Influencing Factors of Willingness to Purchase Long-Term Care Insurance for Employees in Shenzhen, China

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Abstract: Purpose: In the early stage of Shenzhen's long-term care insurance pilot, the awareness, demand, and purchase intention of Shenzhen residents about long-term care insurance and their influencing factors were investigated to provide a basis for improving the government's long-term care insurance system. **Methods:** A structured questionnaire survey was carried out on the Shenzhen employee medical insurance participants. Descriptive statistics, Chi-square test, and Order logistic regression were performed. **Results:** 298 respondents (female 57.7%), filled out the questionnaires. About 73% of the respondents have never heard of long-term care insurance. Respondents' average demand of long-term care was 3.06, which was the general level. The 161(54%) respondents' willing to purchase long-term care insurance and the main influencing factors of purchase willingness are self-assessment of long-term care possibility, monthly income, annual family income and their willingness to pay for long-term care services. **Conclusions:** Respondents lack risk awareness and have low awareness of long-term care insurance; their effective demand for long-term care insurance is insufficient, but the demand for long-term care services is specialized and diversified, and their intention to purchase long-term care services is slightly higher than purchase intention of long-term care insurance. **Recommendations:** Departments at all levels should work together to strengthen the publicity of long-term care insurance to raise awareness among the population, improve the quality of practitioners, and improve the elderly care service system to meet the needs of the specialized and diverse population, and broaden financing channels to deal with the risk that the population is not willing to buy.

Keywords: Long-term care insurance; Purchase intention; Demand; Cognitive level; order logistic regression; Affecting factors; Shenzhen;

Introduction

Long-term care services play a crucial role in the wellbeing of a rush of older adults who need help with everyday care and nursing because of old age, illness or disability[1]. Data from the seventh census of my country released by the National Bureau of Statistics in 2021 shows that: By 2020, China's population aged 60 and above has grown to 18.7% of the total population, and it is expected that the population aged 60 and above will rise to 500 million in the next few decades, accounting for about 30% of the total population[2]. The elderly suffer from chronic diseases such as cardiovascular and cerebrovascular diseases, and disability and dementia are also common, so there is a huge demand for long-term care[3]. The existing literature shows that to solve the disability risk faced by the elderly due to chronic diseases and other reasons and the nursing needs of long-term care after disability, the establishment of a long-term care insurance system is considered to be the most ideal and effective solution[4].

Background

In recent years, many regions in China have launched pilot long-term care insurance policies. As a reform pioneer in the field of elderly care services, Guangdong Province has successively issued relevant documents in recent years to promote the construction and development of the elderly care service industry in various parts of Guangdong Province[5]. Shenzhen vigorously develops and builds elderly care service institutions that combine medical care and improves the construction of an elderly care service system coordinated by home, community, and institution. In November 2020, the Shenzhen Municipal Medical Security Bureau announced that long-term care insurance in Shenzhen will be collected from October 1, 2021; By January 14, 2021, the Shenzhen Municipal Bureau of Justice proclaimed the "Shenzhen Long-term Care Insurance Measures

(Draft for Comment)", and specific regulations for the implementation of Shenzhen's long-term care insurance pilot program can provide a basis for related practical work. However, relevant surveys estimate that Shenzhen will only need more than ten years from entering an aging society to entering a deep aging society, so it is the best time to start planning to cope with the sharply increasing demand for elderly care in the future. At the same time, as young people in Shenzhen are the main force in the personal payment part of long-term care insurance, it is of great practical significance to understand their views and willingness to purchase long-term care insurance. This survey is based on the above background. Before the official revision of the "Shenzhen Social Medical Insurance Measures" is released, the survey was conducted to understand Shenzhen residents' awareness, demand for long-term care insurance, and the influencing factors of their willingness to purchase. Therefore, lay the foundation for the formal promotion of long-term care insurance in China.

