
20	Supramajor 6	3 services	90000	90000
21	Supramajor 7	3 services	99000	99000
22	Supramajor 8	2 services	10800	10800
23	Supramajor 9	2 services	117000	117000
24	Supramajor 10	2 services	126000	126000
25	Supramajor 11 (others not specific)	1 service	135000	135000
26	Supramajor 12	2 services	144000	144000
List of medicines				
1	Allopathic Medicines	1108 medicines	1.20	51,966
2	Ayurvedic medicine	25 medicines	75	280
List of surgical items				
1	Surgical items	43 items	2.75	5000

2.7.6 Member contribution

The member contribution is the pooling of the amount for future risks. The contribution is annual and based on following table below The contribution amount has to be paid, in full, during the time of enrolment.

Table 4: Annual member contribution amount and ceiling for general public

Population	**Annual contribution**
General Population	
Families with up to 5 members	NPR 3,500
Each additional member of the family	NPR 700 per additional member
Government and formal employee	Individual contribution: 1% of the initial salary scale Government/employer contribution: 1% of the initial salary Total contribution: 2% of the initial salary

Children born within a family's valid coverage period are covered by the NHI for that

period without paying any additional contribution amount. However, they must be enrolled in the NHI at the time of renewal by paying the contribution amount, like other members of the family.

Upon presenting their NHI membership ID card at a health facility, members are able to receive the health services and drugs covered by the benefit package without having to pay at any stage and if they bypass the first service point in non-emergency case. This effectively means that service providers have to provide services to members free of cost initially and then claim reimbursement from the HIB according to the agreed rates.

2.7.7 Service providers

The service providers within the NHI are as follows as explained in the official document. (GoN, 2018a)

- Health Posts: Health posts are not defined as the first service point for members of the NHI, they are required to provide any treatment services deemed necessary by the Government of Nepal free of charge, as they currently do for the general public (including non-NHI members). However, the health post must provide health screening once in a year to the NHI members in their catchment area who are above 40 years of age. This service can be claimed for reimbursement from the HIB.
- Primary health centers: Primary health care centres (PHCs) are the first service point for NHI members and provide emergency and out-patient services including required drugs. The members are allowed to chose their PHC during the enrollment process
- Hospitals: NHI has selected number of hospitals in the districts and the members can seek services upon the referral from PHC or directly go to the hospital.

As explained in the SOP document the process of seeking the service in health posts, PHC and hospitals are similar. The health posts normally do the referral to PHCs and

to hospitals when the member requires more complex treatment. The members can change the first point of contact by following the simple process as explained in the SOP document upon the approval from the district manager.

2.7.8 Claims from health facility

After providing services to members, PHCs can claim the expense of providing services covered in the benefit package from the HIB, which reviews the claim and judges if it is in accordance with the agreement between the two parties. Once approved, the HIB reimburses the PHC for the amount claimed.

The IMIS streamlines claims process for health facilities, while providing a convenient claim review mechanism for the HIB. Upon a successful review of a claim, the claimed amount is paid to the health facility by the HIB at pre-defined intervals. The HIB has opted for a case based payment mechanism, in which a fixed rate is paid for each out patient emergency service provided. For inpatient care, HIB pays a fixed rate according to the diagnosis (diagnosis specific costs have been calculated by the HIB).

2.7.9. Thailand Universal Coverage Scheme: a successful case study

Thailand achieved universal health coverage (UHC) in 2002, meaning all Thais were covered by health insurance guaranteeing them with comprehensive health package. Out of primarily three health insurances, the Universal Coverage Scheme (UCS) contributed significantly to achieve UHC with 75% population coverage. While the social security scheme (SSS) and Civil Servant Medical Benefit Scheme cover the remaining 25% populations. The three schemes are explained briefly below

Social Security Scheme (SSS): SSS covers private sector employee but not their dependents. It's a contributory mechanism with 1.5% of salary, equally paid by employer, employee and the government. It covers outpatient, inpatient, and accident, emergency, high-cost care but excludes prevention and health promotion. The scheme covers 16% of the total populations.

Civil Servant Medical Benefit Scheme (CSMBS): CSMBS covers government

employees and their dependents. It’s a general tax and non-contributory. The health benefit package is the most comprehensive as compared to the SSS and UCS. The scheme covers 9% of the total populations.

Universal Coverage Scheme (UCS): UCS covers all those left out by SSS and CSMBS covering 75% of the total populations. The scheme is fully funded through tax.

There were numerous reasons that have mutually contributed to the UCS success. A number of mechanisms have been set up to protect UCS beneficiaries, such as an information hotline, a patient complaints service, a no-fault compensation fund and tougher hospital accreditation requirements. The politicians, civil society and technocrats played crucial roles in pushing through the UCS reform, implementation and evaluation. In particular, a rapid roll-out was possible because in 2001 Thailand already had a firm foundation upon which to implement the scheme: an extensive network of government-owned district health facilities, well established health policy and systems research institutions, public health administration capacities and a computerized civil registration system.

2.8 Methodological issues

This section explains the key theories and approaches with all the study employed research methods. They include qualitative and quantitative methods. The quantitative method was applied for process and outcome evaluation of the NHI program.

2.8.1 Qualitative study: Grounded Theory

Ground Theory is one of the prominent qualitative data analysis approach formulated by Barney G. Glaser and Anselm L. Strauss's (1965, 1967). The theory has considerable significance because it (a) provides explicit, sequential guidelines for conducting qualitative research; (b) offers specific strategies for handling the analytic

phases of inquiry; (c) streamlines and integrates data collection and analysis; (d) advances conceptual analysis of qualitative data; and (e) legitimizes qualitative research as scientific inquiry (Charmaz, 2000). Grounded theory methods have earned their place as a standard social research method and have influenced researchers from varied disciplines and professions. The figure 14 below illustrate the Ground Theory process.

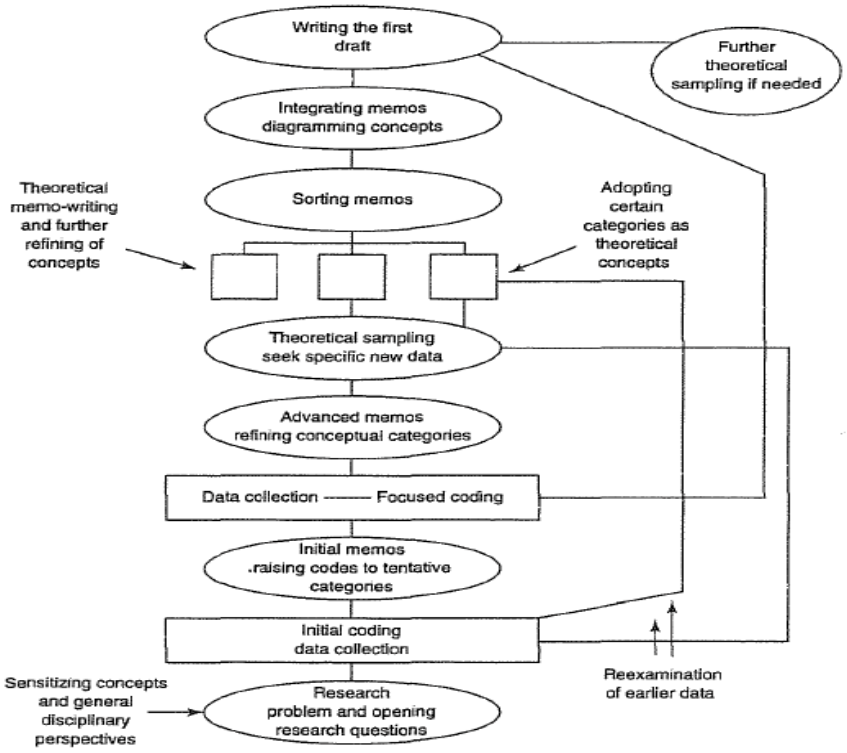

Figure 14: Grounded Theory process

The section here primarily explains on the Grounded theory and practice employed for data analysis. The first analytic step in the Grounded theory is coding and it's a pivotal link between collecting data and developing an emergent theory to explain these data. Grounded theory consists of two main types of coding: I) initial line-by-line coding, a strategy which prompts you to study your data closely-line-by-line-and to begin conceptualizing your ideas, and 2) focused coding, which permits you to separate, sort, and synthesize large amounts of data. The line-by-line coding intends to open up any new ideas, theory in all possible directions indicated by the data. While the focused coding pinpoint the key and relevant ideas emerged and start

weaving them into frame for the write up.

There is also a wide practice of third type of coding called axial coding, which is done to sort, synthesize and organize large amount of data and reassembles them in a new ways after line-by-line coding.

Memo writing is done after the coding completion and before the actual research report write up. It's the initial interpretation and analysis about the data. It's about ideas or any thoughts that come to researcher mind about the codes, category and data.

Theoretical sampling, saturation and sorting are seeking pertinent data to develop the emerging theory. The main purpose of theoretical sampling is to elaborate and refine categories constituting the theory. We conduct theoretical sampling by sampling to develop the properties of category(ies) until no new properties emerge.

Writing a draft is the final process in the Grounded Theory but again it might require a theoretical sampling, refining the codes, categories as required during the writing process. The theory places concepts, analytic framework and ideas on the center stage rather than the actors or individuals.

2.8.2 Mixed study: Data collection and triangulation

(Schoonenboom & Johnson, 2017) defined mixed method as the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e. g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration. There are various types of mixed-method design as explained by (Alessio, 2016) below

- Sequential Explanatory Design: It's a two-phase study where quantitative data is collected first followed by qualitative data. Typically, a greater emphasis is

placed on the quantitative data in the study. The collection of qualitative data is determined by the quantitative data.

- Sequential Exploratory Design: It's a two-phase study where qualitative data is collected first followed by quantitative data. Typically, a greater emphasis is placed on the qualitative data in the study. The collection of quantitative data is determined by the qualitative data.

- Sequential Transformative Design: It has two distinct data collection phases and a theoretical perspective is used to guide the study. Based on the theoretical perspective the method, either qualitative or quantitative, will be utilized.

- Concurrent Triangulation Design: It aims to collect both quantitative and qualitative data at the same and they are analyzed separately. Finally the both set of data will be triangulated to analyze the final result. It aims to combine the advantages of quantitative (trends, large numbers, generalization) with qualitative (detail, small numbers, in-depth). The study aims to employ this design for the collection of data.

(Driscoll et al., 2007) has provided the flow of chart for the data collection within concurrent triangulation as below

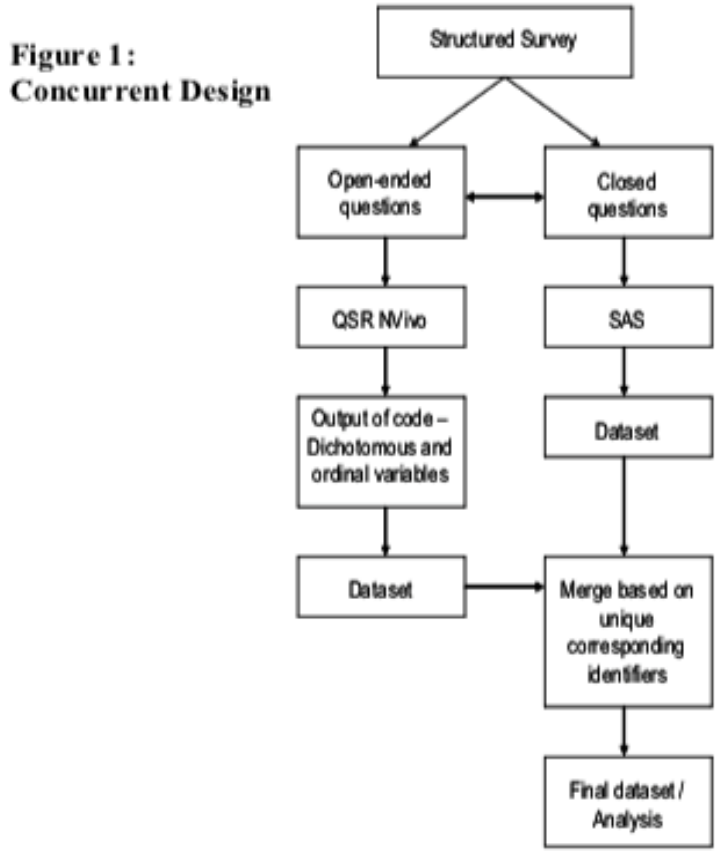

Figure 15: Concurrent design data collection and analysis steps

- Concurrent Embedded Design: One data collection phase during which both quantitative and qualitative data are collected (one is determined to be the primary method). The primary method guides the project and the secondary provides a supporting role in the procedures. The secondary method is "embedded" or "nested" within the predominant method and addresses a different question

- Concurrent Transformative Design: It is guided by a theoretical perspective and involves collection of both quantitative and qualitative data. The design may have one method embedded in the other so that diverse participants are given a choice in the change process of an organization

2.8.3 Process evaluation

Since the study employs process evaluation as one of the evaluation methodology, this section will discuss about the existing literatures on the process evaluation. (Moore et al., 2014) stated that there is no such thing as a typical process evaluation, with the term applied to studies which range from a few simple quantitative items on satisfaction, to complex mixed-method studies exploring issues such as the process of implementation, or contextual influences on implementation and outcomes.

(Linnan & Steckler, 2002) stated that process evaluation is a growing and important component of a comprehensive evaluation effort. They further explained that process evaluation is need to explain why certain results are achieved. Specifically, when interventions lead to significant outcomes, it is important to understand which components of the intervention contributed to the success. They have outlined following components for the process evaluation in the figure 16 below.

The study has followed these components for the process evaluation. Not all the components are equally employed. The key components employed in the study are context, fidelity, and implementation. While reach, dose delivered, dose received, recruitment are partially covered within the fidelity and implementation.

Component	Definition
Context	Aspects of the larger social, political, and economic environment that may influence intervention implementation.
Reach	The proportion of intended target audience that participates in an intervention. If there are multiple interventions, then it is the proportion that participates in each intervention or component. It is often measured by attendance. Reach is a characteristic of the target audience.
Dose delivered	The number or amount of intended units of each intervention or each component delivered or provided. Dose delivered is a function of efforts of the intervention providers.
Dose received	The extent to which participants actively engage with, interact with, are receptive to, and/or use materials or recommended resources. Dose received is a characteristic of the target audience and it assesses the extent of engagement of participants with the intervention.
Fidelity	The extent to which the intervention was delivered as planned. It represents the quality and integrity of the intervention as conceived by the developers. Fidelity is a function of the intervention providers.
Implementation	A composite score that indicates the extent to which the intervention has been implemented and received by the intended audience.
Recruitment	Procedures used to approach and attract participants. Recruitment often occurs at the individual and organizational/ community levels.

Figure 16: Key components of the process evaluation

2.8.4 Health Insurance financial outcome study

The health insurance financial protection outcomes include reducing out-of-pocket (OOP) health expense and catastrophic health expense (CHE) incidence. There are different ways of measuring and analyzing OOP and CHE. The table 4 presents few methodologies and was selected based on the relevancy to the thesis objectives and data analysis.

2.8.5 Triangulation process

Different literatures have explained the triangulation process as below. It has two biggest advantages. Firstly, triangulation is key to mixed method of analysis where qualitative and quantitative data are analyze for the synthesized result and secondly it is one of the method to ensure the validity of the qualitative study.

Data triangulation involves using different sources of information in order to increase the validity of a study. The study employ data from literature review, quantitative and qualitative data for the data triangulation both process and outcome evaluation.

Methodological triangulation involves the use of multiple qualitative and/or quantitative methods to study the program. The study is mixed method to ensure the methodological triangulation.

Investigator triangulation involves using several different 'investigators' and theory in the analysis process. While this is an effective method of establishing validity, it may not always be practical to assemble different investigators given time constraints and individual schedules. So study will identify experts on qualitative method for the triangulation.

Theory triangulation involves the use of multiple perspectives/disciplines to interpret a single set of data. This method can be time-consuming and may not be feasible in all situations. The study does not propose to do theory triangulation, however it will take into account the theories of health system and financial protection.

Environmental Triangulation This type of triangulation involves the use of different locations, settings, and other key factors related to the environment in which the study took place, such as the time, day, or season. The study aims to partially make this triangulation by conducting the study is different districts.

2.8.6 Compliance study

(Foorthuis & Bos, 2011) has defined compliance as a state of accordance between an actor's behavior or products on the one side, and predefined explicit rules, procedures, conventions, standards, guidelines, principles, legislation or other norms on the other. While (Kharbili, 2012) stated that compliance management deals with ensuring that a given enterprise is in accordance with a set of regulatory guidelines. Both of them

emphasized on the increasing interest and study on the organizational compliance and are equally relevant to practitioners and academicians. (Foorthuis & Bos, 2011) has cited various literatures to shed lights on the theories of the compliance, broadly, namely rationalist and normative approaches. These theories are different in nature but are complementary to each other. Rationalist depends its argument on the individual behaviors of the employee, actors who chose to comply with the given rules and regulations based on the calculations of cost and benefits. The incentives and disincentives play roles in shaping the behavior of the people. While normative approach broadens its scope to the context, working culture, organizational rules and regulations to encourage and ensure the compliance.

The conceptual framework for compliance management as depicted in the figure below (Kharbili, 2012).

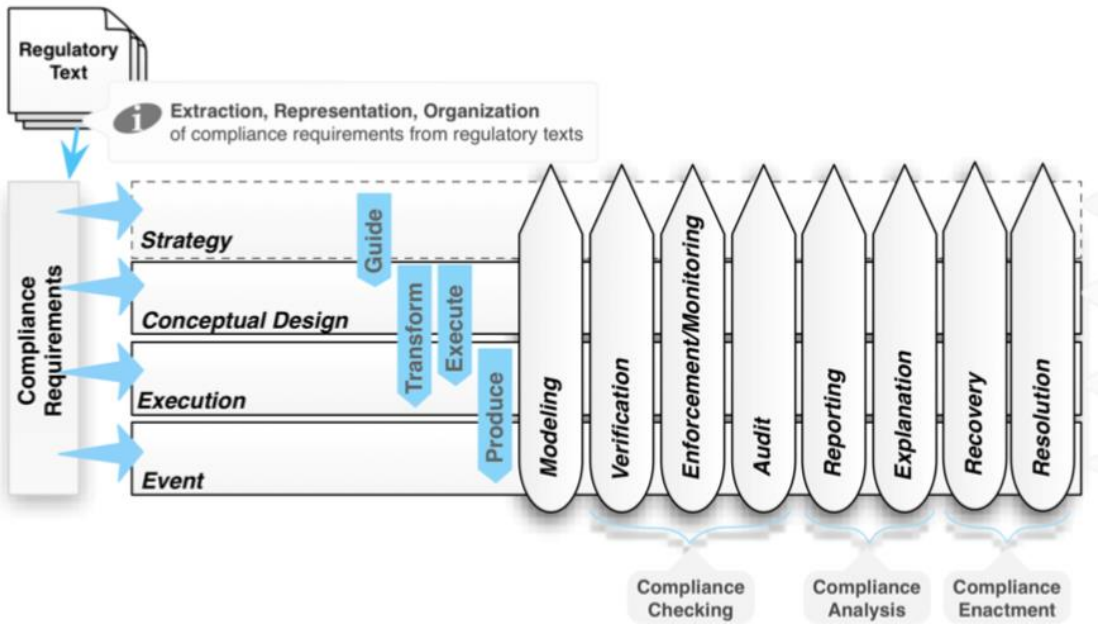

Figure 17: Compliance Management, Conceptual Framework

The study will utilize this concept on compliance checking to design the conceptualization and data collection of the first objective, i.e. to assess if the implementation of Social Health Security Program is in-compliance with the Standard Operating Procedures. Operational Rules and Standard Operating Procedures are the

strategies to guide the conceptual design, which is also called business process model. The process include organizational structure of NHI, membership, benefit package and member contribution, process of health service utilization including referral, health service provider selection process, claims from health facility, system accountability and fulfillment and work of various committees (Medicine Price Fixing, District NHI, Health Facility and Quality monitoring).

CHAPTER 3

METHODOLOGY

3.1 Study design

This was a mixed method study to evaluate the Nepal National Health Insurance (NHI) Program implementation; process and outcome. The mixed- method was qualitative and quantitative data collection. The qualitative data were collected for process evaluation and the quantitative data for outcome. The mixed methods were concurrent for qualitative process evaluation and the quantitative survey for outcome evaluation on intention to NHI membership renewal. The mixed methods were sequential for qualitative process evaluation followed by quantitative pre-post intervention survey outcome evaluation on out-of-pocket (OOP) expenses and equitable health expenses distribution.

The study was divided into two phases

Phase 1: Qualitative and Quantitative: Qualitative study included Key Informant Interviews and Focus Group Discussion for NHI process evaluation (corresponding to objective two). The quantitative study included cross-sectional survey for outcome evaluation to measure intention to NHI membership renews (corresponding to objective three).

Phase 2: Quantitative study: A pre-post-intervention survey for outcome evaluation to measure monthly OOP and equitable health expenses distribution measuring (corresponding objective three). The control group was only recruited during the end-of-research survey corresponding in time to the post intervention survey in the intervention group.

Such pre-post intervention and control group design was employed by (Chankova et al., 2010). There were limitations to such design however had advantage over the mere pre-post design.

The figure below depicts the phase study design

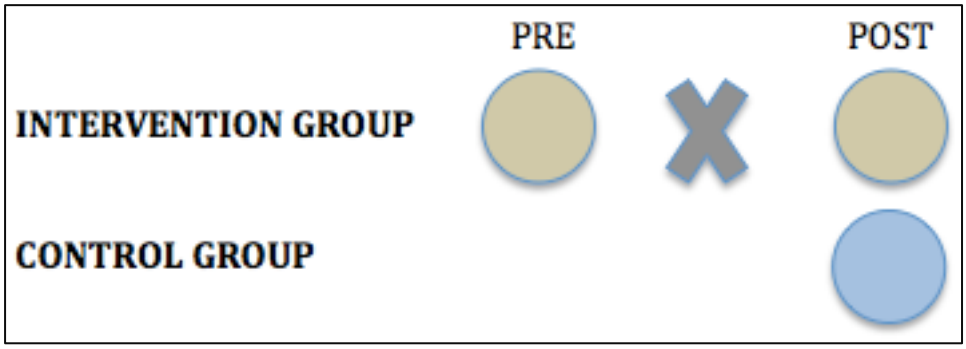

Figure 18: Pre-post with control study design

Phase I:

3.1.1 Study area

3.1.1.1 Qualitative method

The study was based in four districts that were purposively selected. The first district was the metropolitan district of Kathmandu, which is also the Nepal capital city, was selected for the central level process evaluation (for policy development at MoH and policy implementation at national HIB office). The other three districts were Bhaktapur, Chitwan, and Kaski that met the inclusion criteria of at least 5% NHI membership enrollment and the researcher had easy access to these districts.

3.1.1.2 Quantitative method

The study was based in three districts of Bhaktapur, Chitwan and Kaski, the same ones of the qualitative study.

3.1.2 Study period

The study period for both qualitative and quantitative study was from April-July 2019.

3.1.3 Study participants

3.1.3.1 Qualitative method

The qualitative study participants are outlined in table 5 below.

Table 5: Qualitative study participants

Key Informants	FGD participants
- NHI executive director - NHI Central Office staffs- Department heads - NHI District Office Staffs- Provincial Managers and Enrolment officers - Experts - Health service providers- NHI Focal person and hospital managers	- Enrolment assistants - Health Workers

3.1.3.2 Quantitative method

The study participants were those who were already enrolled in the NHI programs for at least 9 months. They were termed as “insured or insured persons or insured members” in the study.

3.1.3 Sample Size

3.1.4.1 Qualitative method

The key informants’ sample size was calculated on a maximum variation rule to interview diverse stakeholders. The variations included were ability to decide and influence the NHI and health policy, provide technical assistance and mobilize resource, govern and manage NHI programs, implement NHI program and provide health services.

The maximum of 8 participants for each focus group discussions were invited.

3.1.4.2 Quantitative method

The sample size for the survey in each district was calculated utilizing Cochran formula below

$$n = \frac{Z^2 p(1-p)}{d^2}$$ (Cochran, 1963)

Where,

p = percentage of household facing catastrophic expenditure which was 13.8%

q = 1-p

d = desired level of precision or error allowance

Z = area under normal curve (from statistical Z table) associated with 95% confidence interval which is 1.96.

Using the formula the total sample size derived was 168. Adding up 10% non-renewal rate the total sample size was 186, which was divided equally in each district, i.e. 62 in each district.

3.1.5 Sampling technique

3.1.5.1 Qualitative study

Purposive sampling of districts based on following inclusion criteria

- The districts where NHI was already rolled out for more than 12 months.
- Districts easy to access from the capital city
- Districts where enrollment was at least 5% of the total households.

Purposive sampling of Key Informants at the NHI central office based on following Inclusion criterion

- Senior management including the Executive Director and Board members
- All department heads or managers.

Purposive sampling of Key Informants at the NHI District office based on following Inclusion criterion

- Provincial managers
- The enrolment officers who hadmore than 1 year of working experience

Purposive snowball sampling of NHI and public health experts based on following Inclusion criterion

- 10-15 years consistently working on national health programs as analyst, researchers, professors, activists, economists and managers.
- Had worked as think-thank or different relevant development agencies supporting the national health programs,

Random sampling of health service centers based on following Inclusion criterion

- Hospitals listed on the NHI as primary care contact for the insured people.
- Hospital serving more than 1000 NHI members at the time of survey

Random sampling of health service providers based on following Inclusion criterion

- Hospital managers or senior doctors on the NHI program
- NHI focal person in the hospital

Purposive sampling of FGD participant based on following Inclusion criteria

- Enrolment assistants with at least six months of working experience
- Health service providers (nurse, mid-wives) with at least six months working experience in NHI program

3.1.5.2 Quantitative method

Purposive sampling of districts based on following Inclusion criteria

- The districts where NHI was already rolled out for more than 12 months.
- Districts easy to access from the capital city
- Districts where enrollment was at least 5% of the total households.

Purposive sampling of health service centers based on following Inclusion criterion

- Hospitals listed on the NHI as primary care contact for the insured people.
- Hospital serving more than 1000 NHI members at the time of survey

Random sampling of Household (HH) based on following Inclusion criteria

- HH head that had been member of NHI and had their benefit package started for at least 9 months.
- HH head or the members that had utilized the service at least one time at the time of survey.
- HH head willing to consent for the study.

Exclusion criteria of all study populations

- HH head who failed to provide consent to the study.

The survey sampling process was multi-staged. Firstly the districts were selected conveniently utilizing the above listed inclusion and exclusion criteria. Given the time and resource limitation the random selection of the district was not possible. Some of the districts in Nepal were hard to reach without viable transportation system. Secondly, the NHI health service centers were selected randomly, from the identified districts, and included if the head of the health center's consented to participate to the survey . Finally the eligible survey participants were selected randomly who attended the identified health service centers until the sample size of 62 was fulfilled.

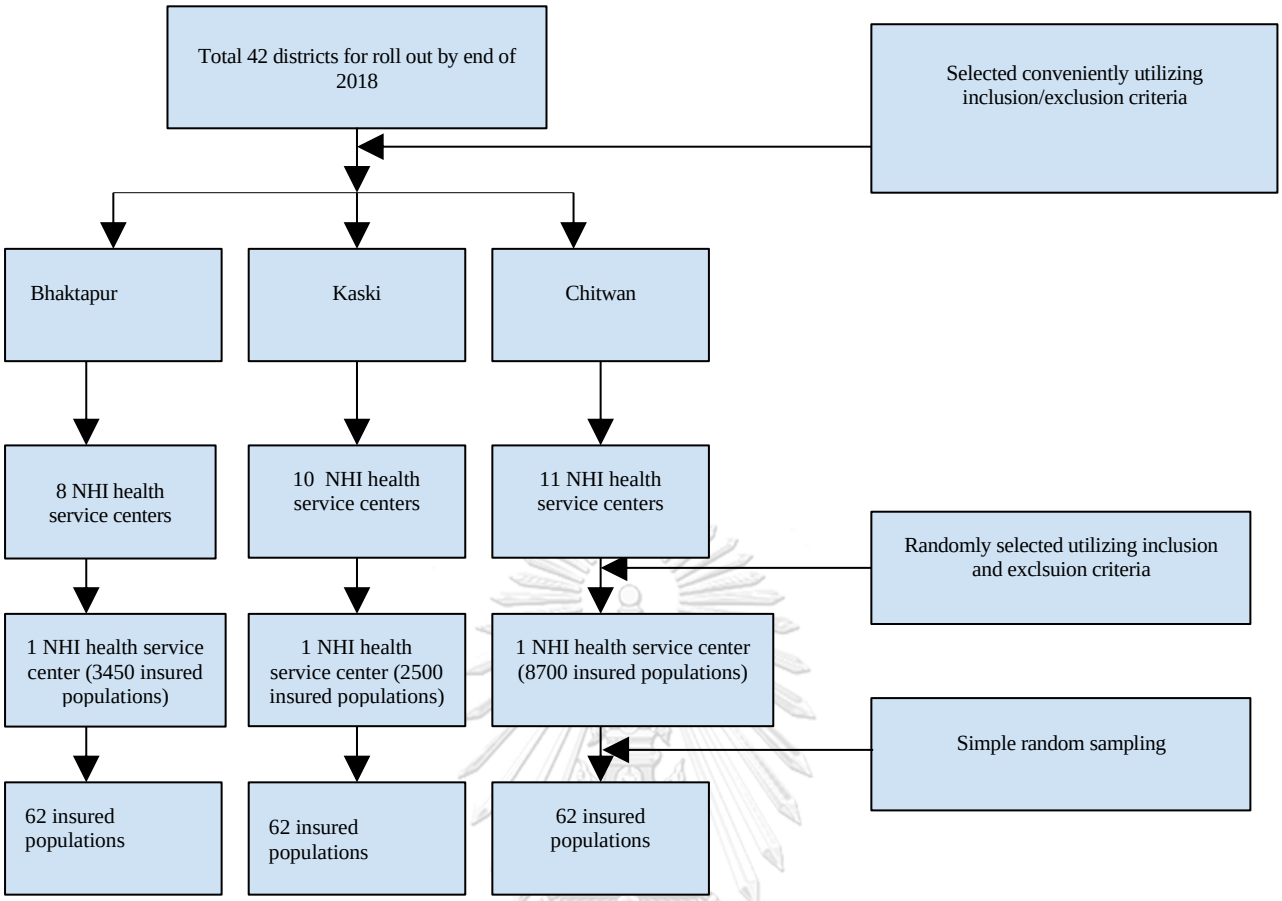

Figure 19: Consort flow diagram cross-sectional survey

3.1.6 Coordination and preparation

The coordination and preparation for qualitative and quantitative method followed the same procedure given the districts; NHI health service centers for the data collection were same.

The researcher coordinated with the Health Insurance Board (HIB) to inform about the study and seek written permission to conduct the study. The researcher firstly met with the Executive Director after which two study focal points comprising of senior manager and mid-level staff were appointed. The researcher then presented the research details to the appointed focal points on February 20 2019 and the written

approval letter was provided on March 21, 20219.

The potential key informant list was prepared through literature review, consultation with already coordinated experts and HIB suggestions. The researcher then sent out an email invitation including research detail information, university letter, ethical approval and HIB approval letter to all the identified experts for the interview.

The researcher then traveled to all the study districts and organized a meeting with HIB district office and the selected NHI health service centers' management. The meeting was for explaining the research objectives, methodology, introducing the data collectors, submitting ethical and HIB approvals and requesting for the data collection support. All the HIB district offices were supportive but the researcher faced some challenges at the NHI health service center in Kaski district. As the result, the selected service center was replaced with another NHI service center, meeting the inclusion criteria, in the same district. Each HIB district office and the hospital, appointed their focal person to support the study in particular the data collectors.

For the FGD, the district Enrolment officer helped gather the Enrolment Assistance, while the NHI focal person at the hospital gathered the health personals for the FGD based on the selection criteria.

3.1.7 Training for the data collection

The same data collectors were deployed for both qualitative and quantitative method.

For the data collection of the process evaluation, eight data collectors, two in each four district, were recruited and trained. The students or researcher with public health, development studies and social work background from the university residing in the study district were recruited. The selected data collectors were provided with one day training in their respective district 2 days prior to the beginning of the actual data collection.

Table 6: The key contents of data collection training

S.N.	Training Sessions	Methodology
1	Research objective and process	Presentations
2	Qualitative data collection - Understanding the questionnaires - Rapport and trust building - Communicating in non-judgemental manner - Key informant Interview skill and recording - FGD facilitation skill and recording	Presentation, group work and mock interviews
3	Quantitative data collection - Understanding the questionnaires (eligibility, skip pattern) - Rapport building - Survey skill (questionnaire completion, data consistency, additional notes, observation)	Presentation and mock interviews

The trained data collectors were then involved in the pilot study of the survey data collection. At least one key informant interview in each district was done jointly with the researcher.

3.1.8 Measurement tools

3.1.8.1 Qualitative method

The qualitative method had one open-ended questionnaire for the KI (see annex 2.2), two guidelines for the FGDs (see annex 2.3). The researchers developed the new questionnaire after literature review.

- Open-ended questionnaire for KI.

The KI were categorized into four groups, as listed below, and the questionnaire was developed accordingly. The questionnaire for each category was similar but the nuances were taken care of while designing the questions for each category. All the questions were new and developed by the researcher (refer to annex 2.3).

- Health and insurance expert and NHI Executive Director:

  The sub-section of questionnaire for this category included Policy and historical context of health insurance, Operationalization of policy, Nepal insurance model (Financing, risk pooling and purchase of services) and Key implementation issues.

- NHI central office staffs

  The sub-section of questionnaire for this category included Program and organizational structure, Benefit package and membership, Communication strategy, Enrollment and renewal process, Purchase of the service, Claims from health facility, Data collection system.

- District manager and enrollment officer

  The sub-sections of questionnaire for this category included District program and organizational structure, Benefit package and membership, Communication strategy, Enrollment and renewal process, Purchase of the service, Health service utilization, Claims from health facility, role of coordination committee and Support to enrollment assistants.

