THE RELATIONSHIP BETWEEN SOCIAL PARTICIPATION AND SMOKING AMONG MIDDLE-AGED AND ELDERLY PERSONS IN CHINA

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ความสัมพันธ์ระหว่างการมีส่วนร่วมทางสังคมกับการสูบบุหรี่ ในกลุ่มผู้สูงอายุและคนวัยกลางคนในประเทศจีน

น.ส.ยู่ชิง หลิว

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ยู่ชิง หลิว : ความสัมพันธ์ระหว่างการมีส่วนร่วมทางสังคมกับการสูบบุหรี่ ในกลุ่มผู้สูงอายุและคนวัยกลางคนในประเทศจีน . (THE RELATIONSHIP BETWEEN SOCIAL PARTICIPATION AND SMOKING AMONG MIDDLE-AGED AND ELDERLY PERSONS IN CHINA) อ.ที่ปรึกษาหลัก : ศ.ดร.ศิริเพ็ญ สุภกาญจนกันติ

การศึกษานี้ทดสอบความสัมพันธ์ระหว่างการมีส่วนร่วมทางสังคมและการสูบบุหรี่ระหว่างวัยกลางคนและผู้สูงอายุ ข้อมูลที่ใช้ในการศึกษาครั้งนี้ใช้ข้อมูลทุติยภูมิจากการศึกษาระยะยาวเกี่ยวกับสุขภาพและการเกษียณอายุในประเทศจีน (CHARLS,2015) ในการสำรวจนี้มีจำนวนข้อมูลทั้งสิ้น 9,876 ชุด ตัวแปรตามคือการสูบบุหรี่และไม่สูบบุหรี่ โดยที่การสูบบุหรี่ประกอบด้วย สูบบุหรี่น้อย สูบบุหรี่ปานกลาง และสูบบุหรี่มาก ส่วนตัวแปรอธิบายหรือตัวแปรอิสระ ประกอบด้วย ลักษณะครอบครัว ลักษณะประชากร ปัจจัยด้านเศรษฐกิจและสังคม การศึกษานี้ใช้วิธีการวิเคราะห์สมการถดถอยโลจิสติก ในการทดสอบปัจจัยที่เกี่ยวข้องกับการสูบบุหรี่

ผลการศึกษานี้แสดงให้เห็นว่า เพศ สถานภาพสมรส การประเมินสุขภาพด้วยตนเอง บ้าเหนี่จ โรคเรื้อรัง การเข้าร่วมเล่นไพ่นกกระจอก เล่นหมากรุก เล่นไพ่ หรือไปสโมสรชุมชน ไปเล่นกีฬา ไปงานสังคม หรือสโมสรอื่นๆ การใช้อินเทอร์เน็ต เป็นปัจจัยที่ส่งผลต่อการสูบบุหรี่ของคนวัยกลางคนและผู้สูงอายุ ซึ่งคนวัยกลางคนและผู้สูงอายุที่เล่นไพ่นกกระจอก เล่นหมากรุก เล่นไพ่ หรือไปสโมสรชุมชน เป็นปัจจัยเสี่ยงสำหรับการสูบบุหรี่ ($p<0.001$). คนวัยกลางคนและผู้สูงอายุที่เล่นไพ่นกกระจอก เล่นหมากรุก เล่นไพ่ หรือไปสโมสรชุมชน มีผลในเชิงบวกต่อการสูบบุหรี่ถึง 1.34 เท่าเมื่อเทียบกับผู้ไม่สูบบุหรี่ (OR=1.342316) คนวัยกลางคนและผู้สูงอายุที่ไปเล่นกีฬา ไปงานสังคม หรือสโมสรอื่นๆ เป็นปัจจัยปกป้อง สำหรับการสูบบุหรี่ ($p=0.022$) คนวัยกลางคนและผู้สูงอายุที่ไปเล่นกีฬา ไปงานสังคม หรือสโมสรอื่นๆ มีผลเชิงลบต่อการสูบบุหรี่ 0.79 เท่าเมื่อเทียบกับผู้ไม่สูบบุหรี่ (OR=0.7941856) หากไปกิจกรรมเหล่านี้เพิ่มขึ้นจะลดการสูบบุหรี่ลง สำหรับคนวัยกลางคนและผู้สูงอายุ ที่ใช้อินเทอร์เน็ต จะเป็นปัจจัยเสี่ยงต่อการสูบบุหรี่ ($p=0.024$) คนวัยกลางคนและผู้สูงอายุที่ใช้อินเทอร์เน็ตมีผลเชิงบวกต่อการสูบบุหรี่ถึง 1.31 เท่าเมื่อเทียบกับคนไม่สูบบุหรี่ (OR=1.314805) ส่วนปัจจัยการมีส่วนร่วมทางสังคมอื่นๆ ไม่มีนัยสำคัญทางสถิติต่อการสูบบุหรี่ ที่ระดับ 0.05 ผลการศึกษาในภาพรวมแสดงให้เห็นชัดเจนถึงความสัมพันธ์ระหว่างการมีส่วนร่วมทางสังคมและการสูบบุหรี่

จำเป็นต้องแยกให้ได้ว่ากิจกรรมการเข้าร่วมทางสังคมประเภทใดที่ก่อให้เกิดประโยชน์ด้านสุขภาพที่ดีต่อคนวัยกลางคนและผู้สูงอายุ กิจกรรมการเข้าร่วมทางสังคมประเภทใดที่ปัจจัยเสี่ยงต่อการดำเนินชีวิตที่ดีต่อสุขภาพ ชุมชนเองควรสนับสนุนส่งเสริมกิจกรรมการเข้าร่วมทางสังคมที่ก่อให้เกิดประโยชน์ด้านสุขภาพที่ดีเช่นกันตัวอย่างเช่นการแขวนข้อความเกี่ยวกับอันตรายของการสูบบุหรี่ การลงทุนสร้างสถานที่เชิงวัฒนธรรมเพิ่มขึ้นเพื่อส่งเสริมวิถีชีวิตที่ดีต่อสุขภาพสำหรับคนวัยกลางคนและผู้สูงอายุ องค์กรด้านสุขภาพ และองค์กรรัฐต้องร่วมมือสนับสนุนนโยบายและการดำเนินนโยบายควบคุมยาสูบ

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Yuqing Liu : THE RELATIONSHIP BETWEEN SOCIAL PARTICIPATION AND SMOKING AMONG MIDDLE-AGED AND ELDERLY PERSONS IN CHINA. Advisor: Prof. SIRIPEN SUPAKANKUNTI, Ph.D.

This study examined the relationship between social participation and smoking among middle-aged and elderly persons. This study used a secondary dataset drawn from the China Health and Retirement Longitudinal Study (CHARLS,2015). In this nationally survey, the number of observations was 9,876. The dependent variable used in this study is smoking and non-smoking. Smoking includes light smoking, moderate, and heavy smoking. The explanatory variables are family factors, demographic characteristics, and socioeconomic factors. Factors associated with smoking were examined with logistic regression model.

The results showed that gender, marital status, health self-assessment, pension, chronic disease, playing Mahjong, playing chess, playing cards, or going to the community club, going to a sport, social, or other kinds of the club, using the Internet are the influencing factors of middle-aged and elderly smoking. Middle-aged and elderly who played Mahjong, played chess, played cards, or went to community club are risk factors for smoking ($p<0.001$). Middle-aged and elderly people who played Mahjong, played chess, played cards, or went to community club are 1.34 times more likely to smoke than non-smokers. (OR=1.342316). Middle-aged and elderly people who went to a sport, social or other kinds of clubs are protective factors for smoking($p=0.022$). Middle-aged and elderly people who went to a sport, social or other kinds of clubs are 0.79 times more likely to smoke than non-smokers (OR=0.7941856). Middle-aged and elderly who used the Internet are risk factors for smoking($p=0.024$). Middle-aged and elderly people who used the Internet are 1.31 times more likely to smoke than non-smokers. (OR=1.314805). The impact of other social participation on smoking among middle-aged and elderly people are not statistically significant at 5% significance level. The results altogether indicated a clear relationship between social participation and smoking.

It is necessary to distinguish which social participation is beneficial to middle-aged and older people's physical and mental health, in which social participation is a risk factor for a healthy lifestyle for middle-aged and elderly people. The community should promote a healthy lifestyle for middle-aged and older people. Post signs of smoking hazards in the community, for example. Increase investment in community cultural facilities to provide more suitable places for middle-aged and older people. Health departments and government departments should actively cooperate in the tobacco control plan and implementation.

Field of Study:	Health Economics and Health Care Management	Student's Signature .....
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Yuqing Liu

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CHAPTER 1

INTRODUCTION

1.1 Problems and Significant

Globally, between 1990 and 2012, life expectancy at age 60 increased from 16.6 years to 18.5 years for men and from 19.7 years to 21.5 years for women (World Health Statistics ,2014)[1]. The increase in life expectancy is the main cause of the problem of aging population.

China is in the stage of rapid development of population aging. With continued development, elderly population may exceed the total of the elderly population in developed countries. In addition, as the average life expectancy continues to increase, the elderly people have a healthy capital reserve will continue to increase. The family and society are the main living and activity spaces for the elderly. As the size of Chinese families tends to be smaller. The elderly will pursue their own space even more. Unwilling to live with children. Older people are more willing to socialize with their friends. For various reasons, the social participation of the elderly has received extensive attention. However, according to statistics , nearly half of the elderly in China do not participate in any social activities. The elderly people are in a state of self-closure for a long time, which may increase the negative impact on the body and the mind.

The depth and breadth of social participation of the elderly in China are very low. Relevant government departments actively call on and lead the elderly to participate in social activities and increase the frequency of social participation. So, will social participation guide the elderly to a healthy lifestyle?

Smoking is considered an unhealthy lifestyle.

The nicotine in tobacco is addictive, and smoking may induce cardiovascular and respiratory diseases.

Due to the pressure of life and psychological factors, smoking has become an indispensable tool for some people. A large number of residents smoking will not only cause physical diseases but also increase the burden on the environment. Today, more and more countries and governments are calling on people to quit smoking, thereby reducing the burden on the environment and the burden of chronic diseases. As we all know, smoking will increase the incidence of various chronic diseases, further leading to death. Through the World Health Organization's data, more than 8 million people

[1] https://www.who.int/gho/publications/world_health_statistics/2014/en/

die from tobacco use every year. The mortality rate caused by tobacco is shown in Table 1.

Globally, 12% of all deaths in adults over 30 years old are caused by tobacco. In the United States and Europe, tobacco accounts for 16% of all deaths in adults over the age of 30. In Europe, tobacco accounts for 16% of all deaths in men over the age of 30. In the United States, 16% of all deaths in women over the age of 30 are caused by tobacco. (As table 1 show)

Table 1Proportion of all deaths attributable to tobacco (%)

WHO Region	Proportion of all deaths attributable to tobacco (%)		
	Men	Women	All adults
African	5	1	3
Americas	17	15	16
Eastern Mediterranean	12	2	7
European	25	7	16
South East Asian	14	5	10
Western Pacific	14	11	13
Global	16	7	12

Source: World Health Organization

Globally, the mortality caused by smoking accounts for 12% of the death rate of 30-year-old adults. So, what is the smoking prevalence of adults in each country. The following is a comparison of adult male and female smoking prevalence in developing countries (referring to countries with low levels of economy, technology, and people's living standards) and developed countries. According to the statistics of the World Health Organization , the smoking prevalence of adults in 15 developing countries and 15 developed countries were selected for comparison.