Literature review
The research on long-term care insurance related to this study mainly includes the following three aspects.
Firstly, the Long-term care insurance system model and service model. In terms of the system model, Jing Tao believes that commercial long-term care insurance cannot adapt to the current purchasing power of the Chinese people, so it is very necessary to establish a social long-term care insurance system[6]. Wager considered that the development of long-term care insurance relies on the socio-economic system of the United States, so to adapt to the national conditions of the United States, its attributes should be commercial insurance rather than social insurance[7]. In the way of service mode, Liu Lulu's research founds that the elderly in rural areas is more willing to choose home-based care for the elderly because of their lack of awareness of modern socialized care services[8]. Tang Qiqun and others noticed that the elderly with lower education levels is less accepting of new concepts and ideas, so they are more willing to choose home care[9]. Shi Zhe and Guo Lifang investigated that the main reasons why the elderly living alone prefer to choose socialized elderly care services are the lack of professional life care and the spiritual comfort of their children and relatives[10][11]. According to Liu Jiaxin's research, the elderly who live with their spouses and children will also choose the socialized pension model because they are relatively young and have greater social pressure[12].
Secondly, the relationship between perceptions of long-term care insurance and purchase intention. Luo Jinfeng surveyed 300 citizens in Jingmen City through random sampling and found that the population's perception of long-term care services and the long-term care insurance system will affect the demand for long-term care services[13]. Zhang Ruili investigated the awareness of long-term care insurance among the elderly residents in Nanjing utilizing empirical research and found that the elderly residents in Nanjing have a low level of awareness of long-term care insurance, and their willingness to participate in insurance is not high[14]. Zhang Rui investigated Shenyang residents' perception of the effect and content of insurance and found that the perception of insurance effect will affect the level of residents' payment, while the level of content perception has no significant effect on the willingness to pay. Through comparative experiments[15]. Zhao Na found that the awareness of the occurrence probability and cost of long-term care and the substitution of informal care had a significant impact on the willingness to purchase long-term care insurance[16].
Thirdly, factors influence population demand and willingness to purchase long-term care insurance. Cao Xinbang found through the survey that age has a significant impact on the willingness to participate in insurance; people with poor health status have a lower willingness to participate in insurance, but the higher the annual family income, the higher the proportion of insurance participation[17]. Kane pointed out that the population with strong long-term care needs is usually the elderly with serious illness or loss of self-care ability[18]. Martin Boyer believes that the population's demand for long-term care insurance will be affected by individuals' perceptions and adverse effects of the insurance product[19]. Brown & Finkelstein proposed that informal care provided by family members has a substitution effect on formal long-term care, and the underestimation of the time and economic cost of informal care services by family members may affect the population's demand for long-term care insurance[20]. Chen Kai and Zhao Na found that risk perception, emotional response, informal nursing experience, health status, and interpersonal network all have a significant impact on long-term care insurance purchase intention[21].

Methodology
Study design
Firstly, this paper learns to understand the focus of the investigation needed for this study by reading a lot of literature on the development history and operation status of long-term care insurance in China and collecting questionnaire information and literature on the same research content in similar pilot cities. It also reviewed news and literature related to the pilot long-term care insurance system in Shenzhen to establish a realistic basis for the questionnaire survey in this paper.
Secondly, by collecting information on policies related to long-term care insurance in Shenzhen and referring to research findings in the literature on the same topic, a questionnaire was developed to collect survey data. To understand the respondents' level of awareness of the long-term care insurance policy, the form of demand for long-term care services and the respondents' willingness to purchase long-term care insurance and the factors influencing it. Convenience sampling was used to conduct the survey by randomly distributing questionnaires among the participants of Shenzhen employees' medical

insurance.

Respondent and setting

Between January 2022 and February 2022, a multi-stage sampling method was used to distribute questionnaires throughout Shenzhen to select citizens (including Shenzhen households and non-Shenzhen households) who were enrolled in the Shenzhen Employees' Health Insurance Scheme. A total of 307 questionnaires were distributed and 298 valid questionnaires were returned, with a return rate of 97.06%.

Criteria for selection of survey respondents: aged 20 or above as of January 1, 2022; having purchased Shenzhen employees' medical insurance; having lived or worked in Shenzhen for at least one year; having the ability to understand the questionnaire questions and voluntarily cooperating with the survey. Criteria for screening invalid questionnaires: questionnaires not meeting the selection criteria for respondents; questionnaires not filled out truthfully or incompletely; response time too short.

General socio-demographic questionnaire

Information about gender, age, education level, family size, self-assessed health status and income is included in this section.

Long-term care insurance awareness questionnaire

The questions in this section of the questionnaire are used to assess people's awareness and consist of three main questions: whether they have heard of long-term care insurance, their knowledge of the long-term care insurance contribution policy and their knowledge of the long-term care insurance benefit policy. The questions on knowledge of contribution and benefit policies are scored on a 5-point Likert scale, with higher scores indicating a higher level of knowledge.

