

*Outpatient Satisfaction with Community Health Service Center during the COVID-19*

*Pandemic in Shanghai, People's Republic of China*



A Thesis Submitted in Partial Fulfillment of the Requirements

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การศึกษาความพึงพอใจในการเข้ารับการรักษาพยาบาลของผู้ป่วยนอกในศูนย์บริการสุขภาพชุมชน

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เอนริ เจิน : การศึกษาความพึงพอใจในการเข้ารับการรักษาพยาบาลของผู้ป่วยนอกในศูนย์บริการสุขภาพชุมชนในช่วงการระบาดของโควิด 19 เมือง เซี่ยงไฮ้ ประเทศสาธารณรัฐประชาชนจีน. ( *Outpatient Satisfaction with Community Health Service Center during the COVID-19 Pandemic in Shanghai, People's Republic of China* ) อ.ที่ปรึกษาหลัก : วัฒนสิทธิ์ ศิริวงค์

การสำรวจความพึงพอใจของผู้ป่วยนั้นมีความสำคัญ เนื่องจากการตอบสนองความต้องการและความคาดหวังของผู้ป่วยจึงเป็นกลยุทธ์สำคัญในธุรกิจการดูแลสุขภาพ การศึกษานี้มีจุดประสงค์ คือ (1) เพื่อประเมินระดับความพึงพอใจของผู้ป่วยโดยใช้เครื่องมือ SERVQUAL ในศูนย์บริการสุขภาพชุมชนต้าผู้เฉียว (Dapuqiao) ในช่วงการแพร่ระบาดของโรคติดเชื้อไวรัสโคโรนา 2019 (2) เพื่อประเมินความแตกต่างระหว่างการรับรู้และความคาดหวังในมิติการบริการ และ (3) เพื่อระบุรายการบริการที่สำคัญที่สุดโดยใช้การวิเคราะห์ความสำคัญและประสิทธิภาพ (Importance-Performance Analysis, IPA) ในการดำเนินการด้านการจัดการเพื่อปรับปรุงความพึงพอใจของผู้ป่วยนอก

ในการศึกษานี้เป็นการศึกษาแบบภาคตัดขวางในศูนย์บริการสุขภาพในชุมชนต้าผู้เฉียว เมืองเซี่ยงไฮ้ ในเดือนระหว่างธันวาคม พ.ศ. 2564 อาสาสมัครได้มาจากการสุ่มตัวอย่างอันตรภาคชั้นตามความสะดวกจากแผนกผู้ป่วยนอก 8 แห่งของศูนย์บริการสุขภาพที่สมัครใจเข้าร่วมวิจัยและอายุมากกว่า 18 ปี ตามเกณฑ์คัดเข้าคัดออกรวมทั้งสิ้น 424 คน โดยการสัมภาษณ์เป็นรายบุคคลด้วยแบบสอบถามมาตรฐาน SERVQUAL เพื่อประเมินการรับรู้และความคาดหวังของผู้ป่วยจากมิติการบริการที่เป็นรูปธรรม 5 มิติ ได้แก่ ความน่าเชื่อถือ การตอบสนอง ความเชื่อมั่น และความเห็นอกเห็นใจ นอกจากนี้การวิเคราะห์ความสำคัญและประสิทธิภาพ ทั้งวิธีแบบใหม่และแบบต้นฉบับ ทำให้เห็นช่องว่างระหว่างการรับรู้และความคาดหวังและความพึงพอใจของผู้ป่วยนอก ทำให้สามารถระบุรายการบริการที่สำคัญในแง่ของความจำเป็นในการดำเนินการด้านการจัดการเพื่อปรับปรุงความพึงพอใจของผู้ป่วยนอก

ผลการศึกษาพบว่า จากอาสาสมัครทั้งหมด 424 คน มีผู้ตอบแบบสอบถามครบสมบูรณ์จำนวน 414 คน (97.6%) มีค่าเฉลี่ยของคะแนนการรับรู้และความคาดหวังของผู้ป่วยนอกเท่ากับ  $4.58 \pm 0.47$  และ  $4.56 \pm 0.50$  ตามลำดับ ผลการวิเคราะห์ของช่องว่าง พบว่าอาสาสมัคร 78.02% (323/414 คน) มีความพึงพอใจกับศูนย์บริการสุขภาพชุมชน และมีความแตกต่างเชิงบวกอย่างมีนัยสำคัญระหว่างการรับรู้และความคาดหวังในมิติรูปธรรมและความแตกต่างเชิงลบอย่างมีนัยสำคัญในมิติการเอาใจใส่

สรุปการศึกษาวิจัยครั้งนี้ โรงพยาบาลสามารถปรับปรุงความพึงพอใจและคุณภาพการบริการ โดยการจัดหาอุปกรณ์ทางการแพทย์ที่ทันสมัยและการให้บริการผู้ป่วยเป็นรายบุคคล

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Enli Chen : *Outpatient Satisfaction with Community Health Service Center during the COVID-19 Pandemic in Shanghai, People's Republic of China*. Advisor: Assoc. Prof. WATTASIT SIRIWONG, Ph.D.

Patient satisfaction survey has been highly important, since satisfying the needs and expectations of patients had become a significant strategy for survival in the healthcare business. This study aims (1) to evaluate levels of patient satisfaction using the SERVQUAL in Dapujiao Community Health Service Center during COVID-19 pandemic, (2) to assess the difference between perceptions and expectations for service dimensions, and (3) to identify the most crucial service items using the importance and performance analysis (IPA), in terms of their need for managerial action to improve outpatient satisfaction.

A cross-sectional study was conducted in Dapujiao Community Health Service Center in Shanghai, in December 2021. The subjects were obtained by stratified convenience sampling from 8 outpatient departments of the center. Outpatients aged  $\geq 18$  were considered to participate by the inclusion and exclusion criteria. Researchers randomly intercepted 424 in outpatient clinics of the health service center to fill out questionnaires face-to-face. The SERVQUAL was used to design the questionnaire for evaluate the patients' perceptions and expectations of 5 service dimensions of tangibles, reliability, responsiveness, assurance, and empathy. The GAP analysis was used to reveal the gap between perceptions and expectations, and outpatients' satisfaction level. In addition, the original IPA and the revised IPA were applied to identify the crucial service items in terms of their need for managerial action to improve outpatient satisfaction.

The results indicated that A total of 414 completed questionnaires, out of 424, were returned, resulting in a response rate of 97.6%. The mean score of outpatient's perceptions and expectations were  $4.58 \pm 0.47$  and  $4.56 \pm 0.50$ , respectively. According to the GAP analysis, 78.02% (323/414) subjects were satisfied, with a perceptions score  $\geq$  expectations score. There was significant positive difference between perception and expectation in tangibility dimension and significant negative difference in empathy dimension.

In conclusion, the finding of this study indicated that the hospital manager may take steps toward improving the quality of services and increasing the outpatient satisfaction by provide new medical equipment and giving patient individualized services.

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## CHAPTER 1: Introduction

### 1.1 Background and Rationale

With the rapid improvement of economic level, people's demand for medical services is gradually rising. The medical needs of patients are no longer just "disease treatment", but also the psychological and spiritual needs. A study on brand marketing of China's first large hospital, investigating 3924 patients in 20 large hospitals in 11 central cities, showed that among the five aspects most impressed patients, medical technology, hospital services, medical environment, hospital location and price account for 51%, 23%, 13%, 11%, 2%, respectively (Zhuang, Fang, Pan, & Su, 2005). Apart from focusing on simply curing diseases and seeking technical medical services, patients gradually pay attention to humanistic services such as medical experience, environment, and process (Zhuang et al., 2005). So the idea of medical institutions should change from "treatment effect centered" to "patient-centered". The connotation of medical quality should change from single clinic quality to multi quality elements, such as effect of treatment, service time, service attitude and expense, and so on.

Dramatic changes in the healthcare industry have brought great pressure to the survival and development of health care providers. In the past 25 years, competition in medical service industry has been part of reform in many countries, such as UK, Australia, France, and Germany (Brown, 2016). The increasing marketization of health care services and the growing momentum of consumerism have influenced health managers to focus their attention on service quality in order to compete in the health care marketplace (Chou, Chen, Woodard, & Yen, 2005). Throat-cutting competition in the medical market has made customers the most important resources to increasing hospitals. In the face of fierce competition,

the success of health care not only comes from good technical skills and providing high-quality services, but also from satisfying customers and encouraging them to come back to practice (Zhou, Wan, Liu, Feng, & Shang, 2017). Hospital management attaches importance to the subjective feelings of patients, and they need patient input and feedback to improve the quality of services (Mohammadi-Sardo & Salehi, 2019). Satisfaction is a concept that is particularly important in health care and is critical in assessing the quality of services provided by organizations. It has been found that satisfied patients are more likely to benefit from health care (Hills & Kitchen, 2007). Satisfying the needs and desires of patients had become an important strategy for survival in the healthcare market (Ng & Luk, 2019). The evaluation of patient satisfaction has been highly valued. And careful attention to the issue of patient satisfaction can profoundly improve the quality of health care services (Mohammadi-Sardo & Salehi, 2019).

Patient satisfaction is “a sense of fulfillment that results from meeting patients’ needs and expectations with respect to specific and general aspects of health care” (Hills & Kitchen, 2007). Thus, the level of patient satisfaction is a matter of the difference between patient's perceived and expected performances (Mohammadi-Sardo & Salehi, 2019). Satisfaction survey is a widely used evaluation method of service quality from the perspective of patients at present. It directly investigates patients' perceived service quality of a certain service in a hospital (Oña, Oña, Eboji, & Mazzulla, 2016). This method has a disadvantage. It can't directly reflect the service needs and potential expectations of patients. Through this method, the information of patient expectation is not collected, the evaluation of hospital medical service quality is not comprehensive. There are different methods for determining the expectations of patients. SERVQUAL tool is one of the best and most used models in this regard (Hills & Kitchen, 2007). It is a method developed



by Parasuraman, Zeithaml and Berry ((herein after referred to as PZB) in 1988, to measure customer expectations and perceived satisfaction with the evaluation items( Parasuraman et al., 1988). SERVQUAL was used to analyze the satisfaction level of service quality in many countries in the world, including European countries(Asiamah, Frimpong Opuni, Aggrey, & Adu-Gyamfi, 2021).The SERVQUAL tool includes five dimensions (tangibility, reliability, responsiveness, assurance, and empathy) and 22 items (Parasuraman et al., 1988). Those items would be presented twice to get the expectations and perceived satisfaction of the service quality(Parasuraman et al., 1988). Responses to each item or question are indicated on Likert 5 points scale. The gap between the expectations and perceptions, which is calculated by subtracting the expected score from the perceived score ( $P - E$ ), is specific for the SERVQUAL (Teshnizi, Aghamolaei, Kahnouji, Teshnizi, & Ghani, 2018). From the result of the gap, we know whether the quality of medical services meets patients' expectations and whether patients are satisfied, ultimately. Our study used it to measure the outpatients' expectations and perceptions of the service qualities in Dapugiao Community Health Service Center, to know the level of outpatient satisfaction.

In addition, Customer satisfaction has a direct impact on customer retention and the institution 's market share. There is positive correlation between customer satisfaction and profitability( Deng, 2007). Therefore, in today's competitive healthcare market, improving customer satisfaction is a critical issue for managers( Deng,2007).In order to help the health service center to stay abreast of competitors, we want to identify the critical service items in terms of the need for managerial action, in order to improve outpatient satisfaction. With this goal in mind, another method, named Importance and Performance Analysis (IPA) was employed in our study, which was proven to be very useful to identify the critical

service performance in customer satisfaction survey data for services (Hills & Kitchen, 2007). IPA was originally designed as a tool for targeted improvement and efficient resource allocation. Researchers applied IPA to analyze two dimensions of customer attributes: performance level (satisfaction), and importance(expectation) to customers. And in the Importance and Performance Analysis matrix, the importance and the performance of the attribute are described along the X-axis and Y-axis, respectively. The analysis of these dimensional attributes was integrated into a matrix to help the company identify the key drivers of customer (patient) satisfaction. And based on these findings, priorities for improvement are set(Deng, 2007).

In December 2019, the novel coronavirus pneumonia began to spread in Wuhan, People's Republic of China. WHO announced that the disease caused by the novel coronavirus would be named COVID-19 on February 11, 2020. It has had a great negative impact on people's life and brought big challenges to all countries and industries around the world. Outpatient clinics are the key areas for the treatment and delivery of medical services and the most direct frontiers against the epidemic. In order to reduce the spread of COVID-19, a series of prevention and control measures have been adopted, such as the adjustment of its service process, treatment links and service mode. The adjustment of outpatient service process will lead to changes in patients' medical experience and will also have a certain impact on patients' medical needs.

However, there are few patient satisfaction survey during COVID-19 pandemic in China. And before COVID-19 pandemic, most of the research on outpatient satisfaction in China focused on outpatients and inpatients in large hospitals, while there are relatively few studies on outpatient satisfaction in community health service centers, and even less satisfaction survey in community

health service centers during COVID-19 pandemic in China. In addition, primary health services build a framework for population health maintenance and early detection and treatment of diseases (Chou, Chen, Woodard, & Yen, 2005), and can reduce health costs, promote equitable and efficient use of health services, and promote the health and wellbeing of the population (Hills & Kitchen, 2007; Mohammadi-Sardo & Salehi, 2019). Various countries have placed great emphasis on improving the quality of primary health services. Patient satisfaction is an important area of concern for countries to assess primary health services. So, it is important to do patient satisfaction in community health service center that provide primary care. We conducted outpatient satisfaction survey during COVID-19 in Dapuqiao Community Health Service Center in Shanghai, China.

## 1.2 Research Questions

1. What are the sociodemographic characteristics of the outpatients in Dapuqiao Community Health Service Center?
2. What is outpatient satisfaction level among outpatient in Dapuqiao Community Health Service Center during COVID-19 pandemic?
3. Is there any difference between perceptions and expectation for the tangibility, reliability, assurance, responsiveness, empathy of the service?
4. What are the crucial service items in terms of the need for managerial action, to improve outpatient satisfaction in Dapuqiao Community Health Service Center?

## 1.3 Research Objectives

1. To describe the sociodemographic characteristics of the outpatients in

Dapuqiao Community Health Service Center.

2.To evaluate levels of patient satisfaction using the SERVQUAL tool in Dapuqiao Community Health Service Center during COVID-19 pandemic.

3.To assess the difference between the perceptions and the expectations for the tangibility, reliability, assurance, responsiveness, empathy.

4.To identify the crucial service items in terms of the need for managerial action, to improve outpatient satisfaction in Dapuqiao Community Health Service Center.

#### **1.4 Research Hypothesis**

There are significant (negative) differences between perceptions and expectations for the service dimensions of tangibility, reliability, assurance, responsiveness, empathy.

### 1.5 Conceptual Framework

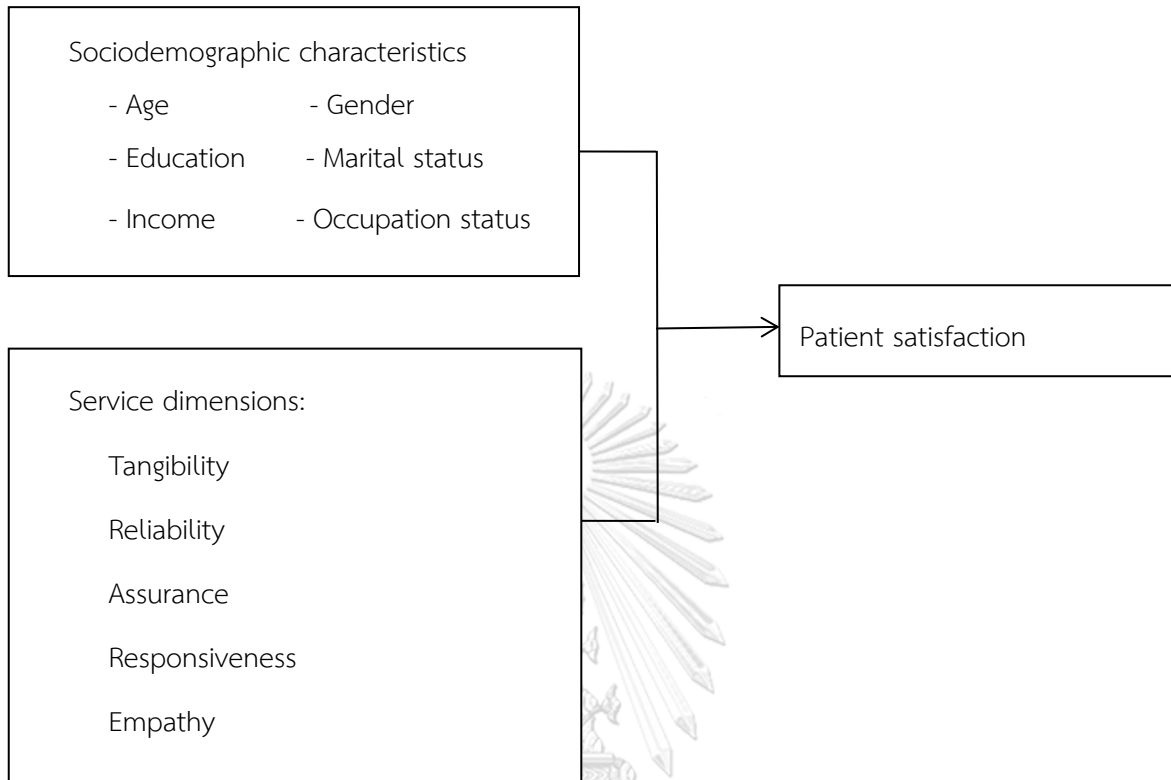


Figure 1 Conceptual framework

### 1.6 Operational Definitions

The operation definition could be found in table 1.