Horizontal comparison: From table 2, in developing countries, the smoking prevalence of men is higher than women. From table 2, in developed countries, the smoking prevalence of men is slightly higher than women.

Vertical comparison: From table 2 and table 3, the smoking prevalence of men in developing countries is much higher than that of men in developed countries. The smoking prevalence of women in developed countries is higher than women in developing countries.

Table 2Smoking prevalence among adults in developing countries

	2011		2012		2013		2014		2015	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
China	26.7	2.2	26.7	2.2	26,4	2.1	26.1	2.0	25.8	2.0
Thailand	41.4	2.1	40.8	2,1	40.5	2.0	40.0	2.0	39.2	1.9
Malaysia	45.3	1.3	44.6	1.3	44.0	1.2	43.3	1.1	43.0	1.0
Brazil	21.1	12.5	20.3	11.9	19.7	11.5	19.1	11.0	18.4	10.5
Egypt	43.9	0.4	44.8	0.4	46.3	0.3	47.6	0.3	48.9	0.3
India	24.0	2.8	23.3	2.6	22.6	2.4	21.8	22.0	21.3	2.0
Philippines	45.0	9.0	44.2	8.7	43.4	8.5	42.4	8.2	41.5	8.0
Russia	61.2	22.7	60.6	22.9	60.0	23.0	59.4	23.2	58.9	23.3
S Africa	33.9	8.9	33.8	8.7	33.5	8.6	33.4	8.4	33.4	8.3
Bangladesh	47.6	1.7	47.0	1.5	46.5	1.3	45.5	1.2	45.1	1.1
Vietnamese	37.1	7.6	36.6	7.3	36.1	7.1	35.6	6.9	35.1	6.6
Indonesia	71.1	3.4	71.9	3.3	73.0	3.1	74.1	3.0	75.2	2.9
Mexico	25.1	8.3	24.2	8.0	23.6	7.7	22.8	7.4	22.1	7.1
Turkey	45.8	15.5	44.8	15.2	43.9	14.9	43.0	14.6	41.9	14.4
Iran	23.4	1.4	23.0	1.2	22.5	1.1	22.0	1.0	21.6	0.9

Source: World Health Organization, Global Health Observatory Data Repository

Table 3Smoking prevalence among adults in developed countries

	2011		2012		2013		2014		2015	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Ireland	28.9	26.9	28.2	26.1	27.5	25.3	26.9	24,5	26.3	23.8
France	36.8	30.0	36.4	30.1	36.2	30.0	35.9	30.2	35.8	30.0
Netherlands	30.9	26.9	30.3	26.5	29.4	26.0	28.7	25.4	27.9	25.0
Belgium	34.8	26.6	34.0	26.4	33.4	26.0	32.7	25.6	32.0	25.4
Germany	35.2	28.9	34.8	28.7	34.5	28.5	33.7	28.6	33.5	28.4
Swit	31.3	23.3	30.9	23.2	30.5	23.0	30.0	22.8	29.5	22.8
Sweden	22.2	22.4	21.4	21.7	20.8	20.9	20.1	20.1	19.5	19.5
Finland	25.7	20.2	25.1	19.9	24.4	19.5	23.8	19.0	23.2	18.7
Italy	29.5	20.0	29.1	19.8	28.8	19.8	28.6	19.9	28.1	19.8
Australia	19.1	15.4	18.5	14.9	18.0	14.4	17.5	13.9	17.0	13.5
Japan	38.6	12.1	37.7	12.0	36.6	11.8	35.6	11.6	34.7	11.4
Korea	37.1	7.6	36.6	7.3	36.1	7.1	35.6	6.8	35.1	6.6
Norway	26.1	24.9	25.0	23.8	23.8	22.8	22.7	21.7	21.7	20.7
Portugal	32.0	15.9	31.6	16.0	31,1	16.0	30.8	16.1	30.4	16.3
Israel	36.6	17.8	36.5	17.2	36.2	16.7	36.0	16.3	35.7	15.9

Source: Source: World Health Organization, Global Health Observatory Data Repository

Gender and economic conditions may affect smoking prevalence. The smoking prevalence of adults in the world generally shows a downward trend that may be due to the tobacco control policies of various countries and the increased awareness of smoking hazards. Some countries show an upward trend. For example, the smoking prevalence among Indonesian men has increased from 71.1% in 2011 to 75.2% in 2015. This may be due to different cultural customs and the government's ineffectiveness in tobacco control. The smoking prevalence of Chinese adult males was from 26.7% in 2011 to 25.8% in 2015, and the smoking prevalence of adult females was from 2.2% in 2011 to 2.0% in 2015. The overall trend is declining. what other factors will affect smoking?

There is evidence that social capital may promote a healthy lifestyle. The social capital at the community and individual levels has a negative correlation with smoking(M. Lindström, Isacsson, & Elmståhl, 2003). In universities, social capital has a negative relationship with overeating (Weitzman & Kawachi, 2000). In universities, social capital plays a role in preventing binge drinking (Weitzman & Kawachi, 2000).

In China, studies have shown that social trust and social relationships are positively correlated with healthy eating (Xue & Cheng, 2017).

Summary, The results show that the factor that determines the relationship between social capital and health is how to measure social capital.

Social participation is an important part of social capital (Ahnquist, Wamala, Lindstrom, & medicine, 2012). Then social participation will also affect people's lifestyles. Use social activity as a surrogate variable for social participation in the study, so as to derive the impact of different social activities on smoking. The research can provide an effective basis for rational allocation of public resources. Provide reasonable advice to the government on the work of the elderly. Provide empirical support for national smoking cessation and control efforts.

1.2 Research Objectives

1.2.1 General objective

To analyze the relationship between social participation and smoking among Chinese middle-aged and elderly persons.

1.2.2 Specific objectives

Through theoretical research and empirical analysis, put forward the research framework of social participation and smoking.

- To analyze the smoking status of middle-aged and elderly persons with different characteristics.

- To analyze the effects of social participation activities on smoking among middle-aged and elderly persons.
- To analyze the effects of socio-economic factors on smoking among middle-aged and elderly persons.
- To explore the relevant policies and regulations of social participation for elderly persons regarding smoking.

1.3 Scope

The data used in this study is the China Health and Retirement Longitudinal Study (2015), and covers all county-level units in China Including 22 regions. Including 150 county-level units.

1.4 Hypothesis

The following hypotheses are drawn:-

- Among the following, social participation activities are expected to positively or negatively correlate with smoking among Chinese elderly persons:

1. Interacting with friends
2. Playing Mahjong, chess, and cards, or going to the community clubs
3. Providing help to family, friends or neighbors who do not live with you
4. Going to a sport, social, or other kinds of club
5. Taking part in a community-related organization
6. Doing voluntary or charity work
7. Caring for a sick or disabled adult who does not live with you
8. Attending an educational or training course
9. Stocks investment
10. Using the Internet
11. Other
12. None of these

- Among socio-economic factors, gender, aging, marital status, pension, self-assessment status, family income are expected to have positive correlation with smoking while health insurance, having children, having chronic diseases are expected to have negative correlation with smoking.

1.5 Possible Benefits

From a socioeconomic perspective, it helps to distinguish which social activities are protective factors and which are risk factors for smoking. That will improve the rational allocation of public resources.

Provide effective data support for the government in the health work of middle-aged and elderly people, thereby reducing the probability of smoking among middle-aged and elderly people.

It can provide support for the smoking cessation and control work of the health prevention and control departments.

CHAPTER 2

BACKGROUND

2.1 General Information of China

This section firstly describes the relevant policies of Chinese elderly social participation and the historical process of Chinese elderly social participation. Secondly, describe the status of smoking and chronic diseases in the elderly and the interpretation of relevant policies. Third, describe the overview of China's tobacco protection measures.

2.2 Chinese elderly social participation

"Healthy China 2030" promotes key people's fitness policies, and strengthens the participation of the elderly in fitness for all. Encourage the elderly to participate in social and cultural life.

As the content of the policy of social participation of the elderly people continues to change. The interpretation of the social participation of the elderly has also been enriched. After the changes of the times and the great development of society, the social participation of the elderly is more biased towards Yang Zongchuan's "benefit theory", which includes all activities that benefit the society. Specifically, it includes participation in social and economic activities, housework, social and cultural activities, social interaction activities, tourism activities, and participation in cultural and entertainment activities within the family.

Great changes have taken place in Chinese society since the reform and opening-up policy. Chinese society is undergoing a transformation from an acquaintance society to a stranger society. From the traditional social activities based on blood relationship and patriarchal clan to multi-level social participation development. Those who have experienced these changes have entered old age.

According to the data (CHARLS,2015), the proportion of elderly people interviewed in 2011, 2013, and 2015 participated in one or more social activities of 50%, 59%, and 56%, respectively. It shows that the proportion of elderly people participating in society in my country has shown an upward trend and then a downward trend in recent years.

The social participation of the elderly in China has undergone several generations of changes, and its content and purpose have also changed. It took decades from the participation of single and unique personnel to the full participation of ordinary people.

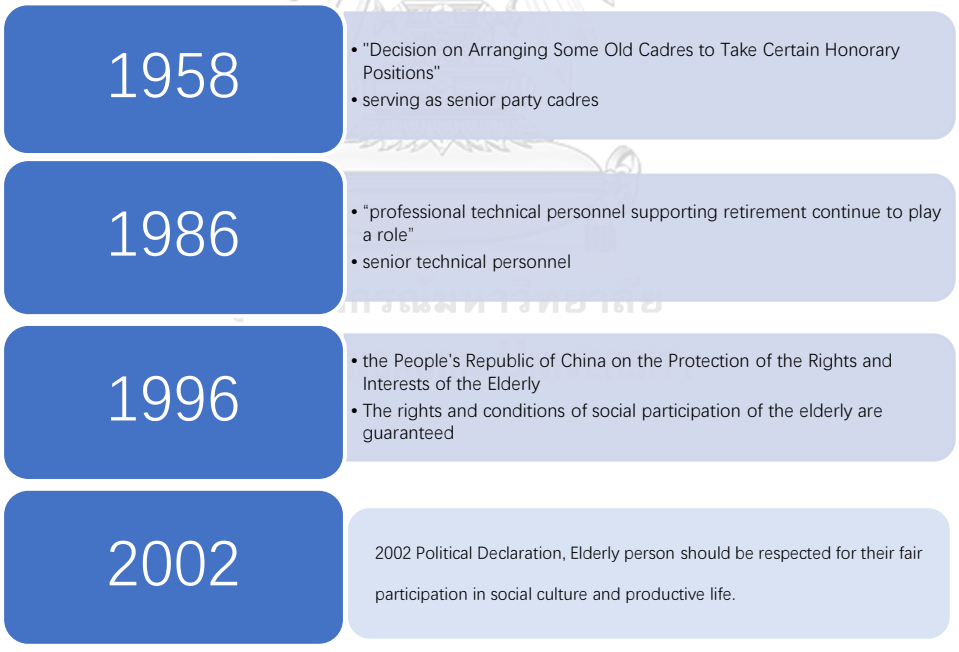
In 1958, China promulgated the "Decision on Arranging Some Old Cadres to Take Certain Honorary Positions" which involved the social participation of the elderly, but the social participation of the elderly at that time refers to the social participation of a small number of the elderly (serving as senior party cadres).