- Service providers:

The sub- section of questionnaire included Organizational structure and service package, NHI program, Benefit package and membership, Health service utilization, Quality of services, Claims from health facility and Health Facility Coordination Committee

- Checklist for FGD with Enrollment assistants

  The FGD checklist of enrollment assistants (refer to annex 2.3) included the following sub-sections
  - Recruitment process and nature of work
  - Capacity development and other support
  - Enrolment process
  - Renewal process
  - Supervision and support

- Checklist of FGD with Health service providers

  The FGD checklist of health service providers (refer to annex 2.4) included the following sub-sections

  - Nature of work and capacity development
  - Benefit package and Health service utilization process
  - Quality of services and service delivery in the health service
  - Communication with NHI and quality monitoring

3.1.8.2 Quantitative method

- Survey questionnaire for the household

  The survey employed a newly developed questionnaire with 5 sub-sections which included

Part 1: Socio-demography characteristics
There were 7 questions in this part to collect the information on education, occupation, income and religion of the respondents.

Part 2: Becoming a NHI member
There were 10 questions in this part to document the process of becoming the NHI member.

Part 3: Performance of enrollment assistants and officers
There were 8 questions in this part on analyzing the work of enrollment assistants and officers.

Part 4: Benefit packages
There were total 19 questions on this part. The key questions include type of benefit package, accessing the benefit package and services of the health centers.

Part 5: Replacement of lost card and renewal
There were 6 questions on this part on process of replacement of lost cards and renewal of the NHI memebership.

3.1.9 Validity and reliability of the measurement tools

3.1.9.1 Qualitative method

The qualitative measurement tools on KI and FGD were validated through following procedures

- The qualitative research experts reviewed the questionnaires and provided comments.
- Followed the iterative process to change the methods and hypothesis in the

light of information gathered during the study without undermining the original objective of the study.

3.1.9.2 Quantitative method

The quantitative survey questinnaire was validated through following procedure

For face validity, the survey questionnaires was piloted with total of 45 participants, meeting all the eligibility criteria, 15 participants from each of the three districts (Bhaktapur, Chitwan and Kaski). The reaction and clarification from the interviewed respondents was incorporated to revise the questions.

For the content validity, the survey questionnaire was reviewed by three Nepali experts (Health Advisor to Health Minister, Ministry of Health and Populations; Health Advisor in DFID, Research Expert, Independent consultant). The Item-Objective Congruence (IOC) Index was used to evaluate the items of the questionnaire based on the score range from +1 to -1 (+ 1 = clearly measuring, 0 = unclear, and -1 = clearly not measuring). The items that had scores of < 0.5 were revised, i.e. q. 10, 10.1 and 16. Other items with score of 0.66 and comments were revised, i.e. q. 1.2, 16, 19, 30.1, 32, 33 and 43.1. The remaining items with score ≥0.5 and without comments were accepted.

The standard questionnaires in english after the review for validity and reliability were translated into Nepali by an English and Nepali bilingual expert health professional expertise related to health system and health insurance. Then a monolingual Nepalese individual who was unfamiliar with the instrument was asked to read through the question to ensure that its understandable. The questionnaire was then back translated into english. After the back translation, the translated questionnaire was compared with the original questionnaires and no major discrepancies were observed.

3.1.10 Piloting of the questionnaire

The questionnaire piloting took place right before the survey from end of March to early April 2019 with total of 45 participants (15 for each district), meeting all the eligibility criteria in three districts. The researcher and the data collector conducted the questionnaire piloting. The piloting objectives were face validity, test the reliability (comprehension, question flow) and time required to complete the survey to plan for the data collection. After the completion of the piloting, the following actions were taken.

- The question number 9, 21, 26, 29, 32.1 and 48.1 were revised to add more choices in the response.
- The question number 10.1, 25 and 30.1 were added up as the follow up questions.
- The questionnaire was reformatted to add the eligibility criteria and response check-box.
- The corrections were also made on the spelling and grammers on the questions.

3.1.11 Data Collection

3.1.11.1 Qualitative method

In-depth Interviews

Open-ended semi-structured guidelines were developed to facilitate a 30-60 minute interview of that was audio-recorded. Confidentiality was assured to facilitate candid discussions, and interviews were held in a private space. The trained data collectors, sometimes under spot-check supervision of the researcher, conducted all the interviews face-to-face and discussed responses at the end with the researcher. All the IDI interviews were conducted at the respective respondents' quiet environment offices during the daytime.

Focus group discussion

A semi-structured FGD checklist was employed to facilitate a 60-80 minute discussion with health workers and enrolment assistants (EAs) and audio recorded after obtaining written consent. To encourage FGD participants' presence, the researcher selected convenient and quiet venues near the hospital (for health workers) and district NHI offices (for EAs) for the meeting. Participants also received a travel allowance. The trained data collectors conducted all the FGDs face-to-face and discussed it at the end with the researcher.

3.1.11.2 Quantitative method

Survey

The survey data collection using by the close-ended questionnaires took around 20-25 min in an average to be completed after obtaining the written consent. The data were collected within the identified NHI health service centers by the trained data collectors and discussed at the end with the researcher.

3.1.12 Data Analysis

3.1.12.1 Qualitative method

All the recorded information from IDI and FGDs was translated into English and transcribed in MS-Word by the data collectors. The PR coded the data from IDI and FGD into themes and sub-themes into the excel sheet manually by applying the Grounded Theory. The spreadsheet was designed for easy information triangulation from four respondent categories with their relevant quotes. An external qualitative research expert reviewed all themes and sub-themes, agreed on adjustment or modification with the PR, and finally crosschecked all data with the existing relevant literature.

3.1.12.2 Quantitative research

The quantitative data were analyzed using SPSS version 22 software. Participants’

characteristics were summarized using descriptive statistics. The univariate logistic regression was employed to identify factors crudely associated with the intentions to renew NHI membership. Multivariate logistic regression analysis was used to examine the net effect of the independent variables on the odds of intention to renew. The confidence level was set at 95% and the significance level at 5% (i.e., p-value < 0.05).

The dependent variable was the NHI members' intention to renew their membership coded as 1 (yes) and 2 (no). Andersen's Behavioral Model guided the independent variables (Anderson R and Newman JF , 2005) and literature reviews on the determinants to enroll and retain the NHI membership. The variables from Andersen's Model include predisposing factors (age, sex, education, family with elderly), enabling factors (occupation, income, NHI information, usage of the benefits package, availability of drugs, satisfaction with the health services, and number of times renewed) and illness level (increased visit after NHI membership, number of visits to the First Point of Contact (FPC) in last nine months). The table #7 summarizes the variables.

Table 7: Summary of process evaluation quantitative study variables

S.N	Variables	Definition of Variables	Variable Description/Coding
	Intention to renew the NHI members	Intentions of the NHI members to renew their annual membership	1= Yes 0= No
	Predisposing factors		
1	Age	Age of the respondents at the time of the survey	1= 18-49 2= 50 and above
2	Sex	The biological sex of the respondents at the time of the survey	0= Male 1= Female
3	Education	The highest level of education attained by the respondents	1= No school to primary

			2= Secondary to university
4	Family	Family with at least one elderly	0= No 1= Yes
	Enabling factors		
5	Occupation	Occupation of the head of the HH or any other members	1= Formal employment 2= Informal employment
6	Income	Monthly income of the respondent's HH	1=10,000- 300, 00 NRs 2= 300,01-100,000 NRs
7	NHI accurate and clear information	Clarity and accuracy of the information in the first time	0= No 1= Yes
8	Usage of benefit packages	Usage of benefits package by the HH members on the first year	1= 1-50% 2= 5- 100%
9	Availability of the drugs	Availability of the drugs in every visit	0= No 1= Yes
10	Overall satisfaction with the health services	Respondents satisfaction with health services	0= No 1= Yes
11	Number of times renewed	Number of times annually renewed by the respondents	1= 0 time 2= 1 time 3= 2 times
	Illness level		
12	Number of visits to the FPC	Number of times the HH members visited the FPC in the last nine months	1= 1-6 times 2= 7 and above
13	Frequency of visits	Increased frequency of visits to	0= No

	to the FPC	the FPC after becoming NHI members	1= Yes

This multivariate regression model included all the independent variables from the univariate analysis that were significant at p-value < 0.20. Finally, we included the variables that had been found significant in the literature such as age, biological sex, presence of elderly in the HH and occupation.

Multi-collinearity testing was conducted using the Variance Inflation Factor (VIF). Age and the presence of elderly persons in the HH were highly correlated with VIFs of value of 24.6 (elderly in the HH) and 25.8 (age). The VIF was less than two after the removal of age from the regression. The Hosmer and Lemeshow chi-square test were employed to test the goodness of fit and the P-value for this test was $P > .05$, implying good fit.

The questionnaire had one open-ended question on the recommendation to improve the NHI program and services. The responses were categorized into nine sub-themes and were analyzed in the discussion section. Similarly, a descriptive analysis of the 61 non-renewal respondents was done.

3.1.13 Ethics

The researcher obtained ethical approval from the Nepal Health Research Council on March 6, 2019 (Reg. # 816/2018) and a no-objection letter from the Health Insurance Board.

The individual consent form outlining study objectives, purpose, respondents' right to withdraw from the interview anytime, and respondent's confidentiality was explained to the participants and written consent was received before the interview.

Only the authors had access to the data.

Phase II

3.2.1 Study area

The study area was Kaski district, the district with purposively selected with highest enrollment rate amongst three districts selected for phase I in 3.1.1 and 3.1.5. The advantage of having the same district was to align and analyse the result of process and outcome evaluation in similar health care settings, geographical area and working area of NHI.

3.2.2 Study participants

The study participants were newly insured populations but not yet started their benefit package. The enrollment within NHI was year round but the benefit package would only be in fixed interval of time, generally evey two months. Therefore, the time from enrolment to benefitting the package ranged from a few days to a maximum of two months.

3.2.3 Study period

The pre- inervention data collection was done from July-August 2019. The original plan was to collect the post-intervention data after nine months in May-June 2020 after 9 months interval time . However due to surging COVID cases in Nepal, the post-intervention and end-of-research survey data were collected from February-March 2021.

3.2.4 Sample size

Sample size was estimated by the test difference between two dependent means (matched pairs) utilizing the GPower software 3.1.9.3. The calculation was based on the study conducted by Munisamy M (2015). The study was quasi-experimental and conducted in Malaysia under similar setting. The dependent variable measurement utilized to calculate the sample size was *% of health expenditure from total household expenditure* before and after intervention within the experimental group and its

continuous. Out of all OOP expense, the catastrophic expense incidence in Nepal ranges from 10-13% HH. The calculated sample size was increased by 20% in order to have the calculated effect size for the catastrophic expense.

The calculated effect size was 0.29 and the alpha and beta level was set at 0.05 and 0.8 respectively. The total sample size calculated was 96 households. The researcher assumed the particants drop out or missing data to be 10% (10) An additional 20% sample size (19) was assumed necessary to ensure that at least 96 HH with hisotry of health expense could be available for analysis therefore, the total sample size was 125 HH (96+ 10 +19) before and after the study. The figure 18 below provides the overview of the effect size and sample size calculation in the software.

The same number of non-insured population, i.e. 125 households was selected from the same study area. Any household nearby the insured populations was randomly selected and its head was interviewed after meeting the inclusion criteria and agreeing to be part of the study.

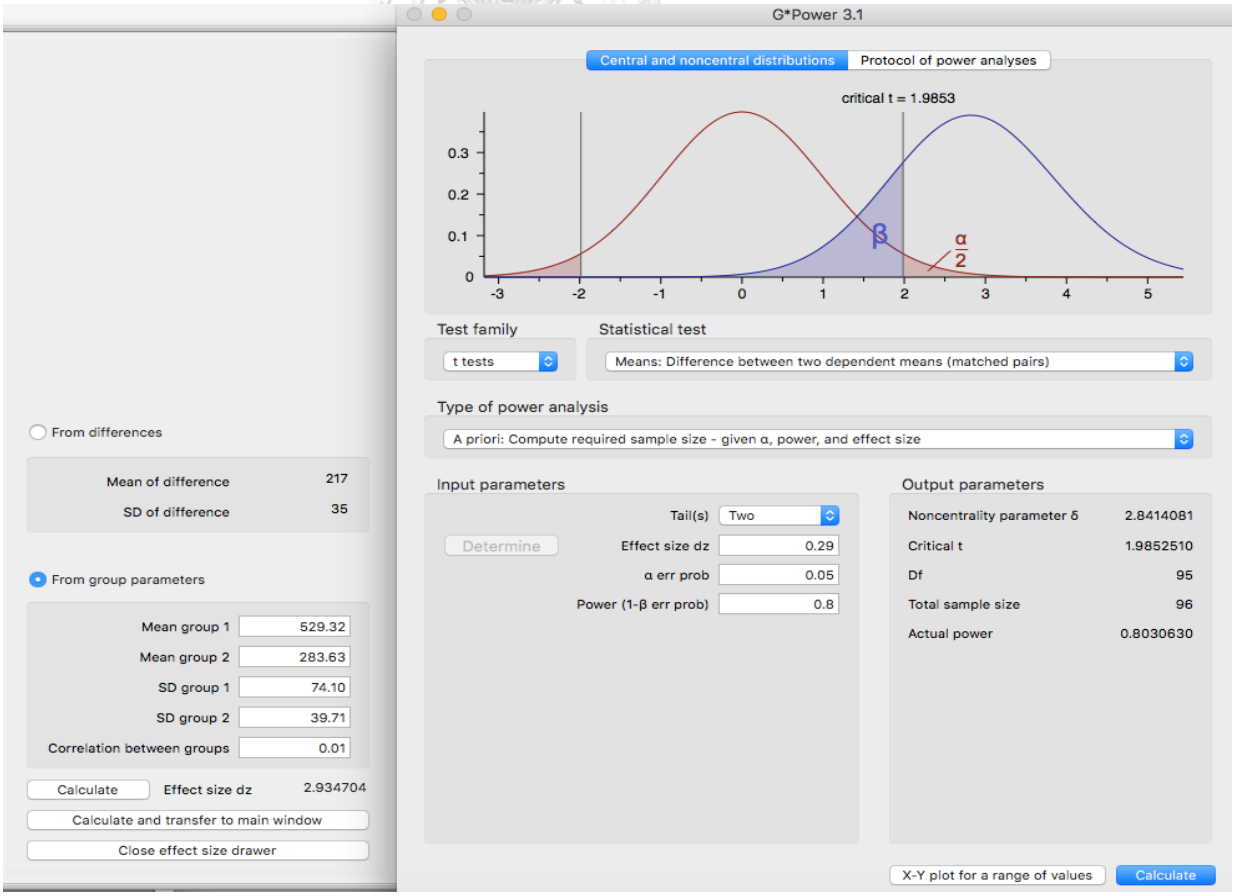

Figure 20: Screenshot of GPower software

3.2.5 Sampling technique

Purposive sampling of one NHI health service centers in the district meeting the following Inclusion criteria

- Hospitals listed on the NHI and primary care contact for the insured people.
- Hospitals with more than 1000 NHI members at the time of survey.
- 50 bed hospital
- Hospital director providing consent to the study

Random sampling of HH meeting the following inclusion and exlusion criteria
Inclusion criteria of insured HH

- Household located in the identified NHI health service centers
- Household Head registered in NHI but not yet started the benefits.
- Household members with history of chronic disease
- Household members with health expense in past 30 days
- Household members below 5 and 65 years old.

Exclusion criteria of household

- HH head not willing to provide consent
- Household with private insurance scheme

The sampling technique was explained above in process evaluation under 3.1.6, including the flow chart figure. Since the study area of the outcome evaluation was one of the districts from process evaluation the technique remains except the sample size and nature of respondents. The screening process would identify and select the household fulfilling at least two criterias from last three criterias (Household with history of chronic disease; Houehold with health expense in past 30 days and Household with members below 5 and 65 years old) outlined above in the inclusion criteria of households.

3.2.6 Coordination and Preparation

Explained in the Process Evaluation under 3.1.6.

3.2.7 Intervention

The intervention was the national health insurance program called National Health Insurance Program, which was being implemented by the government. The researcher did not design the intervention or implemented it. The detail of the intervention can be found in literature review section 2.7.

In summary the intervention consisted of following components

- Families of up to five members had to contribute NRs 3500 per year and NPR 700 per additional member.
- In return, the families would receive benefits of up to NPR 100,000 per year up to five members with an additional NPR 10,000 covered for each additional member.
- It provides subsidized rates for families whose members had a poverty identity card.
- Insurers had to renew their membership through annual contributions.
- Insurers had to choose their first service point but can also access services from government PHCCs and hospitals. Insurers can access specialized services elsewhere that were not available at the first service point on production of a referral slip from their first contact point.

3.2.8 Measurement tools

The outcome evaluation used one questionnaire (refer to annex 2.6) with the components below described. The questionnaire was adapted from two similar studies one in Nepal (Saito et al., 2014) and the other in Malaysia (Munisamy, 2015). The details of adapted questionnaires are below

The questionnaire was divided into 7 parts sections as follows

Part 1: Household Information

This part was adapted from Saito E et. al 2014 and collected the following information

- Introduction
- All births in the household over the past two years
- Household roster

Part 2: Household Income

This part was adapted from the Munisamy M 2015 and collected the household income of last month.

Part 3: Household expenditure

This part was adapted from Saito E et. al 2014 and collected the household expense in previous 30 days. The expenses were separated into food and non-food category.

Part 4: Household episodes of illnesses

This part was adapted from Saito E et. al 2014 and collected two specific episodes of illness. Firstly documented the episodes of general illness and secondly the episodes of chronic illness.

Part 5: Health care utilization and expense

This part was adapted from both Saito E et. al 2014 and Munisamy M 2015. The sub-section in the questionnaire included health utilization, outpatient health expense and coping strategies of the expense.

Part 6: Chronic illness and disability expense

This part was adapted from both Saito E et. al 2014 and Munisamy M 2015. The sub-section in the questionnaire included health utilization, chronic illness and disability expense and coping strategies of the expense.

Part 7: Hospitalization expense

This part was adapted from both Saito E et. al 2014 and Munisamy M 2015. The sub-section in the questionnaire included hospitalization expense and coping strategies of the expense.

Part 8: COVID related expense

The researcher newly added this part after COVID pandemic. The sub-section in the questionnaire included COVID infection and out-of-pocket expense incurred to the treat the infection.

Part 9: HH wealth

This part was adopted from Saito E et. al 2014 and it included the questions on the durable goods of the household for regular use but not for any household enterprise.

3.2.9 Validity and reliability

For face validity, the survey questionnaire was piloted with 15 participants, meeting all the eligibility criteria, in Kaski district. Please see 3.2.10 for detail.

For the content validity, the survey questionnaire was reviewed by three Nepali experts (Health Advisor to Health Minister, Ministry of Health and Populations; Health Advisor in DFID, Research Expert, Independent consultant). The Item-Objective Congruence (IOC) Index was used to evaluate the items of the questionnaire based on the score range from +1 to -1 (+ 1 = clearly measuring, 0 = unclear, and -1 = clearly not measuring). The items that had score of 0.66 and comments were revised, i.e. q. 19 and 20 (under chronic illness). The remaining items with score ≥0.5 and without comments were accepted.

The standard questionnaires in english after the review for validity and reliability were translated into Nepali by an English and Nepali bilingual expert health

professional expertise related to health system and health insurance. Then a monolingual Nepalese individual who was unfamiliar with the instrument was asked to read through the question to ensure that it's understandable. The questionnaire was then back translated into english. After the back translation, the translated questionnaire was compared with the original questionnaires and no major discrepancies were observed.

3.2.10 Piloting of questionnaire

The questionnaire piloting took place on June 2019 with total of 20 participants in Kaski district. The researcher and the data collector conducted the questionnaire piloting. The piloting objectives were face validity, test the reliability (comprehension, question flow) and time required to complete the survey to plan for the data collection. After the completion of the piloting, the following actions were taken.

- The question number 7, 7.1, 7.2, 7.3; 26, 26.1, 26.2, 26.3 and 43 (43.1-43.8) were revised to dissagregate the health expenses.
- The questionnaire was reformatted to add the eligibility criteria and response check-box.
- The corrections were also made on the spelling and grammers on the questions.

3.2.11 Data collection

The data collection took place twice at the pre-intervention and post-intervention for the intervention group while it was once for the control group at the same time of the post-intervention data collection.

The survey data collection facilitated by the close-ended questionnaires took around 50-60 min in an average to complete one respondent after obtaining the written consent form. The data were collected within the identified hospitals and community by the trained data collectors and discussed it at the end with the researcher.

For the post-intervention group survey, the same HH interviewed during the pretest were interviewed. The researcher had all the contact details and addresses of the pre-interventions respondents, which was sent to the data collectors. The data collector firstly made phone calls to the HH and went to conduct the interview after the verbal consent. Out of 125 HH from the pre-intervention only 100 HH could be reached out in the post-intervention.

3.2.12 Statistical Analysis plan

The quantitative data were analyzed using SPSS version 22 software. Descriptive statistics analyzed variables' frequency and percentages. The independent (socio-demography, income, food expenses, non-food expenses) and dependent variables (outpatient, chronic illness and hospitalization expenses) from pre-post and control groups were not normally distributed. So, Wilcoxon rank sum test was employed to measure two independent samples and Wilcoxon signed rank test was employed to measure the pre-post survey intervention group.

Firstly, out of 125 HH respondents from the pre-intervention, only 100 HH could be reached out in the post-intervention. The remaining 25 HH either had migrated from their residing place, death or denied to complete the study. In order to have a matched pair analysis, the researcher decided to use only 100 HH data from the pre-intervention since total sample calculated for testing the hypothesis was 96 HH. The study calculated total sample size was 125 HH due to added 30% respondents to mitigate for drop out. The 100 HH that completed pre and post intervention questionnaires were identified by matching unique id number and then verified through their phone numbers, respondents' name. The median differences between the 100 and 25 HH were analyzed employing the Wilcoxon Rank Sum test for continuous variables and chi-square test for categorical variables.

Secondly, the dependent variables of pre-post intervention and control groups were measured. The variables included family details, HH head sex, HH head education, HH head marital status, HH religion. Paired-t test was employed to measure the

normally distributed continuous variables between pre and post intervention respondents, while the independent-t test was employed to assess between post and control group. Mcnemar test was utilized to compare the categorical variables between pre and post intervention respondents while chi-square test was used for post and control group. Variables with more than two categories were recoded into two categories for the Mcnemar test.

Thirdly, the economic variable between pre-post and control groups were measured. Since the study aimed to measure the OOP health expenses, it was important to compare the economic situation. The variables included HHH and HH member employment status, HH monthly income, food expenses and non-food expenses. The non-parametric test was employed, as the variables were not normally distributed. The inflation was adjusted for the post intervention expenses as the post data was collected after 17 months from the pre-data collected in August 2019. The inflation rate of 2020 was taken as basis, which was 5.052 (WorldBank, 2020c) and the following formula (USAID, 2009) was utilized to calculate the real price.

Real price: Nominal price/(1+inflation rate)

Fourth, the outpatient, chronic illness and hospitalization visits and expenses between the pre and post intervention was compared. The variables were categorized into visit details, expenses and opportunity expense.

The visit details included number of visits to the hospital/facility, diseased diagnosed, illness severity, facility visited and health workers consulted.

The visit expenses included monetary expenses broken down into medical and non-medical expenses. The outpatient and chronic illness medical expenses included consultation fees, tests, medicine, travel and other; while hospitalization expenses included consultation fees, tests, medicine, living expenses of patient and care taker (food, cabin, other) and travel expenses (ambulance, food, lodging during the travel). The non-medical expenses included traditional healer, homeopathy, ayurveda and

home remedy. However due to lack of disaggregated data on medical and non-medical expense for more than 50% of the respondents, the summed-up figure for both medical and non-medical expenses was included for the analysis.

The opportunity expenses included number of work/activity days stopped due to illness and money lost; HH reduced the food expenses and removed children from the school.

Mcnemar test was employed to compare categorical variables and Wilcoxon Signed rank test was utilized to compare the continuous variables. The inflation was adjusted for the post-intervention groups' expenses using the above-mentioned methodology.

The total expenses for outpatient, chronic illness and hospitalization were distributed amongst HH belonging to different wealth quintiles. Wealth was defined as the value of assets owned by the HH. Since there were challenges with the collecting and measuring the accurate income and expenses, wealth index was a viable alternative to measure the HH economic status. The wealth index was created using the Principal Component Analysis (PCA) (WFP, 2017). The following steps were included to calculate the wealth quintile.

- The descriptive analysis of the variables/assets selected and measured for the wealth index was carried out for their frequency and percentage. The assets owned or ticked by more than 95% were telephone, house roof materials (concrete, tiles, galvanized iron and rock), room crowding (5 or fewer people), lighting type (electricity or gas), water source (piped into dwelling or borehole with pump or public tap or tank water) and toilet (flush to piped sewer system/septic tank/pit latrine or ventilated improved latrine). These assets were excluded from the analysis, as they would not help to distinguish between the poor and rich.
- The PCA was run for the remaining assets. The Kaiser-Meyer-Olkin Measure value of equals to 0.6 was accepted. In addition, the variables with high value (above 0.9) and low value (<0.1) were checked but didn't hadto remove any of

them.

- Finally, a wealth index was created and then wealth quintiles. The respondents were divided into five wealth quintiles, where the quintile 1 represented the poorest and quintile 5 represented the richest.
- The graph cross-tabulating wealth quintile and selected variables/assets was plotted to ensure that the appropriate wealth quintile was created.

Fifth, the outpatient, chronic illness and hospitalization visit and expenses between the post intervention and control group was measured using chi-square and Wilcoxon sum rank test.

Sixth the catastrophic health expenses (CHE) incurred due to outpatient, chronic illness and hospitalization expenses was calculated and compared between pre and post intervention group and control group. The CHE was calculated for outpatient and chronic illness expenses jointly as both expenses occurred 30 days before the data collection, while CHE for hospitalization expenses was calculated separately as the expenses occurred within 12 months. The CHE was calculated at 40%, 30%, 20% and 10% threshold of the HH capacity to pay (non-food expenses) as suggested by (O'Donnell et al., 2008). The distribution of catastrophic expenses across the wealth quintile was also analyzed.

Table 8: Measurement of outcome evaluation variables

Independent Variables	Measurement Scale	Statistic measurement
A) Socio-demographic characteristics		
Age	Ratio	Percentage, Mean, SD
Gender	Nominal	Percentage, Number
Education	Nominal	Percentage, Mean SD
Occupation	Nominal	Percentage, Mean, SD
Income	Nominal	Percentage, Mean, SD
Religion	Nominal	Percentage, Mean, SD

Household information • #of household residents • #of elderly per household • # of children per household • # of individual with chronic disease	 Ratio Ratio Ratio Ratio	 Number, Percentage Number, Percentage Number, Percentage Number, Percentage
Dependent variables		
1) Monthly out-of-pocket health expenditure 2) Catastrophic health expenditure	Nominal Nominal	Mean, SD Mean SD

3.2.13 Ethics

As discussed under the section 3.1.13

CHAPTER 4

RESULTS

The chapter presents the key study results based on the study objectives. The study had three general objectives as follows

1. To assess the implementation of NHI Program in-compliance with the Standard Operating Procedures (SOP) and Operational Rules (OR).
2. To evaluate the implementation process of Nepal NHI program.
3. To evaluate the effectiveness of the Nepal NHI program

The study was conducted in two phases, with the first phase to accomplish objectives 1 and 2, and the second phase to accomplish objective 3. The first phase was based on mixed qualitative and quanitative methods. The qualitative part, using IDI with key informants and FGD explored the NHI implementation context (political support, health financing, risk pooling approach), the organizational structure and capacity, health service provider delivery and feedback mechanism

The second phase study was based on quantitative method to asses the NHI effectivess in-terms of reduced NHI members' monthly health expenses (monthly and catastrohic) and equitable distribution of health expenses .

4.1 Objective 1: Process evaluation- NHI compliance study

Objective 1 was only partly achieved through literature review (LR) due to two reasons. Firstly, the Standard Operating Procedures (SOP) employed during the first NHI implementation years (2016-2018) were no more relevant during the data collection (2019-2020) because they were replaced and consolidated into the new Operational Rules (OR). Secondly, newly formulated OR overlapped with the time of the data collection and there was not enough implmentation time to make an assessment possible. The LR (section 2.4.2- Table 1) therefore analysed key NHI guiding documents that included NHI Policy (2014), NHI Act (2017) and Operating Rules (2018). In summary the Act hadprovided a stronger legal and political foundation to the program and strengthened it by embracing the lessons learned during the two-year implementation before its enactment, including mandatory enrollment, autonomous HIB, and subsidy to the poor and targeted populations, and integration of the formal sector. However, the Act and the subsequent regulations failed to translate numerous aspects of the policy into practice. In particular, an inadequate guideline to ensure the quality of health service delivery and the vision of broader multi-stakeholder board members of HIB translated into limited members with heavy dominations from MoH representatives.

4.2 Objective 2 NHI Implementation Process Evaluation-Qualitative result

A total of 28 in-depth interviews (IDI) and six focus group discussions (FGDs) were conducted for the qualitative study and the respondents' information is presented in table 9 and 10.

Table 9: IDI respondents' information

S.N	Sex	Position and location of work	Years of experience
Experts			
1	M	Public Health Expert/Kathmandu (World Bank)	20 years
2	M	Professor and Independent consultant/Kathmandu	20+ years

3	M	Program Coordinator/Kathmandu (Save the Children)	15 year
4	M	Project Manager and Senior Editor/Kathmandu (KOICA, Journal of Public Health)	10 years
5	M	Public Health Expert/Kathmandu	20+ years
6	M	Technical Advisor-Health financing/Kathmandu (GiZ)	
7	M	Project Officer/Kathmandu (GiZ)	
HIB Central Office Staffs			
8	M	Executive Director/Kathmandu	20+ years
9	M	Deputy Secretary (Accounts Department)/Kathmandu	
10	F	Public Health Officer (Complain Handling Department)/Kathmandu	
11	F	Consultant (Claim Review Department)/Kathmandu	
12	M	Public Health Officer (Information and Communications Department)/Kathmandu	
13	M	Health Assistant (Training Management Department)/Kathmandu	
14	M	Public Health Officer (Planning Department)/Kathmandu	
15	M	Public Health Officer (M&E Department)	
HIB Provincial and district staffs			
16	M	Enrolment Officer/Bhaktapur	3 years
17	F	Enrolment Officer/Bhaktapur	3 years
18	F	NHI Provincial Manager/Bhaktapur	3 years
19	M	NHI Provincial Manager/Kaski	18 months
20	M	Enrolment Officer/Kaski	3 years
21	F	Enrolment Officer/Kaski	3 years
22	M	Enrolment Officer (Chitwan)	3 years
23	F	Enrolment Officer (Chitwan)	3 years
Health Service Providers			
24	M	Hospital Manager/Bhaktapur (Nepal Korea Friendship Municipality Hospital)	

25	F	Focal Person/Bhaktapur (Nepal Korea Friendship Muncipality Hospital)	10 years at the hospital
26	F	NHI Focal Person and Accountant/Kaski (Jana Maitri Sishu Hospital)	1 year as NHI focal person
27	F	Acting Medical Superintendent/Kaski (Jana Maitri Sishu Hospital)	9 months as Superitendent
28	M	NHI Focal Person/Chitwan (Bharatpur Hospital)	2.5 years as NHI focal person

Table 10: FGD participants' information

S. N.	District	# of participants	Nature of participants	Venue
FGD with Health Service Providers				
1	Bhaktapur	8	Senior and junior staff nurses, nurse midwife, and auxiliary health worker- with years of working experiences ranging from 2.5-15 years.	Nepal Korea Friendship Municipality Hospital
2	Kaski	6	Senior and junior staff nurses, nurse midwife, auxiliary health workers with years of working experiences ranging from 2-8 year.	Jana Maitri Sishu Hospital
3	Chitwan	7	Senior and junior staff nurses, nurse midwife, auxiliary health workers with years of working experiences ranging from 2-8 years.	Bharatpur Hospital
FGD with Enrolment Assistants				
1	Bhaktapur	7	Enrolment assistants with working experiences from 6 months to 3 years. Most of them were female community health volunteers	Pre-arranged venue

2	Chitwan	7	Enrolment assistants with working experiences from 6 months to 3 years. Some of them were community health volunteers.	
3	Kaski	6	Enrolment assistants with working experiences of 3 years. All of them were female community health volunteers.	

Using the 'Grounded theory analysis' of the information gathered through the IDI and FGD, twelve key themes were identified:

1. Political leadership and NHI policy formulation
2. Health Insurance Board governance and leadership
3. Organizational structure and capacity
4. Financing of NHI program,
5. Human resource (of HIB and service providers)
6. Enrolment of members
7. Health Service Delivery and benefit package
8. Payment for NHI service providers
9. NHI program and service quality monitoring
10. Health Service utilization amongst NHI members
11. People's awareness and understanding

4.2.1. Political leadership and NHI policy formulation

4.2.1.1 Political leadership: NHI received huge political support to get the program started. The parliament unanimously endorsed the NHI Policy and the Act, and the Ministry of Finance (MoF) approved the funding. The political support, as per experts, however, was primarily geared towards accumulating the votes during the general election and was least concerned about the design and strengthening of the program service delivery and quality of care but rather they added complexity to the

challenging situation of HIB. The process resulted in sparse studies and stakeholder consultation to design the program.

There was no objection politically from anywhere regarding NHI.The declaration letters of different political parties gave priority to NHI. There was no objection observed during the discussion in the Parliament. (Expert)

The political enthusiasm at the provincial, however, hadyielded some positive results during the NHI implementation. The local governments in numerous districts offered to pay the premium for the poor and elderly and it proved to be beneficial for the program since the identification of poor was a huge hindrance to initiate the subsidy for the poor populations as stated in the Act.