Table 1 Operation Definition

| Operation            | Definition   |
|----------------------|--|
| Patient satisfaction | Patient satisfaction is “a sense of contentedness, achievement or fulfillment that results from meeting patients’ needs and expectations with respect to specific and general aspects of health care”(Hills & Kitchen, 2007). Thus, the level of patient satisfaction is a matter of the difference between patient's perceived and expected performances(Mohammadi-Sardo & Salehi, 2019). Patient |

|                   |   |
|-------------------|---|
|                   | is satisfied if gap between patient's perceived and expected performances greater than or equal to 0, since patients' expectations is met. While patient is dissatisfied if gap between patient's perceived and expected performances less than 0, since patients' expectations is not reached. The gap calculation formula is as follows: $Gap = \frac{1}{n} \sum_i^n (P_i - E_i)$ . |
| Age               | Chronological age of the outpatient. Include not less than 18 years old.  |
| Gender            | Gender of the outpatient. Divide to male and female at birth.   |
| Education         | Education level of the outpatient. Divide to illiterate, junior high school and primarily school, technical secondary school and senior high school, undergraduate and junior college, graduate and above.  |
| Marital status    | Marital Status of the outpatient. Divide to unmarried, married, widowed, divorced.  |
| Income            | Household monthly income of the outpatient in RMB. Divide to less than 3000 RMB (470 USD), not less than 3000 RMB (470 USD) and less than 5000 RMB (783 USD), not less than 5000 RMB (783 USD) and less than 7000 RMB (1096 USD), not less than 7000RMB(1096 USD) and less than 10000 RMB (1566 USD), and not less than 10000 RMB (1566 USD).   |
| Occupation status | Occupation status of the outpatient. Divide to unemployed, employed, and retired.   |
| SERVQUAL          | SERVQUAL is a method developed by Parasuraman, Zeithaml and Berry in 1988 to measure customer expectations and perceptions from five service dimension of tangibility, reliability, responsiveness, assurance, empathy(Parasuraman et al., 1988).   |
| Tangibility       | Tangibility refers to external tangible factors such as physical facilities, environment, equipment and employees' appearance (Parasuraman et al., 1988).   |
| Reliability       | Reliability means the ability to fulfill service commitments reliably and accurate(Parasuraman et al., 1988).   |

|                |   |
|----------------|---|
| Responsiveness | Responsiveness means that service personnel are willing and able to provide services to customers quickly, reflecting the timeliness of services provided by the organization (Parasuraman et al., 1988). |
| Assurance      | Assurance refers to the ability of employees' knowledge, courtesy and ability to create a sense of trust among customers(Parasuraman et al., 1988).   |
| Empathy        | Empathy refers to care, concern and the provision of personalized services(Parasuraman et al., 1988).   |



## CHAPTER 2: Literature review

### 2.1 Overview of medical service quality

#### 2.1.1 Definition of medical service quality

Medical quality is the soul of the hospital, the driving force to promote the survival and development of the hospital. According to Parasuraman, Zeithaml and Berry(1985), quality of services is ,“the global evaluation or attitude of overall excellence of services”. In Nitecki’s opinion, service quality is meeting or exceeding customer expectations, or as the difference between customer perceptions and expectations of service (Nitecki, 2000). Mosadeghrad (2014) defined medical services quality as “the application of medical science and technology in a manner that maximizes its benefit to health without correspondingly increasing the risk”. It aims at improving the level of physical and mental health of patients, and achieves the quality level of medical service output close to the expected state and matching the demand of patients(Zhang, 2008).

#### 2.1.2 The evaluation of medical service quality

In the past, the evaluation standard of medical service quality was only defined in the level of medical technical ability, which is the ability to diagnose and treat patients with appropriate and correct technology. Nowadays, with the growth of patient’s demand, the meaning of medical service quality not only includes level of medical technology, but also humanistic factors, process factors, tangible and other service factors(Wang, 2013). Evaluation of medical service quality refers to the comprehensive investigation and analysis of the recent diagnosis and treatment activities, service quality and medical environment of medical institutions. It conducts overall evaluation and analysis on the medical



service level of medical institutions through specific evaluation indicators(Zhou, 2015). Through the evaluation of medical service quality, it could carry out quality control over the whole process of medical activities, and investigate the satisfaction accord with patients' needs, the quality level of service content, and the standardization of diagnosis and treatment activities.

## 2.2 Overview of patient satisfaction

### 2.2.1 The origin of patient satisfaction

In the 1940s, customer satisfaction became the focus of the marketing industry. Enterprises must strive for the maximum customer satisfaction as the goal in the highly competitive market environment. At the same time, with the rise of the new public management theory, the public service department has gradually introduced the market operation mechanism. And the public oriented management mode has emerged. In this context, the study of patient satisfaction also rises and develops gradually (Lao, 2018).

### 2.2.2 Definition of patient satisfaction

Webster's College Dictionary (Costello, 1991) defined satisfaction as :

1. the state of feeling of being satisfied, contentment, pleasure
2. a cause or means of fulfillment or contentment
3. the act of satisfying, fulfillment, gratification
4. confident acceptance of something as satisfactory, dependable, true, etc.
5. reparation or compensation, as for a wrong or injury

6. the opportunity to redress or right a wrong, as by a duel

7. payment or discharge, as of a debt or obligation

8. an act of doing penance or making reparation for venial sin.the penance or reparation made

Different scholars have different opinions on patient satisfaction. There are some definitions as following:

Donabedian (1983) defined patient satisfaction as an opinion of the quality of care and represents specific elements of quality, which are mainly related to the expectations and values of patient.

According to Pascoe (1983), patient satisfaction was “a health care recipient’s reaction to salient aspects of the context, process. This reaction is internal, singular and is expressed through observational changes in patient behavior.

Smith (1992) defined patient satisfaction as a combination of perceived needs, expectations and experiences of health care.

Merkouris, Ifantopoulos and Lemonidou(1999) argued that patient satisfaction would appear when experiences, expectations and needs perceived were combined.

Xu, Weng, Du and Xie (2007) believed that patient satisfaction referred to the patient's personal expectations and hospital activity experience, and the comprehensive evaluation of the received services. In other words, patient satisfaction referred to the degree that the hospital services meet the patient's

expectations.

Hills and Kitchen (2007) defined patient satisfaction as a sense of contentedness, achievement or fulfillment that results from meeting patients' needs and expectations with respect to specific and general aspects of health care.

Hills and Kitchen's definition of patient satisfaction was used in this study. Thus, the level of patient satisfaction is a matter of the difference between patient's perceived and expected performances.

### **2.2.3 The application of patient satisfaction in the evaluation of medical service quality.**

Patient satisfaction is a comprehensive evaluation and cognition of all aspects of medical services received in a specific environment (Singh, 1990). Patient's satisfaction is a tool and means to obtain the internal expression of patients' values and real ideas (Huang, Chen, & Chen, 2015). Patient satisfaction survey is an effective tool to find patients' needs and patients' loyalty to medical institutions. It is an important yardstick to evaluate treatment results and medical service quality from the perspective of patients (Baker, 1991; Fitzpatrick, 1991; Kennedy, Boyce, & Logan, 1999). The measurement of patient satisfaction enables us to understand the patient's experience in all aspects of medical services, including the experience of process and results. It includes cognitive and emotional processes through which the patient assesses whether the overall medical experience is consistent with his/her needs, values, desires, and expectations (Jin, 2015; Tonges, Ray, Herman, & McCann, 2018).

Patient satisfaction is considered as a main index to evaluate and improve

medical quality(Merkouris, 1999). It is a tool widely used by medical institutions around the world to record patients' personal evaluation of care(Hekkert, Cihangir, Kleefstra, van den Berg, & Kool, 2009).

In 1956, American scholars believed that medical quality and patient satisfaction were synonymous. The United States first used patient satisfaction to evaluate the quality of nursing work, and developed the patient satisfaction with nursing care Checklist, which is the first test system used to evaluate patients satisfaction of medical services in the world( Abdellah & Levine, 1957). At the 12th International Medical Quality Assurance conference, it was clearly stated that customer satisfaction can be used as an effective means to evaluate medical quality. Internationally, it was clearly defined as the key index to balance the hospital level and improvement direction. And it was proposed to take customer satisfaction as the standard of improvement(Tan, Liu, & Wang, 2014). Some western countries would also write the patient satisfaction evaluation scheme into law, even as a prerequisite for the opening and operation of hospitals (Jing, 2020).

## 2.3 Application of SERVQUAL scale

### 2.3.1 Service quality theory

Service quality theory is a service quality evaluation system proposed by quality management experts PZB. This system conceptualized service quality as the gap between customer expectations and their perception of service performance for the first time. According to this theory, PZB developed a method to evaluate service quality in 1988, which was SERVQUAL scale (Parasuraman et al., 1988 ).

SERVQUAL scale is composed of 22 items to evaluate the service quality

from the five dimensions: tangibles, reliability, responsiveness, assurance and empathy (Table 2) (Parasuraman et al., 1988). Tangibility refers to external tangible factors such as physical facilities, environment, equipment and employees' appearance. Reliability means the ability to fulfill service commitments reliably and accurately (Parasuraman et al., 1988). Responsiveness means that service personnel are willing and able to provide services to customers quickly, reflecting the timeliness of services provided by the organization (Parasuraman, et al., 1988). Assurance refers to the ability of employees' knowledge, courtesy, and ability to create a sense of trust among customers. Empathy refers to care, concern and the provision of personalized services. (Parasuraman et al., 1988)

Table 2 SERVQUAL scale (Parasuraman et al., 1988)

| Dimensions     | Items  |
|----------------|--|
| tangibles      | <ol style="list-style-type: none"> <li>1. They should have up-to-date equipment.</li> <li>2. Their physical facilities should be visually appealing.</li> <li>3. Their employees should be well dressed and appear neat.</li> <li>4. The appearance of the physical facilities of these firms should be in keeping with the type of services provided.</li> </ol>  |
| reliability    | <ol style="list-style-type: none"> <li>5. When these firms promise to do something by a certain time, they should do so.</li> <li>6. When customers have problems, these firms should be sympathetic and reassuring.</li> <li>7. These firms should be dependable.</li> <li>8. They should provide their services at the time they promise to do so.</li> <li>9. They should keep their records accurately.</li> </ol> |
| responsiveness | <ol style="list-style-type: none"> <li>10. They shouldn't be expected to tell customers exactly when services will be performed.</li> <li>11. It is not realistic for customers to expect prompt service from employees of these firms.</li> </ol>   |

|           |  |
|-----------|--|
|           | <p>12. Their employees don't always have to be willing to help customers.</p> <p>13. It is okay if they are too busy to respond to customer requests promptly.</p>   |
| assurance | <p>14. Customers should be able to trust employees of these firms.</p> <p>15. Customers should be able to feel safe in their transactions with these firms' employees.</p> <p>16. Their employees should be polite.</p> <p>17. Their employees should get adequate support from these firms to do their jobs well.</p>   |
| empathy   | <p>18. These firms should not be expected to give customers individual attention.</p> <p>19. Employees of these firms cannot be expected to give customers personal attention.</p> <p>20. It is unrealistic to expect employees to know what the needs of their customers are.</p> <p>21. It is unrealistic to expect these firms to have their customers' best interests at heart.</p> <p>22. They shouldn't be expected to have operating hours convenient to all their customers.</p> |

The above scale needs to be presented twice. The first one measures the expectation of the patient. The second one measure the perception of the patient.

SERVQUAL has good reliability and validity that it could be used to better understand the service expectations and perceptions of patient (Aghamolaei et al., 2014). Aghamolaei et al. (2014) conducted research in a hospital in Iran to evaluate the patient satisfaction of the case object through SERVQUAL scale. The research showed that the gap between the patient's perceived value and its expected value was very obvious. Garrard assessed patient satisfaction of obstetric services with SERVQUAL scale. The results showed that doctors' technical level and medical

ethics are the main influencing factors of patient satisfaction (Garrard & Narayan, 2013). SERVQUAL theoretical framework is widely used in the evaluation of service satisfaction of various commercial organizations, non-profit organizations, and public service institutions, not especially for the quality evaluation model of medical and health service system. SERVQUAL scale has a high maturity.

### 2.3.2 Service quality Gap analysis

It is inevitable that there is a certain gap between patients' perceived satisfaction and expectation of the medical service. It is defined by Grönroos (1984) and the specific expression results can be obtained through formula: Gap = perceived score (PS) - expected score (ES) (Parasuraman et al., 1988). Through this formula, the gap between the expectation and perception of hospital patients' satisfaction can be obtained. If Gap > 0, it indicates that the satisfaction is high, and the service quality reaches a very good level, because the provided services exceed the expectations of service users. If Gap = 0, it indicates that customers are satisfied and the service quality reaches the general level, since the provided services meet the expectations of service users. If Gap < 0, it reflects that the customers are dissatisfied, for customer perceived satisfaction of the service quality has not reached the expectation, indicating that the service level needs to be further improved (Parasuraman et al., 1988).

The core elements of the Gap Analysis Model are Gap (Figure 2). Consumer's perceived satisfaction of service quality depends on the size and direction of GAP5 which, in turn, depends on the nature of the gaps associated with the design, marketing, and delivery of service:

$$GAP5 = f(GAP1, GAP2, GAP3, GAP4) \quad (\text{Parasuraman et al., 1985}).$$

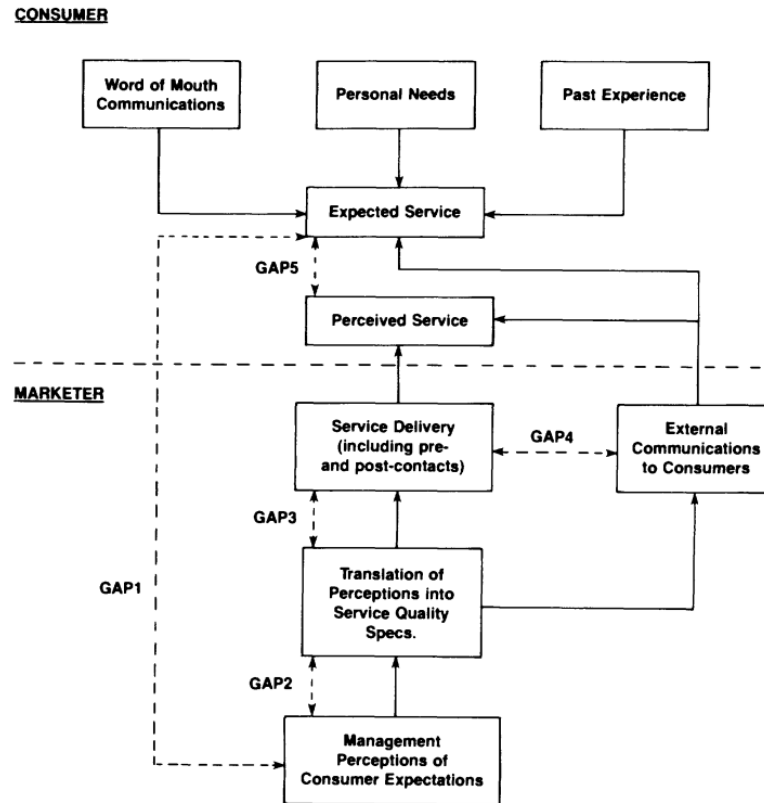


Figure 2 The Gap model of expectations and perceived satisfaction of service quality (Parasuraman et al., 1985)

The five gaps in figure 2 are explained as follows:

GAP 1 is the gap between consumer expectation and management perception. Consumer expectations are influenced by internal and external environment. The internal environment the customer's experience and personal needs, etc. The external environment consists of external publicity (including advertising, public relations, etc.) and reputation of the organization. The reasons for the gap 1 are that managers do not fully understand customer expectations in the following aspects: Firstly, what characteristics is a sign of quality to consumers. Secondly, what features must a service have to meet the needs of consumers.



Third, what level of performance is required to provide high quality service in these features (Parasuraman et al., 1985).

Gap 2 is the gap between management perception and service quality specification. This may be because although the managers understand the customer's expectations, they are not aware of the importance of meeting the customer's expectations which leads to management indifferent, or they think it is impossible to meet the customer's expectations at all because of resource and market constraints(Parasuraman et al., 1985).

Gap 3 is the gap between Service quality specifications and service deliver. There are difficulties in complying with these standards due to variability in employee performance which may be affected by the employee's sense of responsibility or skills( Parasuraman et al., 1985).

Gap 4 is the gap between service delivery and external communications. External communications could affect consumer expectations. If an organization has exaggerated promises, but the delivered service has not met such promises, the gap 4 would appear. External communications could also affect consumer perceptions of the delivered service. If an organization neglects to inform customers of special efforts aimed at serving consumers well, it would affect consumer perceptions of service quality(Parasuraman et al., 1985).

Gap 5 is the gap between expected service and perceived service. Gap 5 is influenced by the magnitude and direction of the previous four gaps and is the result of the accumulation of the first four gaps. Therefore, reducing and eliminating the first four gaps helps to reduce the quality gap(Parasuraman et al., 1985).

## 2.4 Introduction of the Importance and Performance Analysis

Importance and Performance Analysis (IPA) was originally designed as a tool for targeted improvement and efficient resource allocation, and it has proven to be very useful to identify the critical service performance in customer satisfaction survey data for services (Hills & Kitchen, 2007). It includes 2 major components which are importance and performance. Importance is the degree to which users value attributes such as a product or service. Performance is the user's measure of the actual performance of the product or service. The Importance and Performance Analysis method is also known as the Importance-Satisfaction Analysis method, and the Expectation-Performance Analysis method.

This method was first proposed in a study to analyze the importance and performance of motor vehicle product attributes, for evaluating marketing program effectiveness (Martilla & James, 1977). The theoretical basis of the IPA was the expectation difference model. Empirical studies had shown that consumer satisfaction is a function of both expectations and attribute performance judgments associated with certain important attributes (Myers & Alpert, 1968; Swan & Combs, 1976). Measuring performance alone left problems in translating research findings into marketing actions. To address this challenge, Martilla and James (1977) designed a simple and straightforward analysis solution, now known as IPA. IPA has been found to be a useful method for evaluating marketing program elements. Because of its simplicity and practicality, the applications of IPA become more popular among researchers and was quickly extended to other research areas, such as service, marketing, education, public administration, banking, healthcare, eBusiness, tourism field (Koh, Yoo, & Boger, 2010; Martilla & James, 1977). For example, Evans and Chon (1989) used the IPA method to analyze the tourism policies of two tourist destinations in the United States, and finally obtained a

policy system adapted to the market, and made feasible suggestions for the development of the scenic spots, and confirmed the effectiveness of the IPA method. Oppemann(1996) used the IPA method to analyze the strengths and weaknesses of MICE tourism destination. Enright and Newton(2004) collected people's evaluation through the questionnaire of IPA and found that improving the overall scenic performance in the industry can promote the development of the tourism industry. Duke and Persia (1996) applied IPA to measure the performance of national escorted tours. Jang et al.(2009) identified the relative positions of Asian foods in American customers employing IPA. Lai and Hitchcock (2015) established a research framework on the importance-performance analysis method for tourism, which showed that IPA is widely used in hotel and tourism research. Ha and Park (2021) conducted IPA on the educational content related to elder abuse among undergraduate nursing students in Korea, identifying the order of priorities for curriculum topics, to improve the professional ability of nurses who care for the elderly.