In 1986, it was proposed that “professional technical personnel supporting retirement continue to play a role”, but the social participation of the elderly at that time refers to participating in socio-economic development activities, and once senior technical personnel have contributed to social and economic life again after retirement.

In 1996, China promulgated the law of the elderly. The rights and conditions of social participation of the elderly are guaranteed by legislation. It paved the way for the enrichment of the social participation content of the elderly.

In the 2002 Political Declaration, meeting the expectations of the elderly and the economic needs of the society, the elderly should be allowed to fully participate in the economic, political, social and cultural life of the society. As long as the elderly can participate in social life, they should be respected for their fair participation in social culture and productive life.

Figure 1Social participation policies



Source: from author

Enriching and generalizing the social participation of the elderly so that more elderly people can enjoy the fruits of social, economic and cultural development. Help to improve social equity.

2.3 Status of smoking and chronic diseases in middle-aged and elderly people

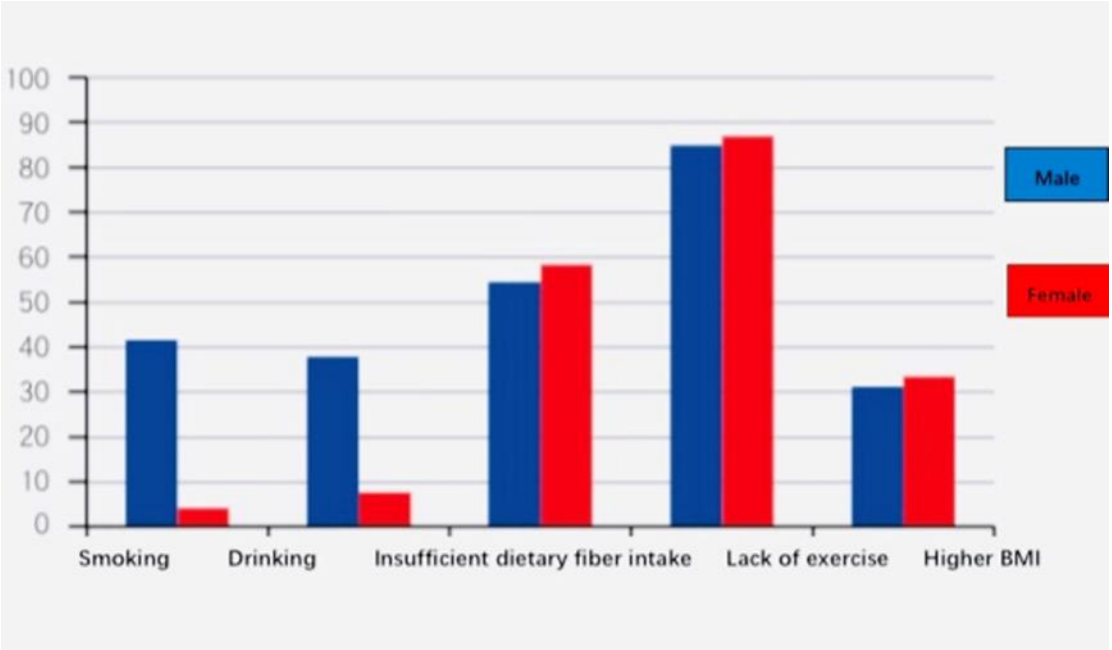
China's aging population is exacerbating the disease burden for the elderly people(bingyu%J, 2014). The social has given attention to the health of the elderly. In 2016, China released the outline of a "Healthy China 2030" plan. In order to improve the residents' health status, improve the residents' healthy lifestyle and practice the health care strategy focusing on prevention, the program is put forward for the individual lifestyle and behavior.

According to the goals of the "Healthy China 2030" plan, by 2020, the prevention and control of chronic diseases have been significantly improved, and the premature death rate caused by chronic diseases has been reduced. The premature death rate caused by chronic diseases among people aged 30 to 70 years has been reduced by 10% from 2015 to 2025, so that the risk factors of chronic diseases have been effectively controlled and the whole life cycle health management of the whole population has been realized.

Changes in health and epidemiology related to population changes, gradually shifting from maternal and infant health problems and infectious diseases to chronic diseases (Nation Assessment of Aging and Health in China). One of the problems associated with population ageing is the consequent increase in the burden of chronic diseases. Therefore, the society gradually began to pay attention to the causes of chronic diseases in the elderly.

Figure 2 describes the main risk factors for the chronic diseases of the elderly in 2010. Among them, the male elderly smoking caused the chronic diseases in the third place. This shows that smoking in the elderly is one of the main risk factors for the incidence of chronic diseases.

Figure 2The prevalence of chronic disease risk factors by sex among Chinese aged 60 and above in 2010



Source: Nation Assessment of Aging and Health in China

Table 4 describes the deaths caused by gender smoking in China in 2004. It is divided into 5 age groups 30-44 years old, 45-59 years old, 60-69 years old, 70-79 years old and over 80 years old. Among all deaths, the age group with the highest percentage of deaths caused by smoking is 70-79 years old, accounting for 15% of deaths. The elderly over the age of 80 ranked second, accounting for 12% of the deaths of people over the age of 80.

Smoking causes malignant neoplasms and indirectly leads to death. Among all deaths, the age group with the highest percentage of deaths caused by smoking is 70-79 years old, accounting for 21% of deaths. Young people aged 30-44 account for 19%.

Smoking causes cardiovascular diseases and indirectly leads to death. Among all deaths, the age group with the highest percentage of deaths caused by smoking is 30-44 years old, accounting for 29% of deaths. Middle-aged people aged 45-59 accounted for 8%.

Table 4WHO estimated death rates (per 100,000) and proportion attributable to tobacco, 2004

Cause of death	Both sexes				
	30-44	45-59	60-69	70-79	80+
Death rate: ALL CAUSES	171	671	2033	5422	15288
Mortality due to tobacco	15	52	207	792	1798
Percentage of deaths due to tobacco (%)	9	8	10	15	12
Death rate: All malignant neoplasms	39	209	562	1067	1354
Mortality due to tobacco	7	28	95	225	216
Percentage of deaths due to tobacco (%)	19	13	17	21	16
Death rate: All Cardiovascular diseases	20	163	738	2316	7502
Mortality due to tobacco	6	13	30	98	60
Percentage of deaths due to tobacco (%)	29	8	4	4	1

Source: WHO Global Report, Mortality Attributable to Tobacco

2.4 Overview of China's tobacco protection measures

This section is based on the interpretation of Table 5. Protect from tobacco smoke, Analyze the possible causes and consequences of the lack of each national legislation measure.

As we all know, the harm caused by smoking, in China, although the government does not encourage people to smoke, and make many danger warnings in the public life, but these warnings do not seem to be strong enough.

Hospital institutions, government agencies, and schools are public places with national representation, but these places lack the smoke-free protection equipment. From Table 5, From 2007 to 2018, Smoke-free health-care facilities, Smoke-free education facilities except universities, Smoke-free universities, Smoke-free government facilities are always vacant. It can be seen from this that China's tobacco control work in public places is not perfect.

From Table 5, we can see that there are vacancies and imperfections in the national legislation on tobacco control. From 2007 to 2018, The following public places have no smoke-free places, National legislation prohibiting smoking in Smoke-free indoor offices, Smoke-free restaurants, Smoke-free pubs, bars and cafes. These places are public places that residents often go to, but the country has no legislation to establish smoke-free places, which will inevitably cause many non-smokers to be attacked by second-hand smoke, causing a certain degree of

physical damage and environmental pollution. Increase the residents' risk of illness and the workload of purifying the environment. Although a smoke-free other indoor public places has been established, this does not suit the actual situation. People may not be familiar with the legislation of smoke-free other indoor public places and the reasons for insufficient punishment make this legislation not applicable.

In China, the number of smoke-free places is very small. From 2007 to 2018, the number of smoke-free places was always 1. The scarcity of smoke-free places makes smokers smoke with no scruples. Citizens who do not smoke will condemn this behavior. This has led to an increase in the incidence of adverse events that endanger society in public places.

In China, national legislation has never enacted a fine that violates smoke-free laws. This may be the root cause of smokers without worrying about smoking. Smokers who violate the law and smoke-free laws will not bear the corresponding crimes and fines, but will be subject to moral condemnation. Loose regulations will increase the difficulty of tobacco control.

In China, fines for institutions that violate smoke-free laws and fines for customers who violate smoke-free laws are not applicable. The reason may be that the cost of controlling it is too high. China has a population of 1.4 billion. Supervision work has always been a major problem for the government and society.

From 2007 to 2018, China’s funds dedicated to the implementation of smoke-free laws were always 0. This means that fiscal expenditures are always 0 in this item. As a result, it becomes more difficult to control tobacco. Control without financial support reduces the enthusiasm of the relevant control personnel.

From 2007 to 2018, citizens' complaints and investigations on violations of the smoke-free laws were always 0, which means that although citizens will complain about people who smoke in public, they are unwilling to appeal and investigate. The reason may be related to the traditional psychology of the Chinese "more things are worse than less". People's indifference to people who violate smoke-free laws encourages smokers to ignore legal warnings and unscrupulous smoking behavior.

By 2018, subnational smoking bans - at least one jurisdiction has a comprehensive ban in place. subnational smoking bans refer to the actual situation of each region, and the municipal people's congress drafted and solicited opinions to formulate corresponding smoking ban policies and regulations. This shows that China's anti-smoking work is in its infancy and needs more investment and support.

Table 5Protect from tobacco smoke data in China

	2018	2016	2014	2012	2010	2008	2007
Smoke-free health-care facilities (national legislation)	No	No	No	No	No	No	No
Smoke-free	No	No	No	No	No	No	No

education facilities (excluding schools) (national legislation)							
Smoke-free universities (national legislation)	No	No	No	No	No	No	No
government facilities of Smoke-free (national legislation)	No	No	No	No	No	No	No
indoor offices of Smoke-free (national legislation)	No	No	No	No	No	No	No
Smoke-free restaurants (national legislation)	No	No	No	No	No	No	No
pubs, bars and cafes of Smoke-free (national legislation)	No	No	No	No	No	No	No
Smoke-free public transport (national legislation)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Smoke-free other indoor public places (national legislation)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Number of places smoke-free (national legislation)	1	1	1	1	1	1	1
Subnational smoke-free legislation authority exists	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fines for violations of smoke-free laws	No	No	No	No	No	No	No
Fines on the establishment for violations of smoke-free laws	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Punish customers who smoke in places with smoke-free laws	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Funds dedicated to	No	No	No	No	No	No	No

the enforcement of the smoke-free ban							
Complaints and investigations for violations of smoke-free laws	No	No	No	No	No	No	No
Subnational smoking bans	Yes						

Source: WHO, Global Health Observatory data repository

We can see from Table 5 that China's tobacco control is incomplete and unsystematic, and the national legislature's regulations on smoking bans in public places are not perfect. Residents' indifference to the law, imperfect government tobacco control laws and lack of funds will increase the difficulty of tobacco control.

To sum up, after the changes of the times, the social participation of the elderly has become more and more abundant. The country also pays more and more attention to the participation of the elderly in social, economic and cultural activities. Enjoy the fruits of economic development. At the same time, chronic diseases are also a health killer for middle-aged and elderly people. Will increasing social participation of the elderly increase the incidence of chronic diseases in the elderly? The above has proved that smoking is the main cause of chronic diseases. So, how does social participation affect middle-aged and elderly smoking.