4.2.1.2 Evolution of NHI and policy formulation

Very little research was conducted and few papers in gray and published literature can be found on NHI in Nepal. In particular, there aren't any documents available at public domain on the inception of the program like feasibility study, NHI design discussion, costing of the benefit package etc. Notable exception was World Bank base-line study in three districts in 2014 (WorldBank, 2014).

Thus, this study relied heavily on the expert respondents in documenting and analyzing the evolution and design of NHI in Nepal. The experts stated that politicians largely envisioned the NHI as a tool to reduce the OOP expenditure. The OOP was as high as 70% of the current health expenditure in 2000s, which in 2006 led the government to introduce its ten-point position paper for the free health care program with focus on essential health care services. Another impetus to NHI design, according to the experts, was provided by the community-base health insurance (CBHI). The CHBI program was implemented in six districts in 2003 but the program could not sustain due to smaller coverage and voluntary enrolment (GiZ, 2012). However, the CBHI offered insights to design the NHI.

The current NHI model was designed by looking at CBHI model and also by analyzing modalities used by other countries. Expert, Development Agency (KOICA)

With these backgrounds, the NHI policy was formulated in 2014 and the Act was endorsed in 2017, four years after the implementation of the program. The policy aimed to enhance financial protection against ill health mainly through the prepayment and risk pooling mechanism and this was the first policy in health that introduces the concept of risk pooling. Please refer to the literature review for the details of the policy. The policy was deemed to be progressive and upholds the principles of NHI like reduced OOP, equitable allocation of funds, health prevention activities, multi-sectoral collaboration, autonomous entity for the management etc. In addition, majority of the experts feel that the Policy can contribute to achieve Universal Health Coverage (UHC). The NHI program covers all the three dimensions of UHC, i.e. reach out to the poorest, risk sharing and improving the service provision. The experts also stated the NHI policy could be a significant financing tool if the risk pooling was successful by achieving a large number of policy subscribers.

It is bit difficult to call it a financial tool because unless everybody is enrolling there will not be risk pooling and money will not generate. Expert, Development Agency (World Bank)

There were subtle differences in opinions if NHI was initiated on timely manner in Nepal. The issue of delay was compared with other low-income countries, which started the NHI quite a time ago. Some experts argued that it's timely as Nepal already had a free health care program. Other stated that such comparisons were not rationale as the government decides for such programs based on the need. While few other felt that NHI came late in Nepal. They argued its due to lack of understanding on NHI and commitment from the government.

4.2.2 Health Insurance Board (HIB) governance and leadership

4.2.2.1 HIB Governance and Leadership:

HIB was headed by the executive director (ED) as the executive head and governed by nine board members. The leadership and governance at HIB was fragile. The ED who heads HIB was changed four times as of July 2020. The board members were only appointed after enacting the Act, and out of the nine members, only seven were appointed by the data collection time. Though the Act foresees a mix of three experts and two insured person in the board, the insured person were yet to be nominated. The ex-ED stated that board meetings' frequencies hadincreased with slight progress on the board functioning, but the overall governance functions remain weak.

4.2.2.2 Relationship of HIB with the Ministry of Health (MoH):

The NHI was born in the MoH, which groomed the program under the semi-autonomous body called *Social Health Security Development Committee* until the Act introduced the fully autonomous HIB. The experts and HIB staff stated that there was a huge influence of MoH on HIB, which was detrimental to the program. The influence was partly due to contradicting clauses in the Act and other aspects. HIB had not yet formalized its organizational structure and human resource, which requires approval from the MoH as per NHI Act 2017 (Section 3, clause 15- sub-clause 5). The recently resigned ED stated that he could not receive such approval for a year. Similarly, HIB was paralyzed to make effective coordination with the line-ministries for the program's effective implementation, without MoH. The influence in the monitoring of the health services is explained under section 4.2.9.

The Act says it is an independent body, but there is no such situation to be independent in behavior...[as]… itself cannot do anything for the coordination with various government bodies or for drafting the policy, it to go through the MoH. (HIB Central Office employee)

4.2.3 Organizational structure and capacity

The HIB currently hadan ad-hoc and temporary organizational structure with a central office of 10 departments (ED office, administration, finance, planning, training, complaint management, M&E, claim, communication, and IT) and one district office in each implementing district (PM, EO, finance, and EA was differing in numbers by districts). The PM oversees several districts.

The experts and HIB ex-ED agreed that there was a lack of robust planning, discussions, and guidelines, with negative consequences, for the organizational development on governance and leadership, human resource, finance, enrolment, communication, payment mechanism, and M&E.

We do not have employees' by-laws, financial by-laws, by-laws about benefits and facilities of board members, and operational by-laws. In the beginning, we only gave importance to the program and its expansion, but until and unless there is no system, rules to govern it, there cannot be a future of any program. (ex-ED-HIB)

4.2.4 Financial resources

The NHI program's key funding sources were tax funds and collected premiums. In practice, it was fully financed through tax, although unclear till when this would continue. The collected premium was not utilized as mandated by the Act as there was no guideline to use it, and there was confusion over un-used premium resting in HIB district accounts.

We have collected the premium amount in every district. However, we have not been able to unite that money and put it in the Central fund account. (HIB Central Office employee)

The Act mandates to use tax money to pay 50% premium for FCHV and full premiums for poverty cardholders, elderly above 70, disabled, people living with HIV, MDR TB, and leprosy patients. At complete NHI coverage, the total annual subsidized premium would require around NRs 23,335 million (Based on the calculations done by the Principal Researcher, 2019) (USD$: 1993.6m; PPP$: 686.7),

or around 41% of the total government health budget of FY 2018/19, which was NRs 56,420 million (USD$: 4820.16; PPP$: 1660.4). HIB's total budget allocation in 2019 was approximately NRs 6,000 million (USD$512.6m; PPP$: 176.6). It needs to be increased by four folds just to pay to subsidize premium, which looks unlikely given a stable government health budget over the years. However, it could be feasible since the NHI was a top government priority unrelated to the health budget if the economic growth continues. The Act invites local and federal government to contribute to the subsidy, and it was practiced in the study districts, including non-governmental organizations' support to pay the premium for the poor.

Table 11: The government premium expense on annual basis

S. N.	**Pop group**	**Source of data**	**# of pop**	**Total premium NRs**	**Amount in USD**
1	Poor populations	Economic Survey 2017/18, Ministry of Finance, Nepal	21.6% of 29936032 = 646,6182.91	226,316,370,00	
2	Elderly populations		111,2057	389,219,950	
3	Disable populations		39655	138,792,500	
4	Leprosy patient		3215	11,252,500	
5	People living with HIV	UNAIDS Nepal Country factsheet 2018	21000	73,500,000	

6	MDR TB patients	National Tuberculosis Program, Annual report 2018	450 (every year)	1,575,000	
7	FCHV populations	Ministry of Health https://www.mohp.gov.np/eng/program/reproductive-maternal-health/female-community-health-programme	51416	89,978,000	
Total				23335,954950	202921347.4

4.2.5 Human Resource

Human resource was the most pressing and challenging issues for HIB because it was not planned robustly and the expansion of the program did not factor in its additional need. The number of staff was inadequate, does not possess required skills and knowledge, hadno proper strategy for capacity development, was temporarily seconded from MoH with a few consultants with a temporary contract, and local staff (EA) were inadequately incentivized.

The numbers of staff were inadequate in most of the central HIB departments, and limited staff was overburdened by the increasing routine workload preventing them from performing strategic programmatic work. For instance, though it was not their usual task other than claim review and disbursement, the central claim department was not able to focus on the assigned fundamental tasks like a review of health services benefit package, drug costing, and timely disbursement to the service providers. The repercussions were high drop-outs due to dissatisfaction over the services. The service providers, too, confirmed the delayed disbursement.

Due to the claim's volume, now we have not been able to give attention to costing and revision of the benefits package. Otherwise, this same team used to review them. (HIB Central Office employee)

Similar scenarios of inadequate staff prevail at the district offices. The EOs were so few that despite standard procedure to meet up with the EA every 15 days, they meet them, hardly once in several months. The EA confirmed this during the FGDs. Similarly, the number of EA falls short in rural places, where the necessity was high, as the district offices cannot recruit them.

They (EO) had said that they would visit us (EO) every 15 days to monitor our work and support us, but they have not been able to do so. (EA)

Since most of the staff in central HIB were from MoH, they lack skills and knowledge necessary for the NHI program, e.g., none of them were health economists or insurance experts, or risk managers. Besides, HIB staff stated the lack of strategy for their capacity development as training was in-consistent, in-adequate, and not focused on key functions. Besides, most HIB staff seconded from the MoH can be recalled by the Ministry anytime, and HIB would lose the trained staff.

HIB is about to get in huge trouble now because most of the employees are from MoH, and they have to go back after the adjustment. (Expert)

Lack of skills, knowledge, and inadequate training remain the same for the district staff. They were all learning by doing. Besides, without criteria on the qualification for EO, the HIB regulation hadonly outlined their tasks (HIB Regulation Section 2, clause 11), which experts stated of not having clarity in the recruitment of EO. HIB was yet to develop the qualification for EO.

There is no clarity in the eligibility of EO that is fit for the district HIB structures. (Expert)

The EA receives 10% of every successful enrolment amount without any other benefit, which many HIB staff said to be inadequate, as it requires travel and communication expense. It was particularly true in rural communities with difficult geography and population difficult to convince to enroll, meaning lots of time and effort wasted without any incentives. This frustration resulted in high EA drop-outs.

If we look at their labor/efforts, they have to do lots of phone call, have to operate vehicles for a faraway place. So, in general, I do not think it is adequate. HIB District staff

Besides low economic incentives for EA, the NHI Operation Rule 2018 prioritized the Female Community Health Volunteers (FCHV) for the EA, who were quite overburdened being mobilized by numerous health and community programs (Khatri RB et.al. 2017). In particular, it could negatively affect the national health promotional programs led by FCHV by adding more roles.

The health service providers, particularly hospitals, had assigned a NHI focal point to coordinate program within the hospitals. The practice of such focal point however was not consistent over the hospitals. Within three study reached hospitals, all had NHI focal points however only two had separate and paid focal person with specific roles and responsibilities. The remaining one was not paid and was a regular staff of the hospital and the role was confined with claims rather than coordination. The study team also reached out a fourth hospital to compare the roles of the focal point. It was also voluntary, a regular hospital staff and had numerous confusion with the role including the feeling of overwhelmed with additional responsibilities.

4.2.6 Enrolment of members

The enrolment's key strategies were door-to-door visits by EAs to facilitate the registration process and awareness through various media and dissemination of IEC materials. Besides, the program mobilizes community and local political leaders to generate demand. The adopted approaches were strategic and congruent for the informal sector. However, had numerous implementation challenges like the heavy

reliance on the EA without adequate support mechanism (see human resource section), lack of communication strategy and guideline for mandatory enrolment, low benefit package, poor health service delivery and access to the service sites, incomplete distribution of poverty card and difficult rural geography.

The demand generation, awareness activities were poorly coordinated in the absence of a formal communication strategy. The influencing community stakeholders' were not effectively oriented and mobilized due to inadequate EOs. The awareness activities were done through diverse government, private media at the national and district level. However, they are not able to tap popular national media like Kantipur, particularly the social media (Facebook, Twitter) that hadlarge potential with coverage of approximately 30% of the total population and an expanding (Digital 2020). The HIB central office develops IEC materials that were not community friendly, as the EA reported, and were not consistently updated.

The challenges regarding the brochure's distribution are that the communities neglect to use them due to insufficient information on insurance benefits and unclear content. (EA)

HIB had not developed the guideline for implementing mandatory enrolment. With 62.2% of the employment in informal sector (CBS, 2020) and weak communication strategy, the mandatory enrollment would be difficult (see discussion).

NHI enrolment was also not much valued because people do not trust public health facilities due to their poor historical quality, inadequate diagnostic support, medicines, and geographical coverage. Some rural areas were 80-100km from the health facility linked to the NHI service provider without proper transportation.

More than 100,000 people are enrolled in the Kaski district, but at Rupa and Annapurna Rural Municipality, there are no public hospitals or any PHCC. (HIB District Office employee)

HIB staffs stated that they could not identify and enroll the poor without poverty card, but the distribution of the card was completed only in 37 out of 76 districts until 2019. The experts added the distribution of the card was falsified and politicized.

The government poverty card to identify the poor is not distributed in everywhere. It is a provision identify the poor for subsidy. (Expert

4.2.7 Health service delivery and benefit package

4.2.7.1 Health Services and delivery in NHI

The NHI program envisioned for the following health services as mandated by the Act

- Health behavior promotion and prevention activities like yoga, nutrition, education and psychosocial counseling
- Safe motherhood, vaccination, reproductive and family planning services
- Curative services including outpatient, inpatient, emergency, surgery, medicine and medical assistance
- Rehabilitative care
- Ambulance
- Other services

In-spite comprehensive health services outlined in the Act, the NHI program was focusing only on the curative services including the family planning services. There is no guideline or strategy to implement the health prevention and promotion activities or rehabilitative care. The experts stated that NHI was criticized of being a medical insurance because it was only covering curative services.

All the respondents stated that the quality of service delivery was poor- in general. The maximum number of complains were related to the poor health services as per the HIB complaint department. The district NHI officers and managers also stated that the key reasons for non-renewal were poor health services. The enrolment assistants face a lot of negative comments and criticism from the members due to poor services. The

service providers too agree that the public services had numerous challenges, which hinder them to deliver quality services.

The key areas of weaknesses as stated by the respondents were unavailability of drugs, negative attitude of health workers and lack of adequate human resource, long waiting hours and lack of services as outlined in the benefit package.

The unavailability of the drug was one of the national health system challenges. The public service providers had to go through the slow government system to procure the drugs, which result in delayed drug delivery. Besides, only cheap drugs were easily available at the public hospital but not the quality and expensive medicine.

The major problem I see associated with NHI program implementation within the service center is the unavailability of medicine at the Pharmacy. An employee, HIB District Office Bhaktapur

Because this is a government hospital….we have to go through the procedure, which takes time for almost about 15-20 days. A health workes, Jana Maitri Shishu Hospital Kaski

The experts stated the health workers were negative towards the NHI program and had considered it as an additional burden. The health workers, during the FGDs, too subtly ventilated their frustrations with the NHI program. They felt that the training program was not adequate for them. The NHI district offices too confirmed that negative attitude of the health workers were observed at the registration desk and pharmacy- in-terms of slow service and ignorant towards the client.

If I want to run HI program effectively in my hospital, I have to set up a pharmacy, have lab services, diagnosis services and all….My clinic will dry up because HIB will not make an agreement with the clinic. In that way also, inside MoH they are never positive. Expert, Development Agency.

One of the participants shared her own experience when she and her mother went to have a video x-ray in a hospital, they were told to come after a week without providing any valid reasons. So they had to go to other hospital to get the service. An employee, HIB District Office Chitwan

The health workers were pressed with inadequate human resources to serve the increased flow of the NHI patient. In contrast, the preparedness of the hospitals was weak and it's also not a strict requirement for NHI. The hospitals within the study prompted for an improvement effort by having a separate registration system and pharmacy for the NHI members. However, such efforts were ad-hoc and not efficient. Even with separate system for NHI members, the waiting hours and crowd management had not improved significantly.

With the increasing rate of enrollment of people, there need to be increase in the number of ticket counter, skilled health service provider in OPD counter need to be recruited to provide services. A health worker, Bharatpur Hospital Chitwan

Inability of the hospitals to provide all the services included in the NHI program was yet another significant problem in the service delivery. The reasons behind were lack of adequate lab facilities, infrastructures and technology within the public service providers. The referral services without availability of public hospitals in nearby distance the referral services seem to be not effective. Besides, very few private hospitals were on the list of referrals, the respondents claimed that the clients had no choice than to visit other private hospitals through OOP.

We are not able to provide all the services included in the NHI package. A health worker, Jana Maitri Shishu Hospital Kaski

4.2.7.2 Benefit package

The NHI members receive a benefit package of worth 1000,000 NRs (1000 USD) after the premium payment of 3500 NRs (35USD), for five family members. There

wasn’t adequate scientific basis or exercise on setting up the premium amount and the benefit package. The experts including HIB mentioned that the government, based on the rationale expectations, made the decision. While other mentioned that willingness to pay was considered to decide the premium amount. However the comprehensive study was conducted while deciding the ceiling of both premium and the package.

It was planned on an ad hoc basis and this is not something that came through a study and analysis. Expert, Development Agency (KOICA)

Though the cap of the benefit package was not scientific, the rates and different sub-packages of the benefit package were decided through costing exercise as per the experts. Limited field level studies, involving health experts and economists, were conducted to decide the cost of the packages. The key services included in the benefit package include the following

- Laboratory tests
- Radiological and diagnostics services
- Medical services (emergency, inpatient and outpatient)
- Cardiac related services
- Cancer related services
- Surgical services
- Medicines (allopathic and Ayurveda)

The exhaustive services list and rates were available in the HIB website.

The new disease pattern evolves everyday and market fluctuates which requires a close monitoring, so there was a need for a systematic review of the benefit package on periodic basis. However, such revision was ad-hoc in practice at HIB and due to heavy work-load with the department responsible for the review of the package, such revision had not taken place for long time. The existing approach was inefficient and had serious programmatic implications.

We don't have a separate drug-costing department. There were sub- committees in need basis. In every one or two years we revise the package. It has been almost 1 and half years since the last revision of packages. An employee, HIB Central Office.

In addition, all the respondents claimed that the benefit package was not adequate mostly in-terms of the services. The 100k NRs was for the five family members meaning each would receive the support of 20k NRs only. Though not everyone would fall sick at one time, the respondents feel that its not adequate.

Benefit package for now can be considered enough, although it will not be enough in case of chronic illness. In general it is enough- ED, HIB.

The study did not delve into package inadequacies of the package in-terms of the services. The general responses, from the HIB district staffs and health workers were with insufficient drugs (especially expensive ones), major surgeries and co-financing with the surgeries and long term contraceptive.

The service of the removal of the long-term contraceptive devices such as IUCD, Implant should also be covered by the insurance policy. A health worker, Jana Maitri Hospital Kaski

The expensive services being provided by the hospital such as operations, are not compensated well by the insurance. This issue is important for the sustainability of the hospital as well as NHI program. A health worker, Jana Maitri Hospital Kaski

4.2.8 Payment for NHI service providers

HIB can only purchase the first point of contact (FPC) services who were public providers and were selected without competitive bidding due to a limited number of public providers. The FPCs were health facilities selected by the insurees during the enrolment process as the first facility to receive the services. HIB had the authority to cancel the contract with providers if poor service delivery or a false claim was

notified; this cancellation was almost impossible to implement due to the unavailability of alternative providers.

Because it was a governmental hospital, it was automatically selected, and we didn't have to prepare after we got enlisted under the NHI. (Hospital Manager)

The payment was made through fee-for-service (inpatient and diagnostic services) and case-based payment (outpatient and emergency services) based on the rates defined in the benefits package. For both cases, the payment was processed digitally through IMIS (Integrated Management Information System) software and managed jointly by the claim and IT department. The claim process had undergone numerous improvements with external development partners' support, and numerous trainings on IMIS to the service providers was organized. However, the practice does not fulfill the Act (Section 2- clause 11), which mandates for capitation fee. The ex-ED stated that HIB couldn't implement the capitation model; in-spite Nepal primary free health service was paid through capitation approach (Torees LV et.al. 2011).

4.2.9 NHI program and service quality monitoring

There were two approaches to monitoring within HIB.

4.2.9.1 Complaint mechanism

HIB set up a centralized complaint mechanism to receive direct responses from the NHI members and stakeholders (e.g., community leaders) via toll-free numbers, emails, in-person visits, and the formal government channels. The volumes of complaints increased significantly, over the years, primarily due to a lack of proper information dissemination on NHI and poor health service delivery. To respond, it delegates the issues to the concerned district offices for mitigation, conduct additional monitoring and training. However, low human resources and inadequate M&E budgets have hindered an effective response.

The complaints mitigation includes monitoring the sites but the department lack budget for adequate monitoring visits. (HIB Central Office employee)

4.2.9.2 Program and health services quality monitoring process

HIB had no M&E guideline for program and health services quality monitoring but a separate M&E department. Without a guideline, there was no strategy on the frequency and content of the regular monitoring visits. The program monitoring activities were carried out through regular site visits and complain based ones, annual reflection meeting with EAs and service providers. The staffs claimed that monitoring visits provide insight on HIB performance on the ground. However, it's not clear how the program utilized the insights for program improvement. The monitoring approach combines supportive supervision and mentoring, on a routine basis, to EOs and service providers via specific departments (like claim, IT, etc.).

The Act (article 15) delegated HIB board members to standardize service providers' quality control. However, the service providers were under MoH's jurisdiction, and MoH representatives dominate the HIB board members. In-spite of HIB being independent to purchase and conduct quality control of the services, the experts claimed that the domination of MoH representatives in the HIB was a conflict of interest, as it would protect the providers' interest. The ex-ED confirmed that HIB staff couldn't negotiate with the health providers for quality services due to power dynamics and lack of adequate mandate. The PM agreed that their role was more of coordination. HIB staffs also lack skilled human resources for quality monitoring.

This is a program under the Government of Nepal, so the relevant Ministry performs the service monitoring process. We just do the coordination. (HIB District Office employee)

4.2.10 Health Service utilization amongst NHI members

The respondents from the HIB district offices and the service providers claimed that NHI led to improved health seeking behaviors including the moral hazard. The indications for the improved health behaviors included early diagnosis of the disease, frequent follow up and in general the members seem to be more concerned about the health. The health workers stated that before NHI, people didn't visit the hospitals even if they have mild symptoms but now the NHI members even come for the general check-up.

I must say the behavior has increased because before even any uneasiness in health happens people do not care instantly but now when they feel difficulty they come and do checkups. People are concerned of their health these days. A health worker, Jana Maitri Shishu Hospital Kaski

The health workers mentioned that the members with hypertension and diabetes majorly visit the hospital, while the general body check-up was quite high too. In general, 50% of the families use up their 100% of the benefit package in 5-6 months period. While some others used only 500 Nrs to one thousand rupees and there were also members who don't use their package at all. The health workers from Kaski stated that once the member used off their benefit package, 50% of them reduce their visits to the hospital while the remaining 50% still actively make their visit. If this data was true at national level, NHI program was definitely successful to improve the health seeking behaviors amongst the members.

The respondents also indicated the moral hazard amongst many members, meaning over-utilizations of the services draining out the scarce resources. The features of the moral hazard as reported were unnecessary visits to the hospital without tangible reason and request for the unnecessary referral and diagnosis. The same members with moral hazard also tend to argue with health workers to transfer the remaining package to next years or so. The study did not collect data on the implications and intensity of the moral hazard but it requires deeper investigation given that public facilities were quite stretched thin in-terms of availability and many didn't have adequate resources.

The NHI members want to take unnecessary investigation because they have insurance. Without the doctor's recommendation, patients come to us with the list of services they want, for the unnecessary referral. A health worker, Jana Maitri Shishu Hospital Kaski

4.2.11 People's awareness and understanding

This section delved into general public perception towards the NHI program and how the behavior, attitude and understanding of the public would impact the program. The experts emphasized that improving the financial health investment behavior of the public was the NHI short-term objectives. The study showed that the practice of insurance, in-terms of front-loading of the private money was not a widely accepted practice in Nepal, especially for the populations under poverty. It's true for other general populations, with average income, in the poor and developing countries.

It is about behavior change for now. It is the primary thing…. And it will not itself be sustainable right away. Therefore, we are moving towards a behavior change not with a large-scale protection design. Expert, Health Economist

The respondents from the HIB district offices substantiated the difficulties in convincing the people. In general, two groups of people were quite difficult to motivate. Firstly, the healthy population with capacity pay and secondly the ultra-poor from the rural areas. The people able to pay enquire all the details and complete the form too but they do not pay the premium right way said the enrolment officers. They only get prompted to pay and activate the package once someone in their family members needs the service. Since such immediate activation of package was not possible, NHI lost the member. While other young and healthy populations did not show interest stating that they were not sick. The ultra-poor had difficulty in paying the premium as discussed in detail under the Pooling section.

The understanding and information about the program was low amongst the enrolled members as well, stated the FGD respondents. This led to numerous confusions while accessing the services. The confusions were with the benefit package, drugs and package activation time once the registration was complete. Besides, the members' expectations to receive quality services (availability of good drugs, more facilities, shorter waiting time etc) seemed to have increased, but the providers remain same or became worst during the initial phase due to massive increment of the patients. This led to increased flow of complaints, conflict with health workers, blaming to the enrolment assistant and more importantly the dropouts.

Because of the lack of awareness among the people, we have faced few conflicts with the clients. A health worker, Bharatpur Hospital Chitwan

4.3 Objective 3- NHI effectiveness evaluation: A cross-sectional survey results on NHI members intention to renew their annual membership

4.3.1 Participants' characteristics

A total of 182 respondents recruited from three districts (Bhaktapur, Chitwan and Kaski) were interviewed. The respondents were the existing NHI members. The table 12 provides the characteristics of the household (HH) head as the respondents. About 86% of them intended to renew, while 14 % did not intend to renew (not tabled). The respondent's mean age was 48 years (SD=15 years). 56% of the respondents were female, and 46% of the HHs had at least one elderly person. 66.5% of the respondents had attended formal education, while 24% had a college or university-level education. The HH head's employment in the informal sector was very high (89%). The respondents' overall satisfaction with the health service was very high at 86%; however, only 30.2% increased their facility visits after joining the NHI membership. Similarly, only 18.7% of the respondents used 51-100% of the benefits package.

Table 12: Characteristics of the HH head (N= 182)

Characteristics		Frequency	Percentage
Age of the participants	18-49 years	98	53.8
	50-100 years	84	46.2
Biological sex	Male	80	44
	Female	102	56
Presence of elderly in the HH	No	98	53.8
	Yes	84	46.2
Education of the participants	No education to primary	100	54.9
	Higher Secondary to university	82	45.1
Occupation of HH Head	Formal employment	20	11
	Informal employment	162	89
Monthly income of the HH	10000 to 30000 NRs	148 *	81.3
	30001 to 10000 NRs	30	16.5
NHI information clarity	No	12	6.6
	Yes	170	93.4
Usage of benefit package	Upto 50%	148	81.3
	51-100%	34	18.7
Availability of drugs in First Point of Contact (FPC)	No	144	79.1
	Yes	38	20.9
Overall health service satisfaction	No	25	13.7
	Yes	157	86.3
No. of times membership renewed	0 times	41	22.5
	1 time	119	65.4
	2 times	22	12.1
No. of FPC visits in last nine months	1 to 6 times	127	69.8
	More than 6 times	55	30.2
Increased frequency of visits after NHI membership	No	127	69.8
	Yes	55	30.2

* 4 missing values

4.3.2 Odds of intentions to renew the NHI annual membership

The univariate analysis (table 13-unadjusted) showed that HHs with a higher monthly income had lower odds of renewing the NHI membership (unadjusted OR: 0.36; 95% CI: 0.14-0.93). While HHs with overall satisfaction with health (unadjusted OR: 6.2; 95% CI: 2.52-15.23), increased frequency of visits after NHI membership (unadjusted OR: 5.86; 95% CI: 1.33-25.80), and a number of FPC visits in the previous nine

months (unadjusted OR: 5.86; 95% CI: 1.33-25.80) had higher odds of renewing their membership.

Out of four variables significantly associated with intention to renew in the univariate analysis, three factors were found significant in the multivariate analysis (table 13-adjusted result). The HHs with higher monthly income had lower odds of renewing their annual NHI membership (adjusted OR: 0.14, 95% CI: 0.03-0.58) (p=0.007). Similarly, HHs with overall health service satisfaction (adjusted OR:3.59, 95%CI: 1.23-10.43) and increased frequency of visits after NHI membership (adjusted OR: 10.09, 95% CI: 1.39-73.28) had high odds of renewing their membership.

The variables with high odds to influence the renewal intention, though not statistically significant, were HH head's occupation and HH members who had visited the health facility more than six times. The HH head from the informal sector employment category had lower chances of renewing their membership (adjusted OR: 0.13; 95% CI: 0.01-1.08).

Table 13: Factors associated with the intention to renew the NHI annual membership

Independent Variables		**Unadjusted results**		**Adjusted results**	
		OR[a] (95% CI)	P-value	OR[a] (95% CI)	P-value
Age of the participants	18-49 years	1		1	
	50-100 years	1.34 (0.57-3.16)	0.507	1.02	0.81
Biological sex	Male	1		1	
	Female	1.21 (0.52-2.81)	0.661	2.28 (0.68-7.62)	0.181
Presence of elderly in the HH	No	1		1	
	Yes	1.34 (0.57-3.16)	0.507	1.07 (0.27-4.24)	0.920
Education of the participants	No school to primary	1		1	
	Secondary to University	0.36 (0.11-1.15)	0.085	0.51 (0.09-2.86)	0.447
Occupation of HH Head	Formal employment	1		1	
	Informal employment	0.67 (0.15-3.09)	0.609	0.13 (0.01-1.08)	0.060

Monthly income of HH members	10000 to 30000 NRs	1		1	
	30001 to 10000 NRs	0.36 (0.14-0.93)	0.034	0.14 (0.03-0.58)	0.007
NHI information clarity	No	1		1	
	Yes	2.24 (0.56-8.92)	0.252	1.87 (0.33-10.73)	0.479
Usage of a benefit package	Upto 50%	1		1	
	51-100%	2.94 (0.66-13.14)	0.157	2.22 (0.36-13.56)	0.387
Availability of drugs in FPC	No	1		1	
	Yes	3.42 (0.77-15.21)	0.251	2.79 (0.48-16.07)	0.251
Overall health service satisfaction	No	1		1	
	Yes	6.20 (2.52-15.23)	<0.001*	3.59 (1.23-10.43)	0.019*
No. of times membership renewed	0 times	1		1	
	1 time	0.47 (0.13-1.71)	0.254	0.54 (0.13-2.23)	0.393
	2 times	0.27 (0.06-1.25)	0.094	0.31 (0.05-2.03)	0.223
No. of FPC visits in last nine months	1 to 6 times	1		1	
	More than 6 times	5.86 (1.33-25.80)	0.019*	4.33 (0.80-24.42)	0.087
Increased frequency of visits after NHI membership	No	1		1	
	Yes	5.86 (1.33-25.80)	0.019*	10.09(1.39-73.28)	0.022*

a: Logistic Regression
*: Statistically significant at 0.05

4.3.3. Characteristics of respondents not-renewing the membership and their reasons

The study interviewed 61 respondents who had not-renewed the NHI membership. The table 14 presents their characteristics and reasons for non-renewal. The mean age of the respondents was 43 (SD= 13.581 years). 68% had formal education until higher secondary, and 9% had attended the university. The informal sector employees

constitute 80% of the total respondents, and 62% earned more than 30,000 NRs (USD$: 257.6; PPP$ 887.57). Most of them (95.1%) had dropped out after one year in the program.

The top three reasons for non-renewals were health services underutilization (43.3%) followed by poor health services (26.9%) and inadequate benefit package (14.9%). Almost 64% of the respondents were willing to renew their membership upon improved services.

Table 14: Characteristics of non-renewal respondents and their reasons (N=61)

Characteristics		**Frequency**	**Percentage**
Biological sex	Male	29	47.5
	Female	32	52.5
Presence of elderly in the HH	No	35	57.4
	Yes	26	42.6
Education of the participants	Never been to school but literate	14	22.95
	Primary to Higher Secondary	38	62.30
	University	9	14.8
Occupation of HH Head	Formal employment	12	19.7
	Informal employment	49	80.3
Monthly income of the HH	10000 to 30000 NRs	19	31.15
	30001 to 10000 NRs	38	62.30
	I don't know or refused to answer	4	6.56
Membership duration	1 year	58	95.1
	2 years	3	4.9
Reasons for dropout	No financial benefit	4	6
	Inadequate benefit package	10	14.9
	Poor health service	18	26.9
	Never utilized it	29	43.3
	Non-affordable premium	6	9
Willing to renew upon improved services	Yes	39	63.9
	No	3	4.9
	I don't know	19	31.1

The study also collected brief qualitative responses from 45 respondents on their non-

renewal reasons coded into five themes as shown in table 15. Firstly, poor services (48.9%) that included long waiting hours, negative health worker's attitude and lack of proper attention to the insured patients. Secondly, unavailability of drugs that could be part of poor services but was kept separately since 22.2% stated it explicitly. The unavailable drugs included expensive prescribed drugs in particular, causing an increased OOP expense, as they had to buy it somewhere else. Thirdly having no financial benefits, (13.3%) since lack of proper services in the NHI affiliated health facilities caused them increased expenses to access private hospitals. Fourthly, underutilization of the NHI services due to lack of proper information, inadequate support from EA and lack of trust on the public facilities. Fifthly, Inadequate benefit package, reported once only.

Table 15: Non-renewal reasons

	Variables	**Frequency (%)**
1	No financial benefit	6 (13.3)
2	Poor services	22 (48.9)
3	Underutilized	6 (13.3)
4	Drugs unavailable	10 (22.2)
5	Inadequate benefit package	1 (2.2)

4.4 Objective 3 -NHI effectiveness evaluation, pre-post- intervention surveys-: Improving financial risk protection of insured population against health expenditures

A total of 125 HH were enrolled during the pre-intervention survey group but only 100 HH completed the post- survey questionnaire as discussed under section 4.2.1. The duration between the pre-/post-intervention surveys in the intervention group was 17 months.

In addition, 125 HH were interviewed as the control group during the post-intervention survey.

4.4.1 Differences between the 100 intervention HH who completed post-intervention survey questionnaire and 25 who did not

The 25 HH head who did not fill in the post-intervention questionnaire had migrated from their residing place, died or refused to complete the study. In order to have a matched pair analysis, the researcher decided to use 100 HH data from HH who filled in both pre-/post-intervention surveys since the 100 HH sample was large enough to achieve the effect size (required size 96 HH).