Long-term care insurance needs study questionnaire

This section of the questionnaire is used to assess the level of demand for long-term care insurance. Demand for long-term care insurance includes potential demand, direct demand and willingness to buy, as well as the need to know the form of long-term care insurance treatment. The demand for the form of treatment is measured in the form of multiple choice questions. The subsequent data processing section therefore requires a cross-tabulation analysis of the population's preference for the form of treatment given the different demographic factors, and then an analysis of the demographic variables that have a significant effect on the preference for the form of treatment.

Long-term care insurance purchase intention study questionnaire

This part of the questionnaire is used to assess the population's willingness to purchase long-term care insurance and long-term care services. The study of purchase intention includes three questions: willingness to pay for long-term care expenses, willingness to pay for long-term care insurance, and reasons for willingness to purchase long-term care insurance. Among them, the population's annual payment intention for long-term care insurance represents the population's long-term care insurance purchase intention, so the follow-up data analysis part needs to find out the factors that significantly affect the population's willingness to purchase long-term care insurance through ordered regression analysis.

data analysis

The questionnaire was designed using the Questionnaire Star platform and the data was imported into an Excel 2007 file in ordinal form, then SPSS 26.0 statistical software was used to analyse the data. Basic frequency statistics were used to describe the basic level of awareness, level of need and willingness to pay for long-term care insurance; group comparisons of long-term care need forms were made using multiple response cross-tabulation and chi-square tests to compare differences between factors; logistic ordered regression was used to analyse the factors influencing the willingness to pay for long-term care insurance among the population in Shenzhen. $p < 0.05$ indicates statistical significance.

Results

Basic information of respondents

Among the 298 respondents, there are more female (57.7%); young people aged 20 to 35 account for 66.1% of the respondents; the number of people with a bachelor's degree or above is about 60%. ; Family size is dominated by small families with 2 to 4 people (56.4%); the vast majority of respondents believe that they are in a state of "general health" (42.3%), and the overall health of the population is good. The monthly income and annual family income are normally distributed, and the overall income level is relatively high; in addition to social security, about half (54%) of the people who have purchased commercial medical insurance, and the risk awareness of the surveyed population is not high. The detailed data are shown in Table 1.

Demographic characteristics	Variable meaning and assignment	num	Proportion (%)
Gender	Male=1	126	42.3
	Female=2	172	57.7
Age	20~35 years old =1	197	66.1
	36~50 years old=2	74	24.8
	51~65 years old =3	27	9.1
Education level	Junior high school and below =1	11	3.7
	High School/Secondary School =2	44	14.8

	College degree =3	61	20.5
	Bachelor's degree =4	157	52.7
	Master's degree and above =5	25	8.4
	Living alone =1	40	13.4
Family size	2~4 people =2	168	56.4
	5 people and above =3	90	30.2
	Very unhealthy =1	1	0.3
Self-assessment of health status	Not very healthy =2	6	2.0
	General health =3	85	28.5
	Relatively healthy =4	126	42.3
	Very healthy =5	80	26.8
	Below 3000 yuan =1	26	8.7
	3001~5000 yuan =2	40	13.4
Monthly income (yuan)	5001~7000 yuan=3	69	23.2
	7001~9000 yuan=4	50	16.8
	9001~11000 yuan=5	46	15.4
	11,000 yuan and above =6	67	22.5
	120,000 yuan and below =1	70	23.5
	120001~240000 yuan=2	101	33.9
Annual income (yuan)	240001~360000 yuan=3	47	15.8
	360001~480000 yuan=4	33	11.1
	480001~600000 yuan=5	15	5.0
	600,000 yuan and above =6	32	10.7
Purchase of commercial insurance	Purchased =1	161	54
	Not purchased =2	137	46

Table 1: Key variable assignments and descriptive statistics

Research on awareness of long-term care insurance
Basic situation of long-term care insurance cognition
The research on the perception of long-term care insurance in this survey includes three aspects: whether you have heard of long-term care insurance, self-assessment of your understanding of the payment rate, and the treatment level of Shenzhen long-term care insurance.

The survey results show that the surveyed population's awareness of long-term care insurance is at a low level. There were 81 respondents (27.2%) who said they had "heard of long-term care insurance", and most of the respondents were "not heard of long-term care insurance" (217 respondents, 72.8%). In the survey of self-assessment of policy understanding (divided into 5 grades from "very unknown" to "very familiar"), the average level of understanding of the long-term care insurance premium rate of the respondents was 1.99 (±1.041), The average score of self-assessment on the understanding of long-term care insurance benefits was 1.99 (±1.038), and the cognition of long-term care insurance rates and treatment policies was at the level of "not very familiar".