In the importance-performance analysis matrix, importance and the performance of the attribute are described along the X-axis and Y-axis, respectively(Deng, 2007). This matrix is divided into four quadrants using the mean value of satisfaction and importance as the intersection point. When the original IPA is used for satisfaction analysis in our study, performance is the satisfaction evaluation, and importance is the expectation evaluation of service quality. The IPA model was constructed by plotting the average scores of expected and perceived values of each attribute in a two-dimensional matrix (Fig. 3). Quadrant I is “Keep up the good work”(both performance and importance are high)(Azzopardi & Nash, 2013). Attributes located in this first quadrant are the major strength of the organization and denote opportunities to achieve or maintain a competitive

advantage. Quadrant II is “possible overkill” (performance is high and importance is low). Attributes located in this area represent business resources dedicated to these and would be overkill and should be deployed in elsewhere (Deng, 2007). Quadrant III is “low priority” (performance and importance are low), indicating an area where the attributes are weaknesses, and extra effort is not required (Deng, 2007). And quadrant IV, named “concentrate here” (performance is low and importance is high), contains attributes with high importance but low important (Deng, 2007). Focusing constructive action on this area will have the greatest effect. It should be top priority and targeted for immediate improvement efforts (Azzopardi & Nash, 2013). The service items in the quadrant IV are the critical service items in terms of their need for managerial action.

However, the above IPA was also called original IPA, which have two assumptions (Deng, 2007): (1) The variables on the importance and performance are independent of each other. (2) There is linear and symmetrical relationship between attribute performance and overall performance. Some researchers questioned the effectiveness of IPA, because the assumptions related to the original method are not easy to meet in real world, suggesting that additional attention should be paid to improvement IPA (Azzopardi & Nash, 2013).

To solve the problem, the revised IPA was developed by Taiwanese scholar Weijaw Deng (2007), and it was applied in his study on Taiwanese hot springs tourism. In the revised IPA, he replaced self-reported importance with implicitly derived importance, which only reflected the net correlation between this variable and overall satisfaction. The implicitly derived importance is obtained by statistical method. It comprises two steps: 1. take the natural logarithm of the perceived satisfaction ( $P_i$ ) of each item and count it as  $\ln(P_i)$ , and the overall satisfaction as OS. And 2. Set  $\ln(P_i)$  as the independent variable and OS as the dependent variable

for multiple regression analysis and derive the partial correlation coefficient between the natural logarithm of each evaluation satisfaction and the overall satisfaction. The partial correlation coefficient is implicitly derived importance (Deng, 2007; Xie & Yang, 2021). This revised IPA does not need to satisfy the prerequisite assumptions of the original IPA. And it is a more scientific, objective, and effective tool for assessing service quality at present.

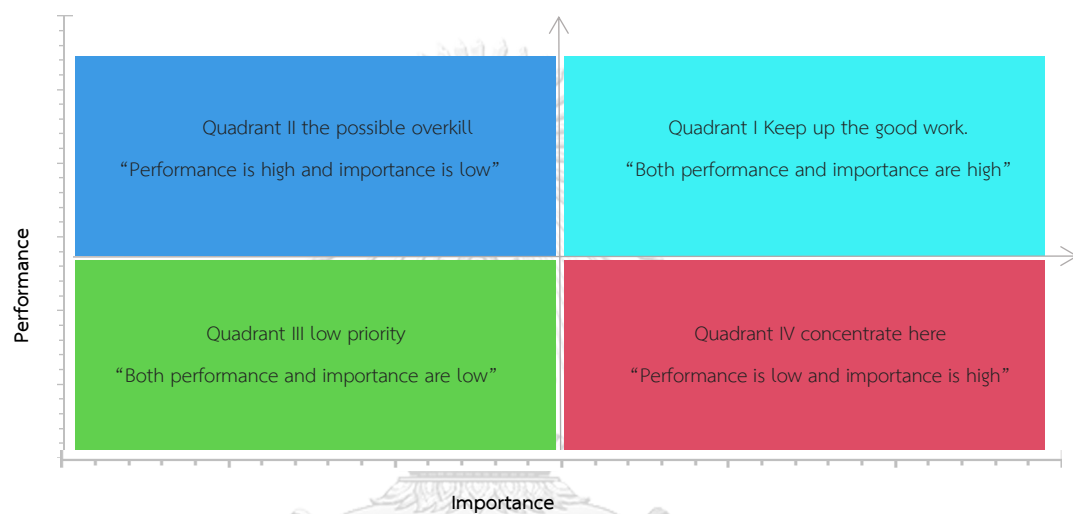


Figure 3 Importance–performance analysis

(He, 2021; Deng 2007; Martilla & James, 1977)

## 2.5 Community health service

### 2.5.1 The emergence of community health service and its definition

In 1978, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) jointly convened the First International Conference on Primary Health Care in Almaty, and issued the famous Almaty Declaration, which clearly proposed the implementation of "primary health care (PHC)" as the key and basic way to achieve the global health strategy goal of "Health for All by the Year 2000". The conference advocated the development and promotion of primary

health care services in all countries of the world. Since then, PHC strategies have gradually become national health strategies, with a focus on reforming health systems(WHO, 1978).

The Chinese government implemented a nationwide primary health care strategy in 1986. In the early 1990s, some urban street hospitals began to actively explore ways to further improve primary health care services, and to carry out medical care for the aging population, and scientific and popular education. Since 1995, such services have been called "community health services" and some cities have started to explore the establishment of community health service centers(Zhang, Shi, & Wang, 2020)

Community health service is an important part of community construction, which is led by the government, with community participation and guidance from higher-level health institutions, with primary health institutions as the main body and general practitioners as the backbone, using community resources and appropriate technology in a rational manner. It is characterized by the focus of human health, family-oriented, community-based, demand-oriented. In addition, women, children, the elderly, chronic patients, the disabled and poor residents, etc. is the focus of services. It is an effective, economic, convenient, comprehensive, and continuous primary health service, integrating prevention, medical treatment, health care, rehabilitation, health education and family planning technical services(QGW, 2014)

According to the functional positioning, Shanghai's health administration issued the basic services of community health services include outpatient services, inpatient services, public health services, rehabilitation services, nursing and home services, health management services, Chinese medicine services, site (village health

room) services( SMHC, 2021).

The organization that carries community health services is generally referred to as a community health service center, which has some major characteristics, including first contact, humanization, accessibility, continuity, coordination and comprehensiveness(Zhang, Jin, & Yu, 2022).

### **2.5.2 Introduction of Dapujiao Community health service center**

Dapujiao Community health service center is one of the top 100 community health service centers in China(Zhao, 2017). It has a construction area of 8324.13 square meters and a service area of 1.59 square kilometers (SHDPG, 2021). It services 17 neighborhood committees and more than 60000 permanent residents in the jurisdiction, offering community health services of prevention, health care, medical treatment, rehabilitation, health education and family planning technical guidance (SHDPG,2021). It had 50 beds in the past. In 2019, the inpatient department was closed for reconstruction in order to expand the number of beds to 150. But because of the COVID-19 Pandemic the inpatient department is still not open due to the COVID-19 Pandemic. There are more than 160 employees, including about 40 general practitioners. The annual outpatient volume was 36700 visits (RWPI, 2018). The outpatient department offers mainly provides general practice medical care of Western medicine, and Chinese medicine.

### **2.6 Overview of COVID-19 pandemic in China.**

In December 2019, COVID-19 broke out in Wuhan, China. After four months of efforts, COVID-19 in Wuhan was under control, and there were none new suspected cases and confirmed cases. The inpatient cases reduced to zero. From that time until the data of this study were collected, there have been several

small outbreaks in China. As of November 4, 2021, the National Health Commission received the information from 31 provinces (areas and cities) and Xinjiang Production and Construction Corps (excluding Hong Kong, Macao and Taiwan) that there are 1129 active cases, of which 37 severe cases, 91840 cases who have been cured, 4636 death cases, and 97605 confirmed cases. There are 4 suspected cases now. At present, there are 1272,333 close contacts, and 45386 people who have been put under medical observation (HERO,2021). It have reported a total of 2,302,67,900 doses of COVID-19 vaccines administered(BDPC, 2021 )

Before our data collection, the latest outbreak started from October 16, with a positive case being reported in Inner Mongolia. Many places in China responded quickly to the outbreak of the epidemic and made every effort to block the risk of epidemic spread by carrying out large-scale nucleic acid testing and epidemiological investigation, tracing the source, accurate screening, and isolation, adjusting medium and high-risk areas, and canceling tourism and cultural activities. All residential communities and villages in medium and high-risk areas for COVID-19 have implemented closed-loop management, urging residents to quarantine at home and calling on people not to leave the city unless necessary. From October 16 to November 4, a total of 787 local confirmed cases have been reported nationwide, and the epidemic has affected 20 provinces (areas and cities) (HERO, 2021) .From 0:00 to 24:00 on November 4, 78 new confirmed cases were reported, including 68 local cases (HERO, 2021).

During the COVID-19 pandemic, the outpatient department is the most direct frontiers against the epidemic. Dapujiao Community Health Service Center has formulated detailed pre inspection and screening process, outpatient department contingency plan and nosocomial infection management measures to ensure the orderly progress of epidemic prevention and control and medical



services. Firstly, they set up a leading group in the outpatient department to be responsible for the formulation and overall arrangement of various prevention and control measures (Chen, 2020). Secondly, they strengthen pre-examination and triage process: the outpatient entrance and exit have been subject to closed management, and formulated the system of "one measurement, four questions and one commitment". when entering the hospital, all personnel shall wear masks (masks with exhaust valve are prohibited) and carry valid ID cards, medical cards, be monitored their body temperature and actively show their health code and travel code, actively inform the recent residence history and contact history of relevant personnel, and carefully cooperate with medical personnel to complete epidemiological investigations (Chen,2020, SHDBJ, 2021). If patients with body temperature  $\geq 37.3^{\circ}\text{C}$  without relevant epidemiological contact history, the medical staff shall register their basic information in detail and guide them to the fever clinic of designated hospitals in the area (Chen, 2020). On the next day, the staff shall follow up and record on the patients. Thirdly, they formulate outpatient department contingency plan, to ensure that suspicious novel coronavirus pneumonia patients could be transferred to designated hospitals safely and promptly (Chen,2020). Fourth, to strengthen outpatient department management (Chen, 2020). Various road signs are added in the outpatient department to reduce the stay of patients. The number of accompanying personnel is limited to one to avoid cross infection (SHDBJ, 2021). Patients are asked to sit at intervals and keep a social distance (SHDBJ, 2021). The guide staff in the clinic area is responsible for keeping the clinic area in order (Chen,2020). The general outpatient service strictly follows the principle of "one doctor, one patient, one consulting room" (Chen 2020, SHDBJ, 2021). Limit the number of outpatients waiting in each department and reduce personnel gathering (Chen,2020). When the number of people in the waiting area exceeds the set number, the outpatient office would control the entry

of personnel (Chen,2020). Patients and their families are prone to irritability when waiting, and the guidance staff should do a good job in appeasing them (Chen,2020). Fifth, they strengthen the prevention and control of nosocomial infection, and pay attention to strengthening environmental cleaning, disinfection, and medical waste management in clinic area (Chen 2020). They strengthen the training and supervision of disinfectant preparation personnel and disinfect twice a day (Chen 2020). Quick hand disinfection solution shall be placed in the clinic area (Chen 2020).



## CHAPTER 3: Methodology

### 3.1 Study Design

This study was a cross-sectional study of descriptive research. It was based on Dapujiao Community Health Service Center. In December 2021, outpatients were conveniently selected in the outpatient department. Patients entered the study after their verbal consent for participation. Researchers interviewed the patients face-to-face.

### 3.2 Study Area

This research study area was Dapujiao Community Health Service Center. Dapujiao Community Health Service Center was a public community hospital, which was in Huangpu District, Shanghai, China. Dapujiao Community Health Service Center have service station clinics and center clinics, which belong to 8 departments. Service station clinics include Zhonghai, Zhonghui, Zhongshun, Zhongtai service station clinic, which are in residential areas. Center clinics are in the health service center, which include general practice clinic, rehabilitation clinic, dental clinic, and traditional Chinese medicine clinic. The annual outpatient volume for all clinics was 36700 visits (RWPI, 2018).

### 3.3 Study Population

Outpatients in Dapujiao Community Health Service Center was purposively included.

### 3.4 Inclusion Criteria

- (1) Age  $\geq$  18 years older.

(2) Agree to participate in the study.

(3) Visit Dapuqiao Community Health Service Center.

### 3.5 Exclusion Criteria

(1) Unwilling to participate in this study.

(2) Unavailability for answering survey questions due to physical or mental condition.

### 3.6 Sample of the study

#### 3.6.1 Sample size

The sample size was calculated from the following formula.:

$$N = \frac{Z^2 pq}{e^2} \quad (\text{Israel, 1992})$$

N= the estimated sample size

Z= the value from normal distribution associated with confidence interval (1.96 with 95% confidence interval)

P = 0.5 (There is a large population in this area but that we do not know the variability in the proportion that will adopt the practice; therefore, assume p=0.5)

e =0.05 (the value of maximum allowable error or desired precision)

The sample size was as following: 
$$N = \frac{Z^2 pq}{e^2} = 385$$

Considering 10% invalid questionnaires, the sample size was 424.

### 3.6.2 Sampling Technique

We used convenience sampling technique to take sample from outpatients of Dapujiao Community Health Service Center. A total of 424 participants were allocated among eight departments of Dapujiao Community Health Service Center, including Zhonghai service station, Zhonghui service station, Zhongshun service station, Zhongtai service station, general practice, rehabilitation, dental, and traditional Chinese medicine based on the number of clinics possessed by each department (Figure 4). Each department was assigned 25–174 participants (Table 3).

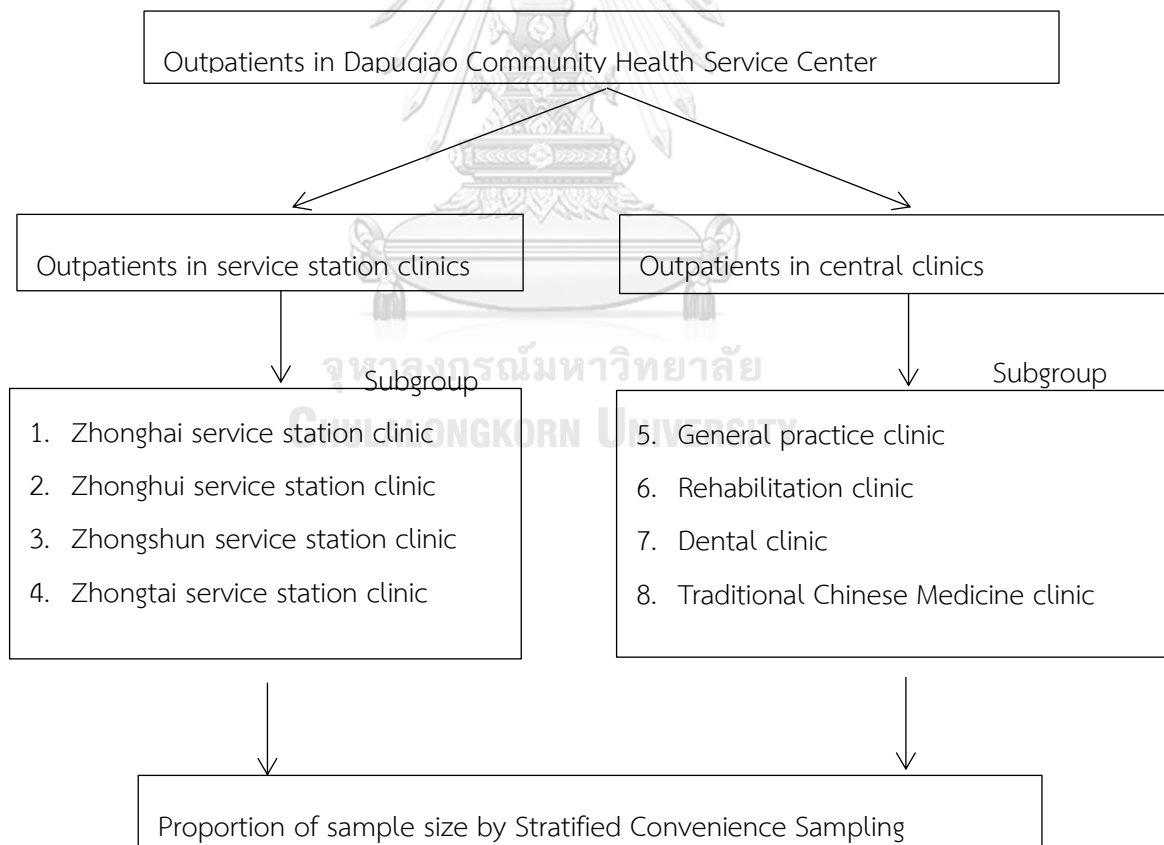


Figure 4 Diagram of sampling technique

$$\text{Sample size in each subgroup} = \frac{\text{Number of clinics} * \text{Number of sample size}}{\text{Total Number of clinics}}$$

Table 3 Proportion of sample size by Stratified Convenience Sampling

| No. | Department                   | Number of clinics | Sample size |
|-----|------------------------------|-------------------|-------------|
| 1   | Zhonghai service station     | 1                 | 25          |
| 2   | Zhonghui service station     | 1                 | 25          |
| 3   | Zhongshun service station    | 1                 | 25          |
| 4   | Zhongtai service station     | 1                 | 25          |
| 5   | General practice             | 7                 | 174         |
| 6   | Rehabilitation               | 1                 | 25          |
| 7   | Dental                       | 1                 | 25          |
| 8   | Traditional Chinese Medicine | 4                 | 100         |
|     | Total                        | 17                | 424         |

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### 3.7 Research Instruments

Questionnaire were used in this study. The questionnaire included two parts as followings:

#### Part I

Proforma checklist was used to collect information on the sociodemographic characteristics, including age, gender, education, marital status,

occupation, household monthly income, and overall satisfaction.

## Part II

The SERVQUAL scale was used to measure outpatient satisfaction, asking subjects to indicate "expected" and "actual perceived" service performance (Table 4). In China, the SERVQUAL scale was first introduced in the medical field by Niu Hongli et al. (2004). The reliability and validity of the SERVQUAL was confirmed to be very good by studies in China (Huang, 2020; Tang, 2017; Huang, 2013; Lv, 2015; Liu, 2016; Li, X., 2016). The scale includes 5 dimensions: tangibility, reliability, assurance, responsiveness, empathy (Parasuraman et al., 1988). All indicators are extracted according to the real feelings of the investigated outpatients. The corresponding Likert 5 points scale method is assigned 1, 2, 3, 4 and 5 points according to strongly disagree, disagree, uncertain, agree, strongly agree.