According to the 2015 Chinese Adult Tobacco Report, Among the four data sets (15-24 years old, 25-44 years old, 45-64 years old, and over 65 years old), the highest smoking rate was found in men aged 45-64 years old (60%) and in women over 65 years old (6.9%). Since the high level of smoking rate is 45-64 years old in males and 65 years old and above in females, this study focuses on the smoking status of middle-aged (45-60) and elderly persons aged 60 and above.

Therefore, this study analyzes the impact of social participation of middle-aged and elderly people on smoking. Through empirical analysis, to identify whether social participation is a risk factor or a protective factor for middle-aged and elderly people. Specific to the analysis and discussion of each social participation. This study focuses on the impact of social participation on smoking among middle-aged and elderly people. The theme of this study is the same as the content and purpose of Healthy China 2030 plan. In order to improve the residents' health status, improve the residents' healthy lifestyle and practice the health care strategy focusing on prevention, the program is put forward for the individual lifestyle and behavior.

CHAPTER3

LITERATURE REVIEW

This section reviews the different definitions of social participation. The impact of social capital on smoking and the impact of social participation on smoking.

3.1 Definition of social participation

Social capital is the first concept used by sociologists. The earliest conception of social capital was Granovetter. What exactly is social capital has not yet formed a unified concept in academia. Different scholars proceed from their subject categories and research paradigms. The concept has been defined differently. According to the nature of social capital, social capital is divided into homogeneous and heterogeneous. Homogeneous social capital mainly refers to the formation of a network of acquaintances as the main body, integrating people with common neighbors, ethnic groups, religions, or family relationships into close social relationships. Heterogeneous social capital is often integrated into close social relationships based on work reasons and interest factors. In the research of expert M Lindström(M. Lindström et al., 2003), social participation and social trust are used to measure social capital. Its social participation includes interacting with relatives, friends and organizations.

Social participation is a theory about the rights of the audience, also known as the right to participate, which means that the recipients have the right to participate in mass communication activities. It was the American expert J. Barron who first proposed this theory. The specific definition and measurement of social participation, so far, it is difficult for someone to give an accurate definition. Experts in different fields have different interpretations of the term social participation. In academia, the concept of social participation has never been accurately defined. Many studies have used alternative phrases to measure social participation. For the social participation of the elderly, the explanation given by each expert is also different. The following table summarizes the explanation of each expert on the social participation of the elderly. According to the interpretation of the expert Pengding, the social participation in this study is defined as the social activities participated in during leisure time.

Table 6Summary of Existing Studies

Title	Authors	year	Definition
Social Participation	(Rainer &	2014	Social participation includes social

And Social Engagement Of Elderly People	Sciences, 2014)		contact, social contribution, and social resources received.
Social participation in older women and men: differences in community activities and barriers according to region and population size in Canada	(Naud, Généreux, Bruneau, Alauzet, & Levasseur, 2019)	2019	The study uses frequency of participation in community activities to replace social participation.
Ageing well: evaluation of social participation and quality of life tools to enhance community aged care	(Brett et al., 2019)	2019	Use community elderly care services to replace social participation.
Inventory and analysis of definitions of social participation found in the aging literature: Proposed taxonomy of social activities	(Levasseur, Richard, Gauvin, Raymond, & medicine, 2010)	2010	Social participation is defined as whether to interact with others in the community.
The Effect of Social Participation on Elderly Live Satisfaction	(Kusmaedi, Sultoni, & Subarjah)	2017	Social participation is defined as the presence of social organizations.
Factors Associated with Social Participation According to Residence Area among Elderly in Indonesia	(Ulfa & Sartika, 2018)	2018	Social participation is defined as the degree of participation in community activities.
Does social participation by the elderly reduce mortality and cognitive	(Hsu & health, 2007)	2007	Social participation included continuous paid work, unpaid work and attendance of meetings of social groups/clubs.

impairment?			
Social participation and perceived depression among elderly population in South Africa	(Hao et al., 2017)	2017	The social participation was perceived difficulty in maintaining social participation and relationships.
Research on Trust Mechanism of Social Participation Affecting Elderly Health	Peng dingping	2015	Social participation refers to engaging in social activities during leisure time.
Neighborhood resources and social participation among older adults results from the VoisiNuage Study	(Richard et al., 2013)and et al	2013	The actions in which an individual shares some resources with others.
The portrayal of older people's social participation on German prime-time TV advertisements	(Levasseur et al., 2010)	2010	Actively participate in small communities or in large communities.
Social participation and the prevention of decline in effectance among community-dwelling elderly: a population-based cohort study	(Takakura, 2015)	2015	Individual engagement in formal activities. Individual engagement in informal activities .

3.2 Definition of smoking

Br J Addict (%, 2020; Heatherton, Kozlowski, Frecker, & FAGERSTROM, 1991),(%, 2020)classifies smoking into light smoking, moderate smoking and heavy smoking. the smoking is less than 10 cigarettes/day for light, 10-20 cigarettes/day for moderate, and >20 cigarettes/day for heavy. The diagnosis and analysis related theories of the multi-classification hierarchical model are mature, but there are still some difficulties in the implementation of statistical software, so this study adopts the binary response variable (smoking, non-smoking).

3.3 The impact of social capital on smoking

Social capital was the first concept used by sociologists. The first to conceptualize social capital was Granovetter, but the academic community has not yet formed a unified concept of what social capital is. Social capital is the connection between people and exists in the structure of interpersonal relationships. This is very similar to the definition of social participation. Many experts believe that social participation is part of social capital.

E Hwa Yun(Yun, Kang, Lim, Oh, & Son, 2010) used National Cancer Center of Korea data. 10905 respondents in a study. The purpose is to study the impact of social support and social networks on smoking in rural residents of South Korea. Define social support as social support and social networks. Definition of smoking: In your life, Do you smoked more than 400 cigarettes? Conclusion: Women's social network is at a moderate level, which is a protective factor for smoking. Smoking in rural areas is associated with high levels of social support.

David(Blok, de Vlas, van Empelen, & van Lenthe, 2017) used data provided by the Dutch LISS team managed by Center data. This is a large Internet survey involving nearly 7,000 individuals over 15 years of age. The purpose was to study the effect of smoking on social networks on smoking cessation and relapse in adults. Social network definition: The total network size of the respondent includes all reported family members and friends. Definition of smoking: Self-reported smoking status was assessed by asking whether the respondent currently smoked and whether he had previously smoked. Quitting smoking is defined as smoking at baseline, but not smoking during follow-up. Similarly, smoking recurrence was defined as a previous smoker who smoked during baseline follow-up. Conclusion: Quitting smoking and recurrence are closely related to the proportion of smokers among family members and friends. The proportion of smokers outside the family has nothing to do with smoking cessation and smoking recurrence.

Mohammad (Siahpush et al., 2006)used data from telephone interviews of approximately 2,762 residents randomly selected from 22 local government areas (LGA) in Melbourne, Victoria, Australia. Study the impact of social capital on smoking. Social capital is defined as trust (most people in your area can be trusted) and security (your area has a reputation as a safe place). Definition of smoking: smokers (every day, at least once a week and infrequent smoking) and non-smokers. Conclusion: Smoking rates are lower in communities with higher social capital stocks.

Joan (Patterson, Eberly, Ding, & Hargreaves, 2004) used data from population and environmental health surveys. A cross-sectional survey of 5256 males and 4806 female adults in 9 regions of the United States was conducted. The description of smoking status is "Do you currently smoke?" Social cohesion is defined as the residents' sense of social cohesion. Conclusion: Social cohesion will increase the likelihood of men smoking.

Eniko(Albert-Lőrincz, Paulik, Szabo, Foley, & Gasparik, 2020) used a stratified random sample of 1,313 students in grades 7 and 8 from three counties in Transylvania, Romania to complete a self-management questionnaire about smoking-related knowledge, attitudes, and behaviors. The purpose is to study the relationship between social capital and smoking. Smoking is defined as: never smokers, experimenters and smokers. Social participation is defined as: personal and community activities. Conclusion: Several social capital factors can play a role in adolescent smoking.

Elizabeth A (Mumford & Liu, 2016) used data from the National Longitudinal Study of Early Childhood, which included 9050 adult mothers. The goal is to study the relationship between social integration and smoking among pregnant women. Define social support as social integration. Social support is divided into family support, friend support and professional support. Definition of smoking: (1) Did you smoke before conception (2) During the first three months of pregnancy, How many cigarettes do you smoke on average every day? Conclusion: Participating in religious services, but not a measure of social support or social participation, is a protective factor for maternal smoking trajectories.

Cecilia (Åslund & Nilsson, 2013) used data from the Westmorland County Youth Life Survey. Study the impact of social capital on smoking and drinking in Swedish youth. A total of 7757 students aged 13-18 completed the survey anonymously. The measurement of social capital is based on the answers to the questions in the questionnaire. This includes whether you feel fear near your home at night, whether you often get help from neighbors, and whether you often see graffiti or damaged public goods in public places. Define smoking according to the answer "Do you smoke?" Conclusion: The probability of high alcohol consumption among people with low social capital has increased by about 60%. People with lower social capital have three times the probability of smoking than people with higher social capital.

Etsuji (Suzuki et al., 2010)used first-hand data to study the relationship between Japanese employees' social capital and smoking. A total of 834 men and 337 women were interviewed. Use trust and reciprocity between colleagues to measure social capital. Measure of trust: "For you, can most people in the company trust, or are you not very cautious when dealing with people?" The answer options are as follows (1 = most people can trust, 2 = can't be too cautious , 3 = other, 4 = don't know). The measure of reciprocity: "Do you think that when you encounter difficulties, most of the people in the company are trying to help, or are they only focusing on themselves?" The answer options are as follows (1 = try to help, 2 = just be careful Myself, 3 = other, 4 = don't know). Measure of smoking: "How many cigarettes do you smoke on an average day now?" The answer is divided into never smoking (the number of cigarettes per day is 0) and smoking (the number of cigarettes per day is greater than 0). Conclusion: Distrust is associated with a higher likelihood of Japanese employees smoking.

The sample used by Gary(Evans & Kutcher, 2011) was taken from several rural areas in upstate New York. The impact of 196 adolescents' social capital on smoking was studied. Measurement of social capital: social cohesion. Social cohesion is calculated in three areas. (1) Mother's interdependence on social connections and community members. (2) The degree of the mother's informal supervision of the young and the willingness of the adult to intervene. (3) The relationship between young people and adults in the community. Definition of smoking: It is evaluated by the frequency of smoking. Conclusion: Social capital is a protective factor for young people smoking.

Anne (Kouvonen et al., 2008) used the Finnish public sector research data. Explore whether higher social capital at work is associated with an increased likelihood that baseline smokers will quit smoking. The final sample included 4853 individuals. Define social capital with the degree of social support. Define social capital based on the questions in the questionnaire. These include whether they understand and trust each other, whether they feel that the boss is friendly, whether they trust the boss, whether they exercise the rights of employees. Measures of smoking "Did you smoke? that is, every day or almost every day?" (Conclusion: High perceived social capital at work may facilitate smoking cessation among smokers in higher-status jobs.

Social capital is sometimes a protective factor for smoking. Social capital is sometimes a risk factor for smoking. This result depends on how experts measure social capital. The following table explains the conclusions of experts studying the impact of social capital on smoking.