Univariate analysis of long-term care insurance cognition
The dependent variable "Long-term care insurance policy cognition" was by combining the two variables, "Shenzhen Long-term Nursing Insurance Payment Rate Understanding Degree" and "Shenzhen Long-term Nursing Insurance Benefit Level Self-Assessment" to calculate the mean value. One-way ANOVA was used to study the relationship between age, education level and economic factors, monthly income, and the health status of the respondents and the dependent variable in the selection of demographic factors as independent variables. The results showed that the understanding of long-term care policies was significantly different (P<0.05) only in the two variable groups of "health status" (P=0.012) and "long-term care possibility self-assessment" (P=0.011).In addition, people who think they are in good health and are unlikely to need long-term care have a higher mean score for their understanding of long-term care insurance policies, which means, they have a higher awareness of long-term care insurance-related policies. For example, respondents who thought they were "very healthy" scored 2.33 ± 1.25 in policy perception, and respondents who thought they were "more likely" to need long-term care scored 2.05 ± 0.93. General understanding" between levels. The detailed analysis data are shown in Table 2.

Independent variable	long-term care policy perception (mean ± SD)	F	P Value

Age	20~35 years old（n=197）	1.91±0.90	1.642	0.195
	36~50 years old（n=74）	2.12±1.17		
	51~65 years old（n=27）	2.16±1.22		
Education level	Junior high school and below（n=11）	2.05±0.91	2.202	0.069*
	High School/Secondary School（n=44）	2.34±1.19		
	College degree（n=61）	1.80±0.90		
	Bachelor's degree（n=157）	1.99±1.00		
	Master's degree and above（n=25）	1.78±1.01		
Monthly income (yuan)	Below 3000 yuan（n=26）	2.54±1.29	1.949	0.086*
	3001~5000 yuan（n=40）	2.06±1.03		
	5001~7000 yuan（n=69）	1.87±0.89		
	7001~9000 yuan（n=50）	1.90±0.84		
	9001~11000 yuan（n=46）	1.90±0.90		
	11,000 yuan and above（n=67）	1.97±1.14		
Self-assessment of health status	Very unhealthy（n=1）	2.00	3.278	0.012**
	Not very healthy（n=6）	1.83±0.68		
	General health（n=85）	1.86±0.92		
	Relatively healthy（n=126）	1.85±0.87		
	Very healthy（n=80）	2.33±1.25		
Self-Assessment of Long-Term Care Possibilities	Almost impossible（n=34）	2.50±1.38	3.304	0.011**
	Unlikely（n=50）	1.74±0.86		
	Generally possible（n=105）	1.91±0.90		
	Relatively likely（n=81）	2.05±0.93		
	Very likely（n=28）	1.89±1.19		

Table 2: Univariate analysis results of long-term care insurance policy perceptions
Note: ***, **, * represent the significant levels of 1%, 5%, and 10%, respectively

Research on the demand for long-term care insurance

Long-term care insurance aims to compensate potential patients with long-term care needs for the costs incurred during long-term care and to provide corresponding services. Long-term care insurance benefits generally have two parts: cash payment and nursing service. To study the demand preferences of the population for the form of long-term care services, and to compare the population's willingness to care for the elderly under different basic conditions, it is helpful to find out the shortcomings of Shenzhen's long-term care service system and provide a reference for improving the long-term care insurance treatment system.

Basic situation of long-term care insurance needs

In the part of the basic needs research of long-term care insurance, the questionnaire investigates four questions: potential needs, direct needs, purchase intention, and treatment form. The U.S. Department of Health and Human Services believes that long-term care insurance is compensation for care costs that cannot be covered by social medical insurance and social medical assistance[22]. Therefore, the "self-assessment of the security level of old-age medical insurance" is divided into 1 to 5 points from "completely unsatisfied" to "very satisfied" to investigate the potential needs of the population for long-term care insurance. The survey results show that the potential demand under investigation has a score of 2.77 (±0.89), which is generally satisfactory. Respondents' potential need for long-term care is not high. The average score of the "self-assessment of the degree of demand for long-term care insurance" for direct demand was 3.06 (±1.128), and the respondents' direct demand for long-term care insurance was relatively high. In the purchase intention survey, 106 (37.5%) respondents were willing to buy, 137 (48.4%) respondents were unsure whether to buy, and only 40 (14.1%) respondents were unwilling to buy, the respondents who are willing to buy and those who may be willing to buy account for the majority. Regarding the choice of