Table 4 Items of the SERVQUAL scale questionnaire used in this study

| Expectation section   | Perception section  |
|---|---|
| Tangibles   | Tangibles   |
| E1. They should have up-to-date equipment.  | P1. They should have up-to-date equipment.  |
| E2. Their physical facilities should be visually appealing.   | P2. Their physical facilities should be visually appealing.   |
| E3. Medical staff should be well dressed and appear neat, in conformity with the medical environment and norms.         | P3. Medical staff should be well dressed and appear neat, in conformity with the medical environment and norms.         |
| E4. The appearance of the physical facilities of this hospital should be in keeping with the type of services provided. | P4. The appearance of the physical facilities of this hospital should be in keeping with the type of services provided. |
| Reliability   | Reliability   |
| E5. When this hospital promises to do   | P5. When this hospital promises to do   |

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|   |   |
|---|---|
| something by a certain time, they should do so.   | something by a certain time, they should do so.   |
| E6. When patients have problems, this hospital should be sympathetic and reassuring.        | P6. When patients have problems, this hospital should be sympathetic and reassuring.        |
| E7. They should provide their services at the time they promise to do so.                   | P7. They should provide their services at the time they promise to do so.                   |
| E8. The price of medical services is disclosure, reasonable and transparent.                | P8. The price of medical services is disclosure, reasonable and transparent.                |
| E9. The hospital should keep patients records accurately.                                   | P9. The hospital should keep patients records accurately.                                   |
| Responsiveness  | Responsiveness  |
| E10. The hospital could tell customers exactly when services will be performed              | P10. The hospital could tell customers exactly when services will be performed              |
| E11. The medical service expected by the patient is provided timely                         | P11. The medical service expected by the patient is provided timely                         |
| E12. The medical staff are willing to help the patient autonomously and spontaneously       | P12. The medical staff are willing to help the patient autonomously and spontaneously       |
| E13. The medical staff can respond to patients requests promptly during rush hours.         | P13. The medical staff can respond to patients requests promptly during rush hours.         |
| Assurance   | Assurance   |
| E14. The qualified professional skills could make patients trust them                       | P14. The qualified professional skills could make patients trust them                       |
| E15. The rich professional knowledge of medical staff could make patients trust them        | P15. The rich professional knowledge of medical staff could make patients trust them        |
| E16. Their staff should be polite   | P16. Their staff should be polite   |
| E17. Their medical staff should get adequate support from this hospital to do the jobs well | P17. Their medical staff should get adequate support from this hospital to do the jobs well |

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| Empathy  | Empathy  |
|--|--|
| E18. This hospital should give patient individualized services                       | P18. This hospital should give patient individualized services                       |
| E19. Medical staff of this hospital should give patients personal attention          | P19. Medical staff of this hospital should give patients personal attention          |
| E20. Medical staff of this hospital should know what the needs of their patients are | P20. Medical staff of this hospital should know what the needs of their patients are |
| E21. The hospital should have their patient's best interests at heart                | P21. The hospital should have their patient's best interests at heart                |
| E22. The hospital should have operation hours convenient to all their patient        | P22. The hospital should have operation hours convenient to all their patient        |

The satisfaction of each quality index was calculated from formula as following:  $Gap = \frac{1}{n} \sum_i^n (P_i - E_i)$ . (Parasuraman et al., 1988; Fan, 2017; Zhang, 2021)

### 3.8 Data Collection

The research team collected all data after receiving permission from the Dapuqiao Community Health Service Center Review Board. Researchers coordinated with the directors of the clinical to take consent. After getting consent from director of the Community Health Service Center, researchers went to the clinics to convenient intercepted outpatients on site during various working shifts and days until the intended sample size was fulfilled. Researchers explained the purpose of the study to the participants and obtained the consent of themselves. Outpatients was interviewed by researchers and filled out the questionnaire by themselves or with the help of the researchers. When the researchers interviewed the patients, in the SERVQUAL scale part, expectations and perceived satisfaction with 22 service items were interviewed at the same time. For example, for the item 1 "up-to-date equipment", we asked the patients about their expectations on

the hospital having "up-to -date equipment". Then we continued to ask patients about their perception of the hospital having "up-to -date equipment". Then we moved to next service item. The researchers corrected the integrity of the participants' answers. And the data were collected and processed.

### 3.9 Data Analysis and Statistical Methods

SPSS statistical program version 25.0 for Windows (IBM SPSS Inc., Chiacago, IL) were used for data analysis. The continuous data were expressed by mean and standard deviation ( $X \pm SD$ ). The categorical data were expressed by frequency [n (%)].

Paired t-test was used to verify the difference between expectation and perceived satisfaction. Chi square test was used to test the relationship between different groups of patients and patient satisfaction. If  $p < 0.05$ , the difference was statistically significant. The gap analysis was used to revealed outpatient satisfaction level. The gap calculation formula was as follows:  $Gap = \frac{1}{n} \sum_i^n (P_i - E_i)$ . An outpatient was satisfied with the community health service center if the sum of the gaps of the 22 service items was greater than or equal to 0. While an outpatient was dissatisfied with the community health service center if the sum of the gaps of the 22 service items was less than 0. Outpatients were satisfied with a service dimension or item if the sum of the whole patients' gap for the dimension or item was greater than or equal to 0. Otherwise, outpatients were dissatisfied with a service dimension or item.

Pearson's correlation coefficient was used to analysis the correlation between expectation and perceived satisfaction. If  $p < 0.05$ , the correlation was statistically significant. The original IPA and revised IPA was used to analyze the

data on outpatients' expectations and perceived satisfaction of the service to identify the critical factor, affecting patient satisfaction. The data used to construct the original IPA grid were the outpatients' expectations mean and perceptions mean of the service dimensions or items. But for the revised IPA grid, the overall satisfaction and the outpatient perceptions mean of the dimension or item were used.

Original IPA includes the following steps

- 1) Use the expectation value as the horizontal coordinate and the perception value as the vertical coordinate.
- 2) Use the mean of all expectation scores for dimensions (or items) and the mean of all perception scores for dimensions (or items) to divide the IPA matrix into four quadrants.
- 3) Plot all dimensions (or items) on the IPA matrix.

Revised IPA includes the following steps:

- 1) Calculate the implied importance of each service item. It comprises two steps:
  - i. Take the natural logarithm of the perceived satisfaction ( $P_i$ ) of each item and count it as  $\ln(P_i)$ , and the overall satisfaction as OS.
  - ii. Set  $\ln(P_i)$  as the independent variable and OS as the dependent variable for multiple regression analysis and derive the partial correlation coefficient between the natural logarithm of each evaluation satisfaction and the overall satisfaction. The partial correlation coefficient is implicitly derived importance

2) Use the implicitly derived importance score as the horizontal coordinate and the perception scores as the vertical coordinate.

3) Use the mean of all implicitly derived importance scores for dimensions (or items) and the mean of all perception scores for dimensions (or items) to divide the IPA matrix into four quadrants.

For the original IPA (or the revised IPA), dimension or item with both expectation (or implicitly derived importance) and perception score higher than mean was in quadrant I. Dimension or item with expectation score (or implicitly derived importance) below the mean and perception score higher than mean was in quadrant II. Dimension or item with both expectation (or implicitly derived importance) and perception score below the mean was in the quadrant III. Dimension or item with expectation score (or implicitly derived importance) higher than the mean and perception score less than mean was in quadrant IV.

### **3.10 Ethical Consideration**

Research ethics approval for study involving human participation was obtained from Dapuqiao Community Health Service Center Review Board.

The results of this project may be published in journals, but we will keep the respondent's information confidential according to the legal requirements.

## CHAPTER 4: Research results

### 4.1 Basic information of the participants.

#### 4.1.1 Composition of outpatient departments

In this study, the outpatients of Dapujiao community service center in Shanghai were selected as the respondents. A convenience sampling method was used in the field at the research hospital in December 2021, and a survey team of uniformly trained medical staff intercepted outpatients on site. Patients completed the questionnaire on their own or with the help of the surveyors. A total of 424 people were intercepted, and 414 valid questionnaires were obtained after eliminating invalid questionnaires, with a return rate of 97.6%. Among the 414 valid questionnaires, the 8 departments were involved, divided into Zhonghai service station, Zhonghui service station, Zhongshun service station, Zhongtai service station, general medical, rehabilitation, dental, traditional Chinese Medicine. Questionnaires distribution were based on the number of clinics in each department. The response rate of the 8 departments was all exceed 90%. And it was shows as followings:

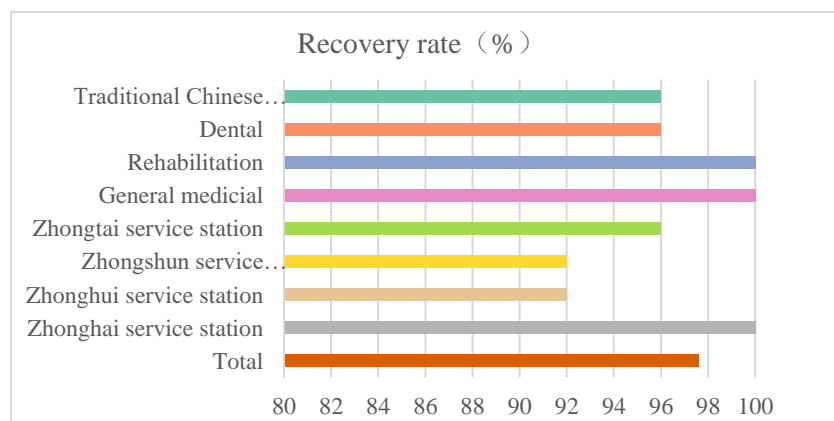


Figure 5 Proportion of valid questionnaires and response rate

#### 4.1.2 Distribution of sociodemographic attribute characteristics of the participants

A total of 414 valid questionnaires were collected. The average age of those participants was  $58.01 \pm 17.03$ , with range of age between 22-91 years old. The sociodemographic characteristics of the participants were shown in the table below. For the details of the age distribution, most of the participants (27.8%) belonged to the (60-69) age group, and 22.2% belonged to the (70-79) age group, 14.0% belonged to the (50-59) age group, 12.8% belonged to the (30-39) age group, 8.7% belonged to the (40-49) age group, 8.0% belonged to the (20-29) age group, 6.5% belonged to the (80-high) age group. Among the participants, male accounted for 40.6%, and female accounted for 59.4%. Of the participant, 43.3% were less than 60 years old, and 56.5% aged 60 or above. In the item of marital status, 81.2% were married, 12.6% were unmarried, 4.8% were widowed, and the rest 1.4% were divorced. For the education level, 45.9% of the participants were undergraduate and junior college, 32.4% were technical secondary school and senior high school, 15.5% were junior high school and primary school, 5.8% were graduate and above, and 0.5% were illiterate. For the distribution of per capita monthly income of families, 3.9% were in the group of less than 3000 RMB, 25.4% were in the group of 3000 RMB - 5000 RMB, 33.3% were in the group of 5000 RMB - 7000RMB, 21% were in the group of 7000 RMB - 10000 RMB, and the last 16.4% were in the group of not less than 10000 RMB.

Table 5 Distribution of demographic characteristics of the participants

| Item        | Classification | Number of Participants | Percentage (%) |
|-------------|----------------|------------------------|----------------|
| Gender      | Male           | 168                    | 40.6           |
|             | Female         | 246                    | 59.4           |
| Age (years) |                |                        |                |

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|                          |   |     |      |
|--------------------------|---|-----|------|
|                          | ≥20, ≤29  | 33  | 8.0  |
|                          | ≥30, ≤39  | 53  | 12.8 |
|                          | ≥40, ≤49  | 36  | 8.7  |
|                          | ≥50, ≤59  | 58  | 14.0 |
|                          | ≥60, ≤69  | 115 | 27.8 |
|                          | ≥70, ≤79  | 92  | 22.2 |
|                          | ≥80   | 27  | 6.5  |
| Marital Status           |   |     |      |
|                          | Unmarried   | 52  | 12.6 |
|                          | Married   | 336 | 81.2 |
|                          | Widowed   | 20  | 4.8  |
|                          | Divorced  | 6   | 1.4  |
| Education level          |   |     |      |
|                          | Graduate and above                                | 24  | 5.8  |
|                          | Undergraduate and junior college                  | 190 | 45.9 |
|                          | Technical secondary school and senior high school | 134 | 32.4 |
|                          | Junior high school and primarily school           | 64  | 15.5 |
|                          | Illiterate  | 2   | 0.5  |
| Occupation status        |   |     |      |
|                          | Retire  | 257 | 62.1 |
|                          | Unemployed  | 9   | 2.2  |
|                          | Employed  | 148 | 35.7 |
| Household monthly income |   |     |      |
|                          | Less than 3000 RMB                                | 16  | 3.9  |
|                          | ≥3000 RMB, < 5000 RMB                             | 105 | 25.4 |
|                          | ≥5000 RMB, < 7000RMB                              | 138 | 33.3 |
|                          | ≥7000 RMB, < 10000 RMB                            | 87  | 21   |
|                          | ≥10000 RMB  | 68  | 16.4 |

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## 4.2 The results of overall perceived satisfaction

We collected outpatients' overall perceived satisfaction through a question "Are you satisfied with this visit?" The mean of overall perceived satisfaction was  $4.679 \pm 0.579$ . 93 outpatients answered they were satisfied, and 302 outpatients were very satisfied. The perceived satisfaction was 95.4%(395/414), indicating that patients had high patients' overall perceived satisfaction of the health service center.

Table 6 Overall perceived satisfaction

| Items                              | Simple size | Min | Max | Mean  | SD    |
|------------------------------------|-------------|-----|-----|-------|-------|
| Are you satisfied with this visit? | 414         | 1   | 5   | 4.679 | 0.579 |

## 4.3 The results of outpatients' expectations and perceived satisfaction.

### 4.3.1 The results of outpatients' expectations

The results of the survey on patients' expectations of service satisfaction were presented in table 7. The mean score of patients' expectations on the five dimensions was  $4.561 \pm 0.502$ , indicating that patients have high expectations of the health service center. The assurance dimension had the highest score with  $4.549 \pm 0.556$ , followed by reliability, responsiveness, empathy, and tangibility with scores of  $4.584 \pm 0.544$ ,  $4.579 \pm 0.543$ ,  $4.549 \pm 0.556$  and  $4.499 \pm 0.600$ , respectively.

Among the 22 items, the top five service items with the highest expectations were item 8, 16, 10, 14, 11, with scores of  $4.655 \pm 0.577$ ,  $4.638 \pm 0.565$ ,  $4.630 \pm 0.583$ ,  $4.597 \pm 0.586$ ,  $4.594 \pm 0.602$ , respectively. The last five indicators in the expectation ranking were item 2, 1, 21, 13, 19 with scores of  $4.435 \pm 0.671$ ,  $4.481 \pm 0.677$ ,  $4.507 \pm 0.652$ ,  $4.510 \pm 0.659$ ,  $4.531 \pm 0.621$ , respectively. There were 11 items with the expectation score exceeded the mean value.



Table 7 The results of outpatient expectation of the 22 items

| Item   | Simple size | Max | Min | Mean  | SD    | Rank |
|--|-------------|-----|-----|-------|-------|------|
| 1. The hospital should have up-to-date equipment.  | 414         | 2   | 5   | 4.481 | 0.677 | 21   |
| 2. The hospital's physical facilities should be visually appealing.  | 414         | 3   | 5   | 4.435 | 0.671 | 22   |
| 3. Medical staff should be well dressed and appear neat, in conformity with the medical environment and norms.         | 414         | 2   | 5   | 4.543 | 0.680 | 14   |
| 4. The appearance of the physical facilities of this hospital should be in keeping with the type of services provided. | 414         | 2   | 5   | 4.536 | 0.640 | 16   |
| 5. When this hospital promises to do something by a certain time, they should do so.                                   | 414         | 3   | 5   | 4.556 | 0.611 | 13   |
| 6. When patients have problems, this hospital should be sympathetic and reassuring.                                    | 414         | 2   | 5   | 4.539 | 0.608 | 15   |
| 7. The hospital should provide their services at the time they promise to do so.                                       | 414         | 2   | 5   | 4.585 | 0.612 | 7    |
| 8. The price of medical services is disclosure, reasonable and transparent.  | 414         | 2   | 5   | 4.655 | 0.577 | 1    |
| 9. The hospital should keep patients records accurately.   | 414         | 2   | 5   | 4.585 | 0.657 | 7    |
| 10. The hospital could tell customers exactly when services will be performed  | 414         | 3   | 5   | 4.630 | 0.583 | 3    |
| 11. The medical service expected by the patient is provided timely   | 414         | 3   | 5   | 4.594 | 0.602 | 5    |
| 12. The medical staff are willing to help the patient autonomously and spontaneously                                   | 414         | 2   | 5   | 4.582 | 0.604 | 9    |
| 13. The medical staff can respond to patients requests promptly during rush hours.                                     | 414         | 3   | 5   | 4.510 | 0.659 | 19   |
| 14. The qualified professional skills could make patients trust them   | 414         | 3   | 5   | 4.597 | 0.586 | 4    |

|   |     |   |   |       |       |    |
|---|-----|---|---|-------|-------|----|
| 15 The rich professional knowledge of medical staff could make patients trust them                | 414 | 3 | 5 | 4.582 | 0.588 | 9  |
| 16. The hospital staff should be polite   | 414 | 3 | 5 | 4.638 | 0.565 | 2  |
| 17. The hospital medical staff should get adequate support from this hospital to do the jobs well | 414 | 2 | 5 | 4.560 | 0.626 | 12 |
| 18. This hospital should give patient individualized services                                     | 414 | 3 | 5 | 4.536 | 0.620 | 16 |
| 19. Medical staff of this hospital should give patients personal attention                        | 414 | 3 | 5 | 4.531 | 0.621 | 18 |
| 20. Medical staff of this hospital should know what the needs of their patients are               | 414 | 3 | 5 | 4.582 | 0.584 | 9  |
| 21.The hospital should have their patient's best interests at heart                               | 414 | 3 | 5 | 4.507 | 0.652 | 20 |
| 22.The hospital should have operation hours convenient to all their patient                       | 414 | 1 | 5 | 4.587 | 0.619 | 6  |

#### 4.3.2 The results of outpatients' perceived satisfaction

The characteristics of patients' perception of service satisfaction survey results were analyzed as shown in table 8 and table 9. As seen in table 8, the highest patient perceived satisfaction was reliability with a score of  $4.623 \pm 0.487$ , followed by assurances with a score of  $4.610 \pm 0.495$ , tangibles with a score of  $4.597 \pm 0.483$ , responsiveness with a score of  $4.578 \pm 0.517$ . And the lowest perceived satisfaction was the empathy dimension, with a score of  $4.488 \pm 0.593$ . The results indicated that the patients' perceptions of service satisfaction were high, but the empathy dimension of the services of this healthcare organization performed the worst in comparison to the overall.