Table 7Summary of Existing Studies

Author(year)	Conclusion
E Hwa Yun (2010)	Women's social network is at a moderate level, which is a protective factor for smoking. Smoking in rural areas is associated with high levels of social support.
David(2017)	Quitting smoking and recurrence are closely related to the proportion of smokers among family members and friends. The proportion of smokers outside the family has nothing to do with smoking cessation and smoking recurrence.
Mohammad(2006)	Smoking rates are lower in communities

	with higher social capital stocks.
Joan(2004)	Social cohesion will increase the likelihood of men smoking.
Eniko(2020)	Several social capital factors can play a role in adolescent smoking.
Elizabeth A. Mumford(2016)	Participating in religious services, but not a measure of social support or social participation, is a protective factor for maternal smoking trajectories.
Cecilia(2013)	The probability of high alcohol consumption among people with low social capital has increased by about 60%. People with lower social capital have three times the probability of smoking than people with higher social capital.
Etsuji(2010)	Distrust is associated with a higher likelihood of Japanese employees smoking.
Gary(2011)	Social capital is a protective factor for young people smoking.
Anne (2008)	Social capital will promote smokers to quit smoking.

3.4 The impact of social participation on smoking

Social participation is an influencing factor for people smoking. Some people have to join social circles with smoking habits to become social smokers due to work needs or other factors. Most of us know someone who only smokes when they go out drinking with friends, or occasionally in some other social setting. Smoking most commonly while partying or socializing(Ruiz, Sharkness, Kelly, DeAngelo, & Pryor, 2010).

Giuseppe N (Giordano & Lindström, 2011) used BHPS data in 2003 for longitudinal research. 10502 British residents were surveyed. Its purpose is to study the impact of social capital on residents' smoking. Some individual characteristics and social economic factors are selected as control variables. Through this question, "Are you smoking?" The answer is "yes" or "no" to define whether the respondent smokes. Social capital is defined as participating in local community activities, volunteer

activities, sports and religious group activities. In conclusion, long-term lack of social participation and people who remain single are related to the beginning of smoking.

Martin(M. J. T. E. J. o. P. H. Lindström, 2004) used Scania's 2000 public health survey data to study the impact of 3978 residents' social capital between the ages of 18-34 on residents' smoking cannabis. Definition of smoking cannabis. (1) Have you ever smoked cannabis? If the answer is "yes", continue to ask (2) Have you smoked cannabis recently? If the two answers are "yes", it is considered that residents are smoking cannabis. The definition of social capital is whether the respondent participates in social activities: including entertainment activities, leisure activities and participation in study circle. conclusion: Individuals with high social participation and low levels of trust may increase the likelihood of marijuana smoking.

Grace(Huang et al., 2014) used social network research data, which is longitudinal research data about teenagers. The sample includes 1795 students. Its purpose is to study the effects of online and offline friendship networks on youth smoking and drinking. The frequency of adolescents' use of SNS and the number of their closest friends on the same SNS were not significantly related to smoking and drinking behaviors.

Sunny(Kim, Marsch, Brunette, & Dallery, 2017)used first-hand data to investigate the impact of 46 individuals using Face Book social media participation on smoking. Face Book social media participation is defined as Face Book's proprietary social media features. The interviewee's comments and sharing are defined as the participation of Face Book social media. Smoking is defined as the daily amount of smoking. Conclusion: Facebook user participation and social support can reduce smoking.

Marilyn(Molyneux et al., 2004) tested whether high school students' participation in community advocacy activities would prevent or reduce their demand for cigarettes. Smoking is defined as: "How many cigarettes do you smoke now?" According to the following answer options, students are classified as non-smokers, mild smokers or experimental smokers or general smokers. Conclusion: Participation in community advocacy activities is a protective factor for smoking among high school students.

Minoru Takakura(Takakura, 2015) used primary data (questionnaire) to investigate 3248 students from 29 middle schools in Okinawa, Japan. The goal is to study the impact of Japanese young people's participation in organized social activities on smoking and drinking. The measure of social capital is whether students participate in the activities of the following organizations: (1) student union(2) extracurricular activities (3)volunteer activities (4)community sports clubs and (5)youth associations. Definition of smoking: "How many days did you smoke in the past 30 days?" Conclusion: Participating in extracurricular activities is a protective factor for smoking and drinking, and participating in youth associations is a risk factor for smoking and drinking.

Harold G(Koenig et al., 1998) used data of the Duke Elderly Epidemiological Survey (EPESE). To study the effect of 3968 elderly people over 65 years old participating in religious activities on smoking. The definition of smoking is (1) whether the respondent currently smokes (2) whether he has ever smoked (3) how many cigarettes are smoked per day. It also assessed participation in religious ceremonies, Participate in religious activities, watch religious TV and listen to religious radio. The control variables were selected as: age, race, gender, education level, alcohol consumption, physical health. Conclusion: The protective factors of smoking when participating in religious activities.

Wouter (Poortinga, 2007) studied the relationship between physical exercise and smoking and drinking. The 2003 England Health Survey Data (HSE) was used. The sample size is 11,617 individuals. Whether to participate the physical exercise is considered physical activity. Definition of smoking: "Do you smoke now". The demographics were selected based on gender, age, social class, economic activity, and sports club membership. Conclusion: Physical exercise affects personal smoking behavior.

Ying(Chuang, Chuang, & medicine, 2008) used data from the survey of social transformation in Taiwan in 1995 and 2000. Study the gender differences between Taiwan's social capital and individual smoking and drinking behaviors. Social capital includes community intimacy, political influence, social interaction, social trust, and social participation. Use a multilevel binomial regression model to analyze the data. The measure of smoking is number of cigarettes smoked per day Conclusion: Women are more likely to be affected by neighborhood relations than men. Social participation is positively related to men and women drinking.

Yuan(2019)studied the impact of social capital on smoking. in the survey mentioned the impact of social participation on smoking. Definition of social participation as social activities. And Use the smoking index to define smoking levels. Conclusion: social participation is a risk factor for smoking.

Social participation is sometimes a protective factor for smoking. Social participation is sometimes a risk factor for smoking. This result depends on how experts measure social participation. The following table explains the conclusions of experts studying the impact of social participation on smoking.

Table 8Summary of Existing Studies

Author(year)	Conclusion
Giuseppe N (2011)	Lack of active social participation and keeping singles are related to the beginning of smoking.
Martin(2004)	The combination of high social participation and low levels of generalized trust of other people, may

	enhance the experience of cannabis smoking.
Grace(2014)	The frequency of adolescents' use of SNS and the number of their closest friends on the same SNS were not significantly related to smoking and drinking behaviors.
Sunny(2017)	Facebook user participation and social support can reduce smoking.
Marilyn(2004)	Participation in community advocacy activities is a protective factor for smoking among high school students.
Minoru Takakura(2015)	Participating in extracurricular activities is a protective factor for smoking and drinking, and participating in youth associations is a risk factor for smoking and drinking.
Harold G(1998)	The protective factors of smoking when participating in religious activities.
Wouter(2007)	Physical exercise affects personal smoking behavior.
Ying-Chih(2008)	Women are more likely to be affected by neighborhood relations than men. Social participation is positively related to men and women drinking.
Yuan(2019)	Social participation is a risk factor for smoking.

In summary, the definition of social capital and social participation varies from expert to expert. Some experts believe that social participation is part of social capital. Many experts give alternative phrases to measure social participation. For example, many social activities replace social participation. Every expert uses social activities differently.

Experts study the impact of social participation on smoking. Select social activities as a substitute variable for social participation. The results show that some social activities are protective factors for smoking, and some social activities are risk factors for smoking. The data selected for this study is CHARLS(2015). Expert Yuan(2019) used this data to study the impact of social capital on smoking. Six social activities were selected as substitute variables for social participation. It is concluded that social participation is a risk factor for smoking. This study will specifically study

the impact of each social participation on smoking among middle-aged and elderly people.

3.5 Literature Gap

Based on the existence of papers related to social participation, most papers focus on the impact of youth social participation on smoking. A few papers focus on the impact of social participation on smoking among middle-aged and elderly people. The conclusion of the impact of social participation on smoking is also different according to the definition of social participation. Based on the data of China Health and Retirement Longitudinal Study (CHARLS,2015), this study studies the impact of different social activities on smoking among middle-aged and elderly people.

CHAPTER 4

CONCEPTUAL FRAMEWORK

Figure 3Conceptual framework

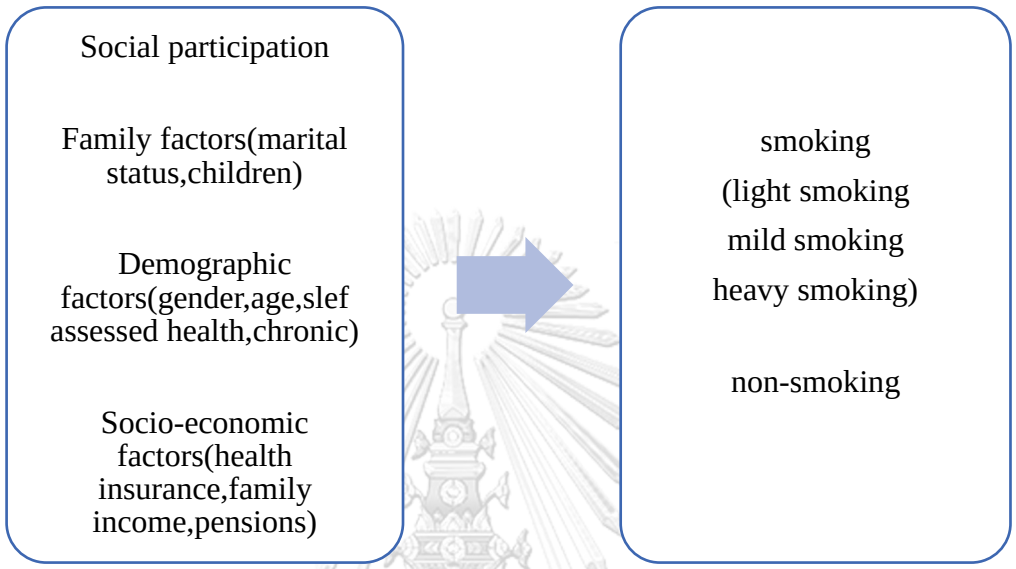


Figure 3 is the conceptual framework of this study by reading the literature to determine what factors affect middle-aged and elderly smoking. In addition to social participation as the main explanatory variables, marital status, children, gender, age, self-assessment health, chronic and health insurance, and family income, the pension is selected as the control variable study.

Gender: The personality of a person is usually determined by gender. Due to psychological factors and social etiquette, men's smoking rate is higher than that of women. Due to the influence of Chinese tobacco culture, in social etiquette, the distribution of cigarettes often represents respect for each other, and smoking brand-name cigarettes is also a symbol of identity.

Age: Age is positively correlated with smoking. The older the elderly, the higher the likelihood of smoking. Moreover, it is difficult to quit smoking. The longer the time, the higher the damage to the body. Affect the physical and mental health of the elderly.

Marital status: Marital status will affect the smoking rate of the elderly. Older people with partners have a higher happiness index than widowed older adults and are more likely to focus on their health to reduce smoking.

Children in this study refer to living children (including biological children, stepchildren, and adopted children). Chinese-style pension generally refers to living in

the home of your children. Smoking may cause physical harm to children or generations. Older people with children are less likely to smoke.

Pensions: The availability of pensions will increase smoking among the elderly. Because there is financial support, older people with pensions are more likely to buy cigarettes.