long-term care insurance benefits, 37 (13.1%) respondents chose cash payment, 46 (16.3%) respondents chose family care at home, 18 (18.0%) respondents chose institutional care, and 131 respondents (46.3%) chose cash payment plus nursing service. The respondents have diversified needs for the treatment of long-term care insurance. It can be seen that a single economic compensation or service supply cannot meet the needs of most respondents. Therefore, improving the long-term care insurance system requires a sound and diverse compensation mechanism.

Comparison of basic conditions of long-term care demand

For a long time, families have shouldered the burden of providing elderly care and nursing services. However, due to the deepening of aging and changes in family structure, the growing health needs with the growth of the elderly population can no longer be met by the family pension model[12]. Therefore, it is necessary to further explore the differences in the choice of long-term care forms in different basic situations.

Through cross-tabulation analysis of multiple response variables, the specific selection of long-term care forms under different demographic variables is counted, and then the results of the chi-square test are used to judge whether the difference between the specific factors of the respondents choosing different forms of long-term care is meaningful. , P<0.05 indicates statistical significance. The results of the cross-tab analysis showed that the most frequently chosen forms were home care by sons and daughters (48.4%) and being cared for by a professional medical and nursing institution (38.9%). Through the chi-square test results, we can find that the differences in gender (P<0.001) and educational level (P=0.021) significantly affect the respondents' choice of long-term care form (P<0.05). The specific performance is that women are more accepting of community and institutional pension forms than men, and people with higher educational levels are more willing to accept professional medical and nursing care institutions. Other analytical data are shown in Table 3.

Independent variable		1	2	3	4	5	6	7	8	X²	P Value
Gender	Male	69	22	42	41	30	9	39	8	27.892	0.000***
	Female	72	15	63	61	58	40	74	4		
Age (years old)	20~35	99	32	75	66	57	34	85	7	16.843	0.265
	36~50	33	4	26	21	22	15	22	3		
	51~65	9	1	4	5	9	0	6	2		
Education level	Junior high school and below	7	2	4	2	1	1	2	3	45.242	0.021**
	High School/Secondary School	20	1	11	10	11	8	9	4		
	College degree	27	4	21	19	18	11	22	1		
	Bachelor degree	79	28	59	50	49	23	64	3		
	Master's degree and above	8	2	10	11	9	6	16	1		
Family size	Living alone =1	17	8	18	13	12	10	21	0	11.214	0.669
	2~4 people =2	75	22	59	54	50	29	61	8		
	5 people and above =3	49	7	28	25	26	10	31	4		
Monthly income (yuan)	≤3000	13	5	8	7	6	4	7	2	32.389	0.595
	(3000,5000]	24	5	9	14	11	10	7	3		
	(5000,7000]	32	12	32	27	21	10	30	3		
	(7000,9000]	26	4	21	14	17	11	17	2		
	(9000,11000]	23	7	12	13	14	8	26	0		
	≥11000	23	4	23	17	19	6	26	2		
Annual income (yuan)	≤120000	37	11	21	20	21	11	18	8	49.103	0.057*
	(120000,240000]	47	11	37	38	28	23	36	2		
	(240000,360000]	20	6	17	18	16	4	22	1		
	(360000,480000]	17	3	14	6	8	4	13	0		
	(480000,600000]	11	6	5	2	4	2	7	0		
	≥600000	9	0	11	8	11	5	17	1		

Table 3: Chi-square test results in the form of long-term care needs

Note: ***, **, * represent the significant levels of 1%, 5%, and 10%, respectively

1: home cared by sons and daughters; 2: relatives take care of elderly at home; 3: nurses take care of elderly at home; 4: provide door-to-door elderly care services by the community; 5: provide centralized elderly care services by the community; 6: ask nurses to take care of elderly in elderly care institutions; 7: Care by professional medical and nursing institutions; 8: Other sources

Research on purchase intention of long-term care insurance

The willingness to pay for long-term care insurance is influenced by many factors. Long-term care insurance in the form of social insurance was sold in the market in the form of commercial insurance by insurance companies before being piloted on a large scale across the country, but this type of insurance has not been widely accepted by the population. Now long-term care insurance will be the sixth insurance type of social insurance and its payment is mandatory. How to customize a reasonable payment system according to the payment ability and cost expectations of the population is one of the conditions for long-term care insurance to be better accepted by the population.