Table 9 showed that highest value of patients' perceived satisfaction with the services of this medical institution was item 3 ( $4.722 \pm 0.485$ ), followed by item

16(4.717 ± 0.506), and item 8(4.696±0.525), while the last three items in the perception ranking were item 21, item 18, item 19, with the scores of 4.447 ±0.686, 4.449±0.697, 4.471±0.680, respectively. The mean value of patient perceived satisfaction of medical service was 4.577±0.472, which was high than the mean expectation, indicating that patient's overall satisfaction was high.

Table 8 The result of outpatients perceived satisfaction of dimensions (n=414)

| Items          | Min | Max | Mean  | SD    | Rank |
|----------------|-----|-----|-------|-------|------|
| Tangibles      | 3   | 5   | 4.597 | 0.483 | 3    |
| Reliability    | 3   | 5   | 4.623 | 0.487 | 1    |
| Responsiveness | 3   | 5   | 4.578 | 0.517 | 4    |
| Assurance      | 3   | 5   | 4.610 | 0.495 | 2    |
| Empathy        | 2.4 | 5   | 4.488 | 0.593 | 5    |

Table 9 The result of outpatients perceived satisfaction of 22 items (n=414)

| Item  | Max | Min | Mean  | SD    | Rank |
|---|-----|-----|-------|-------|------|
| 1.They should have up-to-date equipment.  | 3   | 5   | 4.568 | 0.573 | 13   |
| 2.Their physical facilities should be visually appealing.   | 3   | 5   | 4.502 | 0.625 | 17   |
| 3. Medical staff should be well dressed and appear neat, in conformity with the medical environment and norms.        | 3   | 5   | 4.722 | 0.485 | 1    |
| 4.The appearance of the physical facilities of this hospital should be in keeping with the type of services provided. | 3   | 5   | 4.597 | 0.560 | 8    |
| 5.When this hospital promises to do something by a certain time, they should do so.                                   | 2   | 5   | 4.592 | 0.611 | 10   |
| 6. When patients have problems, this hospital should be sympathetic and reassuring.                                   | 3   | 5   | 4.563 | 0.590 | 15   |
| 7. They should provide their services at the time they promise to do so.  | 3   | 5   | 4.601 | 0.559 | 7    |

|  |   |   |       |       |    |
|--|---|---|-------|-------|----|
| 8. The price of medical services is disclosure, reasonable and transparent.                | 3 | 5 | 4.696 | 0.525 | 3  |
| 9. The hospital should keep patients records accurately.                                   | 2 | 5 | 4.662 | 0.571 | 5  |
| 10. The hospital could tell customers exactly when services will be performed              | 3 | 5 | 4.674 | 0.541 | 4  |
| 11. The medical service expected by the patient is provided timely                         | 3 | 5 | 4.597 | 0.577 | 8  |
| 12. The medical staff are willing to help the patient autonomously and spontaneously       | 3 | 5 | 4.568 | 0.594 | 13 |
| 13. The medical staff can respond to patients requests promptly during rush hours.         | 3 | 5 | 4.473 | 0.673 | 19 |
| 14. The qualified professional skills could make patients trust them                       | 3 | 5 | 4.614 | 0.574 | 6  |
| 15 The rich professional knowledge of medical staff could make patients trust them         | 3 | 5 | 4.589 | 0.583 | 11 |
| 16. Their staff should be polite   | 3 | 5 | 4.717 | 0.506 | 2  |
| 17. Their medical staff should get adequate support from this hospital to do the jobs well | 3 | 5 | 4.519 | 0.613 | 16 |
| 18. This hospital should give patient individualized services                              | 2 | 5 | 4.449 | 0.697 | 21 |
| 19. Medical staff of this hospital should give patients personal attention                 | 2 | 5 | 4.471 | 0.680 | 20 |
| 20. Medical staff of this hospital should know what the needs of their patients are        | 2 | 5 | 4.502 | 0.670 | 17 |
| 21.The hospital should have their patient's best interests at heart                        | 2 | 5 | 4.447 | 0.686 | 22 |
| 22.The hospital should have operation hours convenient to all their patient                | 1 | 5 | 4.572 | 0.621 | 12 |

## 4.4 The Gap analysis

### 4.4.1 Satisfaction with different service dimensions and items

It is inevitable that there is a certain gap between patients' perception of service satisfaction and expectations. According to the Gap analysis, the gap between expectation and perception of patient satisfaction in Dapuqiao Community Health Center was derived, as shown in Table 10&11.

From the overall view of 414 outpatients, both patient expectations and perceived value were high. The mean value of patient expectations was  $4.561 \pm 0.502$ , and the mean value of perceived satisfaction was  $4.577 \pm 0.472$ . The results in Table 10 showed the smallest gap was -1.14 and the largest gap was 1.91 in the overall gap. And the patients' perceptions of healthcare services were generally higher than their expectations of healthcare services, with a positive gap ( $0.016 \pm 0.378$ ). According to the idea of satisfaction measurement, if the perceived score is greater than the expected score, it reflects that the customer's perceived service quality has exceeded expectations and indicates that the service level is high, and the customer is satisfied. So it is clear that the overall outpatient were satisfied, with perceived satisfaction of Dapuqiao community health service meeting the expectation.

From the perspective of the individual outpatient, 21.98% (91 patients) of the 414 outpatients had a perceived patient satisfaction value below the expected value, indicating that those outpatients were dissatisfied. The other 78.02% (323 patients) had a perceived patient satisfaction value  $\geq$  expectation value, indicating that the outpatients were satisfied. Therefore, the outpatient satisfaction level was 78.02%. There is still room for further improvement in patient satisfaction. It was necessary to further analyze the patient satisfaction gap and find the deficiencies

in the quality of medical services that affected the satisfaction. Detailed analysis of the gap of each service dimension and item was needed, which was shown in the table 10&11.

From the view of dimensions, there was significant positive difference between perceived satisfaction and expectation in tangibility dimension ( $\text{Gap} = 0.098 \pm 0.499$ ,  $t = 4.014$ ,  $p < 0.05$ ), which meant the perceived satisfaction was higher than expectation, and the outpatients were highly satisfied with tangibility dimension. The positive difference in reliability and assurance dimension and the negative difference in responsiveness dimension were not statistically significant ( $\text{Gap}_{\text{reliability}} = 0.039 \pm 0.499$ ,  $t_{\text{reliability}} = 0.428$ ,  $p_{\text{reliability}} = 0.072 > 0.05$ ;  $\text{Gap}_{\text{assurance}} = 0.016 \pm 0.436$ ,  $t_{\text{assurance}} = 0.732$ ,  $p_{\text{assurance}} = 0.465 > 0.05$ ;  $\text{Gap}_{\text{responsiveness}} = -0.001 \pm 0.435$ ,  $t_{\text{responsiveness}} = -0.056$ ,  $p_{\text{responsiveness}} = 0.955 > 0.05$ ), which meant expectations and perceptions were matched. So patients were still satisfied with reliability, assurance, and responsiveness dimensions. However, there was significant negative difference in empathy dimension ( $\text{Gap} = -0.060 \pm 0.473$ ,  $t = -2.597$ ,  $p = 0.01 < 0.05$ ). The negative gap meant that the perception of satisfaction in empathy dimension was lower than the expectation. So, the outpatients were not satisfied with the service in this dimension. And further improvements in empathy dimension of healthcare services are necessary.

From the view of items, among the 22 evaluation items of medical service satisfaction, 8 evaluation items had negative gap and 14 had positive gap, and the distribution of each service gap was shown in table 11 and figure 6. Four evaluation items with  $\text{Gaps} < -0.05$ , were in the empathy dimension, including item 18- "giving patient individualized services", item 19- "giving patients personal attention", item 20- "knowing the needs of their patients", item 21- "having their patient's best interests at heart". There were four evaluation items with  $-0.05 \leq$

Gap  $\leq -0.01$ , which were related to responsiveness, assurance, and empathy of medical services. These include item 12 - “willing to help the patient autonomously and spontaneously”, item 13- “respond to patients requests promptly during rush hours”, item 17- “medical staff get adequate support from this hospital to do the jobs well”, and item 22 - “offering operation hours convenient to all their patients”. Among the 14 items with positive, item 1, 2, 3, 4, 7, 16 were with Gap  $\geq 0.05$ , and item 5, 6, 7, 8, 10, 11, 14, 15 were with  $0 < \text{Gap} < 0.05$ .

Combining the results of the paired t test, the difference of the four evaluation items with Gap  $< -0.05$ , was statistically significant at the  $p < 0.05$  level. But the difference of the four evaluation items with  $-0.05 \leq \text{Gap} \leq -0.01$ , was not statistically significant at the  $p < 0.05$  level. Similarly, the difference of the six evaluation items with Gap  $\geq 0.05$ , was statistically significant at the  $p < 0.05$  level. But the difference of the eight evaluation items with  $0 < \text{Gap} < 0.05$ , was not statistically significant at the  $p < 0.05$  level. Therefore, the outpatient were highly satisfied with item 1, 2, 3, 4, 7, 16, especially item 3 with the biggest positive gap. 8 items with no statistically significant negative gap, and 4 items with no statistically significant positive gap, could be still consider the perception met the expectation. So, we believed that outpatients were still satisfied with item 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 17, 22. But outpatients were not satisfied with the item 18, 19, 20, 21. These four items all belonged to empathy dimension. This result was consistent with the results of gap analysis on dimension.

Table 10 The results of the gap analysis on 5 service dimensions (n=414)

| Dimension      | Min   | Max | Mean   | SD    | Rank | t value* | P value*  |
|----------------|-------|-----|--------|-------|------|----------|-----------|
| Tangibility    | -1.25 | 2.5 | 0.098  | 0.499 | 1    | 4.014    | $< 0.001$ |
| Reliability    | -1.60 | 2.0 | 0.039  | 0.428 | 2    | 1.803    | 0.072     |
| Responsiveness | -1.75 | 2.0 | -0.001 | 0.435 | 4    | -0.056   | 0.955     |

|           |       |      |        |       |   |        |       |
|-----------|-------|------|--------|-------|---|--------|-------|
| Assurance | -2.0  | 2.0  | 0.016  | 0.436 | 3 | 0.732  | 0.465 |
| Empathy   | -2    | 1.6  | -0.060 | 0.473 | 5 | -2.597 | 0.01  |
| Total     | -1.14 | 1.91 | 0.016  | 0.378 |   |        |       |

\* A paired *t*-test was used to verify the differences between the levels of expectation and perception.





Table 11 The results of the gap analysis on 22 service items (n=414)

| Item  | Min | Max | Mean   | SD    | Rank | t Value * | p-Value * |
|---|-----|-----|--------|-------|------|-----------|-----------|
| 1.They should have up-to-date equipment.  | -2  | 3   | 0.087  | 0.658 | 2    | 2.688     | 0.007     |
| 2.Their physical facilities should be visually appealing.   | -2  | 2   | 0.068  | 0.591 | 5    | 2.33      | 0.02      |
| 3. Medical staff should be well dressed and appear neat, in conformity with the medical environment and norms.        | -1  | 3   | 0.179  | 0.616 | 1    | 5.903     | 0         |
| 4.The appearance of the physical facilities of this hospital should be in keeping with the type of services provided. | -2  | 3   | 0.060  | 0.510 | 6    | 2.408     | 0.016     |
| 5.When this hospital promises to do something by a certain time, they should do so.                                   | -3  | 2   | 0.036  | 0.612 | 9    | 1.205     | 0.229     |
| 6. When patients have problems, this hospital should be sympathetic and reassuring.                                   | -2  | 2   | 0.024  | 0.534 | 10   | 0.92      | 0.358     |
| 7. They should provide their services at the time they promise to do so.  | -2  | 2   | 0.017  | 0.513 | 11   | 0.67      | 0.503     |
| 8. The price of medical services is disclosure, reasonable and transparent.   | -2  | 3   | 0.041  | 0.452 | 8    | 1.849     | 0.065     |
| 9. The hospital should keep patients records accurately.  | -2  | 3   | 0.077  | 0.551 | 4    | 2.853     | 0.005     |
| 10. The hospital could tell customers exactly when services will be performed   | -2  | 2   | 0.043  | 0.470 | 7    | 1.882     | 0.06      |
| 11. The medical service expected by the patient is provided timely  | -2  | 2   | 0.002  | 0.509 | 14   | 0.097     | 0.923     |
| 12. The medical staff are willing to help the patient autonomously and spontaneously                                  | -2  | 2   | -0.014 | 0.539 | 15   | -0.547    | 0.584     |
| 13. The medical staff can respond to patients requests promptly during rush hours.                                    | -2  | 2   | -0.036 | 0.545 | 17   | -1.354    | 0.177     |
| 14. The qualified professional skills could make patients trust them  | -2  | 2   | 0.017  | 0.532 | 11   | 0.647     | 0.518     |
| 15 The rich professional knowledge of medical staff could make patients trust them                                    | -2  | 2   | 0.007  | 0.559 | 13   | 0.264     | 0.792     |

|  |    |   |        |       |    |        |       |
|--|----|---|--------|-------|----|--------|-------|
| 16. Their staff should be polite   | -2 | 2 | 0.080  | 0.526 | 3  | 3.082  | 0.002 |
| 17. Their medical staff should get adequate support from this hospital to do the jobs well | -2 | 2 | -0.041 | 0.553 | 18 | -1.511 | 0.132 |
| 18. This hospital should give patient individualized services                              | -2 | 2 | -0.087 | 0.532 | 22 | -3.326 | 0.001 |
| 19. Medical staff of this hospital should give patients personal attention                 | -2 | 2 | -0.060 | 0.551 | 19 | -2.229 | 0.026 |
| 20. Medical staff of this hospital should know what the needs of their patients are        | -2 | 2 | -0.080 | 0.562 | 21 | -2.887 | 0.004 |
| 21. The hospital should have their patient's best interests at heart                       | -3 | 2 | -0.060 | 0.585 | 19 | -2.099 | 0.036 |
| 22. The hospital should have operation hours convenient to all their patient               | -4 | 4 | -0.014 | 0.557 | 15 | -0.53  | 0.596 |

\* A paired *t*-test was used to verify the differences between the levels of expectation and perception.

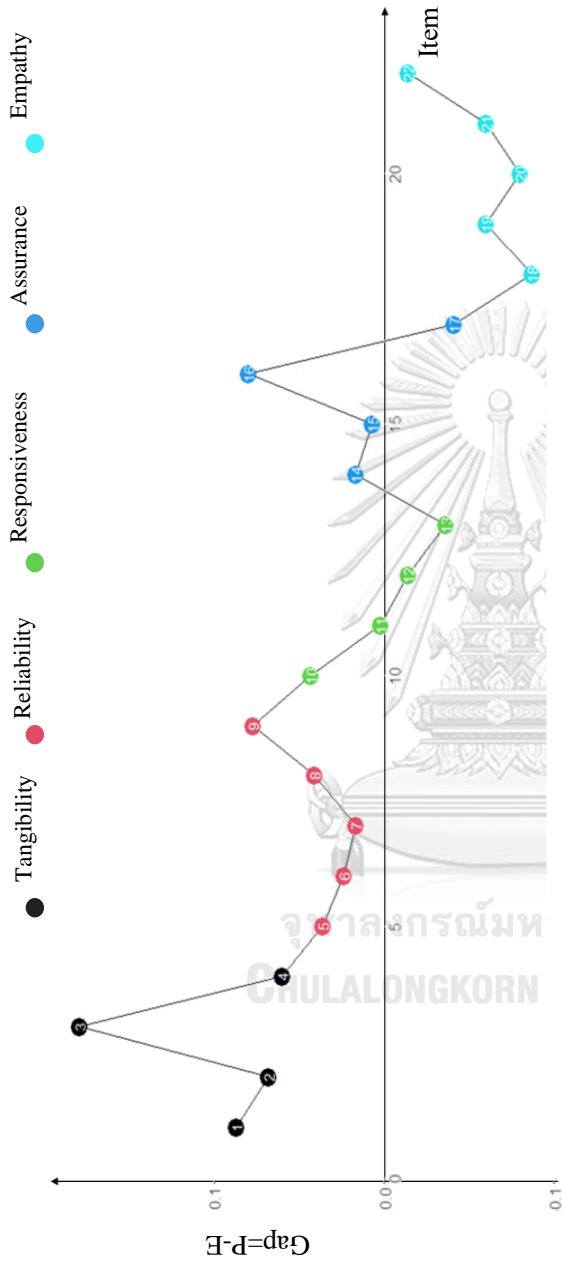


Figure 6 Gap between perceived satisfaction and expectation

Note: A negative gap indicates that the quality of medical services did not meet patients' expectations and patient satisfaction was low. Big Negative gap in item 18, 19, 20, and 21 suggested that these 4 service items needed to be improved.

#### 4.4.2 Services satisfaction by different outpatients

The satisfaction of different groups on the five dimensions and the overall satisfaction of the five dimensions were shown in the table 12. The chi-square tests showed that age was related to satisfaction of the tangibility, reliability services, and the overall satisfaction of the five dimensions. Marital status was related to the satisfaction of tangibility dimension. Occupation status was related to the satisfaction of tangibility, assurance, empathy services, and the overall satisfaction of the five dimensions. Household monthly income was related to the satisfaction of reliability and responsiveness.

Age, marital status, and occupation status were related to tangibility satisfaction. The highest tangibility satisfaction was in 40-49 years old group, divorced group, employed, which were 94.22%, 100%, 93.92% respectively. The lowest satisfaction was in 70-79 years old group, widowed group, retired group, which was 77.17%,70%,80.54% respectively.

Age, and household monthly income were related to reliability satisfaction. The highest satisfaction was in 30-39 years old group and household monthly income  $\geq 10,000$  RMB group, with satisfaction level of 96.23%, 97.06% respectively. The lowest satisfaction was in  $\geq 80$  years old group and household monthly income between 7000 and 100000 RMB group, which were 74.07%, 80.46%, respectively.

Household monthly income was related to responsiveness satisfaction. The highest responsiveness satisfaction were in the household monthly income  $\geq 10000$  RMB group ,with satisfaction level of 95.59%. The group with household monthly income between 7000 RMB and 100000 RMB, had the lowest satisfaction, which was 80.46%.

Occupation status was related to assurance satisfaction, with the lowest satisfaction rate for retired (82.88%) and highest satisfaction level for the unemployed (100%).

Occupation status was also related to empathy satisfaction. The highest satisfaction was in the employed group, with satisfaction level of 88.51%. And the lowest satisfaction was in the unemployed group, with a satisfaction level of 77.78%.