Health insurance: Older people with health insurance will also affect their smoking. Older people with health insurance pay more attention to health, thereby reducing the possibility of smoking.

Self-assessment of health status: Older people with better self-assessment health status are less likely to smoke. May be due to more attention to their health, thereby reducing the possibility of smoking.

Chronic diseases: Middle-aged and older people with chronic diseases may be less likely to smoke due to doctor's orders. Older people with chronic diseases also lower their self-health assessment. Older people with inadequate self-health assessments believe that they have chronic diseases. So elderly self-health assessment and chronic diseases affect each other. Due to technical reasons and the lack of suitable instrument variables, this study cannot solve this endogenous problem.

Family income: Older people with higher family income are more likely to smoke, possibly because of financial support.

CHAPTER 5

METHODOLOGY

5.1 Variables

This section describes the definition of variables in statistical analysis.

5.2 Dependent Variables

The smoking was defined according to the questionnaire:1. “Have you ever chewed tobacco, smoked a pipe, smoked self-rolled cigarettes, or smoked cigarettes/cigars?” and 2. “In one day about how many cigarettes do you consume?”.

Table 9 Details of Dependent Variables

Dependent Variables		Description
Non-smoking		0 cigarettes/day
smoking	light smoking	1≦Number of cigarettes smoked per day≦10
	moderate smoking	10<Number of cigarettes smoked per day≦20
	heavy smoking	Number of cigarettes smoked per day>20

Source: from author

5.3 Independent variables

In this study, the core of variable selection is the social participation, according to the study of foreign and domestic literature, ultimately defines social participation as “the elderly person take part in the family and social activities in their spare time”. According the questionnaire, the definition of social participation: "Have you done any of these activities in the last month? (Code all that apply)".
The remaining variables were selected as family factors (marital status, child), demographic factors (gender, age, self-assessment health, chronic diseases), and socioeconomic factors (health insurance, family income, pension).

Table 10 Detail of Independent Variables

	Description	Expected sign	Reasons
Social participation	(1)Interacted with friends=1; otherwise=0 (2) Played Mahjong, played chess, played cards, or went to community club=1; otherwise=0 (3) Provide help to family, friends or neighbors =1; otherwise=0 (4) Went to a sport, social, or other kind of club=1; otherwise=0 (5) Took part in a community-related organization; otherwise=0 (6) Done voluntary or charity work=1; otherwise=0 (7) Care for a sick or disabled adult who does not live with you=1; otherwise=0 (8) Attended an educational or training course=1; otherwise=0 (9) Stocks investment=1; otherwise=0 (10) Used the Internet=1; otherwise=0 (11) none of these=1; otherwise=0 otherwise=0	+/-	Different social participation activities have different effects on smoking(M. Lindström et al., 2003)
Gender	Male=1 Female=0	+	Men have a higher probability of smoking.

age	Age（60-105）=1;otherwise=0 Age（45-60）=1; otherwise=0；Other age=0	+	As the age of residents increases, the possibility of smoking increases. (Li, 2018)
marital status	Your current marital status". (1) Married and live with spouse. (2) Married, but temporarily not living with a spouse due to work or other reasons. Set as married = 0. (3) Separation (not living together as a spouse). (4) Divorce (5) Widowed (6) Never married (7) Living together. Set as unmarried=1	+	The relationship between smoking and unmarried shows a positive correlation (Peixoto, Firmo, & Lima-Costa, 2005)
pension	According to the respondent's "Do you participate in the basic endowment insurance for government agencies, institutions or employees of enterprises" Have=1 None=0	+	The elderly people who have pension are more likely to smoke(Yong & %J, 2016)
health insurance	What is the main reason why you are not currently participating in any health insurance?" (1) I do not need it. (2) Cannot afford. (3) Do not know where	-	There is a negative correlation between health insurance and smoking(linlin, 2019)

	or from whom to get it. (4) Do not trust the institution that offer health insurance. (5) Do not have suitable programs for me to buy. (6) Do not know/never thought of it. (7) Others. Have=1 None=0		
Children	According to whether the respondent has children alive to definition. Alived=1 Passed away=0	-	Smoking is inversely related to the elderly with surviving children(Cohen-Mansfield, 2013)
self-assessment status	First group “Would you say your health is excellent, very good, good, fair, or poor?” the second group “would you say your health is very good, good, fair, poor, or very poor?” according two group of answer. Poor / Very poor = 1 Good / Very good / Excellent/ Fair = 0	+	The healthier older people are,the more they smoke(Peixoto et al., 2005)
chronic	Whether a doctor has told you that you have the chronic diseases. Have=1 None=0	-	The smoking cessation rate of men aged 18-69 years with chronic diseases is 3.356 times that of non-patients.(fang & %, 2019)
family income	Adding up one year's income of the family members (deducting taxes and paying employees' social insurance).	+	Adults with higher household income are also more likely to smoke.(Lim et al., 2018)

	Continuous variables		

Source: from author

5.4 Model: Logistics Regression Model

(1)$y_{smoking}$=β_0+$\beta_1 interacted\ with\ friends$+$\beta_2 Played\ Majong$+
$\beta_3 Provide\ help\ to\ family$+$\beta_4 Went\ to\ a\ sport$+$\beta_5 Took\ part\ in\ a\ community$+
$\beta_6 Done\ voluntary$ +$\beta_7 Care\ for\ adult$+
$\beta_8 Attended\ an\ educational\ or\ training\ course$+$\beta_{10} Used\ the\ Internet$+
$\beta_{11} none\ of\ these$+$\beta_{12} family_{factor}$+$\beta_{13} Population_{factor}$+

$\beta_{14} Socioeconomics_{factor}$ +e_1

CHAPTER 6

DATA

6.1 Data source: China Health and Retirement Longitudinal Study (CHARLS,2015)

The data used in this study is the China Health and Retirement Longitudinal Study (2015), and covers all county-level units in mainland China Including 22 provinces/cities/autonomous regions. It is China's more authoritative data.
Figure 4 describes the contents of the entire data set. This study shared 6 data sets, including Demographic Background, Health status and functioning, Health care and insurance, Household income, Individual income, Child.

Figure 4 Description of data set

Module in Questionnaire	Dataset	Information
B. Demographic Background	Demographic_Background.dta	Demographic information for main respondent and spouse
C. Family (CA, CB, CC, CD, A)	Family_Information.dta	Information for household and Family Members
C. Family (CE, CF)	Family_Transfer.dta	Transfer among family members
D. Health Status and Functioning	Health_Status_and_Functioning.dta	Health behaviour and Status
E. Health Care and Insurance	Health_Care_and_Insurance.dta	Health care utilization, health care costs and medical insurance
F. Work Retirement and Pension	Work_Retirement_and_Pension.dta	Work history and current status, pension
G&H. Income, Expenditures and Assets (G2, HA)	Household_Income.dta	Household income, expenditure and assets
G&H. Income, Expenditures and Assets (G1, HB)	Individual_Income.dta	Individual income and assets
I. Housing Characteristics	Housing_Characteristics.dta	Construction materials and home facilities
Biomarker	Biomarker.dta	Anthropometric measurements
	Weights.dta	Cross-sectional weights
	Sample_Info.dta	Responsed Samples, whether cross-sectional, whether died, and interview date
C. Family	Household_Member.dta	Constructed information about all household members
C. Family	Parent.dta	Constructed information about parents
C. Family	Child.dta	Constructed information about children
C. Family	Sibling.dta	Constructed information about R's siblings
C. Family	Spousal_Sibling.dta	Constructed information about spousal siblings

Source: China Health and Retirement Longitudinal Study (CHARLS,2015)

6.2 The basic situation of the sample population

Table 11 describes the sample situation, a total of 9876 individual observations. And deal with the dummy variables of Gender, Age, Marital status, Pension, Health

status, Health insurance, Children, Chronic, social participation. The family income is treated by logarithm.

Table 11 Description of the basic characteristics of the middle-aged and elderly persons

Variable	Obs	Mean	Std.Dev.	Min	Max
Gender	9,876	0.512	0.500	0.000	1.000
Age1(45-60)	9,876	0.457	0.498	0.000	1.000
Age2(60-105)	9,876	0.521	0.500	0.000	1.000
marital status	9,876	0.206	0.405	0.000	1.000
Pension	9,876	0.138	0.345	0.000	1.000
Health status	9,876	0.279	0.448	0.000	1.000
Health insurance	9,876	0.915	0.279	0.000	1.000
Children	9,876	0.982	0.135	0.000	1.000
Chronic	9,876	0.624	0.484	0.000	1.000
Family Income	9,876	2.270	4.095	0.000	13.816
Interacted with friends	9,876	0.388	0.487	0.000	1.000
Played Mahjong, played chess, or went to community	9,876	0.215	0.411	0.000	1.000
Provide help to family, friends or neighbors.	9,876	0.160	0.366	0.000	1.000
Went to a sport, social, or other kind of club	9,876	0.089	0.285	0.000	1.000
Took part in organization	9,876	0.029	0.167	0.000	1.000
Done voluntary or charity work	9,876	0.021	0.142	0.000	1.000
Care for a sick or disabled adult	9,876	0.036	0.186	0.000	1.000
educational or training course	9,876	0.010	0.099	0.000	1.000
Stocks investment	9,876	0.013	0.114	0.000	1.000
Used the Internet	9,876	0.074	0.262	0.000	1.000
None of these	9,876	0.426	0.495	0.000	1.000

Source: from author

As shown in Table 12, the number of male individuals is 5057, accounting for 51,20%. The number of female individuals is 4,819, accounting for 48.80%. The number of male middle-aged and elderly individuals is higher than that of females, which is 2.4% higher.

The number of middle-aged individuals (45-60) is 4518, accounting for 45.75%. The number of individuals in the elderly (60-105) is 5149, accounting for 52.14%. The number of individuals in the elderly is higher than that of middle-aged people, 6.39% higher.

The number of married individuals in the marital status was 7840, accounting for 79.38%. The number of unmarried individuals is 2036, accounting for 20.62%. The number of married middle-aged and elderly individuals is higher than that of unmarried individuals, 58.76% higher.

The number of individuals with pensions is 1361, accounting for 13.78%. The number of individuals without a pension is 8515, accounting for 86.22%. The number of middle-aged and elderly individuals with pensions is lower than that without and is 72.44% lower.

The number of individuals with health insurance is 9033, accounting for 91.46%. The number of individuals without health insurance was 843, accounting for 8.54%. The number of middle-aged and elderly individuals with health insurance is higher than that without 82.92%.

The number of middle-aged and older people with living children is 9694, accounting for 98.16. The number of middle-aged and older people without children alive is 182, accounting for 1.84%. The number of middle-aged and elderly individuals with children alive is higher than none, 96.32% higher.

The number of middle-aged and elderly individuals with chronic diseases is 6159, accounting for 62.36%. The number of middle-aged and elderly individuals without chronic diseases is 3717, accounting for 37.64%. The number of middle-aged and elderly individuals with chronic diseases is higher than that without 24.72%.

The number of middle-aged and elderly individuals who rated themselves as poor was 2752, accounting for 27.87%. The number of middle-aged and older people who rated their health as good was 7124, accounting for 72.13%.The number of middle-aged and elderly individuals with functional physical fitness is higher than that of the poor, 44.26%.