All the independent variables and a dependent variable (monthly out-of-pocket health expense) were compared for similarity analyses (see table 16). None of them were significantly different between the 100 respondents and 25 non-respondents in the post-intervention survey. This was suggesting that biases were not included in the results by not analyzing the 25 non-respondents

Table 16: Differences between the 100 HH with filled in post-intervention questionnaire and 25 with pre-intervention only

Variables (continuous and discrete)	**100 HH who completed post-intervention questionnaire**		**25 HH who did not complete post-intervention questionnaire**		**P-value [b]**
	Median (min-max)	IQR	Median (min-max)	IQR	
Monthly HH income	50k (10k-300k)	35k(35k-70K)	48k (10k-150k)	39500(40k-80k)	0.700
Non-food expense	13267 (1067-55017)	9243(8926-18037)	11298 (2964-514150	10111(9552-19663)	0.656
Total out-patient expenses	1200 (60-65k)	3683(850-4500)	1500 (100-38k)	2425(50-2475)	0.100
Total chronic illness expenses	1500 (165-100k)	2750(600-3160)	2100 (180-100k)	3250(0-3250)	0.700
Total hospitalization expenses	30k (5000-600k)	66k(30k-80k)	47k (15k-155k)	0	0.667
Variables (categorical)	**Frequency (%)**		**Frequency (%)**		**P-value [a]**
Family member 1-5	20 (80) 5 (20)		74 (74)		0.615

6-10		26 (26)	
Children 0-3 4-8	 25 (100) 0	 97(97) 3 (3)	 NA[c]
Elderly # (60+) 0-3 4-8	 25 (100) 0	 100(100) 0	 NA[c]
HH Head Sex Male Female	 82 (82) 18 (18)	 20(80) 5(20)	 0.601
HH Head Education No education to middle school High school to University	 52 (52) 48 (48)	 13 (5) 12 (48)	 0.431
HH Head Marital Status Currently single Currently married	 16 (16) 84 (84)	 3 (12) 22 (88)	 0.180
HH Religion Hindu Non-Hindu	 77 (77) 23 (23)	 21 (84) 4 (16)	 0.541
HH Head Employed Unemployed	 83 (83) 17 (17)	 23 (92) 2 (8)	 1.000
HH Member Employed Unemployed	 96 (96) 4 (4)	 22 (88) 3 (12)	 1.000

a: Fisher exact test
b: Wilcoxon rank sum test
c: No statistics computed because of 0 value
k: 000 eg. 5k: 5000

4.4.2 HH characteristics between pre-/post- intervention survey group and end-of-research survey in the control group

The table 17 presents the HH characteristics between pre and post intervention survey and post-interventions survey only in the control group. As detailed in methodology section 3.1 the control group was only measured during the post intervention data

collection. The control group participants were person without health insurance living next door or nearby to a HH from the intervention group. End-of-research-survey here refers to survey carried out for the control group during the post intervention group survey.

All independent variables were not significantly different from pre and post survey in the intervention group except for the decreased number of elderly people (p:0.05) in the post-intervention survey HH. Contrary to this difference, there were no differences between control and intervention groups.

Table 17: HH descriptive characteristics of pre-post intervention survey group and end-of-research survey in the control group

	Intervention Group			**Control group**	
Variables	**Pre-Intervention survey (n=100)** Frequency (%)	**Post-Intervention Survey (n=100)** Frequency (%)	**P-value [a]**	**End-of-research Survey (n=125)** Frequency (%)	**P-value[b*]**
Family member 1-5 6-10	 74 (74) 26 (26)	 66 (66) 34 (34)	 0.289	 77 (61.6) 48 (38.4)	0.504
Children 0-3 4-8	 97(97) 3 (3)	 98 (98) 2 (2)	 1.00	 122(97.6) 3 (2.4)	1.000
Elderly # (60+) 0-3 4-8	 100(100) 0	 100 (100) 0	 NA	 125 (100) 0	NA
HH Head Sex Male Female	 82 (82) 18 (62)	 84(84) 16(16)	 0.791	 108 (86.40) 17(13.60)	 0.667
HH Head Education No education to primary Secondary to University	 52 (52) 48 (48)	 64 (64) 36 (36)	 0.063	 74(59.20) 51(40.80)	 0.151
HH Head Marital Status Currently single Currently married	 16 (16) 84 (84)	 15 (15) 85 (85)	 1.000	 20 (16) 105 (84)	 0.538
HH Religion Hindu Non-Hindu	 77 (77) 23 (23)	 82 (82) 18 (18)	 0.061[b]	 112(89.60) 13(10.40)	 0.419
HH Head			0.001**		

	17 (17)	37 (37)			
Unemployed	83 (83)	63 (63)		57 (45.60)	0.930
Employed				68 (54.40)	
Formal employment	5(5)	5 (5)			
Informal employment	78 (78)	58 (58)			
HH Member					
Unemployed	96 (96)	98 (98)		113(92.60)	
Employed	(4)	2 (2)	1.000	12 (7.40)	0.705

a: Mcnemar test
b: Chi-square test
*P-value reflects relation between post intervention and end-of-research survey in the control group only
** Statistically significant at 0.05
NA: No statistics computed because of 0 value

4.4.2.1 Economic difference between pre-post intervention survey group and post intervention with end-of-research survey in control group

The table 18 portrays the economic situation between pre-post intervention survey group and post interventions with end-of-research survey in control groups. As shown in table the economic situations of the intervention respondents worsened from pre to post survey. The HH Head employment rate decreased from 83% in pre-intervention to 63 % in the post intervention (p: 0.001). The decreased unemployment resulted in 30% reduction in HH monthly income from NRs 50,000 to NRs 34,500 (p <0.001). Since 78% of the pre-interventions' groups HH Head were in informal employment, the COVID pandemic had taken away their jobs. The HH head in formal employment did not lose their jobs. Like-wise the food expense and non-food expense decreased significantly from pre to post survey. The difference in the food and non-food expense was statistically significant after the inflation adjustment in the post-intervention group.

There was no statistical difference in the economic situation between the post intervention survey and the end-of-research control group.

Table 18: Economic situation of pre-post intervention survey group and end-of-research-survey in the control group

Variable	Intervention Groups				P-value [a]	Control group		P-value [b]*
	Pre-intervention survey (n=100)		Post-intervention survey (n=100)			End-of-research survey (n=125)		
	Median (min-max)	IQR	Median (min-max)	IQR		Median (min-max)	IQR	
Income	50k (10k-300k)	35k (35k-70K) 36855.80	34500 (100k-130k)	24250 (26k-50k)	<0.001**	35k (8k-80k)	18k(27k-45k)	0.545
Food expenses	10500 (2500-40k)	7k(8k-15k)	8800 (-2500-23k)	6850(5k-11k)	<0.001**	8k (-7300-83k)	5700(4300-10k)	0.721
Food expenses (inflation adjusted)	10500 (2500-40k)	7k(8k-15k)	8381 (-2381-21905)	6524 (4857-11238)	<0.001**			
Non-food expenses	13267 (1067-55017)	35k(35k-70K)	8840 (1400-22100)	5352(5774-11126)	<0.001**	8090 (3650-22500)	4558(5841-10400)	0.222
Non-food expenses (inflation adjusted)	13267 (1067-55017)	35k(35k-70K)	8419 (1333-21048)	5620(6062-11682)	<0.001**			

a: Wilcoxon Signed Rank Test
b: Wilcoxon Rank Sum test
*P-value reflects relation between post and control group only
** Statistically significant at 0.05
k:000 eg- 5k:5000

4.4.3 Outpatient visit details between pre and post intervention survey group

The table 19 presents the outpatient visit details, disease diagnosed, illness severity, accessed facility and health workers consulted. The outpatient expense was collected for any outpatient visits in the 30 days previous to the data collection.

The self-reported HH outpatient visits decreased from 91% in pre-interventions to 46% in the post intervention (p: <0.001). The potential reasons were explained in the discussion. In total the HH reported to have been diagnosed with 15 illnesses in the pre-intervention while post-intervention respondents reported 13 illnesses. Out of all diagnosed diseases the visits due to injury (pre:9.9; post 4.3), food poisoning (pre:12.1; post 6.5), typhoid (pre: 7.7; post 2.2), common cold (pre:6.6; post 2.2), diarrhea (pre:18.7; post 15.2) decreased; while visits to dental disease (pre:8.8; post 23.9) and fever (pre:19.8; post 21.7) increased.

The post intervention group visited more public facility (71.6%) as compared to the pre-intervention (31.9%) and was statistically significant (p:0003), which was probably due to that fact the Health Insurance scheme had public hospital as the first point of contact. Though not significant, the illness severity increased from 21.60% in the pre-intervention to 38.11 in the post intervention group.

Table 19: Outpatient visits details of pre and post intervention survey group

Dependent Variable	**Pre intervention survey group**	**Post intervention survey group**	**P value[a]**
	Frequency (%)	Frequency (%)	
HH Self-reported outpatient visit			
Yes	91 (91)	46 (46)	
No	9 (9)	54 (54)	<0.001**
HH self-reported diagnosis			
Injury	9 (9.9)	2 (4.3)	
Kidney stone	1 (1.1)	1 (2,2)	
Food poisoning	11 (12.1)	3 (6.5)	
Skin disease	3 (3.3)	1 (2.2)	
Typhoid fever	7 (7.7)	1 (2.2)	
Common cold	6 (6.6)	1 (2.2)	
Dental disease	8 (8.8)	11 (23.9)	
Pneumonia	1 (1.1)		
Headache	1 (1.1)	1 (2.2)	
TB	1 (1.1)		
Jaundice	2 (2.2)	2 (4.2)	
Dysentry	4 (4.4)	4 (8.7)	
Cough	2 (2.2)		

Fever	18 (19.8)	10 (21.7)	
Diarrhea	17 (18.7)	7 (15.2)	
Nasal Polyp		2 (4.3)	
Self-reported illness severity			
No serious	71 (78.40)	28 (60.90)	
Serious	20 (21.60)	18 (38.11)	0.115
Facility visited			
Private	62(68.10)	11(23.90)	0.003**
Public	29 (31.90)	35 (76.10)	
Health workers consulted			
Doctor/paramedic	90 (98.90)	43(93.50)	
Non doctor/traditional healer	1 (1.10)	3 (6.50)	0.625
Insurance coverage			
Yes		2 (4.3)	
No		38 (82.6)	
Partially	NA	6 (13.1)	
Outpatient illness expense payment			
Didn't have to pay		1 (1.6)	
Usual HH income	89 (63.1)	28 (44.4)	
Money from relatives	2 (1.4)	3 (4.8)	
Used savings	47 (33.3)	19 (30.2)	
Investment fund	1 (0.7)	4 (6.3)	
Health Insurance	1 (0.7)	4 (6.3)	
Remittance	1 (0.7)		

a: Mcnemar test
** Statistically significant at 0.05

4.4.3.1 Outpatient visit monthly OOP expense in pre and post intervention survey group

The table 20 presents the outpatient visit monthly OOP expense in the pre and post survey in the intervention groups. The total outpatient OOP expense increased from pre intervention (NRs 1700) to the post intervention (NRs 3900) and was statistically significant (p:0.027). The difference was significant after the inflation adjustment in the post intervention group. The expense increased inspite of lesser outpatient visits in the post intervention (46%) as compared to the pre-intervention (96%). One of the reasons for this increment could be due to increased dental disease visit (from 8.8% in pre-intervention to 23.9% in post intervention), which were costly and not covered by the national health insurance package. In addition, the NHI program did not cover any

expense for 82.6% respondents. Only 4.3% respondents had their expense covered completely and remaining 13.1% had the partial coverage. Upon segregating the outpatient expense by medical and non-medical, only medial expense difference between the pre and post-intervention group was significant (p:0.050).

In-terms of the distribution of outpatient OOP in the wealth quintile groups, the first quintile had the most OOP (NRs 5187) in the pre-intervention while third quintile had the most OOP (Nrs 7874) in the post-intervention.

Majority paid the outpatient expense through their usual income (pre: 63.1%; post 44.4%) and savings (pre: 33.3%; post: 30.2%).

Table 20:Outpatient monthly OOP expense of pre-post intervention survey group

Expenses category	**Pre intervention survey group**			**Post-intervention survey group**			**P-value [a]**
	Frequency (%)	**Median (min-max)**	**IQR**	**Frequency (%)**	**Median (min-max)**	**IQR**	
Medical expenses	91 (91)	1600 (60-65k)	2500 (700-3200)	44 (44)	2650(200- 27k)	5300(1200-6500)	0.050**
Non-medical expenses	10 (10)	500 (50-4k)	873 (402-1275)	15 (15)	600 (200-12k)	1150(500-1650)	0.655**
Total Outpatient expenses	91 (91)	1700 (60-65k)	3683(850-4500)	46 (46)	3900 (200-28700)	5257 (1700-6600)	0.027**
Total Outpatient expenses (inflation adjusted)	91 (91)	1700 (60-65k)	3683(850-4500)	46 (46)	3714 (190-27333)	4857(1428-6190)	0.034**
Quintile 1	19 (20.8)	5187 (150-65k)		12 (26.1)	3941 (667-13010)		
Quintile 2	16 (17.6)	3494(500-15k)		9 (19.6)	6576 (191-27333)		
Quintile 3	18 (19.8)	2990 (200-20750)		11 (23.9)	7874 (476-23809)		
Quintile 4	20 (22.0)	4302 (200-20500)		4 (8.7)	2809 (286-6286)		
Quintile 5	18 (19.8)	2836 (60-11800)		10 (21.7)	3866 (857-8190)		

a: Wilcoxon Signed rank test
** Statistically significant at 0.05
k:000; eg- 5k:5000

4.4.3.2 Outpatient visit opportunity expense

The opportunity expense indicates the hidden economic expense suffered or lost by the family due to health conditions, which was not captured in OOP calculation. The expenses include money lost from inability to work, reduction in food expense and children removed from the school.

The percentage of HH who stopped the job due to illness decreased from 5.5 % in pre intervention to 1.2 % in the post interventions, though not significant (P0.625). Out of five people who stopped job in the pre-intervention four lost money while one respondent who stopped job also lost money in the post intervention group. None reduced the food in pre and post intervention while 1.1% of HH from pre-intervention removed children from the school.

Table 21: Outpatient opportunity expense of pre and post intervention survey group

Variables	**Pre-intervention survey group**			**Post-intervention survey group**			**p-value** [a]
	Frequency (%)			Frequency (%)			
Stopped job or activity due to OPD visit Yes No	 5 (5.50) 86 (94.50)			 1 (2.20) 45 (97.80)			 0.625
Lost money Yes No	 4 (4.40) 87 (95.60)			 1 (2.20) 45 (97.80)			 1.000
HH reduced food expenses Yes No	 0 91 (100)			 0 46 (100)			 NA
HH removed from the school Yes No	 1 (1.1) 91 (98.9)			 0 46 (100)			 NA
Variables	**Frequency (%)**	**Mean (min-**	**SD**	**Frequency (%)**	**Mean (min-**	**SD**	

		max)			max)		
# of days stopped	5	2 (1-30)	14.17	1	10	NA	NA
Lost money (amount NRs)	4	10k (400-15k)	7117.35	1	2000	NA	NA

a: Mcnemar test
NA: Not applicable
b: Pair-t test was not possible due to insufficient valid cases
NA:Statistical test was not possible as one of the variables was zero.

4.4.4 Chronic illness visit details between pre and post intervention survey group

The chronic illness visits and expense was documented in table 22 was for any medical or non-medical visits made for chronic illness in the 30 days prior to the data collection. The HH head self-reported chronic illness visits decreased from 72% in pre intervention to 64% in post intervention though not statistically significant (p:0.200). 11 types of illness were diagnosed and self-reported for the pre-intervention group while only nine illness were self-reported in the post-intervention group. Out of all reported illness insomnia (pre: 9.7% to post: 20.3%) and heart disease (1.4% to 4.7%) increased, which could be due to COVID situation. Following up the similar trend in outpatient visits, the number of visits to public facility increased from 40.3% in pre intervention to 61% in post intervention but was not statistically significant (p:0.265)

Table 22: Chronic illness visits detail of pre and post intervention survey group

Variables	**Pre-intervention survey group**	**Post intervention survey group**	**P-value[a]**
	Frequency (%)	Frequency (%)	
HH self-report Chronic illness visit Yes No	 72(72) 28(28)	 64 (64) 36 (36)	 0.200
HH self-reported Diagnosis			
Allergy	6 (8.3)	6 (9.4)	
Ottis media	10 (13.9)	10 (15.6)	

Insomnia	7 (9.7)	13 (20.3)	
Tumor	27 (37.4)	21 (32.8)	
Tonsilitis	4 (5.6)	1 (1.6)	
Diabetes	5 (6.9)	2 (3.1)	
Hypertension	6 (8.3)	1 (1.6)	
Arthritis	2 (2.8)	1 (1.6)	
Hear Disease	1 (1.4)	3 (4.7)	
Uterine prolapse	1 (1.4)		
Inguinal hernia	1 (1.4)		
Illness severity No serious Serious	 47(65.3) 25(25)	 42(65.6) 22(31.3)	 0.307
Facility visited Private Public	 43(59.7) 29(40.3)	 25(39) 39(61)	 0.265
Health workers consulted Doctor/paramedic Non-doctor/traditional	 72(100) 0	 63(98.4) 1(1.6)	 NA
Insurance coverage Yes No Partially		 6 (9.5) 40 (63.5) 17 (27)	
Chronic illness expense payment			
Didn't have to pay	0	0	
Usual HH income	70 (59.8)	37 (38.90)	
Money for lender	0	1 (1.10)	
Money from relatives	3 (2.6)	4 (4.2)	
Used savings	40 (34.2)	33 (34.70)	
Investment fund	2 (2.8)	1 (1.10)	
Health Insurance	0	14 (14.70)	
Remittance	2 (2.8)	5 (5.30)	

a: Mcnemar test
NA: Mcnemar test was not possible due to insufficient valid cases

4.4.4.1 Chronic illness visit OOP expense between pre and post intervention survey group

The table 23 presents the chronic illness visit OOP expense in the pre and post intervention groups. The total chronic illness expense increased from NRs 1500 in the pre-intervention to NRs 2000 in the post group and statistically significant (p: 0.058). The difference, however, was not statistically significant (p:0.092) after the inflation adjustment in the post-intervention group. Upon segregating the expense into medical and non-medical, only the expense increment in the medical expense was statistically

significant (p:0023). The increased cases of insomnia (pre: 9.7% to post: 20.3%) and heart diseases (pre: 1.4% to post: 4.7%) could be the reason for the increased expense (see table 17). In addition, the NHI program did not cover any expense for 63.5% respondents. Only 9.5% respondents had their expense covered completely and remaining 17% had the partial coverage.

Like the outpatient expense, the poorest had the highest chronic illness OOP (NRs 8891) in the pre-intervention and third quintile had the highest OOP (NRs 10945) in the post-intervention group.

Majority paid the expense through the usual income (pre: 59.8% and post: 38.90) and savings (pre: 34.2% and post: 34.70%). The health insurance covered 14.70% HH in the post-intervention group.

Table 23: Chronic illness visit OOP between pre and post intervention survey group

Expenses-category	**Pre-intervention survey group**			**Post-intervention survey group**			**P-value [a]**
	Frequency (%)	Median (min-max)	IQR	Frequency (%)	Median (min-max)	IQR	
Medical expenses	72 (72)	1500(165-52k)	2480(600-3080)	60 (60)	2350(500-62400)	9100(650-9750)	0.023 **
Non-medical expenses	4 (4)	520(430-50k)	0	21 (21)	500(200-45k)	0 (850-1000)	0.180
Total chronic illness expenses	72 (72)	1500(165-52k)	2750(600-3350)	64 (64)	2k(-850-64400)	7400(750-8150)	0.058 **
Total chronic illness expenses (inflation adjusted)	72 (72)	1500(165-52k)	9865.53	64 (64)	1905 (-810-61333)	7047 (714-7762)	0.092
Quintile 1	12(16.7)	8891(600-52k)		10(15.6)	2676(810-9524)		
Quintile 2	13 (18.1)	4201(165-33500)		13(20.3)	7472(476-61333)		
	16 (22.2)	3115(200-20000)		14(21.9)	10945(190-59238)		

Quintile 3 Quintile 4 Quintile 5	13 (18.1) 18 (25.0)	2630(500-7500) 5814(0-50180)		14(21.9) 13(20.3)	10510(381-45619 2890(190-9524)		

a: Wilcoxon Signed rank test
**: Statistically significant at 0.05
k: 000; eg.- 5k:5000

4.4.4.2 Chronic illness opportunity expense

As presented in table 24, there was no opportunity expense at the pre-intervention group, while three post-intervention respondents stopped the job and two out of three also lost money (NRs 111.1). The difference was not significantly different (p:0.317). Both groups didn't reduce food nor removed children from the school.

Table 24: Chronic illness opportunity expense between pre and post intervention survey group

Variables	**Pre-intervention survey group**			**Post-intervention survey group**			**P-value**
	Frequency (%)			Frequency (%)			
Stopped job or activity Yes No	0 73 (100)			1 (3.2) 61 (96.8)			NA
Lost money Yes No	0 73 (100)			2 (3.2) 61 (96.8)			NA*
HH reduced food expenses Yes No	0 73 (100)			0 63 (100)			NA*
HH removed children from the school Yes No	0 73 (100)			0 63 (100)			NA*
Variables (continuous)	**Frequency (%)**	**Mean (min-max)**	**SD**	**Frequency (%)**	**Mean (min-max)**	**SD**	**P-value [b]**
# of days stopped	0	0	0	2	0.95(0-4)	0.56	0.317
Lost money (amount)	0	0	0	2 (3.2)	111.1	625.05	0.317

NA: Mcnemar test could not be performed due to insufficient valid cases

b: Paired-t test

4.4.5 Hospitalization visit and OOP health expenditure between pre and post intervention survey group

The hospitalization visit was in-patient services accessed by the HH within 1 year prior to the data collection. As shown in the table 25, 25% pre-intervention and 23% of post-intervention respondents were hospitalized (self-reported) in the past one-year before the data collection. There were no significant differences in the average HH number hospitalized and number of hospitalization days between pre and post intervention groups. The hospitalization expense was reduced to NRs 13000 in the post intervention as compared to NRs 30000 in the pre-intervention group but the difference was not statistically significant (p:0.465). The difference was still statistically insignificant (p:0.345) after the inflation adjustment in the post-intervention hospitalization expense. The NHI program complete coverage on the hospitalization expense was nil but it partially covered the expense of 30.4% respondents.

In-terms of the hospitalization OOP expense distribution amongst the wealth quintile, the richest had maximum OOP (NRs 138000) in the pre-intervention and the quintile two had maximum OOP (NRs 113269) in the post-intervention.

Table 25: Hospitalization visit and OOP expense between pre and post intervention survey group

Variables	**Pre-intervention survey group**	**Post-intervention survey group**	**P-value [a]**
	Frequency (%)	**Frequency (%)**	
Self-reported hospitalization visit Yes No	 25 (25) 75 (75)	 23 (23) 75 (75)	 0.871
# of times hospitalized 1-10 times <10 times	 25(100) 0	 23 (100) 0	

							NA
# of days spent 1-10 days <10 days				18 (72) 7 (28)			19(82.6) 4 (17.4)				1.000
Hospital type Public Private				7 (28) 18 (72)			7 (28) 16 (72)				1.00
Insurance coverage Yes No Partially				NA			0 16 (69.6) 7 (30.4)				NA
Variables (continuous)	**Frequency (%)**	**Median (min-max)**	**IQR**	**Frequency (%)**	**Median (min-max)**	**IQR**	**P-value [b]**
Hospitalization expenses (nominal)	25	30k (5k-60k)	66k (30k-80k)	23	13k (2k-325k)	71367(30k-44k)	0.465
Hospitalization expenses (real-inflation adjusted)	25	30k (5k-600k)	66k (30k-80k)	23	12380 (1904-309523)	67968 (28571-41904)	0.345
Quintile 1	3(12)	53333(15k-75k)		5 (21.8)	55790(1905-22667)		
Quintile 2	1 (4)	15000		3 (13)	113269(12380-309523)		
Quintile 3	8 (32)	49625(6k-100k)		4 (13)	15746(5810-33333)		
Quintile 4	8 (32)	58687(5k-200k)		5 (17.4)	83984(23810-142857)		
Quintile 5	5 (20)	138k (7k-600k)		8 (34.8)	18630(4761-74285)		

a: Mcnemar test
b: Wilcoxon Signed rank test
k: 000; eg- 5k:5000
NA: Not applicable for statistical test

4.4.5.1 Hospitalization opportunity expense

The table 26 presents the hospitalization opportunity expense. There was no opportunity expense at the pre-intervention group. While three post-intervention survey HH stopped the job and two out of three lost the money (NRs 3260.86) due to job stopping. The difference however was not statistically significant (p:0.317). No

HH from the pre-post intervention had to reduce the food and removed children from school.

Table 26: Hospitalization opportunity expense of pre and post intervention survey group

Variables (categorical)	**Pre-intervention survey group**			**Post-intervention survey group**			**P-value**
	Frequency (%)			**Frequency (%)**			
Stopped job or activity Yes No	 0 25 (100)			 3 (13) 20 (87)			 NA
Lost money Yes No	 0 25 (100)			 2 (8.7) 21 (91.3)			 NA
HH reduced food expenses Yes No	 0 25 (100)			 0 23 (100)			 NA
HH removed children from the school Yes No	 0 25 (100)			 0 23 (100)			 NA
Variables (continuous)	**Frequency (%)**	**Mean (min-max)**	**SD**	**Frequency (%)**	**Mean (min-max)**	**SD**	**P-value [a]**
# of days stopped	0	0 (0)	0.00	3	0.56 (1-10)	2.14	0.317
Money lost (amount)	0	0	0.00	2	3260.86 (0-60k)	12757.23	0.317

NA: Mcnemar test could not be conducted due to insufficient valid cases
a: Paired-t Test

4.4.6 OOP health expenditure differences between post-intervention survey and end-of-research survey control groups.

The table 27 presents the OOP health expenditure comparison between the post-intervention and control survey groups. The control group HH spent more money for the chronic illness (post: NRs 2000; control: NRs 2500) and hospitalization expense (post: 13000; control: 19750) but were not statistically significant. All others variables compared were also not statistically significant.

Table 27: OOP health expenditure comparison between post-survey intervention and end-of-research control group

Variables	**Intervention Group Post Survey**			**Control Group End-of-research-survey**			p-value
	Frequency (%)	Median (min-max)	SD	Frequency (%)	Median (min-max)	SD	
Outpatient visit Yes No	 46 (46) 54 (54)			 79 (63.2) 46 (36.8)			0.072 [a]
Outpatient expense	46 (46)	3900 (200-28700)	6595.73	79 (63.2)	2600 (2900-60k)	10379.43	0.321 [b]
Chronic illness visit Yes No	 64 (64) 36 (36)			 102 (40.8) 23 (9.8)			0.644 [a]
Chronic illness expense	64(64)	2k (-850-64400)	13860	102 (40.8)	2500 (240-50k)	9550.91	0.326 [b]
Hospitalization visit Yes No	 23 (23) 75 (75)			 36 (28.8) 89 (71.2)			0.403 [a]
Hospitalization expense	23 (23)	13k(20k-325k)	83222.33	36 (28.8)	19750 (1500-935k)	165233.87	0.698 [b]

a: Chi-square test
b: Wilcoxon sum rank test
k: 000; eg- 5k:5000

4.4.7 Catastrophic health expenditure (CHE) between pre and post intervention survey group and end-of-research survey in the control group

The table 28 presents the occurrence of catastrophic health expense in the pre-post intervention survey group and post intervention with control survey group. In general, if the health expense is equals to or more than 40% of the HH capacity to pay (non-

food expense), the expense is catastrophic. In addition, the table also presents the catastrophic expense 30%, 20% and 10% as country like Nepal measures the catastrophic expense at the threshold of 10% in the National Health Account.

As explained in the methodology, the OOP expense incurred from outpatient and chronic illness expense was summed up to calculate the CHE, while hospitalization expense was calculated separately.

There were no significant differences in the catastrophic expense incidence caused by outpatient and chronic illness expense between the pre and post intervention group at all thresholds. However, the CHE occurrence increased in the post intervention by 8%, 4% and 3% respectively at 40%, 30% and 20% threshold while it decreased by 5% at 10% threshold.

Similarly, there were no significant differences in the CHE incidence caused by hospitalization expense too. However, it decreased by 1%, 4%, 4% and 5% respectively in the post-intervention group at 40%, 30%, 20% and 10% threshold.

There were no significant differences in the CHE incidence caused by outpatient and chronic illness expense; and the hospitalization expense between post-intervention and control group. However, the CHE incidence in control group was higher that post-intervention group at all threshold. Further analysis can be found at the discussion.

Table 28: Comparison of catastrophic health expenditure in pre-post intervention survey group and post intervention with the end-of-research group

Variables	**Intervention Group**		**P value[a]**	**Control Group**	**P value[b]**
	Pre-survey group	**Post-survey group**		**End-of-research-survey group**	
	Frequency (%)	**Frequency (%)**		**Frequency (%)**	
Outpatient and chronic illness expense					
CHE at					

40% Yes No	 36 (36) 64 (64)	 44 (44) 56 (56)	 0.280	 80 (64) 45 (36)	 0.845
CHE at 30% Yes No	 44 (44) 56 (56)	 48 (48) 52 (52)	 0.652	 90 (72) 35 (28)	 0.946
CHE at 20% Yes No	 52 (52) 48 (48)	 55(55) 45 (45)	 0.766	 100 (80) 25 (20)	 0.397
CHE at 10% Yes No	 71 (71) 29 (29)	 66 (66) 34 (34)	 0.542	 113(90.4) 12 (9.6)	 0.555
Hospitalization expense					
CHE at 40% Yes No	 7 (7) 93 (93)	 6 (6) 94 (94)	 1.000	 35 (28) 90 (72)	 0.409
CHE at 30% Yes No	 11 (11) 89 (89)	 7 (7) 93 (93)	 0.454	 35 (28) 90 (72)	 0.290
CHE at 20% Yes No	 14 (14) 86 (86)	 10 (10) 90 (90)	 0.481	 35 (28) 90 (72)	 0.098
CHE at 10% Yes No	 20 (20) 80 (80)	 15 (15) 85 (85)	 0.442	 36 (28.8) 89 (71.2)	 0.905

a: Mcnemar test between pre and post intervention survey group only
b: Chi-square test between post intervention and end-of-research-survey group only

4.4.7.1 Catastrophic health expense (CHE) distribution across wealth quintiles in pre and post intervention survey group

The figure 19 depicts the catastrophic health expense (CHE) distribution caused by outpatient and chronic illness across five wealth quintiles in pre and post intervention survey group. In the pre-intervention group, the poorest had highest CHE at 40% threshold with 25% HH, however the richest quintile had highest CHE at 30% and 20% threshold with 25% HH and 26.9% HH respectively. The fourth quintile had highest CHE at 10% threshold with 23.9% HH.

In the post-intervention, the third quintile had highest CHE at 40%, 30%, 20% and 10% threshold with 29.5% HH, 27.1% HH, 25.5% HH and 22.7% HH respectively. with 29.5% HH. Following up the richest quintile had second highest CHE at 40%, 30% and 20% threshold with 22.7% HH, 25% HH and 21.8% HH respectively. Further analysis to the findings can be found in the discussion.

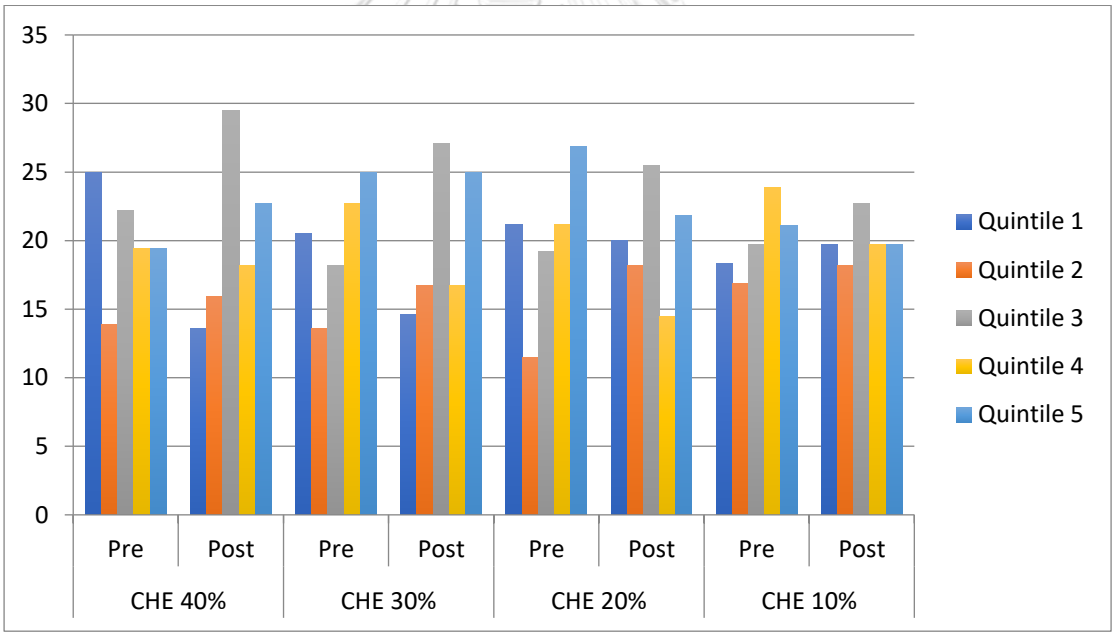

Figure 21: CHE on outpatient and chronic illness expense across wealth quintiles in pre and post intervention survey group

The figure 20 depicts the catastrophic health expense distribution caused by hospitalization expense in both groups. In the pre-intervention the third quintile had highest CHE at 30%, 20% and 10% with 20% HH, 42.9% HH and 35% HH respectively, followed by fourth quintile with second CHE in the same threshold.

In the post-intervention, the fourth quintile had the highest CHE at 40%, 30% and 20% threshold with 50% HH, 42.9% HH and 40% HH respectively. The richest quintile had highest CHE at 10% threshold with 33.3% HH.