In addition, the age and occupation status were related to the overall satisfaction of the five dimensions. The age not less than 80ys, and the unemployed had the lowest satisfaction level (59.26%,66.67%, respectively). The age between 40 and 49ys and the employed had the highest satisfaction level (88.89%,86.49%, respectively).

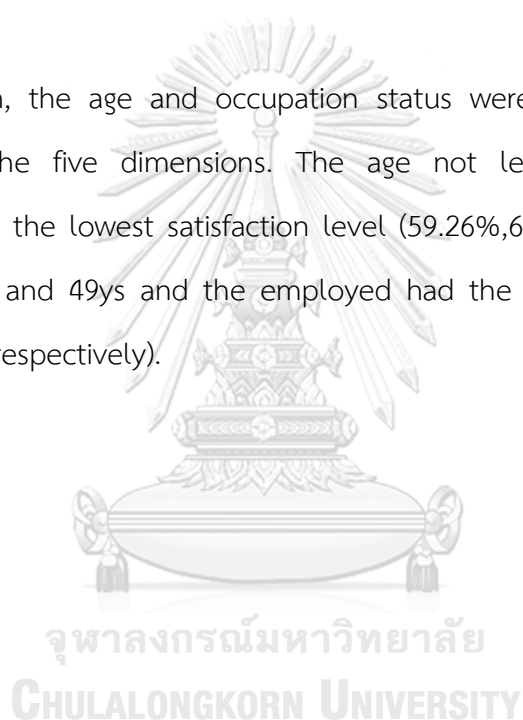


Table 12 Services satisfaction by different outpatients

| Item                  | Subjects Number | Tangibility  |           |         | Reliability  |           |         | Responsiveness |           |         |        |       |
|-----------------------|-----------------|--------------|-----------|---------|--------------|-----------|---------|----------------|-----------|---------|--------|-------|
|                       |                 | Dissatisfied | Satisfied | p-value | Dissatisfied | Satisfied | p-value | Dissatisfied   | Satisfied | p-value |        |       |
| <b>Gender</b>         |                 |              |           |         |              |           |         |                |           |         |        |       |
| Male                  | 168             | 20           | 148       | 1.528   | 0.216        | 21        | 147     | 0.023          | 22        | 146     | 0.022  | 0.883 |
| Female                | 246             | 40           | 206       |         |              | 32        | 214     |                | 31        | 215     |        |       |
| <b>Age (years)</b>    |                 |              |           |         |              |           |         |                |           |         |        |       |
| ≥20, ≤29              | 33              | 1            | 32        | 15.489  | 0.017        | 3         | 30      | 12.765         | 1         | 32      | 11.497 | 0.074 |
| ≥30, ≤39              | 53              | 4            | 49        |         |              | 2         | 51      |                | 3         | 50      |        |       |
| ≥40, ≤49              | 36              | 1            | 35        |         |              | 2         | 34      |                | 3         | 33      |        |       |
| ≥50, ≤59              | 58              | 9            | 49        |         |              | 6         | 52      |                | 7         | 51      |        |       |
| ≥60, ≤69              | 115             | 19           | 96        |         |              | 20        | 95      |                | 17        | 98      |        |       |
| ≥70, ≤79              | 92              | 21           | 71        |         |              | 13        | 79      |                | 15        | 77      |        |       |
| ≥80                   | 27              | 5            | 22        |         |              | 7         | 20      |                | 7         | 20      |        |       |
| <b>Marital Status</b> |                 |              |           |         |              |           |         |                |           |         |        |       |
| Unmarried             | 52              | 3            | 49        | 8.219   | 0.042        | 4         | 48      | 6.332          | 3         | 49      | 5.076  | 0.166 |
| Married               | 336             | 51           | 285       |         |              | 44        | 292     |                | 44        | 292     |        |       |
| Widowed               | 20              | 6            | 14        |         |              | 6         | 14      |                | 5         | 15      |        |       |
| Divorced              | 6               | 0            | 6         |         |              | 1         | 5       |                | 1         | 5       |        |       |

**Education level**

|   |     |    |     |        |       |    |     |        |       |    |     |       |       |
|---|-----|----|-----|--------|-------|----|-----|--------|-------|----|-----|-------|-------|
| Graduate and above                                | 24  | 0  | 24  | 7.137  | 0.129 | 1  | 23  | 4.315  | 0.365 | 1  | 23  | 2.057 | 0.725 |
| Undergraduate and junior college                  | 190 | 24 | 166 |        |       | 24 | 166 |        |       | 25 | 165 |       |       |
| Technical secondary school and senior high school | 134 | 24 | 110 |        |       | 19 | 115 |        |       | 18 | 116 |       |       |
| Junior high school and primary school             | 64  | 12 | 52  |        |       | 9  | 55  |        |       | 9  | 55  |       |       |
| Illiterate  | 2   | 0  | 2   |        |       | 1  | 1   |        |       | 0  | 2   |       |       |
| <b>Occupation status</b>                          |     |    |     |        |       |    |     |        |       |    |     |       |       |
| Retired   | 257 | 50 | 207 | 13,641 | 0.001 | 40 | 217 | 4,701  | 0.095 | 40 | 217 | 5,219 | 0.074 |
| Unemployed  | 9   | 1  | 8   |        |       | 1  | 8   |        |       | 0  | 9   |       |       |
| Employed  | 148 | 9  | 139 |        |       | 12 | 136 |        |       | 13 | 135 |       |       |
| <b>Household monthly income</b>                   |     |    |     |        |       |    |     |        |       |    |     |       |       |
| < 3000 RMB  | 16  | 1  | 15  | 4,009  | 0.405 | 3  | 13  | 10,262 | 0.036 | 2  | 14  | 9.56  | 0.049 |
| ≥ 3000 RMB, < 5000 RMB                            | 105 | 19 | 86  |        |       | 12 | 93  |        |       | 10 | 95  |       |       |
| ≥ 5000 RMB, < 7000RMB                             | 138 | 22 | 116 |        |       | 19 | 119 |        |       | 21 | 117 |       |       |
| ≥ 7000 RMB, < 100000 RMB                          | 87  | 12 | 75  |        |       | 17 | 70  |        |       | 17 | 70  |       |       |
| ≥ 10000 RMB                                       | 68  | 6  | 62  |        |       | 2  | 66  |        |       | 3  | 65  |       |       |

Table 12 Services satisfaction by different outpatients

| Item                  | Subjects Number | Assurance    |           | Empathy      |           | Total        |           | χ <sup>2</sup> | p-value | χ <sup>2</sup> | p-value |
|-----------------------|-----------------|--------------|-----------|--------------|-----------|--------------|-----------|----------------|---------|----------------|---------|
|                       |                 | Dissatisfied | Satisfied | Dissatisfied | Satisfied | Dissatisfied | Satisfied |                |         |                |         |
|                       |                 | ed           |           | ed           |           | ed           |           |                |         |                |         |
| <b>Gender</b>         |                 |              |           |              |           |              |           |                |         |                |         |
| Male                  | 168             | 23           | 145       | 33           | 135       | 35           | 133       | 0.217          | 0.641   |                |         |
| Female                | 246             | 33           | 213       | 40           | 206       | 56           | 190       |                |         |                |         |
| <b>Age (years)</b>    |                 |              |           |              |           |              |           |                |         |                |         |
| ≥20, ≤29              | 33              | 2            | 31        | 3            | 30        | 4            | 29        | 15.952         | 0.014   |                |         |
| ≥30, ≤39              | 53              | 5            | 48        | 5            | 48        | 6            | 47        |                |         |                |         |
| ≥40, ≤49              | 36              | 2            | 34        | 3            | 33        | 4            | 32        |                |         |                |         |
| ≥50, ≤59              | 58              | 6            | 52        | 8            | 50        | 12           | 46        |                |         |                |         |
| ≥60, ≤69              | 115             | 19           | 96        | 25           | 90        | 32           | 83        |                |         |                |         |
| ≥70, ≤79              | 92              | 16           | 76        | 21           | 71        | 22           | 70        |                |         |                |         |
| ≥80                   | 27              | 6            | 21        | 8            | 19        | 11           | 16        |                |         |                |         |
| <b>Marital Status</b> |                 |              |           |              |           |              |           |                |         |                |         |
| Unmarried             | 52              | 5            | 47        | 6            | 46        | 8            | 44        | 3.418          | 0.332   |                |         |
| Married               | 336             | 46           | 290       | 63           | 273       | 75           | 261       |                |         |                |         |
| Widowed               | 20              | 4            | 16        | 3            | 17        | 7            | 13        |                |         |                |         |



|   |     |    |     |    |     |       |       |    |     |       |       |    |     |
|---|-----|----|-----|----|-----|-------|-------|----|-----|-------|-------|----|-----|
| Divorced  | 6   | 1  | 5   | 1  | 5   | 1     | 5     | 1  | 5   | 0.066 | 8.811 | 23 | 151 |
| <b>Education level</b>                            |     |    |     |    |     |       |       |    |     |       |       |    |     |
| Graduate and above                                | 24  | 1  | 23  | 3  | 21  | 4.633 | 0.327 | 1  | 23  | 8.811 | 0.066 |    |     |
| Undergraduate and junior college                  | 190 | 26 | 164 | 31 | 159 |       |       | 39 | 151 |       |       |    |     |
| Technical secondary school and senior high school | 134 | 18 | 116 | 22 | 112 |       |       | 30 | 104 |       |       |    |     |
| Junior high school and primary school             | 64  | 11 | 53  | 16 | 48  |       |       | 20 | 44  |       |       |    |     |
| Illiterate  | 2   | 0  | 2   | 1  | 1   |       |       | 1  | 1   |       |       |    |     |
| <b>Occupation status</b>                          |     |    |     |    |     |       |       |    |     |       |       |    |     |
| Retired   | 257 | 44 | 213 | 54 | 203 | 7.961 | 0.019 | 68 | 189 | 9.869 | 0.007 |    |     |
| Unemployed  | 9   | 0  | 9   | 2  | 7   |       |       | 3  | 6   |       |       |    |     |
| Employed  | 148 | 12 | 136 | 17 | 131 |       |       | 20 | 128 |       |       |    |     |
| <b>Household monthly income</b>                   |     |    |     |    |     |       |       |    |     |       |       |    |     |
| < 3000 RMB  | 16  | 2  | 14  | 3  | 13  | 5.187 | 0.269 | 3  | 13  | 4.293 | 0.368 | 3  | 13  |
| ≥ 3000 RMB, < 5000 RMB                            | 105 | 10 | 95  | 18 | 87  |       |       | 24 | 81  |       |       |    |     |
| ≥ 5000 RMB, < 7000RMB                             | 138 | 22 | 116 | 25 | 113 |       |       | 34 | 104 |       |       |    |     |
| ≥ 7000 RMB, < 100000 RMB                          | 87  | 16 | 71  | 20 | 67  |       |       | 23 | 64  |       |       |    |     |
| ≥ 10000 RMB                                       | 68  | 6  | 62  | 7  | 61  |       |       | 7  | 61  |       |       |    |     |

## 4.5 The Importance Performance Analysis

### 4.5.1 Original Importance Performance Analysis

In the original IPA analysis, the expectation value was used as the horizontal axis, the satisfaction perception value was used as the vertical axis. And the quadrant distribution of 5 dimensions and 22 items of satisfaction with the community health service center in Shanghai could be obtained.

The results of the original IPA analysis could be visualized from figure 7A. It showed that the reliability and assurance dimensions, with high levels of expectation and perceived satisfaction, was in Quadrant I- “Keep up the good work”, while tangibility was in Quadrant II - “possible overkill”, empathy was in Quadrant III- “low priority”. The responsiveness dimension, with high levels of expectation but low level of perceived satisfaction, was in Quadrant IV- “concentrate here”. The result indicate that the community health service center needs to take priority measures to improve the responsiveness dimension.

From the perspective of the items (Figure 7B), 8 items were in the “Keep up the good work” zone. 3 items were in the “possible overkill” zone, 8 items were in the “low priority” zone, and 3 items were in the “concentrate here” zone.

The original IPA analysis showed that the satisfaction level of the community health service center was good, with high expected and high precepted satisfaction levels for eight items, which included item 7 – “They should provide their services at the time they promise to do so”, item 8 – “The price of medical services is disclosure, reasonable and transparent”, item 9- “The hospital should keep patients records accurately”, item 10-“ The hospital could tell customers exactly when services will be performed”, item 11- “The medical

service expected by the patient is provided timely”, item 14- “The qualified professional skills could make patients trust them”, item 15-“The rich professional knowledge of medical staff could make patients trust them”, item 16- “Their staff should be polite”.

The “concentrate here” zone included item 12 - “helping the patient autonomously and spontaneously”, item 20 “knowing the needs of their patients”, item 22- “having operation hours convenient to all their patients”. The three items were with high expectation and low perceived satisfaction, which meant outpatients thought those service items were important but their performance was not good.

#### 4.5.2 Revised Importance Performance Analysis

After obtaining the implicitly derived importance of each dimension and each item by statistical method (Table 13), the implicitly derived importance value was used as the horizontal axis and the perceived satisfaction was used as the vertical axis. Then we drew the revised IPA grid of 5 dimensions and 22 items (Figure 7C, D).

Figure 7C showed that the empathy dimension located in the quadrant IV “concentrate here”, needing to be focused on improvement. The revised IPA chart for the items (Figure 7D) showed that 7 items were in the quadrant I “Keep up the good work”. These 7 items were “dressed and appear neat, in conformity with the medical environment and norms”, “provide their services at the time they promise to do so”, “price of medical services is disclosure, reasonable and transparent”, “ keep patients records accurately ”, “tell customers exactly when services will be performed”, “professional skills”, “professional knowledge”. Two items were in the quadrant IV “concentrate here”, which were “up-to-date equipment”, “giving

patient individualized services”. There were 9 items in the quadrant III “low priority”, which were “equipment and facility attractiveness”, “When patients have problems, this hospital should be sympathetic and reassuring”, “willing to help the patient autonomously and spontaneously”, “Their medical staff should get adequate support from this hospital to do the jobs well”, “giving patients personal attention”, “knowing the needs of their patients”, “having their patient’s best interests at heart”. quadrant II “possible overkill” included “physical facilities keeping with the type of services provided”, “Hospital promise to do some service by a certain time, they should do it”, “The medical service expected by the patient is provided timely”, “Staff should be polite”. Therefore, from the results of the analysis of the revised IPA, this community health center should focus on improving the “up-to-date equipment”, and “giving patient individualized services”.

#### 4.5.3 Comparison of two IPA methods

It was found that there were large differences in the distribution of evaluation items between the original IPA method and the revised IPA method (Table 14&15, Figure 7). In the original IPA, the score of importance (expectation) of 11 items were higher than the mean value, while only 9 items were higher than the mean value in the revised IPA analysis. Item 7, 11 and 16 were in the quadrant I according to the original IPA. But these three items were in quadrant II according to revised IPA analysis. On the contrary, item 3 and 5 were in quadrant II in the original IPA, but in quadrant I in the revised IPA analysis, indicating the high importance of these two items. Of the 11 items with perceived values below the mean, items 1 and 18 located in quadrant III according to the original IPA, but they moved to quadrant IV according to the revised IPA. All items (item 12, 20, and 22) in quadrant IV according to the original IPA, were distributed in

quadrant III according to the revised IPA. The revised IPA analysis believes that the improvement time for these three items could be slightly slower.

In this study, Pearson correlation analysis was used to examine the correlation between the expected and perceived satisfaction values of each service items. At the 95% confidence interval, the correlation coefficients between expectations and perceived satisfaction values for all items were positively significant (Table 16). This indicated that there was statistically significant positive correlation between the expectations and perceived values of these 22 items. So the assumption of the original IPA was not meet. The results of the revised IPA analysis is more applicable.



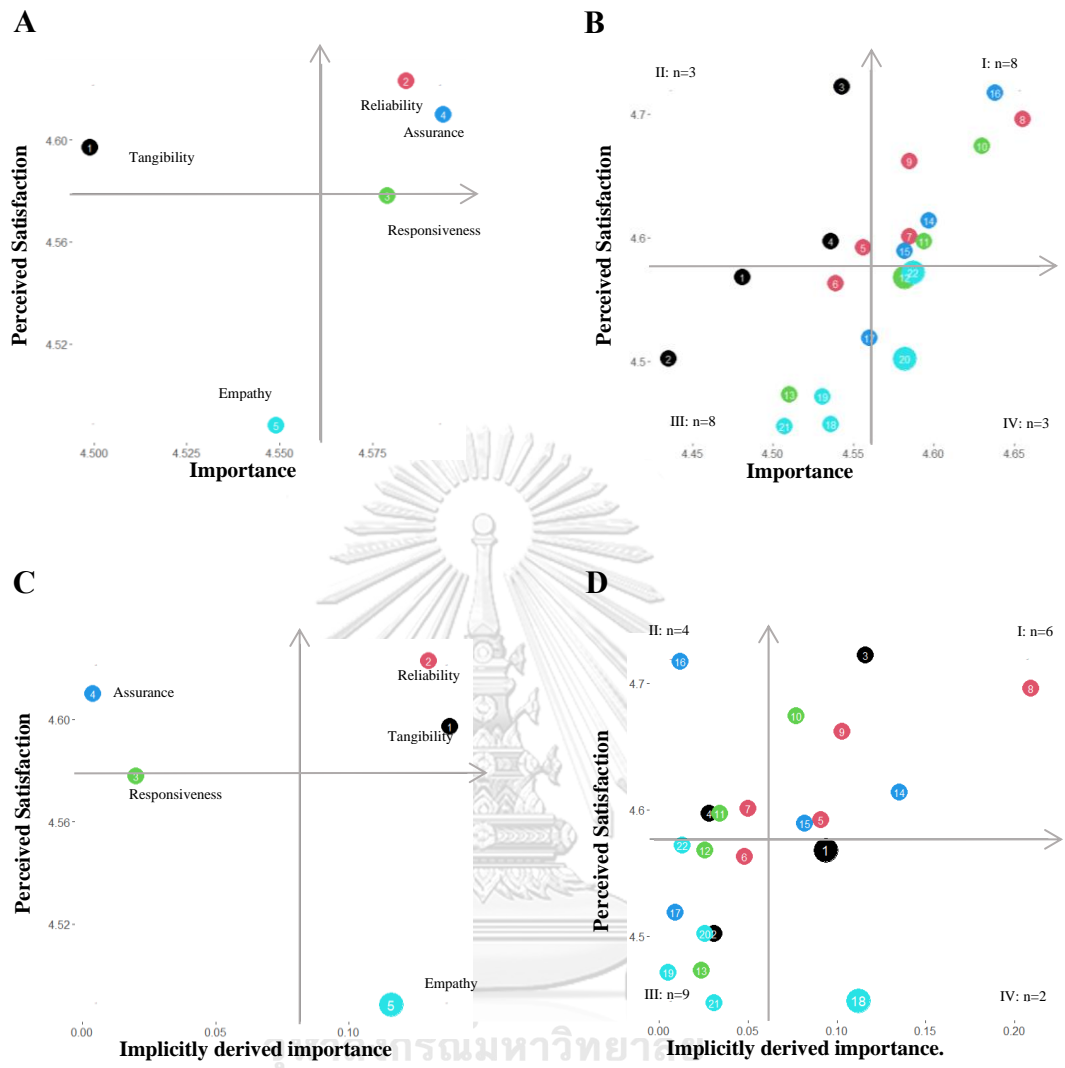


Figure 7 IPA method to analyze outpatient satisfaction

Note: A, B original IPA analysis. C, D revised IPA analysis. D prompts “1. up-to-date equipment”, and “18. giving patient individualized services” in the “concentrate here” quadrant.