Table 12 Basic characteristics of the sample population（N，%）

Variable	Frequent(N)	Percent (%)
gender		
Male	5057	51.20
Female	4819	48.80

Age		
Age1(45-60)	4,518	45.75
Age2(60-105)	5,149	52.14
Marital status		
Married	7,840	79.38
Unmarried	2,036	20.62
Pension		
Have Pension	1,361	13.78
None pension	8,515	86.22
Health insurance		
Have	9,033	91.46
None	843	8.54
Children		
Have	9,694	98.16
None	182	1.84
Chronic		
Have	6,159	62.36
None	3,717	37.64
Self-assessed health		
Poor	2,752	27.87
Fair/Good/Very good/Excellent	7,124	72.13

Source: from author

The following table describes the social participation of middle-aged and elderly people.

As shown in Table 13, the number of middle-aged and elderly individuals interacted with friends is 3,835, accounting for 38.83%. The number of middle-aged and elderly people chose otherwise was 6,041, accounting for 61.17%.

The number of middle-aged and elderly individuals played Mahjong, played chess, played cards, or went to community is 2,128, accounting for 21.55%. The number of middle-aged and elderly people chose otherwise was 7,748, accounting for 78.45%.

The number of middle-aged and elderly individuals provide help to family, friends or neighbors who do not live with you is 1,578, accounting for 15.98%. The number of middle-aged and elderly people chose otherwise was 8,298, accounting for 84.02%.

The number of middle-aged and elderly individual went to a sport, social, or other kind of club is 878, accounting for 8.89%. The number of middle-aged and elderly people chose otherwise was 8,998, accounting for 91.11%.

The number of middle-aged and elderly individual took part in a community-related organization is 284, accounting for 2.88%. The number of middle-aged and elderly people chose otherwise was 9,592, accounting for 97.12%.

The number of middle-aged and elderly individual done voluntary or charity work is 204, accounting for 2.07%. The number of middle-aged and elderly people chose otherwise was 9,672, accounting for 97.93%.

The number of middle-aged and elderly individual care for a sick or disabled adult who does not live with you is 353, accounting for 3.57%. The number of middle-aged and elderly people chose otherwise was 9,523, accounting for 96.43%.

The number of middle-aged and elderly individual attended an educational or training course is 98, accounting for 0.99%. The number of middle-aged and elderly people chose otherwise was 9,778, accounting for 99.01%.

The number of middle-aged and elderly individual participated in stock investment is 130, accounting for 1.32%. The number of middle-aged and elderly people chose otherwise was 9,746, accounting for 98.68%.

The number of middle-aged and elderly individual used the Internet is 732, accounting for 7.41%. The number of middle-aged and elderly people chose otherwise was 9,144, accounting for 92.59%.

The number of middle-aged and elderly individual chose none of these is 4208, accounting for 42.61%. The number of middle-aged and elderly people chose otherwise was 5,668, accounting for 57.39%.

Table 13 Social participation of the sample population（N，%）

Variable	Frequent(N)	Percent (%)
Interacted with friends		
Yes	3,835	38.83
Otherwise	6,041	61.17
Played Mahjong, played chess, or went to community		
Yes	2,128	21.55
Otherwise	7,748	78.45
Provide help to family, friends or neighbors		
Yes	1,578	15.98
Otherwise	8,298	84.02
Went to a sport, social, or other kind of club		
Yes	878	8.89
Otherwise	8,998	91.11
Took part in a community-related organization		
Yes	284	2.88
Otherwise	9,592	97.12

Done voluntary or charity work		
Yes	204	2.07
Otherwise	9,672	97.93
Care for a sick or disabled adult who does not live with you		
Yes	353	3.57
Otherwise	9,523	96.43
Attended an educational or training course		
Yes	98	0.99
Otherwise	9,778	99.01
Stocks investment		
Yes	130	1.32
Otherwise	9,746	98.68
Used the Internet		
Yes	732	7.41
Otherwise	9,144	92.59
None of these		
Yes	4,208	42.61
Otherwise	5,668	57.39

Source: from author

As shown in Table 14, the number of non-smoking middle-aged and elderly individuals was 4878, accounting for 49.39%. The number of lightly smoking middle-aged and elderly individuals was 1512, accounting for 15.31%. The number of middle-aged and elderly individuals with moderate smoking was 1981, accounting for 20.06%. The number of middle-aged and elderly individuals who smoked heavily was 1505, accounting for 15.24%.

Table 14 Smoking of the sample population（N，%）

smoking	Freq.	Percent	Cum.
Non- smoking	4,878	49.39	49.39
Lightly smoking	1,512	15.31	64.70
Moderate smoking	1,981	20.06	84.76
Heavy smoking	1,505	15.24	100.00
Total	9,876	100	

Source: from author

As shown in Table 15, the number of non-smoking middle-aged and elderly individuals is 4878, accounting for 49.39%. The number of middle-aged and elderly individuals who smoked was 4998, accounting for 50.61%.The number of middle-aged and elderly smokers is 1.22% higher than the number of non-smokers.

Table 15 Smoking of the sample population（N，%）

Smoking	Freq.	Percent	Cum.
Non- smoking	4878	49.39	49.39
Smoking	4998	50.61	100.00
Total	9,876	100.00	

CHAPTER 7

RESULTS

7.1 Single-factor analysis of influencing factors of middle-aged and elderly smoking

The single-factor analysis of different basic characteristics shows that gender, age, marital status, health insurance, chronic diseases, and self-assessed health have statistical significance for middle-aged and elderly smoking($p<0.1$).

Table 16 shows that the heavy smoking rate of men (18.83%) is higher than that of women (11.48%).

The heavy smoking rate of middle-aged people is 18.53% higher than that of the elderly (12.31%).

The heavy smoking rate of non-married middle-aged and older people was 15.37%, higher than that of married (14.73%).

The heavy smoking rate of middle-aged and older people without health insurance is 17.56%, higher than that with health insurance (15.02%).

The rate of heavy smoking among middle-aged and older people with chronic diseases was 9.19%, lower than that without chronic diseases (25.26%).

The heavy smoking rate of middle-aged and older people with good self-assessed health was 15.30%, slightly higher than that with poor self-assessed health (15.08%).

Table 16Single-factor analysis of characteristics of smoking among middle-aged and elderly people

Variable	Non smoking	Light smoking	Moderate smoking	Heavy smoking	χ^2	P vale
Gender						
Male	948 (18.75%)	1294 (25.59%)	1863 (36.84%)	952 (18.83%)	4.2e+03	<0.001
Female	3930 (81.55%)	218 (4.52%)	118 (2.45%)	553 (11.48%)		
Age						
45-60	2253 (49.87%)	501 (11.09%)	927 (20.52%)	837 (18.53%)	157.2034	<0.001
60-105	2503	987	1025	634	166.5224	<0.001

	(48.61%)	(19.17%)	(19.91%)	(12.31%)		
Marital status						
Married	1180 (57.96%)	307 (15.08%)	249 (12.23%)	300 (14.73%)	116.9713	<0.001
Unmarried	3698 (47.17%)	1205 (15.37%)	1732 (22.09%)	1205 (15.37%)		
Pension						
Have pension	651 (47.83%)	218 (16.02%)	298 (21.90%)	194 (14.25%)	4.9542	0.175
None Pension	4227 (49.64%)	1294 (15.20%)	1683 (19.77%)	1311 (15.40%)		
Health insurance						
Have	4449 (49.25%)	1388 (15.37%)	1839 (20.36%)	1357 (15.02%)	8.6301	0.035
None	429 (50.89%)	124 (14.71%)	142 (16.84%)	148 (17.56%)		
Children						
Have	4793 (49.44%)	1481 (15.28%)	1946 (20.07%)	1474 (15.21%)	1.0860	0.780
None	85 (46.70%)	31 (17.03%)	35 (19.23%)	31 (17.03%)		
Chronic						
Have	3448 (55.98%)	927 (15.05%)	1218 (19.78%)	566 (9.19%)	538.2253	<0.001
None	1430 (38.47%)	585 (15.74%)	763 (20.53%)	939 (25.26%)		
Self-assessed health						
Poor	1404	424	509	415	6.7734	0.079

	(51.02%)	(15.41%)	(18.50%)	(15.08%)		
Good	3474 (48.76%)	1088 (15.27%)	1472 (20.66%)	1090 (15.30%)		

Single-factor analysis of smoking among middle-aged and elderly people showed that (1) Interacted with friends. (2) Played Mahjong, played chess, played cards, or went to community club. (3) Provide help to family, friends or neighbors who do not live with you. (4) Went to a sport, social, or other kind of club. (10) Used the Internet. (11) None of these. playing Mahjong with friends was statistically significant ($p<0.05$). (as shown in Table 17)

The heavy smoking rate of middle-aged and elderly people who interacted with friends is 14.99%. The heavy smoking rate of middle-aged and elderly people played Mahjong, played chess, played cards, or went to community club is 16.82%. The heavy smoking rate of middle-aged and elderly people provide help to family, friends or neighbors who do not live with you is 16.98%. The heavy smoking rate of middle-aged and elderly people who went to a sport, social, or other kind of club is 15.58%. The heavy smoking rate of middle-aged and elderly people who used the Internet is 20.90%. The heavy smoking rate of middle-aged and elderly people who chose none of these is 14.54%.

Table 17Single-factor analysis of social participation of smoking among middle-aged and elderly people

Variable	Non smoking	Mild smoking	Moderate smoking	Heavy smoking	χ^2	P vale
Interacted with friends						
Yes	1931 (50.35%)	538 (14.03%)	791 (20.63%)	575 (14.99%)	9.1434	0.027
Otherwise	2947 (48.78%)	974 (16.12%)	1190 (19.70%)	930 (15.39%)		
Played Mahjong, played chess, played cards, or went to community club.						
Yes	853 (40.08%)	340 (15.98%)	577 (27.11%)	358 (16.82%)	120.1591	<0.001
Otherwise	4025	1172	1404	1147		

	(51.95%)	(15.13%)	(18.12%)	(14.80%)		
Provide help to family, friends or neighbors who do not live with you.						
Yes	711 (45.06%)	239 (15.15%)	360 (22.81%)	268 (16.98%)	18.0371	<0.001
Otherwise	4167 (50.22%)	1273 (15.34%)	1621 (19.53%)	1237 (14.91%)		
Went to a sport, social, or other kind of club.						
Yes	538 (61.28%)	107 (12.19%)	105 (11.96%)	128 (14.58%)	65.4844	<0.001
Otherwise	4340 (48.23%)	1405 (15.61%)	1876 (20.85%)	1377 (15.30%)		
Took part in a community-related organization.						
Yes	124 (43.66%)	51 (17.96%)	64 (22.54%)	45 (15.85%)	4.2477	0.236
Otherwise	4754 (49.56%)	1461 (15.23%)	1917 (19.99%)	1460 (15.22%)		
Done voluntary or charity work.						
Yes	92 (45.10%)	42 (20.59%)	45 (22.06%)	25 (12.25%)	6.2011	0.102
Otherwise	4786 (49.48%)	1470 (15.20%)	1936 (20.02%)	1480 (15.30%)		
Care for a sick or disabled adult who does not live						

with you.						
Yes	159 (45.04%)	50 (14.16%)	81 (22.95%0	63 (17.85%)	4.8719	0.181
Otherwise	4719 (49.55)	1462 (15.35%)	1900 (19.95%)	1442 (15.14%)		
Attended an educational or training course.						
Yes	44 (44.90%)	13 (13.27%)	22 (22.45%)	19 (19.39%)	2.0750	0.557
Otherwise	4834 (49.44%)	1499 (15.33%)	1959 (20.03%)	1486 (15.20%)		
Stocks investment.						
Yes	66 (50.77%)	18 (13.85%)	18 (13.85%)	28 (21.54%)	6.2001	0.102
Otherwise	4812 (49.37%)	1494 (15.33%)	1963 (20.14%)	1477 (15.15%)		
Used the Internet.						
Yes	298 (40.71%)	107 (14.62%)	174 (23.77%)	153 (20.90%)	34.3790	<0.00 1
Otherwise	4580 (50.09%)	1405 (15.37%)	1807 (19.76%)	1352 (14.79%)		
None of these.						
Yes	2123 (50.45%)	690 (16.40%)	783 (18.61%)	612 (14.54%)	17.3536	<0.00 1
Otherwise	2755 (48.61%)	822 (14.50%)	1198 (21.14%)	893 (15.76%)		