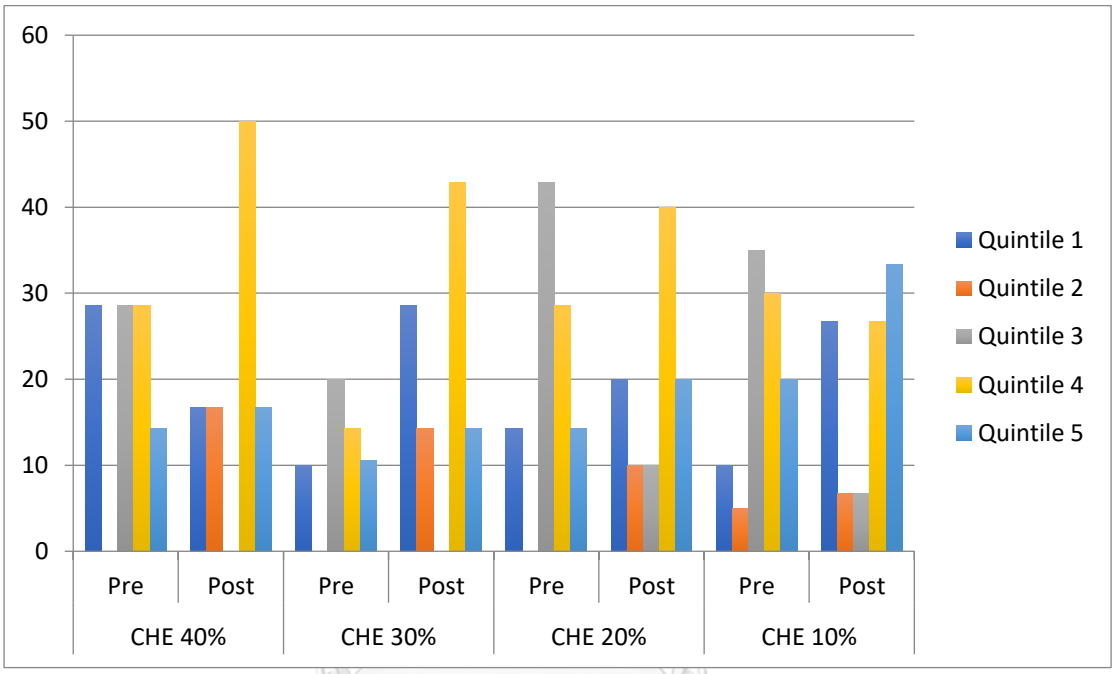

Figure 22: CHE on hospitalization expense across wealth quintiles in pre and post survey in the intervention group

4.4.8 COVID Infection and expense in the post survey intervention and end-of-research survey control group

The table 29 presents the COVID-19 infection and expense comparison between post intervention and control survey group. Eight post intervention respondents and 18 control group respondents were infected with COVID-19. Majority of the infections were asymptomatic (post: 75% and control: 83.3%). As the result, 7 out of 8 post intervention respondents were treated at home. While 50% of the control group respondents were treated at home. The expense for both home and hospital based treatment were similar, i.e. COVID test, medicine and consultation. None of them were hospitalized. Surprisingly health insurance did not cover any expense for the post-intervention group.

In total the post survey respondents spent NRs 4444 and control group respondents spent NRs 3511 but the difference was not statistically significant (p:0.286)

Table 29: COVID infection expense in the post-intervention and control survey group

Variables (categorical)	**Intervention Group Post Intervention Survey**			**Control Group End-of-research group**			**P-value[a]**
	Frequency (%)			**Frequency (%)**			
Self reported COVID Infection							
Yes	8 (8)			18(14.5)			
No	92 (92)			106 (85.5)			1.000
Infection characteristics							
Symptomatic	2 (25)			3 (16.7)			
Asymptomatic	6 (75)			15 (83.3)			NA
Financial expenses incurred							
Yes	8 (100)			16 (88.9)			
No	0			2 (11.1)			NA
Treatment place							
Home	7 (87.5)			8(50)			NA
Hospital	1 (12.5)			8(50)			
National Health Insurance Coverage							
Yes	0						NA
No	8 (100)			NA			
Variables (continuous)	**Frequency (%)**	**Mean (min-max)**	**SD**	**Frequency (%)**	**Mean (min-max)**	**SD**	**P-value**
Home treatment expenses							
COVID Test	7	875 (0-3k)	1246.42	8	1875 (0-4k)	1125.99	

Transportation	7	250 (0-2000)	707.11	8	250 (0-2k)	707.11	
Medicine expenses	7	2812 (0- 7k)	2069.12	8	1975 (0-5k)	1431.03	
Hospital treatment expenses							
COVID Test	1	5000	NA	8	2533(2k-4400)	850	
Medicine expenses	1	3500	NA	8	733 (-2300)	944.72	
Consultation fees				8	111 (0-1000)	333.33	
Total COVID expenses	8	4444 (2k-8503)	2311.56	16	3511 (0-6k)		0.286[b]

a: Fisher Exact Test
b: Independent T test
NA: Not Applicable for Chi-Square test
k: 000; eg- 5k:5000

4.4. 9 COVID effect on OOP expense between pre-post intervention survey and end-of-research survey in the control groups

COVID-19 affected the out-of-pocket health expenditure data for post intervention and control survey group. The table 30 compares the HH head self-reported health facility visits, expense with and without COVID related visits between pre and post intervention survey group; and post intervention group with the control group. It analyzes the COVID effect on the out-of-pocket health expenditures within the intervention groups and intervention with control group.

The COVID-19 infections increased the post-intervention group HH overall visits to the health facility from 85% to 91%. The COVID induced increased visits resulted in statistically insignificant difference (p:0.227) within the pre-intervention group HH visits. The difference was significantly different (p:0.013) without COVID-19 related visits. However, it had no such major effect on the expense. The expense increased by NRs 100 in the post-interventions group and expense difference between pre and post intervention group was statistically significant with and without COVID related expense. Further analyses are presented in the discussion.

The 18 control group respondents were COVID infected but the change in visit number was not statistically different with the post-intervention group. Similarly the increased COVID related visits also increased the expense from NRs 2600 to NRs 3500 in the control group, but it was not statistically different with the post-intervention group.

Table 30: COVID effect on OOP expense between pre-post intervention survey and end-of-research in the control survey group

	Intervention Group			**Control group**	
Variables (categorical)	**Pre-Intervention survey (n=100)** Frequency (%)	**Post-Intervention Survey (n=100)** Frequency (%)	**P-value[a]**	**End-of-research survey (n=125)** Frequency (%)	**P-value[b]**
HH self-reported health facility visits (excluding visits due to COVID)					
No visit	4 (4)	15(15)	0.013**	2 (1.6)	1.000
1-3 visits[c]	96 (96)	85 (85)		123 (98.4)	
1 visit [d]	24 (25)	41 (48.2)		39 (31.7)	
2 visits[e]	52 (54.1)	38 (44.7)		74 (60.2)	
3 visits[f]	20 (20.9)	6 (7.1)		10 (8.1)	
HH self-reported health facility visits (including COVID in post survey and end-of-research survey)					
No visit	4 (4)	9 (9)		1 (0.8)	
1-3 visits	96 (96)	91 (91)	0.227	124 (99.2)	1.000
1 visit	24 (25)	39 (42.9)		33 (26.6)	
2 visits	52 (54.1)	38 (41.7)		65 (52.4)	
3 visits	20 (20.9)	6 (6.6)		8 (6.4)	
HH self-reported health facility visits for COVID only	0	6 (6.6)		1 (0.8)	
HH self-reported	0	2 (2.2)		17 (13.7)	

health facility for either general outpatient or chronic illness or hospitalization and COVID visit								
Variables (continuous)	**Median (min-max)**	**IQR**	**Median (min-max)**	**IQR**	**P-value**	**Median (min-max)**	**IQR**	**P-value**
Outpatient expenses without COVID	1700 (60-65k)	3683(850-4500)	3900 (200-28700)	5257 (1700-6600)	0.027**	2600 (2900-60k)	4825(1175-6k)	0.321
Outpatient expenses with COVID			4k (300-28700)	4775(1800-6575)	0.005**	3500 (2900-64300)	5050(1200-6k)	0.252

a: Mcnemar test
b: Fisher's exact test
**: Significant at 0.05
c: It refers to at least one outpatient visit or chronic illness visit or hospitalization or any combined two visits or all three combined visits
d: It refers to at least one outpatient visit or chronic illness visit or hospitalization
e: It refers to any combined two visits; either outpatient and chronic illness or outpatient and hospitalization or chronic illness and hospitalization
F: It refers to all combined three visits (outpatient, chronic illness and hospitalization)
k: 000; eg- 5k:5000

CHAPTER 5

DISCUSSION, RECOMMENDATIONS AND CONCLUSIONS

The study firstly discussed the qualitative results regarding the NHI implementation process, secondly those on the outcome evaluation and thirdly methodological issues strengths and limitation; and finally offers concrete recommendations for the NHI program improvement and further research.

5.1 Qualitative research, the NHI Implementation Process

Objective 1 was only partly achieved through literature review (LR) due to two reasons, i.e. previous Standard Operating Procedures (SOP) replaced and consolidated into the new Operational Rules (OR) and there was not enough implmentation time for the new OR to make an assessment possible. The LR (section 2.4.2- Table #2) therefore analysed key NHI guiding documents that included NHI Policy (2014), NHI Act (2017) and Operating Rules (2018). In summary the Act provided a stronger legal and political foundation to the program and strengthened it by embracing the lessons learned during the two-year implementation before its enactment, including mandatory enrollment, autonomous HIB, and subsidy to the poor and targeted populations, and integration of the formal sector. However, the Act and the subsequent regulations failed to translate numerous aspects of the policy into practice. In particular, an inadequate guideline to ensure the quality of health service delivery and the vision of broader multi-stakeholder board members of HIB translated into limited members with heavy dominations from MoH representatives.

The qualitative findings showed that the NHI program's inadequate inputs caused implementation bottlenecks at throughput and produced poor outputs. The major problematic inputs were incomplete and conflicting policy documents, weak organizational governance, lack of organizational and programmatic guidelines and insufficient and incompetent human resources.

Among incomplete national documents were the NHI implementations guidelines and among conflicting ones were the Act's clauses. The guidelines on mandatory enrolment, utilization of premium money was not yet developed. The conflicting Act clauses undermined the HIB autonomy with heavy MoH influence on the HIB governance and decision-making, resulting in poor organizational governance capacity and frequent ED changes. Importantly, HIB lacked organizational documents such as human resource management and financial management; and programmatic guideline such as monitoring and evaluation, communication strategy and health service purchase. The majority of the HIB human resources were seconded from MoH without proper planning resulting in insufficient and incompetent staffs. For instance, HIB organizational departments had human resource shortage and lacked technical expertise such as health economist.

The key throughput bottlenecks were difficulty in enrolling members, inability to competitively select the providers, and act as a prudent service purchaser, which were fueled by the insufficient inputs. The enrolment expansion was hindered in the absence of mandatory enrolment guideline and communication strategy, amidst given the 62.2% informal sector employment and 11.4% of unemployed population. In the absence of comprehensive health service purchase and M&E guideline and under MoH influence, HIB was not in a position to negotiate the price and quality services with health service providers protected by MoH.

It was evident that insufficient inputs resulted in throughput bottlenecks. There's a high chance that inadequacy in inputs and throughout had resulted in negative outputs. For instance, NHI program was not able to retain high-income members, resulting in adverse selection, and high NHI membership non-renewal rate amongst informal workers.

NHI studies from other countries too revealed that insufficient inputs drove implementation challenges, which had eventually undermined the program outcomes. Ghana NHI program encountered difficulties in implementing its Social Health Insurance (SHI) because of insufficient and unqualified human resource resulting in

inequitable enrollment of high-income populations, and eventually financially unsustainable benefits packages (Chankova et al., 2010). Without effective health service purchase strategy and corrupted human resource, PhilHealth (the financial intermediary of the Philippines NHI program) mobilized 85% of resources to benefit hospitals, and only 14% to improve health services delivery (Escobar et al., 2010). Kenya's National Hospital Insurance Fund suffered from poor management and corruption where only 22% of the fund was used to pay for benefits to the insured persons (Hsiao & Shaw, 2007).

The input and throughput bottlenecks were also, possibly, the result of poor NHI governance and leadership with the initiative being highly political with sparse scientific and academic consultations to formulate the policy and the NHI design. For instance, the premium amount was decided without any study, the benefits package rate was set through a limited costing exercise, and no program feasibility study. Similar political trend could be observed in other countries like Thailand, where the Universal Coverage Scheme (UCS) was on the Thai Rak Thai (TRT) party top agenda during the general election of 2000 (Tangcharoensathien, 2004). But in Thailand the USC was introduced in 2001 and the same year the Health Systems Research Institute (HSRI), an autonomous research organization, under an executive board of the MoPH chaired by the Minister of Health commissioned a number of researchers to investigate and to recommend alternatives. In Nepal, instead, in spite of having numerous national programs on health system strengthening, the NHI related studies and discourse were still very few.

With this background of inadequate studies and preparation (the researcher found very few published articles and gray literature on the NHI design) the Nepal program was piloted in three districts in 2016. By-2017). The program was rolled out to 15 districts with 15% enrolment rate within the first year, which was possible due to heavy tax funds and political support. The program's rollout and implementation were praiseworthy, given that recruited members were from the difficult to reach informal economic sector. The non-renewal rates, however, were 67%, 44%, and 38% among total enrollment from 2016 to 2018, respectively (Ranabhat et al., 2020). In these

years the HIB annual reports (2018, 19) identified problems with the human resources, low awareness program, low enrolment, poor health service quality, delayed payments to providers, etc. Following the reports, however, neither formal evaluation took place, nor were serious reform efforts planned, except for the improvement in the claim process. On the contrary, the human resource plan and organizational structure was still pending MoH approval. In particular, for the payment mechanisms, the NHI design did not consider more efficient ones except for having adopted some disease-based payments while for the rest fee for service was used. The NHI program did not learnt from other Nepal health programs that adopted more efficient payment mechanisms like capitation, disease, and population-specific case payments based on outputs, that produced better results than the fee for service (Torees et al., 2011).

5.2 Outcome evaluation

The outcome evaluation was highly affected by COVID pandemic. The pre-intervention data was completed around August 2019 and COVID lockdown started in March 2020 in Nepal. The post intervention data collection was planned for June 2020 but took place in February 2021, and by then the respondents were under the COVID pandemic for 17 months. The implications were observed in the respondents' high drop out from answering the post intervention survey, worsened socio-economic status, reduced utilization of general health services and COVID infections cases amongst post-intervention respondents.

5.2.1 NHI members' intention to renew their membership

The quantitative study aiming to identify the factors associated with NHI members' intention to renew their insurance policy found that HH income, health service quality and high illness' level (leading to health service utilization) were significantly associated. This study results were consistent with the result from Nigeria (Aregbeshola & Khan, 2018), Indonesia (Dartanto et al., 2020), Ethiopia (Gidey et al., 2019) and Vietnam (Minh et al., 2016) where high-income HH had lower renewals than poor HH and members largely didn't renew insurance policies due to poor health

service quality. In this study 62.3% of non-renewals fell into the category of high-income HH (table #10).

The higher insurance renewals with increased illness levels were consistent with the results from Nepal study (Ghimire et al., 2019). Similarly, respondents with more than six visits to the health service center in the last nine months were four times more likely to renew their membership than those with less than six visits. The non-renewal survey also indicated that 40.3% of the respondents did not renew their membership because they never utilized the services (the highest reason inevitably people with illness visit health facilities more frequently; hence, they intend to renew). However, another study in Nepal (WorldBank, 2017) described such increased health service utilization patterns as adverse selection. This study result had a limitation, as it did not differentiate between moral hazards (unnecessary use of health services to take advantage of the benefit package) or actual service utilization, Further studies on the health service utilization among Nepal insured persons were necessary.

The other factors such as occupation, NHI information clarity, usage of the benefits package, availability of drugs in the health service centers, and frequency of membership renewals were also associated with renewal intention though not statistically significant. The analysis on informal sector enrolment and its implications is presented in the following paragraph in this section. The respondents who clearly understood the NHI program, particularly enrolment process and a benefits package, were 1.87 times more likely to renew than those who didn't clearly understood the program. In this study, respondents understood the information when the enrolment assistants were able to explain them properly during the home visits. The Nigeria study (Aregbeshola & Khan, 2018) depicted that effective NHI design with clear information dissemination strategy was significantly associated with the enrolment and retention of members. In addition to NHI clarity, the respondents receiving drugs on every visit were 2.79 times likely to renew, and those who used the benefits package more than 50% were 2.22 times likely to renew their membership. However, the respondents who remained longer in the program were less likely to renew (OR: 0.31 for those renewed twice; OR: 0.54 for those who renewed once).

The pre-disposition factors (age, sex, education, presence of elderly in the HH) were associated with intention to renew though not statistically significant. For instance, the HH with the elderly were 1.07 times more likely to renew, consistently with a similar study (OR: 1.11) in Nepal (Ghimire et al., 2019). Though overall health service satisfaction amongst the interviewed insured persons was high (86.3%); only 18.7% of the respondents used more than 50% of the benefits package and the drug availability at every visit were 20.9%. In other words, insured persons did not bother to use the service since they did not expect to find drugs once there. The non-renewal survey supported the finding. Firstly 25% (the second-highest reason) of the respondents did not renew due to poor service and lack of drugs. Secondly, almost 64% of respondents were willing to renew the membership upon improved health services.

Several studies mentioned that it was daunting task worldwide to enroll informal sector populations (Acharya et al., 2012) (Hsiao & Shaw, 2007). This study result too depicted respondents employed in the informal sector were less likely (OR: 0.13; p: 0.06) to renew. Indeed, 80.3% of the HH were from the informal sector. The national data too stated that the informal sector employment constituted 62.2% of all employees (CBS, 2020) and 49% of employees in unregistered profit-making companies (CBS, 2019). These data needed to be taken cautiously since the informal sector data were often inaccurate and not routinely collected (Bitran, 2014). The enrolment of the 11.4% unemployed Nepalese workforce (CBS, 2020) was even more daunting. The NHI Act 2017 had a provision of mandatory enrolment of all Nepalese citizens but the provision lacked implementation guidance.

5.2.2 Socio-economic differences between pre and post intervention

The number of elderly in the HH had significantly (p:0. 05) decreased in the post-intervention survey group going from the mean value of 0.88 people per HH in pre intervention survey to 0.74 in the post intervention (data not tabled). The decrease

could be due to 17-month lag between pre and post intervention surveys during which the elderly might have died or migrated to other places as suggested by fewer outpatient (table #19) and chronic illness (table #22) visits in the post-intervention groups. There could be other reasons for the lesser visits, which are explained below in the discussion. Unfortunately, this study could not confirm a similar decrease in HH elderly the control group as well since it was surveyed once only at the end of the research. Increased/decreased/unchanged could only be detected with at least two measurements

Similarly, employment rate and monthly HH income significantly decreased in the post-intervention survey group (table #18). Due to series of Covid-19 related lockdowns since March 2020, the national economy crippled down and the national GDP plummeted to -2.088% in 2020 from 6.657% in 2019 (WorldBank, 2020a). The unemployment rate increased from 2.85% in 2019 to 4.44% in 2020 (IBID). The ILO report (ILO, 2020) estimated that between 1.6-2 million workers were disrupted with job loss, reducde working hours and pay cut, in particular amongst the informal sector workers. The post-intervention survey respondents' mirrored the national scenario: 20% of those working in the informal sector lost their job resulting in 31% reduction in HH income. However, none of the formal sector workers lost their job. It was also worth noting that in the post-intervention survey group workers reported to have temporarily interrupted in working due to outpatient care (2.2%,) chronic illness (3.2%) and hospitalization (13%). In contrast, at the pre-intervention survey only 5.5% respondents reported interrupting work due to outpatient illness. In the post-intervention survey group, participants reported decreased food expenses by 16% and non-food expenses by 33%, as expected during a period of mobility restriction and closure of schools, entertainments, transportation, shopping centers etc. These decreased expenses were reflected in the decreased national HH consumption expenses from 8.14% in 2019 to 3.59% in 2020 (WorldBank, 2020b)

5.2.3 Health Service utilization during COVID

The self-reported outpatient and chronic illness visits decreased in the post-

intervention survey group by 53% and 11% respectively. The decrease in outpatient was statistically highly significant (p: <0.001). A Nepal study (Singh et al., 2021) assessing health service utilization in Province-2 explained numerous reasons associated with reduced service utilization during the Covid-19 pandemic. The first reason was people's perception on COVID-19 as a highly fatal disease and lacking proper information they hesitated to visit facilities for fear of being discriminated if found infected. Other reasons for reduced service utilizations were health service providers' reduced activities due to lack of adequate prevention measures like personal protective equipment (PPE), disruption in routine and essential services such as immunization and the supply chain for medicines and equipment, long-term transportation disruption, and increased unemployment amongst people resulting in inability to attend non-COVID illnesses. Nepalese anecdotal and studies in other countries showed that people used health services for serious illnesses during COVID. This study finding concurred with this health service utilization associated with severe illnesses. The outpatient visits for acute severe illnesses increased from 21% to 38% and for chronic severe illnesses from 25% to 31.3% in pre-intervention and post-intervention surveys respectively.

5.2.4 Monthly Out-of-pocket and catastrophic health expense

For this study, the monthly OOP was calculated separately for outpatient, chronic illness and hospitalization visits. The results showed that the total outpatient OOP expenses increased from pre intervention (NRs 1700) to the post intervention (NRs 3900) and was statistically significant (p:0. 027). The total chronic illness expenses also increased from NRs 1500 in the pre-intervention to NRs 2000 in the post-intervention and statistically significant (p: 0.058).

The hospitalization expense was reduced by more than half from NRs 13000 in the post intervention as compared to NRs 30000 in the pre-intervention group though the difference was not statistically significant (p:0. 465). In general, NHI program did not reduce the monthly OOP for outpatient expenses. However, it reduced the OOP for serious illnesses expenses, assuming that hospitalization indicate the serious health condition. The control group chronic illness and hospitalization expenses too were

higher as compared to the post intervention group, substantiating the reduced OOP for serious illness amongst the insured persons. The descriptive changes in the in-patient expense is big (from 30k-13k) but it was significant could be due to small sample size.

Other health insurance impact studies from China (Yip & Hsiao, 2010) showed both positive and negative results depending on the program context, settings and implementation challenges. The studies stated numerous factors for increased OOP in the national health insurance program, which are explained below.

Firstly, access to the health service induced by the health insurance could increase service users' expenses due to consumption of costly health services but absence of coverage of key services (such as drugs, some private or high-level facilities, or ancillary costs such as transportation) and inappropriate or illegal billing by facilities. This study showed that health service providers had often prescribed expensive medicines not covered by the insurance program and around 79% of the respondents had to buy the drugs on their own. The post-interventions survey showed increased dental disease visits (from 8.8% in pre-intervention to 23.9% in post intervention), which were costly and not covered by the national health insurance package.

Secondly due to adverse selection (i.e. purchase of health insurance by the sickest people) their expenses may have been higher had they not been insured (Hsiao & Shaw, 2007). The Nepal NHI program had suffered from adverse (WorldBank, 2017) and this study too confirmed that members with more illnesses and who frequently visit the health service centers intended to renew their membership more.

Methodology, study sites and health insurance dynamics also influenced study results on the OOP health expenses. The NHI program is not homogenous and is affected by the country diversity in-terms of populations, resource, health care system, and economy depending on the districts/province/state. Out of two studies in China (Yip & Hsiao, 2010) evaluating the health insurance impact with pre-post design amongst the general insured members; the first one in Gansu province using data from

2000(pre-program) and 2004(post-program) found that the program reduced both OOP and catastrophic expenses. By contrast, the second study using data from 2003 (pre-program) and 2005 (post-program) in 12 China's provinces found that the program didn't reduce OOP and catastrophic expenses. The authors recognized that the heterogeneity of provinces may constitute one important limitation of their study. This study result was also focused on one district in Nepal and in the absence of other similar studies in the country, we could not conclude that the National Health Insurance program had failed its purpose of reducing the OOP.

This study showed that there was no statistical difference in CHE incidence between pre and post intervention group. The CHE incidence had increased by maximum 8% at 40% threshold for outpatient and chronic illness expenses but decreased by maximum 5% at 10% threshold for the hospitalization expenses in the post-intervention. Similarly, the control group had higher CHE incidence as compared to the post-intervention group at all threshold of 10-40%. The difference was higher at the hospitalization expenses. For instance, at 10% threshold, the CHE incidence at post-intervention was 6% as compared to 28% in the control group. The data indicate that the insurance program provided protection against CHE to the insured populations as also confirmed in a Namibia (Wright et al., 2010) and Ghana study (Chankova et al., 2010) reporting severe CHE for uninsured households as compared to insured ones. The both studies had pre-post design similar to this study.

This study finding on the CHE incidence over 17 months had differences with the National Health Account data 2018 (MoHP, 2018), which could be due to this study sample bias, methodology and analysis limitations. In this study the CHE were divided in outpatient; including the chronic illness and inpatient expenses. The average CHE at 10% threshold of HH capacity to pay was 20% for both outpatient and in-patient, while the national CHE incidence at 10% threshold was 10.7%. A 2003 study (Saito et al., 2014) collected the primary data through cross-sectional survey among general population in one (Kathmandu) district and found that cumulative CHE was 13.8% at the threshold of 10%.

Other studies conducted on the CHE incidence in Nepal yielded different results.

(Saito et al., 2014) reviewed the Nepal National Living Standard Health survey 2010/2011 and found that cumulative incidence of CHE was 10.3% per month at the threshold of 40%. The study only calculated the CHE at 40% threshold.

The said National health account data showed that richer population faced higher catastrophic expenses compared to the poor one, while this study slightly differed at the 40% threshold since in pre-intervention survey the CHE was concentrated in the poorest while the richest reported more CHE in the post-intervention survey. The third quintile group had the largest CHE incidence in both pre-post- intervention surveys.

5.2.5 COVID effect on the out-of-pocket expenditures

As mentioned, COVID-19 had highly affected the study and the implication was explained in different sub-sections above. The paragraph here attempts to further discuss and assess how COVID affected OOP expenses. Having being exposed to COVID-19 for 17 months there's a high chance that the OOP reported in post-intervention survey and end-of-research survey, for control group were due to COVID related expenses. In order to trace the COVID effect, on visits and expenses, they were calculated separately; and the OOP expense were calculated with and without COVID. Although COVID affected the frequency of health facility visits between pre- and post-intervention surveys, the OOP expense was minimally affected. Firstly, the OOP expense in post intervention survey increased by NRs 100 only (NRs 3900 in the pre to NRs 4000 in the post intervention). Secondly, out of eight reported COVID infections, six HH had only COVID related visits and no visits for other reasons, suggesting mild COVID infections. The six HH had no contribution in the calculated general OOP expense in the post-intervention survey, which highly reduced the chance that COVID related expense increased the total OOP expense. Similarly, the OOP expenses between post intervention and end-of-research control group surveys were not statistically significant when the COVID-19 expense was included.

5.3 Broader reflections on NHI program

This section summarized all the study key results, analysis of the NHI program performance employing two existing authoritative conceptual framework: namely the WHO three-dimension coverage: who was covered, what services were covered, and what proportion of expenses was covered, and the World Bank's three pre-conditions for the NHI sustainability: adequate premium collection, qualified health providers' certification, and economic growth. Also, this section provides a blurb on comparison of Nepal NHI with Thailand Universal Coverage Scheme (UCS) to analyze the areas of improvement.

Who was covered? The Nepal NHI did a praiseworthy job by initiating the program targeting the informal sector workers, while conventional NHI program historically (Ghimire et al., 2019) left behind these workers. In spite of being targeted, however, this study showed that informal sector workers had very low intention to renew the health insurance.

Other studies, also, found that the Nepal NHI program had not been able to effectively enroll the poor who need the insurance most. The rich had more leverage on and access to the NHI, however this study found that HH with higher income had lesser odds (OR: 0.36; p: 0.034) to renew their annual NHI membership. In summary, NHI program enrollment looked skewed with high adverse selection and leaving out the poor. This would create problem in risk pooling which is explained below. This study did not make analysis on different other groups like rural community, ethnically marginalized groups, women, children, elderly which was not within its scope.

What were covered? The study did not delve into the service use details, however, there were indications from this study (qualitative result) that the existing benefit package was inadequate and members often did not receive even the listed benefits as well. Inadequacies included frequent lack of drugs, in particular expensive ones, low coverage of in-patient services, poor referral to higher levels and lack of services in the health facility. The experts and HIB representative too stated that the current

benefit package was inadequate and merely a minimum package. The benefit package increment and quality improvement however looked contesting for numerous reasons. The NHI program could increase the financial coverage but could not ensure quality delivery as the public service providers enlisted in the NHI program had fewer facilities and lower capacity than needed. Another way to assess what is covered was to look beyond what is promised by the benefits package and to measure what proportion of the population that needed a particular health intervention actually received it (Lagomarsino et al., 2012) .

What proportion of the cost was covered: The reduction of monthly OOP and catastrophic health expenses for the serious illness (hospitalization expenses) indicated the NHI offered some level of financial protection. The study finding was not conclusive given there was an increased OOP outpatient and chronic illness expenses in the post intervention group. The COVID played roles in the health behaviors and expenses of the insured members, making it more difficult to interpret the OOP expenses. However, catastrophic health expenses reported in the control group were higher at all threshold (though not statistically significant) compared to those reported in the post-intervention survey group suggesting that the NHI may have provided some protection against financial risk in the insured persons. The decreased hospitalization expenses in the post-intervention group too aligned with this finding, as hospitalizations expenses are often catastrophic.

Adequate premium collection: The NHI program premium collection was not adequate during the data collection. The HIB expenses exceeded the premium collection (based on HIB ex-ED). Besides, the program subsidized the poor's premium, but the government needed to significantly increase the HIB budget to pay for the subsidized premium amount. Mandatory premium collection in Nepal could be a daunting task within the informal sector workers; constituting 62.2% of the total workers and 49% of the workers in unregistered profit-making companies. Importantly, the risk pooling did not seem to take place given the likely adverse selection and the non-renewals of the healthy and richer populations.

Qualified health providers' certification: Health providers' certification referred to enhance the quality of health services provided through quality monitoring, which was highly unsatisfactory for the NHI program. The program regulation had neither providers' certification nor effective quality control monitoring. In fact, the HIB had no influence at all over the poorly performing public health service providers.

Rapid economic growth: The annual GDP growth from 2017 to 2019 (the NHI implementation years) was 8% (2017), 6.7% (2018), and 7 % (2019) (WorldBank, 2020a). This growth rate would have played in favor of NHI sustainability. However, the COVID-19 epidemic dropped the GDP to 0.8% as of September 2020, it was projected to contract by 0.6% in 2021. A protracted recovery was expected into 2022, assuming a gradual retreat of the pandemic (IBID). This indicated that more time was needed for full national economic recovery, which was the real requirement for the sustainability of the NHI program in the near future.

Amidst challenges, however, there were some positive aspects once the country recovers from the COVID-19 pandemic. Firstly 50.1% of the profits making enterprises were registered, and together with government, they could provide substantial premium collection among their employees to cross-subsidize the informal sector premium collection gap. However, it required a further costing exercise and a robust monitoring plan. Secondly, studies found that education increases a person's propensity to enroll (Spaan et al., 2012) and school enrolments in Nepal is continuously increasing. Experts too suggested that strategic, targeted improved communication would increase demand for the NHI program, and it was relatively easy to put in place an improved communication. Third, the Government of Nepal formulated the Public Health Service Act 2018 (MoHP, 2019) and Clinical Audit Implementation Regulation 2020 (MoHP, 2020)to improve and standardize the quality of health care. The Act would provide a legal foundation for the NHI program to negotiate with the service providers on the services' quality. Finally, this study captured NHI's catalytic role in improving the infrastructures and facilities of the public hospitals (as envisaged in the NHI policy) though such role was small at present. The PHCCs, according to the experts, benefitted the most from the program and had relatively strengthened their facilities.

There are stark differences between Nepal and Thailand as a country. Nepal belongs to LMICs while Thailand is UMIC. The Nepal health system is characterized with lower health budget with 59USD per capita, low MoH absorption capacity, inadequate infrastructures, limited number of public health service providers, lengthy and slow procurement. Whereas Thailand health system has been exemplary in the region with adequate health budget of 272 USD per capita, infrastructure, ample health service providers even in the rural places and others. Even there are differences in the insurance system. There are three insurance systems in Thailand (social security system, civil service welfare schemes and universal coverage schemes). Out of these three systems, Universal Coverage Schemes (UCS) is similar to Nepal NHI. But the Thailand UCS is completely funded through tax while Nepal NHI is contributory. The similarity was the insurance system in both countries were pushed through high political will. One has to be careful to make comparison between such different countries. However, there are areas of cross-sharing and learning from the Thai practices by Nepal. In particular, Thailand success with UCS was significantly due to its existing strong health system, such as infrastructures, public service providers expanded throughout the countries, robust accreditation system in place for quality control and National Health Security Office (NHSO) acted as a prudent service purchaser. In contrast, none of these systems and practices is fully functional in Nepal, the Thai experience points what should be prioritized in Nepal. Most specific changes for improvement are spelled out in the recommendations.

5.4 Benefits, Strengths and Limitations of the Study

5.4.1 Benefits of the Study

The study findings from the qualitative data (process evaluation) would help to strengthen the NHI policy, governance and management. The study unfolded the weaknesses of policy documents such as the Health Insurance Act and pointed areas of improvement in the governance body. It further dissected the organizational challenges into human resource, finance and coordination. These finding would serve

as reflective guidance to the decision makers of the HIB to strengthen the policy, governance and organization. In particular, the recommendations were concrete and had practical mitigations measures to address the identified problems.

The quantitative findings would directly benefit the NHI program managers at central and provincial level. The NHI sustainability depends on the members enrolling in the program. The study offers evidence on different factors and predictors that influence the intention of members to renew the insurance policy and prevent non-renewal. The program managers can improve their communication approach including outreach strategy, demand generation, capacity building trainings (health care workers and enrolment assistants) based on the study findings. In particular, 89% of the respondents from existing members and 80% of the dropped outs were from the informal sector, so the findings add up knowledge and offer insights on retaining the members from the informal sector.