Table 13 The results of implicitly derived importance

| Dimensions     | Items   | Implicitly derived importance | Perceived satisfaction |
|----------------|---|-------------------------------|------------------------|
| Tangibles      | 1.They should have up-to-date equipment.  | 0.094                         | 4.568                  |
|                | 2.Their physical facilities should be visually appealing.   | 0.031                         | 4.502                  |
|                | 3. Medical staff should be well dressed and appear neat; in conformity with the medical environment and norms.        | 0.116                         | 4.722                  |
|                | 4.The appearance of the physical facilities of this hospital should be in keeping with the type of services provided. | 0.028                         | 4.597                  |
| Reliability    | 5.When this hospital promises to do something by a certain time, they should do so.                                   | 0.091                         | 4.592                  |
|                | 6. When patients have problems, this hospital should be sympathetic and reassuring.                                   | 0.048                         | 4.563                  |
|                | 7. They should provide their services at the time they promise to do so.  | 0.05                          | 4.601                  |
|                | 8. The price of medical services is disclosure, reasonable and transparent.   | 0.209                         | 4.696                  |
|                | 9. The hospital should keep patients records accurately.  | 0.103                         | 4.662                  |
| Responsiveness | 10. The hospital could tell customers exactly when services will be performed   | 0.077                         | 4.674                  |
|                | 11. The medical service expected by the patient is provided timely  | 0.034                         | 4.597                  |

|           |  |       |       |
|-----------|--|-------|-------|
|           | 12. The medical staff are willing to help the patient autonomously and spontaneously       | 0.026 | 4.568 |
|           | 13. The medical staff can respond to patients requests promptly during rush hours.         | 0.024 | 4.473 |
| Assurance | 14. The qualified professional skills could make patients trust them                       | 0.135 | 4.614 |
|           | 15. The rich professional knowledge of medical staff could make patients trust them        | 0.082 | 4.589 |
|           | 16. Their staff should be polite   | 0.012 | 4.717 |
|           | 17. Their medical staff should get adequate support from this hospital to do the jobs well | 0.009 | 4.519 |
| Empathy   | 18. This hospital should give patient individualized services                              | 0.112 | 4.449 |
|           | 19. Medical staff of this hospital should give patients personal attention                 | 0.005 | 4.471 |
|           | 20. Medical staff of this hospital should know what the needs of their patients are        | 0.026 | 4.502 |
|           | 21. The hospital should have their patient's best interests at heart                       | 0.031 | 4.447 |
|           | 22. The hospital should have operation hours convenient to all their patient               | 0.013 | 4.572 |



Table 14 The results of original IPA

| Dimensions     | Item  | Location in the original IPA grid |                 |              |             |
|----------------|---|-----------------------------------|-----------------|--------------|-------------|
|                |   | Quadrant I                        | Quadrant II the | Quadrant III | Quadrant IV |
|                | Keep up the   | possible                          | low priority    | concentrate  |             |
|                | good work   | overkill                          |                 | here         |             |
| Tangibles      | 1.They should have up-to-date equipment.  |                                   | III             |              |             |
|                | 2.Their physical facilities should be visually appealing.   |                                   | III             |              |             |
|                | 3. Medical staff should be well dressed and appear neat, in conformity with the medical environment and norms.        | II                                |                 |              |             |
|                | 4.The appearance of the physical facilities of this hospital should be in keeping with the type of services provided. | II                                |                 |              |             |
| Reliability    | 5.When this hospital promises to do something by a certain time, they should do so.                                   | II                                |                 |              |             |
|                | 6. When patients have problems, this hospital should be sympathetic and reassuring.                                   |                                   | III             |              |             |
|                | 7. They should provide their services at the time they promise to do so.  | I                                 |                 |              |             |
|                | 8. The price of medical services is disclosure, reasonable and transparent.   | I                                 |                 |              |             |
|                | 9. The hospital should keep patients records accurately.  | I                                 |                 |              |             |
| Responsiveness | 10. The hospital could tell customers exactly when services will be performed   | I                                 |                 |              |             |

- 
11. The medical service expected by the patient is provided timely I
12. The medical staff are willing to help the patient autonomously and spontaneously IV
13. The medical staff can respond to patients requests promptly during rush hours. III
14. The qualified professional skills could make patients trust them I
15. The rich professional knowledge of medical staff could make patients trust them I
16. Their staff should be polite I
17. Their medical staff should get adequate support from this hospital to do the jobs well III
18. This hospital should give patient individualized services III
19. Medical staff of this hospital should give patients personal attention III
20. Medical staff of this hospital should know what the needs of their patients are IV
21. The hospital should have their patient's best interests at heart III
22. The hospital should have operation hours convenient to all their patient IV
- 

Assurance

Empathy

Table 15 The results of revised IPA

| Dimensions     | Location in the revised IPA grid   |                       |              |                  |
|----------------|--|-----------------------|--------------|------------------|
|                | Quadrant I   | Quadrant II           | Quadrant III | Quadrant IV      |
| Tangibles      | Keep up the good work  | the possible overkill | low priority | concentrate here |
| Reliability    | 1.They should have up-to-date equipment.<br>2.Their physical facilities should be visually appealing.<br>3. Medical staff should be well dressed and appear neat, in conformity with the medical environment and norms.<br>4.The appearance of the physical facilities of this hospital should be in keeping with the type of services provided.   | II                    | III          | IV               |
| Responsiveness | 5.When this hospital promises to do something by a certain time, they should do so.<br>6. When patients have problems, this hospital should be sympathetic and reassuring.<br>7. They should provide their services at the time they promise to do so.<br>8. The price of medical services is disclosure, reasonable and transparent.<br>9. The hospital should keep patients records accurately.<br>10. The hospital could tell customers exactly when services will be performed | I                     | III          | I                |

- 
11. The medical service expected by the patient is provided timely II
12. The medical staff are willing to help the patient autonomously and spontaneously III
13. The medical staff can respond to patients requests promptly during rush hours. III
- Assurance
14. The qualified professional skills could make patients trust them I
15. The rich professional knowledge of medical staff could make patients trust them I
16. Their staff should be polite II
17. Their medical staff should get adequate support from this hospital to do the jobs well III
- Empathy
18. This hospital should give patient individualized services IV
19. Medical staff of this hospital should give patients personal attention III
20. Medical staff of this hospital should know what the needs of their patients are III
21. The hospital should have their patient's best interests at heart III
22. The hospital should have operation hours convenient to all their patient III
-

Table 16 Results of the correlation test between the patients' expectation and perceived satisfaction

| Dimensions  | Items   | Expectations |    | Perceptions |    | Pearson correlation coefficient* | p-Value* |
|-------------|---|--------------|----|-------------|----|----------------------------------|----------|
|             |   | Mean ± SD    | SD | Mean ± SD   | SD |                                  |          |
| Tangibles   | 1.They should have up-to-date equipment.  | 4.481±0.677  |    | 4.568±0.573 |    | 0.456                            | < 0.001  |
|             | 2.Their physical facilities should be visually appealing.   | 4.435±0.671  |    | 4.502±0.625 |    | 0.586                            | < 0.001  |
|             | 3. Medical staff should be well dressed and appear neat, in conformity with the medical environment and norms.        | 4.543±0.68   |    | 4.722±0.485 |    | 0.481                            | < 0.001  |
|             | 4.The appearance of the physical facilities of this hospital should be in keeping with the type of services provided. | 4.536±0.640  |    | 4.597±0.560 |    | 0.646                            | < 0.001  |
|             | 5.When this hospital promises to do something by a certain time, they should do so.                                   | 4.556±0.611  |    | 4.592±0.611 |    | 0.499                            | < 0.001  |
| Reliability | 6. When patients have problems, this hospital should be sympathetic and reassuring.                                   | 4.539±0.608  |    | 4.563±0.590 |    | 0.603                            | < 0.001  |
|             | 7. They should provide their services at the time they promise to do so.  | 4.585±0.612  |    | 4.601±0.559 |    | 0.619                            | < 0.001  |
|             | 8. The price of medical services is disclosure, reasonable and transparent.   | 4.655±0.577  |    | 4.696±0.525 |    | 0.668                            | < 0.001  |
|             | 9. The hospital should keep patients records accurately.  | 4.585±0.657  |    | 4.662±0.571 |    | 0.605                            | < 0.001  |

|                |  |             |             |       |        |
|----------------|--|-------------|-------------|-------|--------|
| Responsiveness |  |             |             |       |        |
| 10.            | The hospital could tell customers exactly when services will be performed              | 4.63±0.583  | 4.674±0.541 | 0.653 | <0.001 |
| 11.            | The medical service expected by the patient is provided timely                         | 4.594±0.602 | 4.597±0.577 | 0.628 | <0.001 |
| 12.            | The medical staff are willing to help the patient autonomously and spontaneously       | 4.582±0.604 | 4.568±0.594 | 0.595 | <0.001 |
| 13.            | The medical staff can respond to patients requests promptly during rush hours.         | 4.51±0.659  | 4.473±0.673 | 0.666 | <0.001 |
| Assurance      |  |             |             |       |        |
| 14.            | The qualified professional skills could make patients trust them                       | 4.597±0.586 | 4.614±0.574 | 0.579 | <0.001 |
| 15.            | The rich professional knowledge of medical staff could make patients trust them        | 4.582±0.588 | 4.589±0.583 | 0.544 | <0.001 |
| 16.            | Their staff should be polite   | 4.638±0.565 | 4.717±0.506 | 0.522 | <0.001 |
| 17.            | Their medical staff should get adequate support from this hospital to do the jobs well | 4.56±0.6260 | 4.519±0.613 | 0.602 | <0.001 |
| Empathy        |  |             |             |       |        |
| 18.            | This hospital should give patient individualized services                              | 4.536±0.620 | 4.449±0.697 | 0.679 | <0.001 |
| 19.            | Medical staff of this hospital should give patients personal attention                 | 4.531±0.621 | 4.471±0.68  | 0.644 | <0.001 |
| 20.            | Medical staff of this hospital should know what the needs of their patients are        | 4.582±0.584 | 4.502±0.67  | 0.606 | <0.001 |

|  |             |             |       |         |
|--|-------------|-------------|-------|---------|
| 21. The hospital should have their patient's best interests at heart         | 4.507±0.652 | 4.447±0.686 | 0.618 | < 0.001 |
| 22. The hospital should have operation hours convenient to all their patient | 4.587±0.619 | 4.572±0.621 | 0.597 | < 0.001 |

\*Pearson correlation coefficients,  $p$ -values for the correlation test between expected and perceived satisfaction values for each item and their  $p$ -values



## CHAPTER 5: Discussion

### 5.1 General characteristic of participants

The average age of the participants in this study was  $58.01 \pm 17.03$ , and the percentage of those aged 60 years and above was 56.5%, and the participants in the 60-69 age group accounted for the highest percentage, which was 27.8%. Shanghai Zhujiajiao and Zhangyan Community Health Service Center had 55,257 and 41,757 outpatients for the year 2019, respectively, with an average age higher than 56 years old, and the proportion of elderly people aged 60 and above was 53.17% and 46.79%, respectively (Fig. 8). And outpatients aged 60-69 years accounted for the largest proportion, 27.8% and 24.6%, respectively (Si, Liu, & Wang, 2021). A national wide survey involving more than 80,000 outpatients of community health service center also showed that community outpatients were predominantly elderly (Yang, 2011). It can be concluded that community outpatients were predominantly elderly.



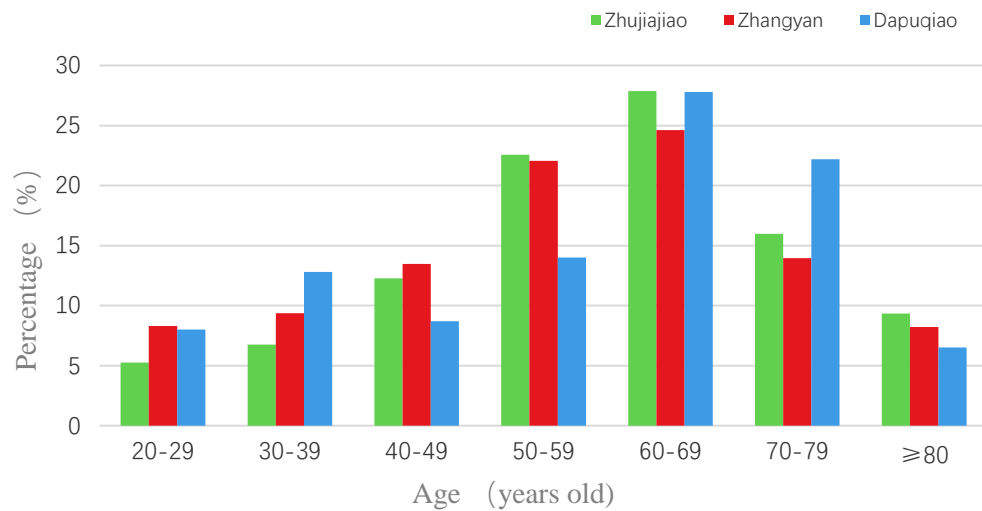


Figure 8 Age Distribution of participants, compared to age distribution of outpatients in other two community service center in Shanghai (n=414)

Most of the study group was married, accounting for 81.2%. The percentage of those with education level of college and above was 51.7%. According to the results of China's seventh national census, 33.87% of Shanghai's population has an education level of college and above, second only to Beijing (41.98%)(Statistics, 2021). The outpatients of the Dapuqiao Community Health Center live in the center of the city, which may be the reason why a higher education level of the participants in this study than the average in Shanghai. 62.1% of the participants were retired, which was consistent with the high proportion of elderly participants in this study. In June 2020, the China Internet Network Information Center released data showing that 29.3% of the 940 million Chinese Internet users (275 million people) had a monthly income of 5,000 RMB or more (BI, 2022). 70.7% of the participants had a per capita monthly household income above 5000. Monthly household income levels of the participants were higher than the national average,

which was consistent with that Shanghai per capita monthly income is higher than the national per capita monthly income level.

## 5.2 The outpatient satisfaction level

The results of this study showed that the outpatient satisfaction with Dapujiao Community Health Service Center was 78.02%. Comparing the results of Chinese surveys in similar studies, the patient satisfaction level in this community health center is at the middle to upper level (Fig. 9). For example, some researchers studied the satisfaction level of community health service centers in Fuzhou, Shenzhen, Nanjing, Nanchang, Yan'an, and Dalian, with satisfaction levels of 75.90%, 75.72%, 75.10%, 73.38%, 72.02%, and 70.25%, respectively. Those are lower than this study, but the difference is not very large (Chu, Liu, & Jiang, 2000; Fan, Chen, & Zhang, 2009; Jie, Liu, Sun, & Lu, 2005; Pan, Zheng, & Liu, 2009; S., Zhang, Li, & Feng, 2020; Yuan, Zhou, Wang, & Xiao, 2006). While the results of the study on the satisfaction of community health service centers in Yinchuan and Xining showed a satisfaction level of 60%, which is significantly lower than this study (Gulibahaer, Yan, Feng, & W., 2004). The level of patient satisfaction in this study was relatively high may be that Shanghai is an economically developed city in China, and that Shanghai is a leader in the development of community health service center in China, with early start and high starting point of community health services. However, some researchers studied the satisfaction level of community health service centers in Beijing and Zhejiang Province, and the satisfaction level was 96.60% and 81.80%, respectively (Yuan, Zhu, et al., 2009; Zhang & An, 2008), which was higher than this study. It may be because the former two surveys defined the satisfaction as the perceived satisfaction. This study also collected patients' overall perceived satisfaction through a question-“Are you satisfied with this visit?” At last, 93 participants were satisfied and 302 participants were very satisfied. The perceived

satisfaction was 95.4%, which is higher than Zhejiang's patient satisfaction level, close to Beijing's satisfaction level. So the satisfaction level in Dapuqiao community health service center was very high. However, we believe that satisfaction means that patients' expectations are met. In fact, high perceived satisfaction does not mean that the expectations of patients are met. Therefore, using the perceived satisfaction level to express the true satisfaction level of patients may be falsely high. It is suggested that more promotion and evaluation should be carried out in the future to express the satisfaction of patients by measuring whether the expectations of patients have been achieved.

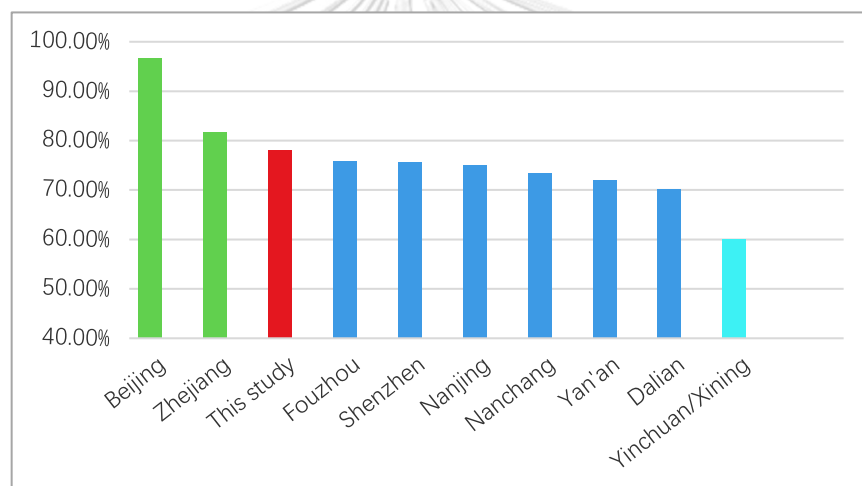


Figure 9 Patient Satisfaction level compared with other study (n=414)

### 5.3 The Gap analysis

There was significant positive difference between perception and expectation in tangibility dimension and significant negative difference in empathy dimension. There was no significant difference between perception and expectation in reliability, responsiveness, and assurance dimensions. Therefore, outpatients were satisfied with the tangibility dimension, reliability, responsiveness, and assurance dimensions.