Overview of Purchase Intention

In this survey, the research on willingness to pay is carried out on three questions: willingness to pay for long-term care costs, willingness to pay for long-term care insurance, and reasons for being willing to buy long-term care insurance.

According to the statistical results in Table 4, it can be seen that the respondents' willingness to pay monthly nursing expenses is moderately high. In 2019, the Luohu District of Shenzhen issued the reference standard for the care and support funds for extremely poor people. And the standard stipulates that the nursing standard for semi-disabled and extremely poor people is 1,100 yuan per person per month, and the nursing standard for fully disabled and extremely poor people is 1,650 yuan per person per month. Referring to this standard, most of the respondents are willing to pay a slightly higher than the government-funded standard monthly nursing fee. However, the respondents' willingness to pay for long-term care insurance is moderately low. The specific performance is that the long-term care insurance fee that most people choose to pay per year is "51~100 yuan", compared with the "Shenzhen Long-term Care Insurance Measures (Draft for Comment)" which stipulates that the annual payment fee is about 128 yuan/person/year, the long-term care insurance fees that the respondents are willing to pay is relatively low. The most common reasons respondents are willing to buy long-term care insurance are "unwilling to increase the pension burden for their children", "guaranteeing that the original living standard will not be lowered" and "worrying that they will not be cared for when they are old".

Variables		num	Proportion (%)
Willing and able monthly care costs	1000 yuan and below	41	14.5%
	1001~2000 yuan	62	21.9%
	2001~3000 yuan	79	27.9%
	3001~4000 yuan	54	19.1%
	4001~5000 yuan	24	8.5%
	More than 5000 yuan	23	8.1%
Desired long-term care insurance annual contribution	1~50 yuan/year	47	16.6%
	51~100 yuan/year	74	26.1%
	101~150 yuan/year	66	23.3%
	151~200 yuan/year	46	16.3%
	RMB 201 and above/year	50	17.7%
Reasons to buy long-term care insurance	unwilling to burden children	188	66.4%
	Worry about being unattended	120	42.4%
	Worry about being unable to pay for care	111	39.2%
	Guarantee that the original standard of living will not be reduced	129	45.6%
	Hope to enjoy professional nursing services at a low price	93	32.9%
	Other reasons	23	8.1%

Table 4: Descriptive statistics of willingness to pay

Chi-square test of influencing factors of purchase intention

The chi-square test was used to investigate the differences in the population's willingness to pay annual long-term care insurance under different conditions. The data analysis results showed that, health status (P=0.010), self-assessment of long-term care possibility (P=0.006), monthly income (P<0.000), annual household income (P<0.000), self-assessment of ability to pay (P=0.001), and The willingness to pay for long-term care costs (P<0.000) has a statistically significant difference in the respondents' willingness to pay for long-term care insurance. Table 5 shows more details.

Variables	X^2	P Value	Variables	X^2	P Value
Gender	5.436	0.245	Age	13.104	0.108

Education level	17.623	0.346	Family size	7.837	0.450	
Self-assessment of health status	31.913	0.010**	Self-Assessment of Nursing Possibilities	33.464	0.006**	
Monthly income	57.959	0.000***	Annual household income	56.485	0.000***	
Self-assessment of ability to pay	38.799	0.001***	Willingness to pay for care	83.496	0.000***	

Table 5: Chi-square test results of influencing factors of willingness to pay
Note: ***, **, * represent the significant levels of 1%, 5%, and 10%, respectively

Order logistic regression analysis of purchase intention

Using the five increasing intervals of the annual payment amount of long-term care insurance as the dependent variable, an ordered logistic regression analysis was performed with the independent variables with statistical significance in the chi-square test. The parallel line test result of the model is $\chi^2=28.471$, P=0.055> 0.05, which meets the conditions of ordered regression analysis and can be further analyzed; at the same time, the -2 log-likelihood P=0.000<0.05, McFadden pseudo R2=0.79, It shows that the model can explain 79% of the changes in willingness to pay.