The outcome evaluation results benefit both policy makers and program managers. One of the key NHI objectives is to protect the insured members against monthly OOP and catastrophic expenses and if the program was unable to achieve the expected objectives, this would alert both decision makers and managers. Amidst COVID pandemic induced situations, this study results couldn't explicitly show whether the NHI reduced OOP expenses. For instance, OOP expense might not have been decreased due to adverse selection, lack of comprehensive service package, prescription of expensive medicine not listed in the benefit package and unavailability of drugs at the pharmacy. The HIB could improve and strengthen the identified weaknesses through re-visiting their program, holding health service accountable for their misdeeds and could initiate further studies on the identified issues to generate more evidence.

5.4.2 Strengths of the Study

The study is a first-time study in Nepal. The NHI process evaluation was conducted by the World Bank in 2017 but did not include in-depth analysis on inputs and

throughputs; while there was no study conducted to measure the NHI outcomes. In particular, the study having a mixed method design provided both qualitative information and quantitative data.

For the qualitative study, programmatic key stakeholders (central office staffs, governing body, district staffs, health service providers, development agencies providing funding and technical assistance to the program) at all levels were interviewed, and their responses triangulated, analyzed and presented, increasing the validity of the findings. The summarized themes and sub-themes could be found in an annex 2.6, which depicts the triangulation. All informants' categories consistently reported the information on inputs (human resource, insufficient guideline) and throughputs (payment mechanism, enrollment challenges). Other strengths include the length of time devoted by the informants to complete the IDI. Some informants even provided additional and updated information on the follow up emails.

Amongst the strengths of outcome evaluation, for the evaluation on members' intention to renew NHI membership analyzed the data from the existing NHI members and those who did not renew their membership providing stronger evidence-based results. For the evaluation on OOP and CHE expense, an adequate duration between pre-post interventions surveys, having a control group to compare and differentiation of the out-of-pocket expense based on the expense categories and illness. The literature suggests for at least 12-month gap between pre- and post-intervention survey to measure the monthly OOP expenses, while this study had 17-month gap. A final strength, was the differentiated monthly OOP health expenses as recommended by WHO and provide nuanced information. The health expense segregation based on illness visit included outpatient, chronic illness and hospitalization and categories included medical and non-medical. The medical was further divided into consultation, medicine, transportation, lodging and food. The respondents provided information based on this segregation, though there were challenges with collecting detailed medical expense, which is explained under the study limitation section below.

5.4.3 Limitations of the Study

5.4.3.1 Qualitative study limitations

1. The qualitative study did not document the beneficiaries' perspective. The cross-sectional study on insurance renewal intention captured the beneficiaries' perspective quantitatively, but not the' how', 'why', 'when', and 'who' behind this intention.
2. The collection of information was urban centered missing out on enrolment assistants' and health service providers' viewpoint working in rural areas. Similarly the PHCCs service providers' viewpoints were also missed.
3. At the central level, the study could not reach out the Ministry of Health representative in-spite numerous efforts to contact them.
4. Three different data collectors in three districts conducted the IDI and FGD, so the study could not rule out the inter-personal data collectors' bias. The ideal situation was to have one data collector- however each district context was different which could negatively influence data collection process. Having a local data collector would comprehend the district context easily, easy to build rapport with the respondents and navigate the KI's locations for interviews.
5. Due to limited time and resources, the Nepali language interview was transcribed directly into English through word-to-word written translation done by the data collection. The researcher however reviewed most of the written translations against the audio for validation. Besides, the researcher also frequently crosschecked the audio vs. transcription during the coding process to ensure that the information's essence was not lost.

5.4.3.2 Outcome evaluation: quantitative study limitations

1. The study area's three districts, though purposively selected, did not support generalizing the research results to other Nepal districts. Nepal is a very diverse country geographically and economically with 77 districts in total.

2. The sample size calculation of all 61 non-renewal respondents was done without using a statistical formula necessary for statistical testing. However, the benefit of collecting information from these respondents still has enriched the results and discussion by triangulating the membership renewal predictors from two different groups.
3. The pre-post intervention survey only collected the control group data during the post-intervention survey. Given the intervention was a national program and during the research period the government had aggressively fast-tracked the program expansion. For instance within 2018/19 (third implementation year) the NHI program was expanded to 51 districts (based on enquiry to HIB) out of 77 districts, and rest of the districts to be reached out in 2019/2020. The randomized or quasi-experimental study design was therefore almost impossible. Due to the rapid disappearance of reachable non-NIH program districts the researcher thus opted for the pre-post-intervention design with a control group only during the post intervention data collection. There were scientific studies on NHI with such design (Chankova S, Atim C and Hatt L 2010, Ghana's National Health Insurance Scheme) that although not most valid still offered a comparative advantage rather than just pre-post design.
4. Other limitation of an end-of-research survey only in the control group e.g this study couldn't confirm a similar decrease in HH elderly the control group as well since it was surveyed once only at the end of the research. Increased/decreased/unchanged could only be detected with at least two measurements in both intervention and control group.
5. Self reported illnesses without confirmation from the health facilities records or other valid documentation. Self-report may have resulted in under or over-reported diseases as well as misdiagnoses.
6. Self-reported expenses without confirmation from the health facilities records or other valid documentation may also have resulted in under or over-reported expenses.
7. Lack of adequate response on the medical expenses segregated into consultation, medicine, transportation, lodging and food was a common limitation reported often in the literature. Even if the data were collected, there

wasn't a robust way to validate those expenses.

8. The OOP and catastrophic expense for outpatient and inpatient could not be combined to lack of data. However, the studies with OOP and catastrophic segregated by outpatient and in-patient were prevalent and it offers a nuanced analysis.
9. The post-survey intervention respondents dropped by 20%. This limitation, however, may not be so important because there was 23% percent increase in sample size for expected drop-outs planned before the study. The required sample size was 96 HH while the final sample interviewed was 100 that was sufficient to conduct statistical testing of the study hypotheses.
10. COVID-19 affected the health service utilization of the respondents. However, upon deeper analysis, its effect on the OOP expenses was found to be minimal. The result section dedicated sub-section assessing the COVID impact and how it was mitigated.

5.5 Recommendations

The study suggests key recommendations for improvements in policy and program in, health service delivery as well as for future research.

5.5.1 Recommendations for policy and program:

i. NHI Act and Regulation: Given the conflicting and inadequately defined NHI Act clause, the parliament should amend two sections of the Act. Firstly, section 3, clause 15- sub-clause 5 to eliminate contradictory clauses undermining HIB autonomy and set up a body that is more independent from the MoH; secondly, section 3-clause 15- sub-clause 2,3 & 6 to strengthen service quality monitoring in compliance with the NHI policy, the Public Health Service Act 2018 and the Clinical Audit Regulation 2020. Also, the number of MoH nominees in the HIB board members should be reduced to one MoH as they could represent the health service delivery partner and influence the HIB monitoring function. The MoH should appoint the two

beneficiaries foreseen by the Act, as they had not been appointed. A multi-sectoral body, as indicated in the NHI policy, should make the nomination of HIB board members.

ii. Operating and organizational guidelines: As foreseen by the NHI Act, but not yet done, the HIB should issue and implement operating guidelines, in particular, mandatory enrolment (Section 2-clause 3) and mobilization of premium amount (section 3- clause 14) through robust scientific and academic discussion supported by evidence. HIB should also issue and implement organizational guidelines of HIB Without influence from the MoH.

iii. Human Resources: HIB, with support from experts, should carry out a comprehensive human resource assessment; develop specific skill-based training curriculum required for NHI program, revise the qualifications of and incentives for the EA; adequately define qualifications required for the EO; and learn from the Thai NHI to invest more in human resource to strengthen the NHI implementation.

iv. Demand generation: HIB communication department should issue and aggressively implement a targeted communication strategy for the informal sector to increase health insurance enrollment. HIB should regularly assess the NHI communication outreach and its impact, emphasizing the informal sector populations. Develop a separate communication strategy focusing on the informal sector populations, if needed. Consistent education and information flow were critical strategies to increase the enrolment and retain the informal sector populations.

v. Private-public partnership: Certified private health service providers should be re-installed as the first point of contact where necessary to fulfill the access gaps created by the limited number of public providers.

vi. Primary health care center (PHCC) unit in large hospitals: Similar to Thailand, the larger public hospitals could add a new PHCC hospital unit as the first point of contact to reduce expenses, crowding, and to increase easy access for the poor at larger hospitals. The approach could be applied to private hospitals if the above private-public partnership is re-installed.

vii. HIB should develop strategic guidelines to implement the NHI mandatory

enrolment with a specific focus on the informal sector populations.

viii. HIB should organize national conferences and specific seminars with experts, policymakers, civil society organizations, donors, and service providers for consistent demand and knowledge generation areas well as affirmative policy changes.

5.5.2 Recommendations to improve health service delivery.

Participants made a total of 250 recommendations (in the final open question of questionnaire) during the quantitative cross sectional data collection the outcome evaluation (intention to renew). They were divided into nine themes and summarized here as follows.

ix. Improve drug availability at FPC: The prescribed drugs should be available in FPC at every visit. In particular, the expensive drug should be included in the benefits package. If such expensive drugs were not included, the patients should be informed before prescribing such drugs.

x. Make available all services listed in the package: The FPC should increase the facilities and services to include as many services as listed in the benefits package.

xi. Improve attitude of health workers: Health workers should be polite and not discriminate against the insured persons. They should be regularly trained on updates of the NHI program.

xii. Improve hospital management for an enabling environment to increase access to services: The enabling environment would include crowd management and reduce the waiting hours, people's chart with detailed NHI information for insured population, increased registration time duration for the insured population, improvement of emergency and operations facilities, appropriate and friendly services for elderly and disabled, improve the referral system by referring to hospital with better facilities,

xiii. Improve technical software and benefits package information: The software should enable a swifter registration process at FPC. The benefits package

information should be easily accessible.

xiv. Increase the health workers efficiency through regular capacity development training on effective service delivery at FPC.

xv. The need for more hospitals in NHI: Include the private hospitals as the NHI health service sites to offer more options for the members to chose the FPC. More health service centers would reduce the travel time and motivate members

5.5.3 Recommendations for further research are

xvi. Conduct the NHI financial outcome evaluation covering more districts, with bigger sample size. The HH survey should cross check the self-reported illness and diagnosis to increase the validity.

xvii. As in the reported Thai NHI experience, the HIB should partner with existing research agencies or universities' faculties of public health and health economics to:

xviii. Identify areas of study and conduct them with particular focus on:

a. Specific health economic studies to estimate the duration of complete tax funding for the program and plan for the sustainability of the program through additional financing through premium.
b. Cost-benefits studies of existing payment mechanism and investigate more efficient mechanism available like Diagnostic Relative Group (DRG) or as mandated by the NHI Act (such as capitation)
c. Human resources studies on the implication of mobilizing already overburdened FCHV, such as EA.
d. Conduct NHI outcome evaluation studies such as financial protection against OOP expense and catastrophic expense at the national level.
e. Further studies on the health service utilization amongst the NHI members.

xix. Calculation of sample size for measuring OOP and CHE should be done in consultation with the health economists or broader literature to achieve the appropriate effect size.

5.7 Conclusions

The NHI program's implementation bottlenecks caused by inadequate inputs particularly inadequate national documents, weak organizational governance, inadequate organizational guidelines, insufficient and incompetent human resources and lack of strategic program guidelines led to negative outputs such as insured persons refusal to renew insurance policies, low coverage of poor households and low financial risk protection. The program's sustainability might be at stake if the discussed problems, low renewals, low-quality health services persist, and were further exacerbated by the COVID-19 situation in the country. In spite of the said limitations, the study analyzes programmatic opportunities and offers practical recommendations for policymakers and programmers to strengthen the NHI program. Upon effective implementation, the NHI, the first-ever national health risk-pooling program, would pave the path to universal health coverage in Nepal.

In summary, the study findings benefit the national program of Nepal, which is considered as one the crucial approaches to achieve universal health coverage in Nepal. The study offers evidence and knowledge for a sound NHI policy and governance, stronger organization and robust program design.

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APPENDICES

Annex 1: Consent form
Research Title: Effectiveness of a Social Health Security Program in improving financial risk protection against the health expenditures of the insured populations in four districts of Nepal: A Mixed method study

My name is .....……. I am representing the College of Public Health Sciences Chulalongkorn University.

The purposes of this study are

- To evaluate the implementation process of Social Health Security Programs in Nepal.
- To evaluate the outcome of the Social Health Security Programs in improving financial risk protection against health expenditures of the insured populations in Nepal

The information from this survey will help the government of Nepal, in particular Social Health Security Program Committee, to strengthen the national health insurance program to effectively reach out to the needed people and achieve the desired health and economic outcome. Although there might not be an immediate benefit in participating in this survey, the information you provide is very helpful for health insurance policy planning and implementation, which will eventually, benefit you as the member of the NHI. In this regard I would like to ask you some questions about your experiences.

There is no possible risk if you agree to participate in this interview, although some of the questions are personal and may make you feel uncomfortable. However, all the information that you give to me will be kept strictly confidential. Your name will not be used and you will not be identified in any way. The ethical review committee at the Nepal Health Research Council has approved this study. There is no funding for this research and we wont be able to provide any incentives for this interview. This interview may take approximately 15 to 60 minutes to complete. Your participation is absolutely voluntary and there is no penalty for refusing to take part. You are free to ask any questions. You may refuse to be in this interview process, refuse to answer any question in the interview; and stop the interview at any point.

You may ask any question about the study at this time and if you have further questions about this study, please do not hesitate to contact.

If you agree to participate in this study, please write the date and your name below.

Signature:_____ Date: _____

ANNEX 2: Measurement Tools

*Annex 2.1.*Compliance assessment tool of NHI at the central level

S.N.	Compliance component	Response (Y/N)	Supporting Document/routine data	Reference to SoP
1	**Organizational Structure**			
1.1	*Central level*			
1.1.1	How many staffs are envisioned for the central level?		• List of staffs and their contract • Organogram	
1.1.2	Are all the staffs recruited at the central level?			
1.1.4	Do all the staffs have contract and ToR?			
1.1.5	Is there office space for the central office?		*Observation note:*	
1.1.6	Is the office adequate to accommodate all the envisioned staffs?			
1.2	*District level*			
1.2.1	How many staffs are envisioned for each district?		• List of districts and their staffs • To be validated in the selected district visits	
1.2.2	Are all the staffs recruited at the district level?			
1.2.3	If not- how many districts remaining for the staffs to be recruited?			
1.2.4	Which particular staffs are not recruited?			
1.2.5	Do all the staffs have contract and ToR?		ToR	
1.2.6	Are the District Health Security Coordination Committee formed in all the rolled out districts?		• List of districts and committee • To be validated in the selected district visits	
1.2.7	If not- how many districts remaining for the committee to be formed?			
1.2.8	Is there office space for the district office?			
1.2.9	Is the office adequate to accommodate all the envisioned staffs?			
1.3	*VDC level*			
1.3.1	How many enrolment assistants planned for each VDC?		List of enrolment assistants	
1.3.2	Are all the enrolment assistants recruited in all the VDC?			
2	**Benefit package and member contribution**			
2.1	Do the member receive all the benefit package as planned?		• HMIS data on usage of services	

2.2	Do members contribute as requested?		• Receipt and total amount of money collected	
3	**Enrolment process**			
3.1	Has the program followed all 14 steps to facilitate the enrollment process of the members?		• HMIS data on members • Receipt • District report	
3.2	Has the policy started on the timely after the members get enrolled in the program?		• HMIS data on members	
3.3	Are all the documents available in each district for the enrollment process? (Membership ID Card, ID card cover, smart phone, receipt, progress and monitoring form, laptop for enrolment officer, bag, motorbike for enrolment officer and stationary)		• Report from the districts • To be validated at districts visit	
4	**Membership renewal**			
4.1	Has program followed all 16 steps to facilitate the membership renewal process of the members?		• HMIS data on members • Receipt • District report	
4.2	Are all the documents available in each district for the membership renewal? (Membership renewal form, smart phone, receipt, progress and monitoring form, laptop for enrolment officer, bag, motorbike for enrolment officer and stationary)		• Report from the districts • To be validated at selected districts visit	
5	**Replacing lost ID cards**			
5.1	Has program followed all 8 steps to facilitate the replacement of the lost ID cards?		• HMIS data on members • Receipt • District report	
6	**Change of first service point**			
6.1	Has program followed all 6 steps to facilitate the change of first service point for the members?		• HMIS data on members	
7	**Health service utilization**			
7.1	Do the primary health care centers follow the procedures as outlined in the SoP?		• HMIS data on members • Monitoring report • District report • To be validated at selected districts visit	
7.2	How do you monitor that they are following up the processes?			
7.3	Do the hospitals follow the procedures as outlined in the SoP?		• HMIS data on members • Monitoring report • District report • To be validated at	

			selected districts visit	
7.4	How do you monitor that they are following up the processes?			
8	**Claims for health facility**			
8.1	Do the health facility follow 4 steps claim entry process?		Claim receipt and report	
8.2	Do you follow 8 steps medical review at the national level by NHI?		Medical review process document and report	
9	**Feedback mechanisms**			
9.1	Do the members know about the feedback mechanism?		Compilation of feedbacks from the members	
9.2	Do you provide address the complaints received in the feedbacks?		Feedback mechanism report, meeting minutes	
932	Do the members know about the hotline at central level?		Hotline telephone and registry	
9.4	Do you have human resource and equipment required for the hotline?			

Annex 2.2 Questionnaires for Key Informant Survey: Process evaluation

KI 1: Government (ministry of health)

Name:
Position:
Department:

Objectives

- To review the context like political support, financing, health system which affect the implementation of NHI.
- To review the pros and cons of existing pooling of risk of the insurance program.

Theme	Question	Remarks/things to remember
Policy and historical context	What is your analysis on the National Health Insurance policy and Act? What does the insurance policy aims to achieve?	The overall thrust of the policy is to enhance financial protection against ill health mainly through the prepayment and risk pooling mechanism.

	What is the key rationale for Insurance program in Nepal? Who were the key players? Why do you think we took longer time to bring this scheme while various other developing countries in South Asia and Africa has initiated it long time back? (India, Sri-Lanka, Burundi etc)	
	How was the insurance model designed for Nepal-in-terms of financing (who pays the money), risk pooling (how is the money collected) and buying up the services?	
	Nepal have had community insurance scheme in the past which did not work and could not be scaled up-why do think that this NHI will work now?	
Operationalization of policy	Do you think the Operation rules, SOP and NHI Committee has well reflected and translated the essence of policy into practice? Do you observe any gaps?	
Nepal insurance model (Financing, risk pooling and purchase of services)	What is the contribution of the government to the budget for the SHS program? What is the plan of the government to fund this program?	The literature suggest that the government vision is not clear about the future funding to NHI
	What will be key role of ministry of health and ministry of finance to implement NHI? What are the roles of other line ministries and which body ensures all these coordination?	
	What roles have donors played with the design and implementation of NHI? What are the roles of donors you foresee in future?	Where there any pre-conditions by the donors? What are their contributions to the NHI?
	Is the centralized risk pooling mechanism appropriate for Nepal? How will it change or remains same as we have moved to federal states?	
	Currently the same insurance package is applicable for every Nepalese citizen- though targeting primarily to the poorer populations. Does the government has the plan to differentiate the scheme to formal employee at public and private sector, elderly people etc.	
	Are our health service centers able to provide services as envisioned by NHI? How are the service providers selected?	
	What are the opportunities and challenges within our health service providers to effectively implement the	Literature claim that health

	NHI? For instance the media has picked up the issue of low renewal rate and the key issue was the lack of drugs and quality services.	system is confident to realize the objective of NHI
Key implementation issues	Do you think NHI department appropriate and adequately resourced for the implementation of the program?	
	How would you judge the work of NHI as of now? What are their strengths and weaknesses?	
	Do you think the benefit package is enough? What was the basis of keeping it 500USD per family?	
	Do you think the centralized claim system from health facility feasible as the number of insurers increase?	
	What are the opportunities and challenges of voluntary vs mandatory enrollment? Which approach best fits for Nepal at this context?	
	Any other challenges or opportunities with NHI implementation process?	

KI 2: Political party (Nepal Congress Party)

Name:
Position:
Department:

Objectives

- To review the context like political support, financing, health system which affect the implementation of NHI.

Theme	Question	Remarks/things to remember
Policy and historical context	What is your analysis on the National Health Insurance policy and Act? What does the insurance policy aims to achieve?	The overall thrust of the policy is to enhance financial protection against ill health mainly through the prepayment and risk pooling mechanism.
	What is the key rationale for Insurance program in Nepal? Who were the key players? Why do you think we took longer time to bring this scheme while various other developing countries in South Asia and Africa has initiated it long time back? (India, Sri-Lanka, Burundi	What was the role of your political party and how has the support changed from being in the ruling party to the opposition?

	etc)	
	How was the insurance model designed for Nepal- in-terms of financing (who pays the money), risk pooling (how is the money collected) and buying up the services?	
	Nepal have had community insurance scheme in the past which did not work and could not be scaled up- why do think that this NHI will work now?	
Operationalization of policy	Do you think the Operation rules, SOP and NHI Committee has well reflected and translated the essence of policy into practice? Do you observe any gaps?	
Nepal insurance model (Financing, risk pooling and purchase of services)	What is the contribution of the government to the budget for the SHS program? What is the plan of the government to fund this program?	The literature suggest that the government vision is not clear about the future funding to NHI
	What will be key role of ministry of health and ministry of finance to implement NHI? What are the roles of other line ministries and which body ensures all these coordination?	
	What roles have donors played with the design and implementation of NHI? What are the roles of donors you foresee in future?	Where there any pre-conditions by the donors? What are their contributions to the NHI?
	Is the centralized risk pooling mechanism appropriate for Nepal? How will it change or remains same as we have moved to federal states?	
	Currently the same insurance package is applicable for every Nepalese citizen- though targeting primarily to the poorer populations. Does the government has the plan to differentiate the scheme to formal employee at public and private sector, elderly people etc.	
	Are our health service centers able to provide services as envisioned by NHI? How are the service providers selected?	
	What are the opportunities and challenges within our health service providers to effectively implement the NHI? For instance the media has picked up the issue of low renewal rate and the key issue was the lack of drugs and quality services.	Literature claim that health system is confident to realize the objective of NHI

Key implementation issues	Do you think the NHI department appropriate and adequately resourced for the implementation of the program?	
	How would you judge the work of NHI as of now? What are their strengths and weaknesses?	
	Do you think the benefit package is enough? What was the basis of keeping it 500USD per family?	
	Do you think the centralized claim system from health facility feasible as the number of insurers increase?	
	What are the opportunities and challenges of voluntary vs mandatory enrollment? Which approach best fits for Nepal at this context?	
	Any other challenges or opportunities with NHI implementation process?	

KI 3: Funding agency (World Bank, ADB, KOICA, GiZ, UN)

Name:
Position:
Department:

Objectives

- To review the context like political support, financing, health system which affect the implementation of NHI.

Theme	Question	Remarks/things to remember
Policy and historical context	What is your analysis on the National Health Insurance policy and Act? What does the insurance policy aims to achieve?	The overall thrust of the policy is to enhance financial protection against ill health mainly through the prepayment and risk pooling mechanism.
	What is the key rationale for Insurance program in Nepal? Who were the key players? Why do you think we took longer time to bring this scheme while various other developing countries in South Asia and Africa has initiated it long time back? (India, Sri-Lanka, Burundi etc)	
	How was the insurance model designed for Nepal- in-terms of financing (who pays the money), risk pooling (how is the money	

	collected) and buying up the services?	
	Nepal have had community insurance scheme in the past which did not work and could not be scaled up- why do think that this NHI will work now?	
Operationalization of policy	Do you think the Operation rules, SOP and NHI Committee has well reflected and translated the essence of policy into practice? Do you observe any gaps?	
Nepal insurance model (Financing, risk pooling and purchase of services) and support of donor	What is the share of the donor to the budget for the SHS program? Do you foresee increment or decreased commitment from the donors? What could be the appropriate financing mechanism for the NHI as it expands to the whole country?	
	What is the specific support that your organization provides to the NHI and why?	
	How do you foresee you future support to NHI?	
	Is the centralized risk pooling mechanism appropriate for Nepal? How will it change or remains same as we have moved to federal states?	
	Currently the same insurance package is applicable for every Nepalese citizen- though targeting primarily to the poorer populations. Do you think we need differentiate the scheme to formal employee at public and private sector, elderly people etc.	
	Are our health service centers able to provide services as envisioned by NHI? How are the service providers selected?	
	What are the opportunities and challenges within our health service providers to effectively implement the NHI? For instance the media has picked up the issue of low renewal rate and the key issue was the lack of drugs and quality services.	Literature claim that health system is confident to realize the objective of NHI
Key implementation issues	Do you think NHI department appropriate and adequately resourced for the implementation of the program?	
	How would you judge the work of NHI as of now? What are their strengths and weaknesses?	
	Do you think the benefit package is enough? What was the basis of keeping it 500USD per family?	

	Do you think that the centralized claim system from health facility feasible as the number of insurers increase?	
	What are the opportunities and challenges of voluntary vs mandatory enrollment? Which approach best fits for Nepal at this context?	
	Any other challenges or opportunities with NHI implementation process?	

KI 4: Health and Insurance Experts

Name:
Position:
Department:

Objectives

- To review the context like political support, financing, health system which affect the implementation of NHI.

Theme	Question	Remarks/things to remember
Policy and historical context	What is your analysis on the National Health Insurance policy and Act? What does the insurance policy aims to achieve?	The overall thrust of the policy is to enhance financial protection against ill health mainly through the prepayment and risk pooling mechanism.
	What is the key rationale for Insurance program in Nepal? Who were the key players? Why do you think we took longer time to bring this scheme while various other developing countries in South Asia and Africa has initiated it long time back? (India, Sri-Lanka, Burundi etc)	Key players: Donors, political parties, think tank etc
	How was the insurance model designed for Nepal- in-terms of financing (who pays the money), risk pooling (how is the money collected) and buying up the services?	
	Nepal have had community insurance scheme in the past which did not work and could not be scaled up- why do think that this NHI will work now?	

Operationalization of policy	Do you think the Operation rules, SOP and NHI Committee has well reflected and translated the essence of policy into practice? Do you observe any gaps?	
Nepal insurance model (Financing, risk pooling and purchase of services) and support of donor	What are the existing financing sources to the NHI program? How sustainable and appropriate are they? What could be the appropriate financing mechanism for the NHI as it expands to the whole country?	
	What roles have donors played with the design and implementation of NHI? What are the roles of donors you foresee in future?	Where there any pre-conditions by the donors? What are their contributions to the NHI?
	Is the centralized risk pooling mechanism appropriate for Nepal? How will it change or remains same as we have moved to federal states?	
	Currently the same insurance package is applicable for every Nepalese citizen- though targeting primarily to the poorer populations. Do you think we need differentiate the scheme to formal employee at public and private sector, elderly people etc.	
	Are our health service centers able to provide services as envisioned by NHI? How are the service providers selected?	
	What are the opportunities and challenges within our health service providers to effectively implement the NHI? For instance the media has picked up the issue of low renewal rate and the key issue was the lack of drugs and quality services.	Literature claim that health system is confident to realize the objective of NHI
Key implementation issues	Do you think NHI department appropriate and adequately resourced for the implementation of the program?	
	How would you judge the work of NHI as of now? What are their strengths and weaknesses?	
	Do you think the benefit package is enough? What was the basis of keeping it 500USD per family?	
	Do you think that the centralized claim system from health facility feasible as the number of insurers increase?	
	What are the opportunities and challenges of voluntary vs mandatory enrollment? Which	

	approach best fits for Nepal at this context?	
	Any other challenges or opportunities with NHI implementation process?	

KI 6: NHI board, staffs and committee members

- NHI Committee members- Coordinating Board member (BM)
- NHI Committee members- Quality control and monitoring committee (QMC),
- NHI Committee members- Drug costing and review committee (DRC),
- NHI Committee members- Executive director or senior program management staff, (ED)
- NHI Committee members- Claim review officer (CO)
- NHI Committee members- Senior accountant (Acct)

Name:
Position:
Department:

Theme	Question	Remarks/things to remember
Policy and historical context	What is your analysis on the National Health Insurance policy and Act? Are the policies adequate and appropriate to achieve the vision of universal health coverage?	
	What political support does the NHI have and how do you foresee the support in future?	
	What are other national health or non-health policies that influence the NHI?	
Operationalization of policy	How were Operational Rules and SOP developed? What are the differences between these documents?	
	Do you think these operational rules and SOP have translated the policies into practice?	
	How do you ensure that the implementation was done according to Operational Rules and SOP? Who monitors the compliance and how?	
Nepal insurance model (Financing, risk pooling and purchase of services) and support of donor	How was the insurance model designed for Nepal- in-terms of financing (who pays the money), risk pooling (how is the money collected) and buying up the services?	
	What is the share of the government to the budget for the SHS program? Do you foresee increment or decreased commitment from the government? What could be the appropriate financing mechanism for the NHI as it expands to the whole country?	
	Who are the current foreign donors for NHI? What roles have donors played with the design and implementation of	Where there any pre-

	NHI? What are the roles of donors you foresee in future?	conditions by the donors? What are their contributions to the NHI?
	Is the centralized risk pooling mechanism appropriate for Nepal? How will it change or remains same as we have moved to federal states?	
	Currently the same insurance package is applicable for every Nepalese citizen- though targeting primarily to the poorer populations. Do you think we need differentiate the scheme to formal employee at public and private sector, elderly people etc.	
	Are our health service centers able to provide services as envisioned by NHI? How are the service providers selected?	
	What are the opportunities and challenges within our health service providers to effectively implement the NHI? For instance the media has picked up the issue of low renewal rate and the key issue was the lack of drugs and quality services.	
Program and organizational structure	Do you think the staff positions fulfilled at central, districts and provincial level are adequate? What is the nature of staff (permanent, temporary, consultant, government staffs etc)? How were they selected?	
	What are the capacity development approaches of the NHI staffs? How often the trainings are provided, on what topics and who fund such training cost?	
	Are all the positions at various committees (board member, quality monitoring, drug review, local coordination) fulfilled?	
	Could you briefly explain the working process of each committee- board member, quality monitoring and drug review committee?	
	What is the program and budget planning process at central and district level?	
	How does the central office communicates with the district staff in-terms of day-to-day work, monitoring and any other support?	
Benefit package and membership	How was the benefit package of 500USD per family decided? Is it enough? Is there plan to revise the package?	
	What are the opportunities and challenges of voluntary vs mandatory enrollment? Which approach best fits for Nepal at this context?	

	What are the key challenges with the membership expansion?	
	What are the special provisions relating to the family of government staff? Has it been implemented?	
	What are other social security programs in Nepal? What are the approaches or discussions about integrating with other social security programs?	
Communication strategy	How was the communication strategy developed it? What is the goal of the strategy and what are the key elements to meet the envisioned goal?	
	What are the approaches, tools and resources for implementing it? How do you judge the implementation of the communication strategy?	
Enrollment and renewal process	What are the key strategies for the enrollment of the members to the NHI? How is the strategy implemented- what are the key elements of the implementation?	
	How was the enrollment assistants envisioned? Why FCHV were not mobilized for the enrollment?	Are all the positions of enrollment officer and enrollment assistant fulfilled? How many enrollment assistants are there in total?
	What are the capacity development approaches for the enrollment assistants and officers?	
	What are the key challenges with the enrollment process?	
	How was the annual renewal process decided? Is it an opportunity or a challenge?	
	What were the key reasons for the non-renewal in the renewal process? Any mitigation measures taken?	The media report on non-renewal of the renewal rate by 16%
	What are the problems related to identifying and reaching the poor, ultrapoor and vulnerable groups mitigated?	
Purchase of the service	How are the service providers identified in the districts?	
	Are private sectors involved in the service provision? Why and on what circumstances?	
	How are the service providers monitored? Are there any measures to improve the quality of services?	
	What are the key challenges with the service providers?	
Health service utilization	Are there any differences in the in-take of service from NHI and non-NHI member? What are the key services	

	used by the NHI members once they are enrolled?	
	Do you observe differences in the service utilization behaviors of the patients once they are enrolled in NHI? Has it increased/decreased, overuse of the services etc?	
	How fast do the NHI members finish their benefit package- in an average? Is there change in their utilization behavior once their benefit package is finished?	
	Do you know if the NHI members are utilizing the private health centers? What are the reasons?	
	Have you observed any problem or opportunities created by the co-payment of 15% in drug purchasing What are other hindrances to access and utilizing the health services for the NHI members?	
Claims from health facility	What are the opportunity and challenges with the centralized claims disbursement system?	
	Who are the NHI national medical review team to review the claims from the districts?	
	How long will it take for the disbursement?	21 days of receiving the claim, as per operational rules
	Has there been advance payment? If yes under what circumstances.	
Data collection system	What are the strategies of the data collection system for NHI? How are data collected, analyzed and disseminated? What is the quality assurance mechanism?	
	What are the advantages and dis-advantages of digitalized data collection system? How are enrollment assistants, officers trained on the digital data collection system?	
	What are the lessons learnt until now with the data collection system?	
Quality control and monitoring committee (QMC),	Are all the positions of the review committee fulfilled? How were they selected?	
	Is there ToR for the committee? What are the key roles of the committee? How often does the committee meets and who coordinates the meeting?	
Committee members- Drug costing and review committee	Are all the positions of the review committee fulfilled? How were they selected?	
	Is there ToR for the committee? What are the key roles of the committee?	

	How often does the committee meets and who coordinates the meeting?	
	Are the lists of medicines enlisted in the Operational rules available in the NHI service providers? How do you ensure the availability?	
	How do you monitor the quality of the medicines in the service providers pharmacy? What is the modality of collaboration with the DDA to monitor the quality of the medicines?	
	What is the process of fixing up the price of medicine- lower than the market price? Who bears the gaps in the cost?	
	How was the co-payment of 15% decided? What are the opportunities and challenges created by this co-payment?	