Especially they were highly satisfied with the tangibility dimension. Outpatients of Dapujiao Community health service center were not satisfied with the empathy dimension. Specifically, they were dissatisfied with item 18, 19, 20, 21 in the empathy dimension. Based on the gap analysis results, we suggest that the hospital needs to focus on improving the service items of the empathy dimension to increase outpatient satisfaction.

The high outpatient satisfaction on the tangibility dimension was due to the renovation and expansion of the Dapujiao Street Community Health Center after receiving a ¥ 40 million grant from the government( HDDRC, 2018). The renovation has resulted in a very significant improvement in its external environment and in the dress code of the medical staff. In recent years, Shanghai has focused on the development of community health service centers, continued to promote the comprehensive reform of community health services, and increased financial investment in community health in each district. From 2021 to 2025, Shanghai have begun a new round of community health service institutions standardized construction. Each district has determined a phased plan for new construction or expansion of community health service centers, to improve the level of construction of site settings, facilities, and equipment, and to reserve space for the expansion of community health service functions. More and more community health service centers would receive government funding for renovation. It is reasonable to infer that satisfaction with the tangibility dimension of community health service centers in Shanghai will increase across the board, like the community health service centers in this study.

According to the gap model, gap 5 is the combined result of gaps 1, 2, 3, and 4. Therefore, to reduce the gap of patient satisfaction in empathy dimension, the following four points are suggested: Firstly, the hospital should increase the

understanding of outpatients' expectations of individualized service, to reduce gap 1. Process of individualized health services include individualized diagnosis, individualized treatment, and individualized care(Y. Liu, 2020).Understanding which process of the individualized services is weakness in this hospital from the patient's point of view, is helpful for hospitals to effectively optimize individualized services. It is recommended that the community health center conduct relevant research on patients. In addition, the data from the electronic medical record system and electronic health records can be used to analyze the actual needs of patients. Because they records health, wellness, and medical information from birth to death, offering multidimensional insight into health and disease, patient behavior, and providing powerful support to offer individualized services(Abul-Husn & Kenny, 2019; Liu, Wu, & Chen, 2016).Secondly, achieving higher patient satisfaction by enabling patients' individual needs to be met can strengthen the competitive position of healthcare providers. Hospitals need to fully recognize the importance of meeting the expectation of patients. Then they will develop strategies to improve individualized services and continuously monitor the implementation of individualized service programs. Thirdly, it is important for medical staff to understand the importance of providing individualized services and to increase their responsibility to perform them, which will reduce the gap3. Fourth, appropriate publicity to inform patients of the personalized services currently offered by the hospital, such as the specific services contracted by family physicians, to influence patients' expectations of the relevant services.

The gap between patients' expectations and perceptions for each dimension and service item was not too large, with gap ranging from -0.1 to 0.2. The possible reason for this may be that outpatients visited the community health service center for multiple times. They already knew the center very well, so their

expectations were influenced by their past perceptions of the service. It is necessary to compare the satisfaction of first-time patients with the repeatedly visited outpatients in the future study. In addition, the expectation and perceived value of the same item were interviewed together in this study, and patients' expectation and perception ratings may interfere with each other. It is recommended collecting expectation and perception sections of the questionnaire separately in future studies to reduce mutual interference.

Different groups have different satisfaction levels. For example, the results indicated that the age $\geq$ 80ys expressed poorer overall satisfaction. Age is seen as the most important determining variable of patient satisfaction (Batbaatar et al., 2017). Most reviewers believe that older respondents are more satisfied than younger respondents (Hall & Dornan, 1990), because they are more mellow and accepting. But Weiss (1988) appears to be doubtful about it. And a study in the former Soviet Union showed that younger people are more likely to be satisfied (Footman, Roberts, Mills, Richardson, & McKee, 2013). Our study also showed that younger people are more likely to be satisfied.

Some study showed that consumers become satisfied and loyal if the organizations gave priority to their consumers by meeting their requirements and required assistance (Rao, Saleem, Saeed, & Ul Haq, 2021). It is important to adjust the personalized health service strategy according to the satisfaction level of different groups. For the elder groups, the hospital needs to pay attention and take measures to meet their expectations and needs in the whole medical treatment process and all service dimensions. The 70-79 years old, widowed, retired outpatients, had the lowest satisfaction with the tangibility service dimension. When serving those outpatients, the hospital staff must pay attention to the tangibility performance of service. The outpatients with age $\geq$ 80ys,

household monthly income between 7000 and 100000 RMB had the lowest satisfaction with the reliability service dimension. During the service process, pay attention to improving the quality of reliability services. The responsiveness should be improved, during serving outpatient with household monthly income between 7000 RMB and 100000 RMB. The lowest satisfaction with empathy services was found in the unemployed group. The hospital should pay attention to personalized needs of the unemployed and provide personalized services to meet their expectations.

#### **5.4 The Importance performance analysis**

By using the results of the revised IPA analysis, it identified key items that affected the quality of services and patient satisfaction in this community health service center, that was those in quadrant IV “concentrate here” (Lin, 2019). Therefore, it is suggested that the community health service center should take key attention and improvement strategies in the item 1-“up-to-date equipment”, item 18-“giving patient individualized services”, giving priority to increasing resource investment. After the above priority improvements have been well addressed and the service center has sufficient discretionary resources, consideration can be given to start improving the metrics that were in the Quadrant III “low priority”. As for the dimensions and items that are in the dominant retention area (quadrant I), the original resource investment should be continued to ensure the dominance of that community service center services. In addition, avoid over-investing in dimensions and items that are in the quadrant II “possible overkill”. Just make sure they meet the basic criteria.

In terms of research methodology, original IPA analysis was used. It was originally designed as a tool for targeted improvement and efficient resource

allocation(Deng, 2007). This analysis is widely used in the industry because it is simple, effective, intuitive, and easy to interpret(Chen, 2013; Deng, 2007). But original IPA has some limitations. The original IPA assumes the following premises: 1. The variables on the two dimensions of importance and perception of satisfaction are independent of each other. And 2. patients' perceptions of satisfaction with each item are linearly correlated with overall satisfaction(Xie & Yang, 2021). There was a statistically significant correlation between the expectation (importance) and the perceived satisfaction value of the 22 evaluation items in this paper, which did not satisfy the above hypothetical premise. The reason for this analysis may be that patients' evaluations are generally participative, and their importance ratings and satisfaction perception ratings are hardly mutually independent variables. In addition, satisfaction attributes have three-factor theory characteristics, so changes in attribute satisfaction are related to changes in attribute importance(Deng, 2007). And using original IPA to identify potential improvement directions without meeting the assumptions of original IPA analysis may lead to incorrect improvement actions and unreasonable resource reallocation. For example, the results of the original IPA was used in this study, without satisfying the premise assumptions, differed significantly from the results obtained using the revised IPA analysis method in terms of the distribution of evaluation items. In contrast, the revised IPA used the partial correlation coefficient as the implicitly derived importance. Since the partial correlation coefficient reflected the net correlation between the two variables, using it as the implicitly derived importance could eliminate the effect of satisfaction (perceived value) and satisfy the premise assumption of IPA analysis (Xie & Yang, 2021). Therefore, the results of the revised IPA analysis are more practical guidance.

By the results of the revised IPA analysis, this study proposed different



prioritized and optimized development strategies for this community health center to effectively improve health care quality and patient satisfaction, and to promote its sustainable development. The revised IPA analysis method makes up for the deficiency that the original IPA analysis method cannot satisfy the assumptions in practice. In terms of questionnaire workload, the revised IPA analysis method does not require obtaining the participants' importance ratings for the items, shortening the time of the participants and researchers. While reducing the load of the questionnaire, it helps to improve the quality of questionnaire collection. Therefore, the revised IPA analysis method can be promoted in patient satisfaction studies in the future.



## CHAPTER 6: Conclusion and limitation

### 6.1 Conclusion

This study mainly adopted a questionnaire survey method to conduct an in-depth study of outpatient satisfaction in Dapuqiao Community Health Center. Based on empirical research interviews in Dapuqiao Community Health Center, it was found, the outpatient satisfaction with Dapuqiao Community Health Service Center was 78.02%, and outpatients were not satisfied with the empathy dimension. Service item 1- “the up-to-date equipment” and item 18- “giving patient individualized services”, were identified as important factors by the outpatients but the perceived satisfaction was low. So, we recommend managers of Dapuqiao Community health service center planning and policymaking changes for the center to improve the service quality on the empathy dimension and item 1, item 18, to increase the patient satisfaction.

In this study, SERVQUAL was used to obtain patients' expectations and perceptions to measure patient satisfaction levels. This method compensates for the lack understanding of patient expectations in some satisfaction surveys.

Various SPSS analysis methods, such as paired sample t-test, chi-square test, Pearson correlation test, were used to test and analyze the data to ensure that the results are statistically significant. For example, the t-test to determine whether the differences between expectations and perceptions of the service dimension are statistically significant.

This study applied IPA to identify the crucial service items in terms of the need for managerial action. The information derived from the IPA grid were invaluable in developing marketing strategies for the health service center. It is

wise to considering patient expectations in allocating resources to improve service attribute performance. Especially spending limited resources on service attribute where patient expectations are high but actual perceived satisfaction is low. In turn, this will achieve the most effective improvement in patient satisfaction and improve the hospital's competitiveness and actual business revenue. It is reasonable to assume that it is important for hospital to develop appropriate strategies, considering reconciling patient expectations and actual resources.

## 6.2 Limitation

The study only selected the community health service center of Dapuqiao Street in Shanghai as a sample, and the study findings are not representative enough for generalization to Shanghai. The sample was stratified from 8 department not using proportional stratification, because the sample size for each department was calculated based on the number of clinics in each department, not on the number of outpatients in each department. The sample strata may not be proportional to the overall strata, resulting in a somewhat limited representation of the sample. In addition, the sample was drawn among convenience outpatients in each department, which also led to some limitations in the representativeness of the sample. Therefore, it is recommended to expand the sample size in future studies by sampling multiple community health service centers and using proportional stratified random sampling to reduce sampling error.

This study was only a cross-sectional study. Monitoring data from different time points could not be provided for longitudinal comparison. For example, the context of this study was during the COVID-19 epidemic. The COVID-19 epidemic led to changes in the outpatient consultation process, which could affect the

patient satisfaction. In the future, we can further study the patient satisfaction after the end of the COVID-19 epidemic and compare the difference of satisfaction between the COVID-19 epidemic and non- COVID-19 epidemic.



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## Appendix

### Appendix A Ethical Approval certificated by Dapujiao Community Health Service Center

上海市黄浦区打浦桥街道社区卫生服务中心医学伦理委员会  
Medical Ethics Committee of Dapujiao Community Health Service Center, Huangpu District, Shanghai

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### CERTIFICATE OF ETHICS APPROVAL

This is to certify that the Medical Ethics Committee of Dapujiao Community Health Service Center has reviewed and approved a study entitled:

DPQ2021-1130, Outpatient Satisfaction with Community Health Service Center during the COVID-19 Pandemic in Shanghai, People's Republic of China by Enli Chen.

Medical Ethics Committee of  
Dapujiao Community Health Service Center  
3 December, 2021





## Appendix B Questionnaire(English version)

### Part I. Basic information

1. Gender:

Male  Female

2. Age: \_\_\_\_\_ years old

3. Marital status:

unmarried  married  widowed  divorced

4. Education level:

graduate and above

undergraduate and junior college

technical secondary school and senior high school

junior high school and primary school

illiterate

5. How much is your household monthly income?

Less than 3000 RMB (470 USD)

≥3000 RMB (470 USD), < 5000 RMB (783 USD)

≥5000 RMB (783 USD), < 7000RMB(1096 USD)

≥7000 RMB (1096 USD), < 10000 RMB (1566 USD)

≥10000 RMB (1566 USD)

6. Occupation:

retire  unemployed  employed

7. Which department are you visited?

Zhonghai service station clinic  Zhonghui service station clinic

Zhongshun service station clinic  Zhongtai service station clinic

General medical clinic  Rehabilitation clinic

Dental clinic  Traditional Chinese Medicine clinic

8. Are you satisfied with this visit?

Very dissatisfied  Dissatisfied  General

Satisfied  Very satisfied

## Part II. SERVQUAL INSTRUMENT

This survey deals with your opinions and feeling of medical services. Please show the extent to which you expect and perceive the Dapuqiao Community Health Center offering services should possess the features described by each statement. For the expectation, if you strongly agree that this hospital should possess a feature, circle the number 5. If you strongly disagree that this hospital should possess a feature, circle 1. If your expectation is not strong, circle one of the numbers in the middle. For the perception part, if you strongly agree that this hospital possess a feature, circle the number 5. If you strongly disagree that this hospital possesses a feature, circle 1. If your feeling is not strong, circle one of the numbers in the middle. There are no right or wrong answers—all we are interested in is a number that best shows your expectations and perception about the hospital offering medical services.

l. They should have up-to-date equipment.

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

2. Their physical facilities should be visually appealing

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

3. Medical staff should be well dressed and appear neat, in conformity with the medical environment and norms.

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

4. The appearance of the physical facilities of this hospital should be in keeping with the type of services provided.

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

5. When this Hospital promise to do some service by a certain time, they should do it.

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

6. When patients have problems, this hospital should be sympathetic and reassuring.

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

7. They should provide their services at the time they promise to do so.

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

8. The price of medical services is disclosure, reasonable and transparent.

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

9. The hospital should keep patients records accurately.

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

10. The hospital could tell customers exactly when services will be performed

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

11. The medical service expected by the patient is provided timely

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

12. The medical staff are willing to help the patient autonomously and spontaneously

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

13. The medical staff can respond to patients requests promptly during rush hours.

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

14. The qualified professional skills could make patients trust them

Expectation : 1 2 3 4 5

Perception : 1 2 3 4 5

15. The rich professional knowledge of medical staff could make patients trust them

Expectation : 1 2 3 4 5

Perception : 1 2 3 4 5

16. Their staff should be polite

Expectation : 1 2 3 4 5

Perception : 1 2 3 4 5

17. Their medical staff should get adequate support from this hospital to do the jobs well

Expectation : 1 2 3 4 5

Perception : 1 2 3 4 5

18. This hospital should give patient individualized services

Expectation : 1 2 3 4 5

Perception : 1 2 3 4 5

19. Medical staff of this hospital should give patients personal attention

Expectation : 1 2 3 4 5

Perception : 1 2 3 4 5

20. Medical staff of this hospital should know what the needs of their patients are

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

21. The hospital should have their patient's best interests at heart

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5

22. The hospital should have operation hours convenient to all their patient

Expectation: 1 2 3 4 5

Perception : 1 2 3 4 5



## Appendix C Questionnaire(Chinese version)

### 一、基本信息:

1. 性别: 男  女
2. 年龄: \_\_\_\_\_岁
3. 婚姻情况: 未婚  已婚  丧偶  离异
4. 受教育程度:
  - 研究生及以上  大专、本科  高中、中专  小学、初中  文盲
5. 工作状态: 在职  失业  退休
6. 您的家庭人均月收入
  - <3000 元
  - ≥3000 元, < 5000 元
  - ≥5000 元, < 7000 元
  - ≥7000 元, < 10000 元
  - ≥10000 元
7. 您的就诊科室
  - 西医全科诊室  中医诊室  口腔科诊室  康复科诊室
  - 中汇站点诊室  中海站点诊室  中顺站点诊室  中泰站点诊室
8. 您对本次就诊满意吗?
  - 非常不满意  不满意  一般  满意  非常满意

### 二、这项调查涉及你对医疗服务的看法以及实际感受。

请填写您对打浦桥街道社区卫生服务中心应具备的下述每项特征的程度的期望值和实际感受值。在期望值部分如果你强烈同意这家医院应该拥有一个特征, 圈出第 5 个数字。如果你强烈反对这家医院应该拥有一个特征, 圈出 1。如果你的感觉不强, 圈出中间的一个数字。在实际感受值部分, 你强烈同意这家医院拥有一个特征, 圈出第 5 个数字。如果你强烈反对这家医院拥有一个特征, 圈出 1。如果你的感觉不强, 圈出中间的一个数字。没有正确或错误的答案, 我们感兴趣的是一个数字, 它最能显示您对医院提供医疗服务的期望和实际感知情况。

#### 1. 服务设施现代化程度与先进性

|        |   |   |   |   |   |
|--------|---|---|---|---|---|
| 期望值:   | 1 | 2 | 3 | 4 | 5 |
| 实际感受值: | 1 | 2 | 3 | 4 | 5 |

#### 2. 医疗设备与设施吸引力足够

|        |   |   |   |   |   |
|--------|---|---|---|---|---|
| 期望值:   | 1 | 2 | 3 | 4 | 5 |
| 实际感受值: | 1 | 2 | 3 | 4 | 5 |

3. 医护人员着装得体整洁，与医疗环境及规范的符合度  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
4. 医院的各项服务都匹配相应设施  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
5. 可准确、及时地向患者提供所承诺的服务  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
6. 可帮助患者解决实际困难  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
7. 准时提供所承诺的服务  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
8. 医疗服务收费公开、价格合理、透明  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
9. 医疗记录正确  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
10. 可告知患者服务提供的准确时间  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
11. 及时提供给患者所期望的医疗服务  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
12. 医护人员乐意并能自主、自发地帮助患者  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
13. 繁忙时医护人员可马上提供服务，满足患者医疗所需  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
14. 医护人员合格的岗位专业技能使患者信赖  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
15. 医护人员丰富的专业知识，令患者足够信任、  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5
16. 医护人员服务态度能否令患者满意  
期望值： 1 2 3 4 5  
实际感受值： 1 2 3 4 5



17. 医院能否给予医护人员强大的依靠，多方面支持医护人员工作  
 期望值： 1 2 3 4 5  
 实际感受值： 1 2 3 4 5
18. 医院向患者提供个性化服务  
 期望值： 1 2 3 4 5  
 实际感受值： 1 2 3 4 5
19. 医院给予患者个别化关心  
 期望值： 1 2 3 4 5  
 实际感受值： 1 2 3 4 5
20. 医护人员从患者角度出发了解其实际需求  
 期望值： 1 2 3 4 5  
 实际感受值： 1 2 3 4 5
21. 医院可优先考虑患者利益  
 期望值： 1 2 3 4 5  
 实际感受值： 1 2 3 4 5
22. 医院可提供合理的服务时间，能满足患者各个时间段的就诊需求  
 期望值： 1 2 3 4 5  
 实际感受值： 1 2 3 4 5



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