Among the six independent variables, the factors that significantly affect the respondents' willingness to pay for long-term care insurance are the respondents' monthly income (P=0.013), family annual income (P=0.003), self-assessment of long-term care possibility (P=0.003) and willingness to pay for nursing expenses (P=0.000), they were both positively correlated. Among them, "monthly care fee payment willingness" has the most significant impact on long-term care insurance payment willingness (P=0.000), the specific performance is that the willingness to pay for long-term care insurance increases by 1.424 times (OR value = 1.424) for each additional 1,000 yuan in the willingness to pay for nursing care. More details are shown in Table 6

Variables	B	Std.Error	Wald Chi-Square	P Value	Exp(B)	95%Wald Confidence Interval Lower	Upper
Self-assessment of health status	0.049	0.136	0.132	0.717	1.051	-0.192	3.234
Self-Assessment of Nursing Possibilities	0.322	0.107	8.998	0.003**	1.380	1.407	4.870
Monthly income	0.194	0.078	6.125	0.013**	1.214	2.510	6.031
Annual household income	0.233	0.077	9.115	0.003**	1.262	3.523	7.115
Self-assessment of ability to pay	-0.061	0.123	0.249	0.618	0.941	-0.217	0.316
Willingness to pay for care	0.353	0.085	17.085	0.000***	1.424	0.112	0.532

Table 6: Order logistic regression results of willingness to pay

Discussion

Analysis of long-term care insurance cognition analysis

The respondents' awareness of long-term care insurance was low. Analysis of the survey data found that the number of people who "have heard of long-term care insurance" is relatively small, and the average score of the self-assessment of their understanding of the relevant policies is also at the level of less understanding. The results of the univariate analysis of the respondents' cognitive level showed that the cognitive level of the population with good health status and low probability of needing long-term care in the future was relatively high. The reason may be that healthy and optimistic young people account for a relatively high proportion of the respondents to this questionnaire, and young people have relatively high channels for obtaining information and accepting new things.

There are two possible reasons for the low level of respondents' awareness of long-term care insurance. First, the pilot program of long-term care insurance in Shenzhen is relatively short. Official reports on the pilot program of long-term care insurance in Shenzhen have only appeared since the end of 2020. The time of this questionnaire is from January 2022. The work of understanding and popularizing relevant information has not been carried out on a large scale, so they know very little about Shenzhen's long-term care insurance. The second is because it is stipulated in the "Trial Measures" that at present, part of the monthly transfer of the supplementary medical insurance funds from various places is used as the part paid by the unit,

and the personal payment of the long-term care insurance of the first-level medical insurance participant is transferred from the personal account and the second and third-grade insureds need to pay the fee personally. This payment method means that most respondents do not need to pay an additional long-term care insurance fee at present, so most people in Shenzhen may not know that long-term care insurance has been piloted and collected.

Long-term care insurance demand and long-term care service supply from preference

Long-term care insurance is not in high demand. Respondents' direct demand for long-term care insurance is at the level of "general demand", but the potential demand is relatively large. The average score of the self-assessment of the demand degree is "general needs", and the number of people willing to buy long-term care insurance is relatively large; realizing that the current level of pension, medical and social security "cannot meet" their needs, and expressing uncertainty about whether to purchase long-term care insurance is a reflection of indirect needs. In addition, combined with the survey results on long-term care insurance awareness, the respondents have low-risk awareness and insufficient understanding of long-term care insurance. If the risk prevention awareness of the population and the understanding of long-term care insurance can be improved, the potential needs of these populations have great potential to be converted into direct needs.

Long-term care needs come in a variety of forms. Under the influence of traditional concepts, home care is still the first choice of the respondents, followed by professional medical and nursing institutions. The results of the chi-square test indicated that the factors that significantly influenced the respondents to choose different forms of nursing were gender and educational level. Women and people with higher educational levels were more willing to receive nursing care services in medical and nursing institutions. With economic development and changes in the concept of old-age care, the choices of old-age care methods for the Shenzhen population have become diversified and accompanied by professionalization. Although the status of home care is unshakable, the time and economic costs required for home care increase the burden on family members. Therefore, the main body of home care services may be transferred from family members to professional caregivers. In addition, the respondents have various needs for long-term care services, requiring Shenzhen to establish a sound home-community institution as soon as possible to coordinate the supply of three-party service models.