KI 7: NHI district managers

Name:
Position:
Department:

Objectives

- To assess the organizational structure of NHI at district level
- To assess the communication strategy of NHI and its implementation process to analyze the reach of the program information to intended audience.
- To review the communication mechanism from NHI with the service providers in-terms of selection of service providers, review of the claims from service providers, disbursement and monitoring of the services as per SoP.

Theme	Question	Remarks/things to remember
District program and organizational structure	When did you start working as the NHI District Manager? How were you selected? What are you key roles in summary? Did you receive the capacity development training once you were recruited?	Compliance question
	Could you explain the structure of district NHI? How are the staff positions your districts and village level fulfilled? What is the nature of staff (permanent, temporary, consultant, government staffs etc)? Are the human resources adequate and skillful as required by the job in your team?	Compliance question
	How autonomous is the NHI district structure or whom do you report at the district level?	

	What is the program and budget planning process at district level?	
	How does the central office communicates with the district staff in-terms of day-to-day work, monitoring and any other support?	
	How is the district operations defined? What document do you follow for the rules and regulations of NHI?	Does the district follow the same operational rules or do you have simplified district version of rules and SoP? Compliance question
	Are the members of the District Coordination Committee, Health Facility Coordination committee fulfilled? Do you coordinate with them and how often do they meet?	Compliance question
Benefit package and membership	What are the challenges with the premium payment? Is the contribution amount payable for all kind of population in your district? What do you think about the benefit package of the NHI? Is it enough for your district?	
	What are the opportunities and challenges of voluntary vs mandatory enrollment? Which approach best fits for your district at this context?	
	What are the key challenges with the membership expansion?	
	Are there other social security programs, community insurance program? Do you coordinate with them?	
Communication strategy	Does your district have its own communication strategy? If yes what are the key strategies, activities and the resources?	Awareness raising has been one of the challenge
	What are your plans and strategies to reach out to the rural and hard to reach areas?	
	What are the key promising practices and challenges with your communication strategy to reach out the populations with information on NHI?	
Enrollment and renewal process	Are all the positions of enrollment officer and enrollment assistant fulfilled? How many enrollment assistants are there in total?	Provision of one enrolment assistant per 1,000 families and an additional two

		enrolment assistants as back-up
	What is the capacity development approaches for the enrollment assistants and officers?	
	What are the key challenges with the enrollment process?	
	What are the opportunities and challenges with the digital enrollment system?	
	Is the annual renewal process an opportunity or a challenge?	
	What were the key reasons for the non-renewal in the renewal process? Any mitigation measures taken?	The media report on non-renewal of the renewal rate by 16%
	What are the problems related to identifying and reaching the poor, ultrapoor and vulnerable groups mitigated?	
	Any recommendations to increase the enrollment?	
Purchase of the service	How are the service providers identified in the districts?	
	Are private sectors involved in the service provision? Why and on what circumstances?	
	How are the service providers monitored? Are there any measures to improve the quality of services?	
	What are the key challenges with the service providers?	
Health service utilization	Are there any differences in the in-take of service from NHI and non-NHI member? What are the key services used by the NHI members once they are enrolled?	
	Do you observe differences in the service utilization behaviors of the patients once they are enrolled in NHI? Has it increased/decreased, overuse of the services etc?	
	How fast do the NHI members finish their benefit package- in an average? Is there change in their utilization behavior once their benefit package is finished?	
	Do you know if the NHI members are utilizing the private health centers? What are the reasons?	
	Have you observed any problem or opportunities created by the co-payment of 15% in drug purchasing	

	What are other hindrances to access and utilizing the health services for the NHI members?	
Claims from health facility	What are the opportunity and challenges with the centralized claims disbursement system?	
	Is there any role of district NHI to review the claims from the service provider?	
	How long will it take for the disbursement?	21 days of receiving the claim, as per operational rules
	Has there been advance payment? If yes under what circumstances.	
Summary	What is your impression with the NHI in your district? What are the key opportunities and challenges? Any key recommendations for the betterment of the program.	

KI 8: NHI enrollment officer

Name:
Position:
Department:

Objectives

- To assess the communication strategy of NHI and its implementation process to analyze the reach of the program information to intended audience.
- To review the enrollment process of insurers and collection of premium as per SoP.

Theme	Question	Remarks/things to remember
District program and organizational structure	When did you start working as the Enrollment Officer? How were you selected? What are you key roles in summary? Did you receive the capacity development training once you were recruited? What infrastructures and facilities are provided to you to perform your responsibilities?	Compliance question
Benefit package and membership	What are the challenges with the premium payment? Is the contribution amount payable for all kind of population in your district?	

	What do you think about the benefit package of the NHI? Is it enough for your district?	
	What are the opportunities and challenges of voluntary vs mandatory enrollment? Which approach best fits for your district at this context?	
	What are the key challenges with the membership expansion?	
	Are there other social security programs, community insurance program? Do you coordinate with them?	
Communication strategy	Does your district have its own communication strategy? If yes what are the key strategies, activities and resources?	Awareness raising has been one of the challenge
	What are your plans and strategies to reach out to the rural and hard to reach areas?	
	What are the key promising practices and challenges with your communication strategy to reach out the populations with information on NHI?	
Enrollment and renewal process	Are all the positions of enrollment assistant fulfilled? How many enrollment assistants are there in total? How do you identify them	Provision of one enrolment assistant per 1,000 families and an additional two enrolment assistants as back-up [SEP] Compliance question
	What are the key challenges with the enrollment process?	
	What is the capacity development approaches for the enrollment assistants and officers?	
	What are the opportunities and challenges with the digital enrollment system?	
	Is the annual renewal process an opportunity or a challenge?	
	What were the key reasons for the non-renewal in the renewal process? Any mitigation measures taken?	The media report on non-renewal of the renewal rate by 16%
	What are the problems related to identifying and reaching the poor, ultrapoor and vulnerable groups mitigated?	
	Any recommendations to increase the enrollment?	

Support to enrollment assistants	How do you support the enrolment assistants? How frequently do you meet them?	
	What is the working situations of enrolment assistants? What are their incentives? Is it adequate	
	What are the key challenges of enrolment assistants?	
	Any recommendations to improve the working situations of enrolment assistants.	
Summary	What is your impression with the NHI in your district? What are the key opportunities and challenges? Any key recommendations for the betterment of the program.	

KI 9: District NHI coordination committee member

Name:
Position:
Department:

Objectives

- To assess the organizational structure of NHI at district level
- To assess the communication strategy of NHI and its implementation process to analyze the reach of the program information to intended audience.
- To review the communication mechanism from NHI with the service providers in-terms of selection of service providers, review of the claims from service providers, disbursement and monitoring of the services as per SoP.

Theme	Question	Remarks/things to remember
Coordination committee	What are the key roles of the committee and how was it formed? Are all the positions of the review committee fulfilled? Is there ToR for the committee? How often does the committee meets and who coordinates the meeting?	Compliance question
Benefit package and membership	What are the challenges with the premium payment? Is the contribution amount payable for all kind of population in your district?	
	What do you think about the benefit package of the NHI? Is it enough for your district?	

	What are the opportunities and challenges of voluntary vs mandatory enrollment? Which approach best fits for your district at this context?	
	What are the key challenges with the membership expansion?	
	Are there other social security programs, community insurance program? Do you coordinate with them?	
Enrollment and renewal process	Are all the positions of enrollment assistant fulfilled? How many enrollment assistants are there in total? How do you identify them	Provision of one enrolment assistant per 1,000 families and an additional two enrolment assistants as back-up [1]
	What are the key challenges with the enrollment process?	
	What is the capacity development approaches for the enrollment assistants and officers?	
	What are the opportunities and challenges with the digital enrollment system?	
	Is the annual renewal process an opportunity or a challenge?	
	What were the key reasons for the non-renewal in the renewal process? Any mitigation measures taken?	The media report on non-renewal of the renewal rate by 16%
	What are the problems related to identifying and reaching the poor, ultrapoor and vulnerable groups mitigated?	
	Any recommendations to increase the enrollment?	
Health service providers	How are the service providers identified in the districts?	
	Are private sectors involved in the service provision? Why and on what circumstances?	
	How are the service providers monitored? Are there any measures to improve the quality of services?	
	What are the key challenges with the service providers?	
	Do you know if the NHI members are utilizing the private health centers? What are the reasons?	
	Have you observed any problem or opportunities created by the co-payment of 15% in drug purchasing	

	What are other hindrances to access and utilizing the health services for the NHI members?	
Summary	What is your impression with the NHI in your district? What are the key opportunities and challenges? Any key recommendations for the betterment of the program.	

KI 10: District hospital manager managing the NHI program

Name:
Position:
Department:

Objectives

- To review the communication mechanism from NHI with the service providers in-terms of selection of service providers, review of the claims from service providers, disbursement and monitoring of the services as per SoP.

Theme	Question	Remarks/things to remember
Organizational structure and service package	Could you briefly explain the organizational structure of your health centers? How many departments, human resource, types of services etc?	
	Human resource: What is the nature of health service providers in your centers? (doctors, nurses, ANM, health assistants etc)	
	How many VDCs do you cover in your catchment areas? Tentatively how many populations do you serve?	
	What is the annual budget of your health centers? What are the sources of budget?	
	How many other service centers are there within your catchment areas? How do you coordinate with them?	
	What is the disease profile of your populations within your catchment area- in a brief summary?	
NHI program	How was your service center selected under the NHI? How long has this health center been providing service under NHI?	
	What were the preparation you have to do once you get enlisted under the NHI? Was there any change in your structure, team or working modality?	

	How did NHI support to make these preparations with the human resource, infrastructures and processes?	
	What is the communication mode with the district and national NHI office? Is the communication mode clear?	
	How many NHI members receive service in your health centers since you joined NHI? How many do you serve as the first point of contact and how many referrals in an average?	
Benefit package and membership	What are the challenges with the premium payment? Is the contribution amount payable for all kind of population in your district?	
	What do you think about the benefit package of the NHI? Is it enough for your district?	
	What are the opportunities and challenges of voluntary vs mandatory enrollment? Which approach best fits for your district at this context?	
	What are the key challenges with the membership expansion?	
	Are there other social security programs, community insurance program? Do you coordinate with them?	
Health service utilization	What are the key services in your health center under NHI? What are the key differences in the procedures and services for NHI and non-NHI members?	
	How is the procedure for NHI member to receive the service? How long will it normally take for a NHI member to receive the service?	
	Are there any differences in the in-take of service from NHI and non-NHI member? What are the key services used by the NHI members once they are enrolled?	
	Do you observe differences in the service utilization behaviors of the patients once they are enrolled in NHI? Has it increased/decreased, overuse of the services etc?	
	How fast do the NHI members finish their benefit package- in an average? Is there change in their utilization behavior once their benefit package is finished?	
	Do you think the benefit package is adequate for the NHI members?	
	Do you know if the NHI members are utilizing the private health centers? What are the reasons?	
	Have you observed any problem or opportunities created by the co-payment of 15% in drug purchasing?	
	What are other hindrances to access and utilizing the health services for the NHI members?	

Quality of services	Has the health service centers upgraded its quality to meet the objective of the NHI? What are they?	
	If not what are the key challenges within the service center meet the objectives of NHI?	
	How does the health service center manage all the services and drugs listed in the NHI? How do you manage if the service and the drugs are not available?	
	Are human resources adequate and do you receive various capacity development training to meet the demand of the flow and need of the patients in your service sites?	
Claims from health facility	What are the opportunity and challenges with the centralized claims disbursement system?	
	How easy or difficult is it to make the claims? Are the rates of claims stated in the operational rules adequate? What rates would be appropriate?	
	How long will it take for the disbursement?	21 days of receiving the claim, as per operational rules
	Has there been advance payment? If yes under what circumstances.	
Health Facility Coordination Committee	Are all the positions of the review committee fulfilled? How were they selected? Is there ToR for the committee? What are the key roles of the committee? How often does the committee meets and who coordinates the meeting?	
Summary	What is your impression with the NHI in your district? What are the key opportunities and challenges? Any key recommendations for the betterment of the program.	

Annex 2.3 Focus group guidelines and checklist: Enrollment Assistants: Process evaluation

Objectives

- To review the enrollment process of insurers and collection of premium as per SoP.
- To document the reasons for the drop-outs from the programs
- To assess the communication strategy of NHI and its implementation process to analyze the reach of the program information to intended audience.

The steps for organizing the focus group are:

1. **Defining the criteria and selection of the participants**

   Criteria

   - Both male and female
   - Have been working as enrollment assistant for at least 3 months
   - Within the catchment area of the selected service site for the study

   Selection methodology

   The list of enrollment assistance within the catchment area of the selected service sites will be requested from the enrollment officer and District manager. The list will be finalized based on the criteria as explained above and 7-8 participants will be selected purposively by analyzing various factors like age, caste, years of experience and gender to select the wide range of participants similar characteristics.

   The local motivator and facilitator will be then mobilized to extend invitation to the FGD participants to the venue identified below in section 2.

2. **Physical arrangement**

   Identify a safe and conveniently located space where the focus group can be held at least one week before you want to have the discussion. The location could be community hall, NGO meeting room etc far from noise and influence of district NHI office and will employ the local data collector to identify the venue.

3. **Team to conduct the FGD**

   The team of three people, including principle researcher, local facilitator and local motivator, will conduct the FGD and each will have specific responsibility. The principle researcher or local facilitator will be the lead facilitator depending on the context and the remaining will be the recorder. The local motivator will support to reduce the disturbance from external factors and support with logistics like water, food etc.

<u>Functions of the facilitator</u>

The facilitator should NOT act as an expert on the topic. His or her role is to stimulate and support discussion.

- **FGD set up and introduction**

Often, people are more comfortable being seated in a circle. Set up the chairs and place the numbers on the chairs for the note-taker. On each chair, place a piece of paper please ask the participants to fill out at the beginning of the FGD. It will not ask for the participants' names but for information such as age, nationality and gender. It was also ask that participants give their informed consent. If participants do not write, so have a volunteer ready who can take down the information for them.

Introduce the team for conducting FGD and facilitate the introduction of the participants. Explain the Let participants introduce themselves with whatever names they wish to use. Put the participants at ease and explain the purpose of the FGD, the kind of information needed, and how the information will be used. Ask permission to use a tape-recorder.

- **Encourage discussion**

Be enthusiastic, lively, and humorous and show your interest in the groups' ideas. Formulate questions and encourage as many participants as possible to express their views. Remember there are **no** 'right' or 'wrong' answers. **React neutrally** to both verbal and non-verbal responses.

- **Encourage involvement**

Avoid a question-and-answer session. Find ways to maintain the balance of participation from the dominant and shy participants. Mobilize the local motivator to encourage shy participants.

- **Deal correctly with sensitive issues**

The sensitive issues could be mitigated by requesting the participants (if literate) to anonymously write down their responses or opinions on the topic. Alternatively, summarise for the group some of the opinions from previous focus group discussions, focusing on one or two major contrasting opinions. Still another strategy is to form *sub-groups*, and to get a member of the sub-group to summarise and present the opinions of their sub-group members after which the whole group can still discuss these opinions.

- **Build rapport, empathise**

Observe non-verbal communication of the participants and create enabling and friendly environment. Be aware of your own tone of voice, facial expressions, body language, and those of the participants.

- **Avoid being placed in the role of expert**

When asked for ideas or views by a respondent, please do not educate or inform them but float it for discussion and their comments. Do not try to comment on everything that is being said. Don't feel you have to say something during every pause in the discussion. Wait a little and see what happens.

- **Control the rhythm of the meeting, but in an unobtrusive way**

Listen carefully, and move the discussion from topic to topic. Subtly control the time allocated to various topics so as to maintain interest. If participants spontaneously jump from one topic to another, let the discussion continue for a while since useful additional information may surface; then summarise the points brought up and reorient the discussion.

- **Close the focus group discussion**

Summarise the main issues brought up, check whether all agree and ask for additional comments. Thank the participants and let them know that their ideas have been a valuable contribution. Re-iterate the following issues

- The note-taker and moderator to ensure no names will review the notes and pictures from the FGD or identifying details about participants are included.
- It will translate the information into English and ensure no identifying information is present in the English version of the material.
- Only principle researcher will have access to the final information, from which he will write the report
- Principle researcher will not share the FGD notes with anyone.

<u>Functions of the recorder</u>

The recorder should keep a record of the content of the discussion as well as emotional reactions and important aspects of group interaction. Assessment of the emotional tone of the meeting and the group process will enable you to judge the validity of the information collected during the FGD.

Items to be recorded include:

- Date, time, place

- Names and characteristics of participants
- General description of the group dynamics (level of participation, presence of a dominant participant, level of interest)
- • Opinions of participants, recorded as much as possible in their own words, especially for key statements
- Emotional aspects (e.g., reluctance, strong feelings attached to certain opinions)
- Vocabulary used - particularly in FGDs that are intended to assist in developing questionnaires or health education materials
- Spontaneous relevant discussions during breaks or after the meeting has been closed
- It is highly recommended that a tape-recorder be used to assist in capturing information. Even if a tape-recorder is used, notes should be taken as well, in case the machine malfunctions and so that information will be available immediately after the session for discussion.

Function of motivator

- Ensure that no other than participants will enter abruptly and disturb the flow of the discussion.
- Provide required logistic support like water, food as required.
- Motivate the shy participants to speak or notify the facilitators about the shy participants.

4. **Number and duration of sessions**

Number of sessions

In each district there will be one FGD for enrollment assistant. In total there will be three FGDs.

Duration

The proposed duration of FGD will be one hour and half.

5. **Processing and analysis of data**

The FGD team will meet immediately after the FGD to review and **complete the notes** taken during the meeting. This is the right moment to **evaluate** how the focus group went and what changes might be made in the topics when facilitating the next focus group.

Guiding questions for the FGD- Enrollment Assistants

S.N.	Question	Remarks
Introduction		
Recruitment process and nature of work		
1	How did you know about the position of enrollment? Why were you interested in the position?	
2	How were you selected? What was the process and who did it? How did you feel about the process of selection?	
3	How long have you been working as the enrollment assistance? How satisfied are you with your work?	
4	How many enrollment assistants in your VDC? How are the target and work divided amongst the assistants and how do you coordinate with each other? What do you think are the difficulties with coordination and reaching out the targets?	The SOP says there will be one enrolment assistant per 1,000 families and an additional two enrolment assistants as back-up? Is it happening in your area?
Capacity development and other support		
5	Have you received training after your recruitment? What are the key areas of training and How beneficial was the training?	How many trainings conducted and check if there was any follow up trainings.
6	How useful are the smart phone provided to you? What do you think are the advantage and disadvantage of smartphone?	Is it user-friendly? Is there any difficulty operating them? How do you manage the problem?
7	How useful and relevant are the IEC materials on NHI? How do you distribute the IEC materials?	What kind of IEC materials? Is it enough and relevant for purpose? Do you get them on time?
8	What incentives do you receive for your work? Are you satisfied with it?	
Enrolment process		

9	How do you reach out to the intended insurers? What are the processes involved and how long will it take for one family or individual to be enrolled in the program?	
10	What is your experience and opinion about the application process? Is it simple, efficient or time consuming?	
11	Has there been difficulty to identify the ultra poor? What are those difficulties?	
12	Are there any other key issues with the enrolment process- which we forgot to discuss?	
Renewal process		
13	What is your experience and opinion about the renewal application process?	What are the processes involved and how long will it take for one family or individual to renew in the program? Is it simple, efficient or time consuming?
14	What do you think are the reasons for renewal?	
15	What are the reasons for drop-outs?	
16	What is your experience and opinion about the replacement of the lost id card application process?	Is it simple, efficient or time consuming?
Supervision and support		
17	What kind of support do you receive from enrollment officer and the district manager? What are your experiences working with them?	How often the Enrolment officer makes the supervision visit? What are other support provided by the officer?
18	Do you have any recommendations to improve and support your work?	

Annex 2.4: Focus group guidelines: Health service providers: Process evaluation

Objectives

- To review the process and the services provided by the health service providers to the insurers as per SoP.
- To assess receipt of the benefit packages by insurers as explained in the SoP

and analyze the effect of co-payment and other factors like distance, timing to receive the benefit package.

- To review the communication mechanism from NHI with the service providers in-terms of selection of service providers, review of the claims from service providers, disbursement and monitoring of the services as per SoP.

The steps for organizing the focus group are:

1. **Defining the criteria and selection of the participants**

   Criteria

   - Both male and female
   - Have been working as health service providers as health assistant, nurse, ANM (Auxiliary nursing and Mid-Wifery), accountant, program assistant and claim administrator for at least 3 months

   Selection methodology

   The list of health service providers from the selected service sites working on the NHI will be requested from the District manager and Hospital management. The list will be finalized based on the criteria as explained above and 7-8 participants will be selected purposively by analyzing various factors like age, caste, years of experience and gender to select the wide range of participants similar characteristics.

   The local motivator and facilitator will be then mobilized to extend invitation to the FGD participants to the venue identified below in section 2.

2. **Physical arrangement**
3. **Team to conduct the FGD**
   a. Functions of the facilitator
   b. Functions of the recorder
   c. Function of motivator
4. **Number and duration of sessions**
5. **Processing and analysis of data**

They are all similar to what explained under the FGD guideline for enrollment assistants.

Guiding questions for the FGD- Health Service Providers

S.N.	Question	Remarks
Introduction		

Nature of work and capacity development		
1	How long have you been working as the health service providers?	
2	How long are you working under NHI? How were you selected to work under NHI?	Or check if everyone in the health service center is working on NHI.
3	Did you receive any orientation and capacity development training to work under NHI? What are the key areas of training and How beneficial was the training?	
4	Are you aware of how many NHI members receive services from your site?	
Benefit package and Health service utilization process		
5	What are the key services in your health center under NHI?	Are they regular services or anything added up with NHI
6	How complex or simple is the procedures for receiving the services for NHI members?	How long will it normally take for a NHI member to receive the service? What are the key differences in the procedures for NHI and non-NHI members?
7	What are the differences in the service utilization behaviors of the patients once they are enrolled in NHI?	What are the key services used by the NHI members once they are enrolled? Has it increased/decreased, overuse of the services etc?
8	Do you think the benefit package is adequate for the NHI members?	How fast do the NHI members finish their benefit package- in an average? Is there change in their utilization behavior once their benefit package is finished?
9	Are the NHI members utilizing the private health centers? What do you think are the reasons?	
10	Have you observed any problem or opportunities created by the co-payment of	

	15% in drug purchasing?	
11	What are other hindrances to access and utilizing the health services for the NHI members?	Checklists are distance to service sites, low benefit, quality of services, nature of health service providers etc
Quality of services and service delivery in the health service		
12	How did the health service centers upgrade its quality to meet the objective of the NHI? What are the key components? If not what are the key challenges within the service center meet the objectives of NHI?	Insurers pay premium with expectation to receive quality services.
13	What are the key strengths and weaknesses of this center in-terms of service delivery?	
14	How does the health service center manage all the services and drugs listed in the NHI? How do you manage if the service and the drugs are not available?	Have the list of all services and drugs from NHI SOP
Communication with NHI and quality monitoring		
15	How is the quality monitoring performed by the NHI national or district office?	How often; what are the tools of monitoring?
16	Do you have any recommendations to improve and support your work?	

Annex 2.5: Survey questionnaire with the insured populations: Process evaluation

Screening questionnaires

S.N.	Question	Response
1	Are you the member of NHI?	**Y/N**
2	Have you started your benefit package?	Y/N If yes (Y) and benefit package has started at least 9 months before- proceed to question 3- *If less than 9 months stop the*
2.1	How long has it been since your package has started?	

		interview
3	Do any members of your household utilized the NHI benefit package at least one once you became NHI members?	**Y/N**
4	Do you consent for the interview?	**Y/N**

Note: If any respondent fulfills question 2&2.1 and confirm yes (Y) for both questions 3&4 please proceed ahead with the full interview- otherwise look for next respondents.

Part 1: Socio-demography characteristics

Q.N.	Questions	Answer/Code	Skip to
1	Name of the respondents: Age: Name of village/municipality: Ward #: Do you have poverty card?		
2	Type of family- specify the number of family members	Joint…….1 (…….) Single……..2 (……..)	
3	Sex	Male ……..1 Female ……. 2 Transgender …… 3	
4	What is the level of your education?	Never gone to school……1 Never gone to school but can read and write Thai language……2 Primary school……..3 Secondary school……..4 Higher secondary …….5 College or university……6	
5	What is your occupation?	Household work……..1 Govt. job…….2 NGO job……..3 Business……4 Teacher……5 Professional (Doctor/Engineer/ Advocate) ……6 Agriculture works ……7 Garments Worker ……8 Handicrafts ……..9 Poultry/cattle raising ……..10	

		Skilled Laborer ……11 Unskilled Laborer ……12 Driver ……..13 Student ……14 Beggar…….15 Military service……16 Rickshaw/van puller……17 Fisherman ……18 Retired ……19 House help/ Maid……20 Unemployed ……21 Other (Specify)…….98	
6	How much is your monthly family income?	≤ 10,000 NRs……..1 10,001- 300, 00 NRs..…….2 300,01- 50,000 NRs……3 50,001-100,000 NRs..…….4 6 100,000 NRs……5	
7	What is your religion?	Hinduism……..1 Buddhism…….2 Islam…….3 Kirat……..4 Christianity……5 Other…….98	

Part 2: Becoming a NHI member

Q.N.	Questions	Answer/Code	Skip to
8	When did your family joined NHI? How much premium did you pay?		Tally the amount paid with # of family members
9	How did you know about the NHI?	Enrollment assistant……1 Newspaper/tv/radio advertisement……..2 Community gathering…….3 NHI awareness program……4 Friends/relatives who were Already insured ……..5 Others (specify)……98	

10	Was the information clear?	Yes……..1 No……2 Don't know…….3	If Yes please go to question 5 *SQ
10.1	If not clear- why?	Specify the reason in 1 sentence	
10.2	How did you get the clear information?	Specify the answer in 1 sentence	
11	How long did it take for you to be part of NHI once you knew clearly about the scheme?	Less than 1 week……1 1 week…….2 7 weeks……3 8 weeks……4 4 weeks……5 More than 1 month……..6	*SQ
12	Whom did you reach out to be part of NHI?	Enrollment assistant……..1 Enrollment Officer……2 NHI district manager……..3 Others (specify)…….98	
13	How long did it take for you to receive the NHI card?	Less than 1 week……1 1 week…….2 9 weeks……3 10 weeks……4 4 weeks……5 More than 1 month……..6	
13.1	If more than 1 month, what was the reason?	Slow process from enrollment Assistant……1 Digital system malfunction……2 Enrollment officer/district manager away For long time…….3 Could not pay the premium On time……..4 Others (specify)…….98	
14	How was the process of becoming the member?	Easy……1 Difficult……..2 Don't know…….3	*SQ
14.1	Specify the reason		
15	How much premium did you pay?		
15.1	Is the amount payable for you?	Yes……..1 No……2	*SQ

16	How did you pay?	Did not have to pay……1 Usual salary, pensions and regular household income……2 Worked over time……..3 Sold jewellary/belongings……4 Sold property……5 Borrowed money from the money lender…….6 Borrowed money from friends/relatives…….7 Borrowed money from employers……..8 Borrowed money from bank……..9 Used the savings …….10 Used Investment fund……..11 Remittance…….12 Others- specify……..98	
17	Did the scheme start in time after you became the NHI member?	Yes……..1 No……2 Don't know…….3	Max two months after the membership *SQ
17.1	If no why?		

Part 3: Performance of enrollment assistants and officers

Q.N.	Questions	Coding Categories	Skip to
18	Do you know how many enrollment assistants in your VDC? Specify the number		
19	How many times did they visit your house until you became the members?	1-3 times……1 4-6 times……2 7-9 time…….3 More than 10 times……4 Don't know…….5	
20	What do they do when they visit you?	Explain about NHI…….1 Motivate you to be NHI member……..2 Gossip about NHI, Enrollment officer…….3 Share their frustrations……..4 Provide you with IEC On NHI……..5 Others (specify)……98	Multiple choice

21	Was the information on NHI clear?	Yes……..1 No……2 Don't know…….3	If Yes please go to question 6 *SQ
21.1	If not clear- why?	Specify the reason in 1 sentence	
22	How did you get the clear information?	Specify the answer in 1 sentence	
23	Do you know enrollment officer and district manager?	Yes……..1 No……2	If no- end this section
24	How many times did they visit in last 3 months?	Not a single time……1 1-3 times……2 4-6 times……3 7-9 time……4 More than 10 times……5 Don't know…….6	
25	What do they do on their visit?	Explain about NHI…….1 Motivate people to be NHI member……..2 Ask about enrollment Assistants……..3 Provide you with IEC On NHI……..4 Others (specify)……98	

Part 4: Benefit packages

Q.N.	Questions	Coding Categories	Skip to
26	Do you know the benefit package of becoming NHI?	Yes……..1 No……2	
26.1	What is the package?		
26.2	If no why?		
27	Which health facility did you chose as your first point of contact?	PHC……..1 Hospital…….2	

28	Did you have enough options to chose the point of contact?	Yes……..1 No……2 Don't know…….3	*SQ
29	How did you choose it?	Chose on my will……..1 Enrollment assistant Asked to choose……..2 No choices to choose My interest…….3 Others (specify)…….98	
29.1	Please provide name of your first contact of PHC or hospital.		
30	Why did you choose PHC/hospital as the first point of contact?	Near to my place……1 Been their many times (comfortable)…….……2 Quality services……..3 Friendly health workers……..4 More facilities…….5 Others (specify)…….6	Only if chosen on my own will in question 2 Multiple selection
31	How many times did you visit your PHC/hospital, in last 3 months, after becoming the NHI members?	1-3 times……1 4-6 times……2 7-9 time……3 More than 10 times……4	
32	Did you visit the PHC/hospital more after becoming the NHI members?	Yes……..1 No……2 Don't know…….3	
32.1	Specify the reasons if yes		
33	What are other reasons hindering your from accessing your PHC and hospital?	No serious disease……1 Spontaneous recovery……2 No money……..3 No transport……4 Long waiting time……..5 No good care…….6 Unfriendly health ……..7 care providers Could not get away from work…….8 Nobody to accompany……..9 Fear of health care centers ..10 Expensive health care……..11 Religious belief……12 Others- specify……98	

34	How was the procedure of getting the service after becoming NHI member?	Easy- more priority given……..1 Lengthy process with forms And formalities……..2 Difficult- lesser priority given…..3 No changes……4 Others (specify).…….98	*SQ
34.1	Provide some explanations if selected 1, 2 or 3.		
35	Did you find any changes in the PHC/hospital services and facilities after becoming NHI members?	Yes……..1 No……2 Don't know…….3	If no- go to 16
35.1	If yes- please specify		*SQ
36	Did you find any changes in the behaviors and attitude of health service providers after becoming NHI members?	Yes……..1 No……2 Don't know…….3	If no- go to 18
36.1	If yes- please specify		*SQ
37	Did you receive the benefit package as stated during your membership orientation process?	Yes……..1 No……2	*SQ
37.1	If no why		
38	How much of benefit package did you use after becoming NHI member in first year?	None……1 11 25%.....2 26-50%.....3 51-75%.....4 76-99%.....5 100%.....6	
38.1	If chosen 1 or 2- please ask the reason	Nobody fell sick seriously…..1 Did not use the selected PHC/hospital……..2 Visited private hospital……3 Others (specify)……98	

38.2	If 100% chosen, how long did you take to use 100%	1-3 months……1 4-6 months……2 7-10 months……..3 11-12 months…….4	
39	How did you manage the expense after completing 100%?	Did not visit the center…….1 Out of pocket expense……..2 Other insurance…….3 Free health services……..4 Others……98	
39.1	Was the information about the use of your benefit package easily accessible?	Yes……..1 No……2 Don't know…….3	*SQ
40	Were you referred to other health facilities from your PHC/hospital?	Yes……..1 No……2 Don't know…….3	
40.1	What was the reason for referral?	Please specify	
40.2	How many times you were referred in last three months?	1-3 times……1 4-6 times……2 7-9 time…….3 More than 10 times……4	
41	How was the referral mechanism?	Easy- more priority given……..1 Lengthy process with forms And formalities……..2 Difficult- lesser priority given…..3 No changes……4 Others (specify).…….98	*SQ
42	Are the drugs available all the time in your PHC/hospital?	Yes……..1 No……2 Don't know…….3	*SQ
42.1	How many times did you not get the drugs from your PHC/hospital in last 3 months?	1-3 times……1 4-6 times……2 7-9 time…….3 More than 10 times……4	
42.2	What did you do?	Did not buy…….1 Bought from private Pharmacy…….2 Bought from other PHC And hospital…….3	

42.3	If 2 or 3: how did you buy it?	Out of pocket……..1 85% copayment reimbursed…2	
43	Incase in the availability of drugs in PHC and hospital- did you receive 85% deduction in the drug?	Yes……..1 No……2 Don't know…….3	*SQ
43.1	If no-why?		
43.2	Is it easy for you to pay 15% on the drugs?	Yes……..1 No……2 Don't know…….3	
43.3	If no why?		
44	Have your heard from any other NHI members about difficulty in paying 15%?	Yes……..1 No……2 Don't know…….3	

Part 5: Replacement of lost card and renewal

Q.N.	Questions	Coding Categories	Skip to
45	Have you ever lost the card?	Yes……..1 No……2	If no go to…..
46	How long did it take to replace the card?	Less than 1 week……1 1 week…….2 12 weeks……3 13 weeks……4 4 weeks……5 More than 1 month……..6	
46.1	If more than a month- why?	Slow process from enrollment Assistant…….1 Digital system malfunction……2 Enrollment officer/district manager away For long time…….3 Discrepancy in the name……4 Others (specify)…….98	

47	How many times did you renew your membership?	0 time……1 1 time……2 14 times……..3 3 times……..4	If 1 go to 48.1
48	Why did you decide to renew the membership?	Reduced by out of pocket expense…..1 Protected my family from Catastrophic expense……..2 Improved the health of my family…..3 Better services and processes……..4 Better benefit package…….5 Others (please specify)……98	Multiple choice *SQ
48.1	If 0 time- why did you not renew?		
49	How was the process of renewal?	Easy……1 Difficult……..2 Don't know…….3	*SQ
50	Any specific recommendations to make the program and service better to meet your needs	2-3 specific recommendations	

***SQ: Satisfactory questions**

Annex 2.6: NHI Outcome evaluation questionnaire

Screening questionnaires

S.N.	Question	Response
1	Are you a member of NHI?	**Y/N**
2	Have you started your benefit package?	Y/N If no (N) or yes (Y) and benefit package has started less than 3 months before- proceed to question 3- *If more than 3 months stop the interview*
2.1	How long has it been since your package has started?	
3	Do any members of your household have history of chronic disease?	**Y/N**
4	Do any members of your household are below 5 or 65 years old?	**Y/N**
5	Do any members of your household made health expense in past 30 days?	**Y/N**

6	Do you consent for the interview?	**Y/N**

Note: If any respondent fulfills question 2&2.1, answers minimum 2 yes (Y) out of question 3, 4 & 5 and consent for the study- please proceed ahead with full interview- otherwise look for another respondent.