7.2 The effect of social participation on smoking among middle-aged and elderly people is based on Logistic regression analysis

The analysis results show that gender, marital status, self-assessment health, whether there is a pension, whether there is a chronic disease, whether to participate in played Mahjong, played cards, or went to community club, whether to participate in went to a sport, social, or other kind of club, whether used the Internet are the influencing factors of middle-aged and elderly smoking. Middle-aged and elderly who played Mahjong, played chess, played cards, or went to community club are risk factors for smoking($p<0.001$). Middle-aged and elderly people who played Mahjong, played chess, played cards, or went to community club are 1.34 times more likely to smoke than non-smokers. (OR=1.342316). Middle-aged and elderly who went to a sport, social, or other kind of club are protective factors for smoking($p=0.022$). Middle-aged and elderly people who went to a sport, social, or other kind of club are 0.79 times more likely to smoke than non-smokers. (OR=0.7941856). Middle-aged and elderly who used the Internet are risk factors for smoking($p=0.024$). Middle-aged and elderly people who used the Internet are 1.31 times more likely to smoke than non-smokers. (OR=1.314805). (as shown in Table 18)

Interacted with friends. Provide help to family, friends or neighbor. Took part in a community-related organization. Done voluntary or charity work. Care for a sick or disabled adult who does not live with you. Attended an educational or training course. Stocks investment. Chose none of these has no significant effect on the smoking of middle-aged and elderly people. (as shown in Table 18)

Men, not married, self-rated health is poor are risk factors for smoking among middle-aged and elderly people. Middle-aged and elderly people with chronic diseases and pensions are the protective factors of smoking. (as shown in Table 18)

Table 18The effect of social participation on smoking among middle-aged and elderly people is based on Logistic regression analysis(2-level)

	Coef.	OR	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Social participation	Other-omitted						
Interacted with friends	-.0350463	.9655607	.077224	-0.45	0.650	-.1864026	.1163099
Went to a sport, social, or other kind of club.	-.2304381	.7941856	.1009727	-2.28	0.022	-.4283408	-.0325353
Took part in a community-relat	-.0076512	.992378	.1718246	-0.04	0.964	-.3444212	.3291189

ed organization.							
Attended an educational or training course.	-.1819742	.8336229	.2845726	-0.64	0.523	-.7397261	.3757778
Stocks investment.	-.3550716	.7011232	.2550178	-1.39	0.164	-.8548974	.1447541
None of these.	-.0411481	.959687	.0898328	-0.46	0.647	-.2172171	.1349209
Played Mahjong, played chess, played cards, or went to community club.	.2943966	1.342316	.0751348	3.92	<0.001	.1471351	.4416581
Provide help to family, friends or neighbors who do not live with you.	.0748994	1.077776	.080662	0.93	0.353	-.0831952	.2329941
Done voluntary or charity work.	.036974	1.037666	.2020204	0.18	0.855	-.3589788	.4329268
Care for a sick or disabled adult who does not live with you.	.094925	1.099576	.1490466	0.64	0.524	-.197201	.387051
Used the Internet.	.2736883	1.314805	.1211279	2.26	0.024	.036282	.5110947
Men	3.123352	22.72242	.0587082	53.20	<0.001	3.008286	3.238418
Age (45-60)	.0937875	1.098326	.1869673	0.50	0.616	-.2726616	.4602366
Age (60-105)	.033204	1.033761	.1855034	0.18	0.858	-.330376	.396784
Age	Age<45-omitted						
Unmarried	.3155644	1.371033	.0706846	4.46	<0.001	.1770251	.4541037
Self-assessed health(poor)	.3358264	1.399096	.0612996	5.48	<0.001	.2156813	.4559714
Pension	-.3354269	.7150328	.0816297	-4.11	<0.001	-.4954181	-.1754356
Health insurance	-.1405523	.8688782	.0944327	-1.49	0.137	-.325637	.0445323

Children	-.1076439	.8979473	.1929189	-0.56	0.577	-.4857581	.2704702
Chronic	-1.041358	.352975	.0593438	-17.55	<0.001	-1.157 67	-.9250463
Family income	.0069533	1.006978	.0069691	1.00	0.318	-.0067059	.0206126
_cons	-.9138399	.4009815	.2813686	-3.25	0.001	-1.465312	-.362367

CHAPTER 8

CONCLUSION AND RECOMMENDATIONS

8.1 The influence of individual characteristics of middle-aged and elderly people on smoking

In this study, middle-aged and elderly men have a higher smoking rate than women. The government and tobacco control departments should pay close attention to this group's tobacco control work. Due to the influence of psychological and environmental factors, middle-aged and elderly people who are not married are more prone to smoking. The community and relevant departments should pay attention to the mental health of middle-aged and elderly people. Self-assessed middle-aged and elderly people with poor health are more likely to smoke, probably because such middle-aged and elderly people have weak health awareness. Ignore the consequences of smoking. The older people with pensions are less likely to smoke, which is inconsistent with the expected results. It may be that after retirement, the pressure of the elderly decreases, and the changes in the psychological factors of the elderly make the possibility of smoking reduced. Middle-aged and elderly people with health insurance are less likely to smoke, and it is possible that such middle-aged and elderly people have a higher health awareness. Middle-aged and elderly people with chronic diseases are less likely to smoke, probably because of family counseling and doctors' advice to reduce smoking. The higher the family income, the greater the likelihood of smoking. The possible reason is financial support. In addition to meeting basic living conditions, they can have more opportunities to enjoy other consumption.

8.2 Influence of social participation on smoking among middle-aged and elderly people

8.2.1 Interactions with friends and family

Interacting with friends is the most traditional social interaction mode of the elderly in China. People influence each other's behavior through interactions. Chinese-style interactions will visit each other's homes and pay attention to their etiquette. Smoking in the other party's family is an impolite behavior. Especially the other party's family is a smoke-free family. By interacting with each other, it affects your smoking behavior. Thereby reducing the possibility of smoking.

Provide help to family members, friends or neighbors who do not live with you, and take care of sick or disabled adults who do not live with you, which will also increase the possibility of middle-aged and elderly smoking. In China, smoking has become a means of communication. Smoking can shorten the psychological distance between people. Respecting each other's cigarettes can convey emotions and produce a psychological closeness. So, Provide help to family members, friends or neighbors who do not live with you and take care of sick or disabled adults who do not live with you will increases the possibility of smoking. And taking care of others will produce fatigue, smoking will make people feel less tired.

8.2.2 Participate in community activities

Played Mahjong, played chess, played cards, or went to community club will increase the likelihood that middle-aged and older people will smoke. played Mahjong will help promote good interpersonal communication and communication among the elderly (Tong, 2020), but at the same time playing Mahjong will increase the smoking rate of middle-aged and elderly people. In China, smoking is a culture. Many people start smoking purely because of social etiquette. When playing Mahjong, they first give someone a cigarette, and then light one for themselves. others give you smoke, no Accepted and appeared impolite. With the increase in this "reciprocity", slowly from smoking a cigarette for a long time to uncomfortable for half a day to uncomfortable, and finally joined the ranks of smokers. MLindström's research proves that participation in community club increases the likelihood of smoking.

Went to a sport, social, or other kind of club and took part in a community-related organization will reduce the probability of middle-aged and elderly smoking. Middle-aged and elderly people who like sports pay more attention to their physical health, the stronger their health awareness. This will reduce the frequency of smoking. This is consistent with the expert's conclusion (MLindström's,2003).

Done voluntary or charity work will reduce the possibility of smoking. Volunteerism refers to improving society and promoting social progress without asking for rewards. Participating in volunteer services and smoking at the same time, this is contrary to the work of volunteers. Volunteer activities are public welfare activities. The nature of the activities may be the reason for reducing smoking in the elderly. This is consistent with the findings of experts (E Hwa Yun,2010).

Attended an educational or training course and stocks investment reduces the possibility of smoking for middle-aged and elderly people, because most educational institutions and stock trading venues are closed environments and are non-smoking places, which may reduce the possibility of smoking.

8.2.3 Participate in network activities

Many people smoke often associated with a certain life, environment, and emotional state, so we should try to avoid the influence of these factors. Using the Internet has increased the possibility of smoking for people. The way to go online is at an Internet cafe or at home. In China, most people who access the Internet in Internet cafes smoke. The environmental impact may be the reason for increasing the likelihood of smoking people. Most middle-aged and elderly people go online to work. Many people, after suffering setbacks in work, study, and life, use smoking to ease their tension and eliminate their worries. Other activities in this questionnaire survey did not specify which social participation, so it will not be discussed in this study.

8.3 Recommendations

Some social participation is a protective factor for middle-aged and elderly smoking, for example, Interacted with friends, Went to a sport, social, or other kind of club. Took part in a community-related organization. Done voluntary or charity work. Attended an educational or training, Stocks investment. Some social participation is a risk factor for middle-aged and elderly smoking, for example, Played Mahjong, played chess, played cards, or went to community club. Provide help to family, friends or neighbors who do not live with you. Care for a sick or disabled adult who does not live with you. Used the Internet.

Therefore, the government cannot blindly encourage middle-aged and elderly people to increase social participation. It is necessary to distinguish which social participation is beneficial to the physical and mental health of middle-aged and elderly people. Which social participation plus is a risk factor for a healthy lifestyle for middle-aged and elderly people.

The community should promote a healthy lifestyle for middle-aged and elderly people. Post signs of smoking hazards in the community. The purpose of promoting a healthy lifestyle in the electronic bulletin board to impress the community residents. Increase investment in community cultural facilities to provide more healthy places for middle-aged and elderly people.

Health departments and government departments should actively cooperate in tobacco control. The government should realize the rational allocation of public resources, set up places beneficial to the physical and mental health of middle-aged people and elderly people, and provide relevant information to middle-aged people and elderly people who smoke—popularization of the hazards of smoking—thereby improving the performance of the tobacco control work of the health department.

The whole society should pay more attention to the elderly. Population aging is a primary concern that runs through the country in the 21st century. It is a long-term strategic task for the country to respond to the aging population actively. As an essential part of active aging, the entire society should emphasis on the social participation of the elderly, create a healthy atmosphere of participation for the elderly, promote the social participation of the elderly, and ensure that the elderly share the benefits of reform and development.

8.4 Limitation

This study used a secondary dataset drawn from the China Health and Retirement Longitudinal Study (CHARLS,2015), Not specifically formulated for the study of social participation, so the measurement of social participation variables has certain limitations.

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