Long-term care insurance purchase intention and influencing factors

The willingness to buy long-term care insurance is not high. The research on the willingness to purchase consists of two parts of the survey the willingness to pay for nursing care and long-term care insurance. Through the survey data and the comparison of city policy standards, we found that the respondents' willingness to pay for nursing expenses is higher than that for long-term care insurance. Zhao Na and other scholars have found through empirical research that the willingness to purchase long-term care insurance is affected by the population's awareness of the probability of long-term care and the cost of care[16]. Therefore, in this survey, the reason for the respondents' low willingness to pay for long-term care insurance may also be that they have insufficient awareness of long-term care risks and insufficient understanding of long-term care insurance.

Economic factors are an important factor driving people's willingness to purchase long-term care insurance. When the elderly or disabled people need long-term care, if only the family assumes the role of service provider, it will cause family members to pay a huge time cost to take care of them, and the economic cost of long-term care may destroy the original life of an ordinary family. Therefore, people who are willing to buy long-term care insurance are essentially hoping to avoid the huge economic and time cost of long-term care risks through long-term care insurance. The results of the chi-square test and logistic regression analysis of the influencing factors of willingness to pay also proved that the personal economic factors (monthly income and annual family income) of the respondents had a significant impact on the willingness to pay. Monthly income reflects an individual's economic strength, and the purchasing intentions of some people living alone and single will be affected by monthly income. At the same time, under the influence of the family concept in our country, many people also consider whether to buy long-term care insurance and the premium level from the perspective of the family, so the annual family income is also a big influencing factor[17].

In addition, people who think they are more likely to need long-term care in the future and are more willing to pay for long-term care are more likely to purchase long-term care insurance. Because people who think they have a great possibility of needing long-term care in the future need to purchase insurance in advance to help them transfer their risks.

Suggestions

It is necessary to strengthen the promotion and popularization of long-term care insurance with a focus on young people. Studies have shown that the population's understanding of the long-term care insurance system and the awareness of the probability of long-term care and the cost of long-term care have a significant impact on the willingness to purchase long-term care insurance[16]. In the above analysis, we found that when people's awareness of long-term care insurance is at a low level, their demand for long-term care insurance and willingness to pay will also decrease. The premise of stimulating the population's demand for long-term care insurance and increasing the willingness to pay is to increase the awareness of long-term care insurance among the population. The survey also found that young people are more receptive to new things, and the publicity work for young people can be better carried out, and the effect will be relatively significant.

Cultivate professional nursing talents and improve the tripartite collaborative pension system. Through the survey, it is found

that the population has a professional preference for long-term care services, but at present, there is a large shortage of staff in China's nursing industry, the professional quality is uneven, and there is a lack of relevant industry norms. Therefore, it is very important to enrich the choice of nursing projects and improve the professional standards of nursing staff. In addition, it can also enrich the types of services according to the nursing needs of different elderly people, and provide differentiated and precise services for the elderly. In this questionnaire survey, many respondents are willing to choose the three types of pension service supply models, and respondents under the influence of different conditions have different pension needs. Meeting the diverse elderly care needs of the population is the premise of liberating family productivity and reducing the cost of socialized elderly care. At the same time, a sound and high-quality socialized pension service system is a necessary condition for improving the long-term care insurance benefit payment system.

Broadening the financing channels of long-term care insurance can effectively deal with the risk of people's low purchase willingness. Although Shenzhen's population is currently aging at a low level and expenses are relatively small, in the future, with the acceleration of the aging process of the population, the expenses of long-term care insurance will rise sharply. The current single financing mechanism will increase the burden on Shenzhen's medical insurance fund and affect the smooth operation of medical insurance and long-term care insurance. Therefore, Shenzhen's long-term care insurance should speed up the increase in financing methods, decouple it from the medical insurance fund as soon as possible, and become an independent type of insurance.

Limitations and Future Research

The survey has some limitations. First, the age composition of the respondents is unevenly distributed. The age of the respondents is concentrated in 20 to 35 years old, and there is a lack of sample data for the elderly aged 50 years and above, which limits the generalization of the study results on the attitudes of middle-aged and elderly people towards long-term care insurance, so this study lacks a certain universality. Future research can adopt relatively strict stratified sampling to ensure the collection of relevant data at different age levels. Secondly, the influence of subjective factors cannot be excluded. Young people have more channels to learn about new things and have a strong ability to accept them, but their awareness of old-age care is relatively weak, which may lead to the purchase intention of this study being lower than that of the actual group. Future research can add a scale test of pension awareness to discuss whether the subjective factors of pension awareness have a significant impact on purchase intention.

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