Interview Visits

	1	Final visit
Date of interview		
Name & code of interviewers		
Result code*		
NEXT VISIT: DATE		
TIME		

***Result codes:**

1 Completed
2 Not at home
3 Postponed
4 Refused
5 Dwelling not found
6 Other_____(specify)

Data collector	Principle Researcher
NAME_____ DATE _____	NAME_____ DATE _____

Part 1: Household Information

Introduction

Name of district	
Name of village/municipality	
Ward #	
Who is the person who provides the main economic support for the household? Identify from the list below	

Who are the household respondents? Name and code number from the Household rooster	1. 2. 3. 4. 5.

All births in the household over the past two years

Member	Gender (Male:1/F:2)		Year of birth	Age if still alive

Household roster

#	Usual residents or visitors	Sex	Rel to the Head of HH	Age	Education	Occupation	Marital status	Religion
	Please give me the names of the people with whom you usually sleep and eat starting with the head of the household.	1=Male 2=Femal e 3= Third gender	What is the relationship of (NAME) to the head of the household? **Refer to code below*	Write in years If age less than 1 year write 00	**Refer to the code below	***Refer to the code below	1=Never-married 2=Currently married 3=Divorced 4=Separated 5=Widowed	1=Hinduism 2=Buddhism 3=Islam 4=Kirat 5=Christianity 6=Other

***Relationship to head of household**	**Education	***Occupation

1=Head **2**=Wife or husband **3**=Son or daughter **4**=son-in-law or daughter-in-law **5**=Grandchild **6**=Parent **7**=Parent-in-law **8**=Brother or sister **9**=Other relative **10**=Adopted/fostered/stepchild **11**=Not related **12**=Don't know	1=no education (never been to school), 2=literate (never been to school but can and write simple Nepali language), 3= primary school (Grade 1-5), 4= Middle school (Grade 6-9), 5= high school (Grade 10-11) 6= College or University and above.	**1**=Household work **2**=Govt. job **3**=NGO job **4**=Business **5**=Teacher **6**=Professional (Doctor/Engineer/Advocate) **7**=Agriculture works **8**=Garments Worker **9**=Handicrafts **10**=Poultry/cattle raising **11**=Skilled Laborer **12**=Unskilled Laborer **13**=Driver **14**=Student **15**=Beggar **16**=Military service **17**=Rickshaw/van puller **18**=Fisherman **19**=Retired **20**=House help/ Maid **21**=Unemployed **22**= Other (Specify)

Part 2: Household Income

Total monthly household income. Refer to the last month income	In NRs	
Were there any changes in this year's income compared to last year's income?	Yes…….. 1 No…….2 Don't know/Cant say……3	
If there has been a change, has it increased or decreased from the past year till today?	Increased…….1 Decreased……2 Don't know/Can't say…..3	
In the past 30 days, did your household earn any income (in cash or in kind) from the following source	Yes------1 No-------2	Amount
Business		
Regular salary job		
Labor (daily wages)		
Properties rent, savings, interests, dividends		
Pension		
Welfare		

Agriculture		
Selling of cattles (chicken, goat, pigs etc)		
Remittance		
Any other source, please specify		

Part 3: Household expenditure

Now, we would like ask you about household expenditure. For past 30 days, please refer to a normal one-month period without any special expenditure for festivals, weddings, or funerals.

WRITE IN RUPEES. IF NONE WRITE ZERO. WRITE DK IF DOES NOT KNOW. DO NOT LEAVE ANY PART BLANK.

Questions	**Answers**	
Food Expenditure	**Past 30 days**	**Past 12 months**
A. How much money did your household spend on food bought from outside? (e.g. rice, beans, cooking oil. vegetable, meat etc.)		
B. Did your household consume food that was grown or produced by your household? If so, how much would your household have spent in the market to buy this quantity of food?		
C. What is the total value of food consumed that your household received in-kind (gift, donation or wages for work, etc.)?		
How much money did your household spend on:	**Past 30 days**	**Past 12 months**
A. Education		
B. Clothes and footwear		
C. Personal care items (soap, shampoo, toothpaste, cosmetics, haircuts and the like)		
D. Household items (laundry soap, cleaning items, anti-mosquitoes and the like)		
E. Water and sewage		
F. Electricity		
G. Fuels		
H. Transport		
I. Telecommunication fees		
J. Garbage disposal		
K. Health care and treatment costs		
L. Socializing and recreation (except funerals, dowries and weddings)		
M. Loan repayment		
N. Other (Specify)		

What is the money value of the amount received in-kind (gift, donation or wages for work, etc.) by your household for:	**Past 30 days**	**Past 12 months**
A. Clothes and footwear		
B. Personal care items (soap, shampoo, toothpaste, cosmetics, haircuts and the like)		
C. Household items (laundry soap, cleaning items, anti-mosquitoes and the like)		
D. Other (specify)		

Part 4: HOUSEHOLD EPISODES OF ILLNESSES

Now we will ask you about illness episodes among household members. Please consider multiple medical treatments for the same disease as one episode. For example, if a child went to a clinic for asthma and then again after two days for a follow up visit, those two clinic visits will be considered as one episode of illness.

USE SEPARATE LINES FOR EACH DISEASE EPISODE (DIAGNOSIS) IF SAME PERSON HAD MORE THAN ONE DISEASE EPISODE. YOU MAY USE DITTO FOR NAME AND HOUSEHOLD LINE NIMBER.

1. Has anybody (including children) in the household suffered from any illnesses or injuries or delivered a baby in the **past 30 days?**

1. YES

2. NO >> GO TO Question 2 for chronic illness

Who became become sick, had delivered or was injured in the **PAST 30 DAYS**?
If sick or injured, or had complications associated with delivery, what was the diagnosis?

WRITE "NORMAL DELIVERY" IN Diagnosis FOR DELIVERY WITHOUT COMPLICATION AND LEAVE duration of illness BLANK.

Code	**Name**	**HH Line #**	**Diagnosis or main symptom (see code below)**	**Duration of illness**		
				Years	**Months**	**Days**

2. Has anybody (including children) in the household suffered any chronic diseases (including those due to injury) in the **past 12 months**? Chronic disease refers to a disease that lasts for **more than 3 months**.

1. YES
2.NO >>*GO TO NEXT Question*

Who and what chronic diseases did they suffer from in the **PAST 12 MONTHS?**

Code	**Name**	**HH Line #**	**Diagnosis or main symptom (see code below)**	**Duration of illness**		
				Years	**Months**	**Days**

Part 5: Health care utilization and expense

General and outpatient cost

In the past 1 month, did you or anyone in your household have any episode of illness that did not require hospitalization but required outpatient treatment? Hospitalization is defined as having spent at least one night in hospital											
Was there any cost incurred due to this illness (or delivery) in the past 30 days?	Yes- 1 No- 2 (go on to next part) Don't Know- 3 (go on to next part)	1	2	3	4	5	6	7	8	9	10
Severity	Not serious……..1 Quite serious……..2 Very serious……3 Don't know…….98										
Types of facility visited for treatment	Did not seek care……..1 Public health inst Sub-health post……2 Health post……..3 PHC…….4 Mobile clinic……5 Ayurveda center …….6 Hospital……..7 Private health inst Private clinic……8 Pharmacy…….9 Pvt hospital……..10										

	Health worker's home..11										
Types of health workers consulted	Public health inst Doctor…….1 Paramedic ……..2 (HA, SAHW, AHW, ANM) Kaviraj/vaidya……3 Private heath inst Doctor…….4 Pharmacist……..5 Paramedic……6 Kaviraj/vaidya……7 Traditional healer……8 Other……98										

If not visited- what are the reasons	No serious disease……1 Spontaneous recovery……2 No money……..3 No transport……...4 Long waiting time……..5 No good care…….6 Unfriendly health ……..7 care providers Could not get away from work…….8 Nobody to accompany……..9 Fear of health care centers ..10 Expensive health care……..11 Religious belief……12 Others- specify……98										
How much was spent for the past consultation of this injury and illness over the past 30 days?	Fees including consultation/ investigation fee, diagnosis & test (e.g. X ray, blood test etc)										
	Medicine cost										
	Travel cost										
	Other cost										
How much did this HH pay in cash for traditional	Record in rupees										

healer for this illness in the past 30 days?	If nothing was spent write 0										
Did this HH pay in kind for traditional healer for this illness in the past 30 days? If so, how much would your household have spent in the market to buy the item?	Record in rupees If nothing was spent write 0										
How much did this HH pay for homeo-medicine for the treatment of this illness in the past 30 days?	Record in rupees If nothing was spent write 0										
How much did this HH pay for ayurvedic treatment for this illness in the past 30 days?	Record in rupees If nothing was spent write 0										
How much did this HH pay for home remedy for this illness in the past 30 days?	Record in rupees If nothing was spent write 0										
Did you receive any kind of	Yes-1										

in-kind or cash support for the treatment of this illness or injury?	No- 2 Don't know- 3										
Did you stop from any usual activity and job due to the illness or injury?	Yes- 1 No- 2										
How many days did you stop?											
Did you lose any money or kind in these days you stop from the usual activity and job?	Yes-1 No- 2 Don't know- 3										
How much money did you lose?											
Did this household reduce expenditures on food to pay for this illness (or delivery) in the past 30 days?	Yes-1 No- 2 Don't know- 3										
Did this household remove children from school to pay for this illness (or delivery) in the past 30 days?	Yes-1 No- 2 No children going to school in this HH-3 Don't know- 4										

How did your household pay the expense for this illness and injury?	Did not have to pay……1 Usual salary, pensions and regular household income……2 Worked over time……..3 Sold jewellary/belongings……4 Sold property……5 Borrowed money from the money lender…….6 Borrowed money from friends/relatives……7 Borrowed money from employers……..8 Borrowed money from bank……..9 Used the savings ……10 Used Investment fund……..11 Health insurance……..12 Remittance……13 Others- specify……..98										
What is the health insurance/subsidy program or scheme that NAME or HH was enrolled in during the past 30 days?	None……..1 Government employees' benefits……..2 Government subsidy……...3 NHI……4 Private insurance…….....5 NGO subsidy……6										

	Other (specify)……..98										
How much total money has NAME already received from the health insurance/subsidy to fully or partially cover the health care expenditure that was incurred in the past 30 days due to this illness (or delivery)?	Record in rupees Write 0 if none										
(If not yet received) How much total money is NAME to receive from the health insurance/subsidy to fully or partially cover the health care expenditure that was incurred in the past 30 days due to this illness (or delivery)?	Record in rupees Write 0 if none										

Part 6: Chronic illness and disability cost

How much did this household pay for chronic illness and disability in the past 12 months? Please do not include hospitalization, which is defined as having spent at least one night in hospital. Please include all costs for allopathic medicine, traditional healers, homeopathy, ayurveda and home remedy etc.											
Was there any cost incurred due to chronic illness and disability (or delivery) in the past 12 months?	Yes- 1 No- 2 (go on to next part) Don't Know- 3 (go on to next part)	1	2	3	4	5	6	7	8	9	10
What chronic illness do the members have	Respiratory……..1 Asthma……2 Cholesterol…….3 Epilepsy……..4 Cancer……5 Diabetes……6 Kidney……7										

	Liver diseases…….8 TB……..9 Gastritis/Ulcers……..10 Rheumatism (arthritis)…….11 Gynecological problems…….12 Occupations illness…….13 Gastrointestinal diseases…….14 High/low blood pressure…….15 Neurological diseases…….16 Others (specify)…….98										
What disability do the members have	Physical…….1 Visual……2 Hearing…….3 Visual and hearing……4 Speech……5 Mental……6 Multiple……..7 Others (specify)…….98										
Severity	Not serious……..1 Quite serious……..2 Very serious……3 Don’t know…….98										

Types of facility visited for treatment	Did not seek care……..1 Public health inst Sub-health post……2 Health post……..3 PHC…….4 Mobile clinic……5 Ayurveda center …….6 Hospital……..7 Private health inst Private clinic……8 Pharmacy…….9 Pvt hospital……..10 Health worker's home..11										
Types of health workers consulted	Public health inst Doctor…….1 Paramedic ……..2 (HA, SAHW, AHW, ANM) Kaviraj/vaidya……3 Private heath inst Doctor…….4 Pharmacist……..5 Paramedic……6 Kaviraj/vaidya……7 Traditional healer……8 Other……98										

If not visited- what are the reasons	No serious disease……1 Spontaneous recovery……2 No money……..3 No transport……...4 Long waiting time……..5 No good care…….6 Unfriendly health ……..7 care providers Could not get away from work…….8 Nobody to accompany……..9 Fear of health care centers ..10 Expensive health care……..11 Religious belief……12 Others- specify……98										
How much was spent for the past consultation of this injury and illness over the past 30 days?	Fees including consultation/ investigation fee, diagnosis & test (e.g. X ray, blood test etc)										
	Medicine cost										
	Travel cost										
	Other cost										
How much did this HH pay in cash for traditional	Record in rupees										

healer for this illness in the past 30 days?	If nothing was spent write 0										
Did this HH pay in kind for traditional healer for this illness in the past 30 days? If so, how much would your household have spent in the market to buy the item?	Record in rupees If nothing was spent write 0										
How much did this HH pay for homeo-medicine for the treatment of this illness in the past 30 days?	Record in rupees If nothing was spent write 0										
How much did this HH pay for ayurvedic treatment for this illness in the past 30 days?	Record in rupees If nothing was spent write 0										
How much did this HH pay for home remedy for this illness in the past 30 days?	Record in rupees If nothing was spent write 0										
Did you receive any kind of	Yes-1										

in-kind or cash support for the treatment of this illness or injury?	No- 2 Don't know- 3										
Did you stop from any usual activity and job due to the illness or injury?	Yes- 1 No- 2										
How many days did you stop?											
Did you lose any money or kind in these days you stop from the usual activity and job?	Yes-1 No- 2 Don't know- 3										
How much money did you lose?											
Did this household reduce expenditures on food to pay for this illness (or delivery) in the past 30 days?	Yes-1 No- 2 Don't know- 3										
Did this household remove children from school to pay for this illness (or delivery) in the past 30 days?	Yes-1 No- 2 No children going to school in this HH-3 Don't know- 4										

How did your household pay the expense for this illness and injury?	Did not have to pay……1 Usual salary, pensions and regular household income……2 Worked over time……..3 Sold jewellary/belongings……4 Sold property……5 Borrowed money from the money lender…….6 Borrowed money from friends/relatives……..7 Borrowed money from employers……..8 Borrowed money from bank……..9 Used the savings ……10 Used Investment fund……..11 Health insurance……..12 Remittance……13 Others- specify……..98										
What is the health insurance/subsidy program or scheme that NAME or HH was enrolled in during the past 30 days?	None……..1 Government employees' benefits……..2 Government subsidy……...3 NHI……4 Private insurance…….....5 NGO subsidy……6										

	Other (specify)……..98										
How much total money has NAME already received from the health insurance/subsidy to fully or partially cover the health care expenditure that was incurred in the past 30 days due to this illness (or delivery)?	Record in rupees Write 0 if none										
(If not yet received) How much total money is NAME to receive from the health insurance/subsidy to fully or partially cover the health care expenditure that was incurred in the past 30 days due to this illness (or delivery)?	Record in rupees Write 0 if none										

Part 7: Hospitalization cost

How much did this household pay for hospitalization due to this illness in the past 12 months? Hospitalization refers to having spent at least one night in hospital.											
Did NAME receive inpatient treatment for this illness in the past 12 months?	Yes- 1 No- 2 (go on to next part) Don't Know- 3 (go on to next part)	1	2	3	4	5	6	7	8	9	10
How many times was NAME hospitalized for this illness in the past 12 months?											
How many days did NAME spend in the hospital for this illness during past 12 months (days)?											

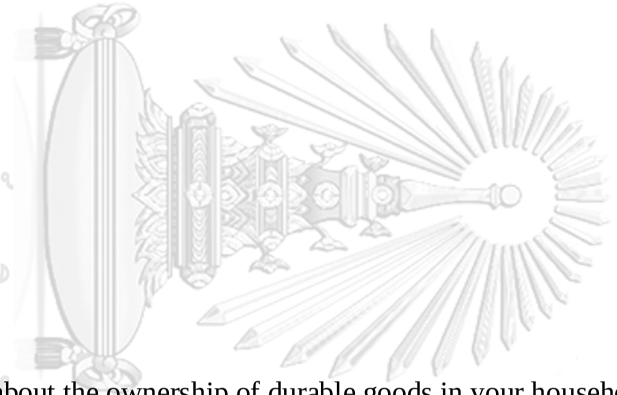
Types of hospital hospitalized	Public health inst PHC……1 Ayurveda center …….2 Hospital……3 Private health inst Private clinic……4 Pvt hospital……..5										
How much was spent for the past consultation of this injury and illness over the past 30 days?	**Medical cost**										
	Fees including consultation/ investigation fee, diagnosis & test (e.g. X ray, blood test etc)										
	Medicine cost										
	Living cost during the hospitalization										
	Food										
	Other cost										
	Expense of accompanying										
	Travel (including the patient, ambulance etc)										
	Food and lodging										

	Others										
Did you receive any kind of in-kind or cash support for the treatment of this illness or injury?	Yes-1 No- 2 Don't know- 3										
Did you stop from any usual activity and job due to the illness or injury?	Yes- 1 No- 2										
How many days did you stop?											
Did you lose any money or kind in these days you stop from the usual activity and job?	Yes-1 No- 2 Don't know- 3										
How much money did you lose?											
Did this household reduce expenditures on food to pay for this illness (or delivery) in the past 30 days?	Yes-1 No- 2 Don't know- 3										
Did this household remove children from school to pay for this	Yes-1 No- 2 No children going to										

illness (or delivery) in the past 30 days?	school in this HH-3 Don't know- 4										
How did your household pay the expense for this illness and injury?	Did not have to pay……1 Usual salary, pensions and regular household income……2 Worked over time……..3 Sold jewellary/belongings……4 Sold property……5 Borrowed money from the money lender…….6 Borrowed money from friends/relatives……..7 Borrowed money from employers……..8 Borrowed money from bank……..9 Used the savings ……10 Used Investment fund……...11 Health insurance……..12 Remittance……13 Others- specify……..98										

What is the health insurance/subsidy program or scheme that NAME or HH was enrolled in during the past 30 days?	None……..1 Government employees' benefits……..2 Government subsidy……...3 NHI…….4 Private insurance…….....5 NGO subsidy……6 Other (specify)……..98										
How much total money has NAME already received from the health insurance/subsidy to fully or partially cover the health care expenditure that was incurred in the past 30 days due to this illness (or delivery)?	Record in rupees Write 0 if none										
(If not yet received) How much total money is NAME to receive from the health insurance/subsidy to fully or partially cover the health care expenditure that was	Record in rupees Write 0 if none										

incurred in the past 30 days due to this illness (or delivery)?											



Part 8: DURABLE GOODS

In the following questions, I would like to ask about the ownership of durable goods in your household, regardless of which person owns them. Please **exclude** from your answer any item owned mainly for a **household enterprise**.

Does your household own any of the following items?				How many [ITEM] (s) does your household own?	How many years ago did your household acquire this [ITEM]? If your household has more than one item, please refer to the most recently acquired item.	Did you purchase it or receive it as a gift or payment in-kind?]? If your household has more than one item, please refer to the most recently acquired item.	How much was it worth when your household obtained it?]? If your household has more than one item, please refer to the most recently acquired item.	If you wanted to sell this [ITEM] (s) today, how much would you receive? If your household has more than one item, please mention total value of all items.
CODE	ITEM	**Y**es / **N**o		Number	Years (0) if less than a year)	1=Purchase 2=Gift	NRs	NRs
01	Radio/Tape/CD player	Y	N					
02	Camera (still/movie)	Y	N					
03	Bicycle	Y	N					
04	Motorcycle/scooter	Y	N					
05	Motor car/Jeep	Y	N					
06	Refrigerator or freezer	Y	N					
07	Washing machine	Y	N					
08	Fans	Y	N					
09	Heaters	Y	N					
10	Television	Y	N					

11	Telephone sets/Mobile phone	Y	N					
12	Sewing machine	Y	N					
13	Computer/Printer	Y	N			2		

INTERVIEWERS: CHECK YOUR FILLED IN QUESTIONNAIRE CAREFULLY BEFORE LEAVING THE RESPONDENTS AND END YOUR INTERVIEW BY GIVING THANKS TO THE RESPONDENT

RECORD THE TIME FINISHED: HOURS MINUTES

Interviewer: In future, we may need to contact you again for follow-up. Can you tell us your (mobile) phone number for that purpose?

If permission is given, record the phone number. Phone No. _____

Disease Code

Code	Diagnosis
01	Injury
02	Allergy
03	Appendicitis
04	Cancer (specify)
05	Kidney stone
06	Otitis media
07	Food poisoning
08	Abortion
09	Peptic ulcer disease (gastritis)
10	Chicken pox
11	Insomnia
12	Cataract
13	Skin disease
14	Uterine prolapse
15	Tumor
16	Typhoid fever
17	Common cold/Tonsillitis
18	Diabetes
19	Dengue fever
20	Dental disease
21	Pneumonia
22	Nasal polyp
23	Piles/Hemorrhoids
24	Urinary tract infection
25	Hypertension
26	Benign prostatic hyperplasia
27	Gallbladder stone/cholecystitis
28	Arthritis (Joint pain, back pain, bone pain)
29	Migraine/Headache
30	Epilepsy

31	Mental disease
32	Tuberculosis
33	Hypercholesterolemia
34	Anemia
35	Liver disease including Jaundice, cirrhosis and hepatitis B&C
36	Asthma
37	Heart diseases
38	Inguinal hernia
39	Measles
40	Hyperuricemia
41	Dysentery

Code	**Symptom**
43	Cough
44	Fever
45	Diarrhea
46	Abnormal vaginal bleeding
47	Other (Specify)
99	Don't know

Annex 2.6 Themes and Sub-themes from the qualitative data analysis

Themes	**Sub-themes**			
	Experts	Health Insurance Board (HIB) central level	Health Insurance Board provincial/ district level	Health service providers
Governance: national political leadership and policy formulatio	**Political support:** prime minister initiated and bipartisan parliament support got the SHI Act			

n for SHI	**Policy formulation:** Top-down government policy formulations with little or no contribution from other stakeholders (academic, civil society, parliament, employers). Policy highlights: Insurance coverage for all citizens premium paid by citizens, subsides for citizens who can' pay total or partial premium			
HIB governanc e and leadership	**Ineffective coordination:** Ad-hoc Stakeholder coordination	**Organizational Ownership:** Autonomy of HIB not practiced in reality though Act has ensured it		
	Potential conflict of interest: HIB board members are dominated by MoH representative	**Organizational ownership:** Uncertain autonomy of HIB	**Political support**: Local governance and stakeholders support to the SHI	
	R&D: Possible alternative options for equitable approach	**Ineffective coordination:** Weak inter-ministry coordination		
	Weak Government understanding on SHI: SHI is not just medical issue but its dominated by finance too	**Limited international assistance:** The support of the external donors is limited and ad-hoc		
	Organizational ownership: Evidence on MoH overriding the role of HIB			
Financing of SHI program		**Financial sustainability** very difficult: the initial complete financing of the SHI program		

		through government general taxation fund, has not yes plans with targets and timeline for shifting funding to collected premium		
	Financial sustainability very difficult: highly ambitious 100% subsidized premium for specific populations (e.g. absolute poors. Elderly >65 years)	**Financial Inefficiency**: Unused budget: HIB unable to utilize the collected premium		
		Financial source: Policy for tax fund and premium as the key source of funding, no specific targets and time yet		
Human Resource of HIB	**High turn over of staffs:** The high turn over of enrolment assistant and high probability of enrolment officer due to high job openings	**Unskilled staffs:** Lack of qualified staffs with specific skills	**Limited training**: training package for enrolment officer only include admin, account and store keeping	**SHI focal person at the hospital:** Ad-hoc and un-paid SHI focal person at the hospital
	Inadequate and temporary staffs: Due to lack of human resource planning and staffs with contract and deputed from MoH	**Inadequate staffs:** The staff will be inadequate as the coverage of the program expands	**Inadequate and temporary staffs at districts:**	**Adequate training for health workers:** General and specific trainings related to the claim
	Temporary and unskilled staffs: Lack of the expertise staffs in HIB	**Inadequate training:** Only the generic trainings are provided and its not consistent every year.	**Inadequate facilities for enrolment assistant:** Merely 10% commission	**Inadequate training for health workers:** Only introductory orientation on SHI
	Challenges with district staffs: Unclear requirement of enrolment officer, low coordination and poor reporting	**Inadequate and temporary staffs:** Due to lack of human resource planning and staffs with contract and deputed from MoH	**EA selection:** Priority for FCHV	

	mechanism between officer and assistants			
		Inadequate public awareness: The orientation could have been done more effectively with sufficient HR	**Work satisfaction:** EA satisfied with their work	
		Unfair selection: The limited training opportunity is provided only for the MoH deputed staffs.	**Inadequate assistants:** Lack of EA at rural places	
			Challenges with enrolment assistant: blamed for weak service delivery	
			Recommendations to SHI: Support for EA	
Payment for SHI health service providers	**Inadequate benefit package**: The package is not enough for chronic illness and hospitalization	**Program Expense:** Majority of HIB expense is on claim reimbursement	**Inadequate benefit package:** Does not include major services	**Delayed payment:** Late disbursement on the claim
	Out Of Pocket health expense: Provider fraud and abuse to induce OOP for poor	**Delayed claim reimbursement:** The untimely reimbursement to service providers due to bureaucracy	**Recommendations for SHI:** Need to start the benefit package within 1 month of registration	**Claim challenges:** Non-alignment of hospital software with claim system
		Challenges with claim at service provider: Service providers unable to submit the claim properly mainly due to lack of skill and human resource		**Opportunity with claim:** Transparent and simple procedure
		Fee for service model: Current service purchase mechanism		**Recommendations for SHI:** capacity issue of enrolment assistant, communication and claim payment on time

		Capitation model: Envisioned service purchase mechanism		
		Inadequate benefit package: The package not enough for chronic illness		
Enrolment and collection of premium	**Efficient pooling:** central risk pooling	**Insufficient premium collection:** The payment surpass collected premium due to low coverage	**Weak ability to pay the premium:** the rural people have this difficulty	
	Mandatory enrollment: high chances to be implemented due to formal sector and subsidies	**Inequitable premium:** All members have to pay the same amount irrespective of their income	**Enrolment challenges:** lack of digital technology, weak service delivery and other private insurance	**Enrolment challenges:** Inadequate public awareness on SHI packages
	SHI Policy implementation challenges: Mandatory enrolment, identification of the poor	**Innovative practice:** Potential regulation on mandatory enrollment	**Mandatory enrolment:** For sustainability of SHI program	**Recommendations to improve SHI:** Reach out the poor
	SHI Coverage: the poor should be the top priority		**Challenges with mandatory enrolment:** Poor identification problem and lack of data.	
	Potential increased premium collection: The addition of formal sector and subsidized population; need of government directives.		**Adverse selection:** Urban populations and residing near to the service providers	
	In-equitable premium: the premium not as per income of the individual		**Reason for non-renewal:** Low understanding of people with financial health investment	
	In-equitable annual renewal: annual renewal deprive		**Public private partnership:** Non-renewal due to removal	

	people from service if they cant pay on time		of private sector as first point of contact	
	Self sufficiency of SHI: 100% formal sector enrolment to sustain SHI		**Political support:** Local governance support for ultra poor	
			Recommendations to SHI: Need of quality health services before making it mandatory	
SHI program norms and standards	**R&D:** Benefit package calculation based on limited study	**Complaint mitigation:** The complains received are not processed in a systematic manner.	**Communication strategy at districts:** Enrolment assistant and public awareness through media, IEC and orientation of community leaders	**Unfair treatment policy:** One disease per visit
	Calculation of premium: Willingness to pay	**Complain priority setting:** All complaints are responded as priority	**Challenge with IEC:** Unfriendly IEC materials	**Recommendations for SHI:** Need of digital card system at the hospital
		Claim review: Departmental coordination and online verification for the claims	**Delegation of authority:** Centralized budgeting system	
		Claim approval authority: The HIB central office only has the sole authority to approve the claim	**Local planning:** District level activities planning	
		Un-functional drug costing committee: There is ad-hoc drug costing committee and it has not been revived since 1.5 years	**Risk of exposure:** Lack of confidentiality guidelines for sensitive and stigmatized populations	
		Vague benefit package: The benefit package not clearly defined affecting the claim process	**User friendly technology for EA:** Easier smartphone application	

		Communication approach: Orientation, training, IEC materials and use of local media to create awareness on SHI to the general public	**Challenges with digital system:** Lack of digital infrastructure at local PHC	
		Ineffective use of social media: Utilization of the social to disseminate the information is low.	**Advantage of digital system:** Prevention of misuse and promote transparency	
		Lack of Communication strategy: HIB has not created any communication strategy	**Recommendations for SHI:** IT-based system	
		Inadequate resource for the communication: Limited budget for developing communication materials		
		Training approach for new staffs: The training provided to the new staffs by the old staffs.		
		Training manual: Availability and use of the manual to deliver trainings for the local staffs and stakeholders		
		Organizational development: Lack of organizational operational guidelines and system		
		Guideline and policy: Lack of guideline on mandatory enrollment		
Health Service Delivery	**Poor service delivery:** The delivery should be strengthened for the success of SHI	**Poor service delivery:** Majority of complains on service delivery	**Health service provider preparedness:** Crowd management	**Health service provider preparedness:** Additional human resource for SHI

	Accessibility and availability: Inadequate number of public health service sites and private sectors discouraged	**Public and private partnership:** Engagement of private hospitals limited to referral	**Selecting health service providers:** Government hospitals by-default selected	**SHI focal point at the hospital:** roles and responsibilities
	Accessibility and availability: Lack of adequate public health service sites	**Service provider preparedness:** Upfront loading of the payment provided to the PHC and hospitals to set up their pharmacy.	**Effective coordination with hospital:** Through SHI focal person	**Accessibility:** Unavailability of the government hospitals
	Service provider preparedness: Upfront loading of the payment provided to the PHC and hospitals to set up their pharmacy.	**Ineffective implementation:** Implementation of the preventive and promotive health care within SHI is weak.	**Coordination with other free health programs:** No overlapping with payment of the free services.	**Catalytic role of SHI:** Increased facility as the result of SHI
	Prevention and promotion services: Inadequate emphasis and response by HIB		**Catalytic role of SHI:** Strengthened government facilities	**Service delivery challenges:** Increased crowd, lack of human resource, infrastructure, unavailability of drugs
	Public private partnership: Unavailability of the public hospital in all needed part of the country.		**Recommendations for SHI:** Improve health service	**Recommendation for SHI:** timely distribution of drugs, support at service delivery point
	Catalytic role of SHI: Contribute in HSS			
People's awareness and Understanding	**Influencing people's understanding:** Continuous messages, peer to peer counseling and communication	**Inadequate public awareness:** Complains would be less if information on SHI is delivered well	**Low understanding on SHI:** Inadequate public awareness on SHI	**Recommendations for SHI:** Need of more public awareness

	Financial health investment behavior of the public: Short term objectives of SHI		**Low financial health investment behavior of the public:** Unable to convince healthy populations and challenges with the renewal who does not get sick after being a member	**Misunderstanding on waiting time with SHI members**
	Self-sufficiency of SHI: Behavior change to invest on health and protection for poor		**Public awareness on SHI:** Need of comprehensive awareness on package and program	
			Increased understanding of the public: Increased acceptance of SHI	
			Enrolment challenges: Difficulty in convincing poor people	
			Enrolment opportunity: Changes in general people's perception towards SHI	
			Difficulty in convincing poor people	
Health service quality monitoring	**Un-functional monitoring committee**	**Weak service monitoring:** Inability to monitor the service providers effectively by HIB	**Weak Service Monitoring:** Coordinating role rather than monitoring the quality of services	
	Service monitoring: Weak monitoring of the service providers due to confusion with roles of HIB			
SHI Program Quality monitoring	**R&D:** Recommendation for program evaluation	**Program monitoring:** The complaints mitigation includes monitoring the sites where the complaints are generated.	**Weak monitoring to enrolment assistant:** Ad-hoc coordination: between enrolment assistant and officers	**Program monitoring:** Site visit from SHI on administration of SHI program
	Program monitoring: Weak monitoring	**Claim review monitoring:** The ad-hoc committee set up to	**Program Reporting:** Routine reporting from districts to the central	

	mechanism	monitor the reviewed claim.	office	
		Program monitoring: Monitoring at the district level	**Effective coordination with hospitals through focal person**	
Health service Utilization in SHI members	**Service utilization:** Moral hazard		**Moral hazzard**	**Increased utilization of services:** Improved health behaviors including moral hazard
			Improved health behaviors	**Usage of the benefit package:** 50% of members used their 100% package annually
				Utilization of private services: Emergency conditions are taken to private facilities

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