

Research on Diversified Development of New Pension Model from the Perspective of Resource Integration Based on Logistic Regression Model

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Abstract

With the gradual deepening of aging, Chinese society will enter the stage of moderate aging from mild aging in the future, and the demand for elderly care will also develop in the direction of high quality and diversification. Based on the investigation of 261 residents in Longyang District, Baoshan City, Yunnan Province, this paper makes an empirical analysis by using the disordered multi classification logistic regression model to explore the factors affecting the residents' choices of new pension model. The results show that residents' consumption ability has the most significant impact on their choice intention of pension mode, residents' loneliness frequency, local publicity and the number of children have a significant impact on their choices, and the local climate has a relatively significant impact on their choices. The promotion of the new pension model is affected by many factors. When introducing the new model and combining the traditional model for development, we need to take the local reality as the development basis and choose a new pension model suitable for its pension demand characteristics, so as to promote the high-quality development of pension services.

Keywords

New pension model; Questionnaire investigation; Logistic model.

1. Introduction

Since 1999, China has entered an aging society. The aging society is divided into three stages based on the proportion of the elderly aged 65 and above in the total population. Those who account for more than 7% but less than 14% are mild aging. More than 14% but less than 20% is moderate aging. More than 20% but less than 40% is severe aging. Data show that in 2020, China's population aged 65 and over reached 190.64 million, accounting for 13.5% of the national population. In 2021, China's population aged 65 and over exceeded 200 million, reaching 200.56 million, accounting for 14.2% of the national population, an increase of 0.2 percentage points over the previous year. With the gradual deepening of aging, experts predict that during the 14th Five Year Plan period, China's aging population will exceed 300 million, from mild aging to moderate aging. The continuous increase of the elderly population shows that China has a huge elderly group. At the same time, with the development of economy and the improvement of people's living standards, the demand of the elderly group for elderly care services also presents high-quality, multi-level and multifaceted characteristics. In addition to the most basic material needs such as clothing, food, housing and transportation, the elderly group is more eager to get spiritual enjoyment in the process of elderly care, to improve their sense of gain and happiness.

The proposal of the new pension model is a practical attempt to meet the diversified needs of the elderly groups for pension services and promote the high-quality development of pension services in combination with the current social situation and the new characteristics of pension

needs. The emergence of new models represented by community pension, mutual pension, pastoral pension, migratory bird-style sojourn pension and "combination of medical and nursing care" pension enriches the choice of pension models, and its future promotion direction depends on people's choices of pension will. Therefore, this paper will use the form of questionnaire survey to carry out research in Longyang District, Baoshan City, Yunnan Province, to understand the residents' willingness to provide for the elderly, and offer suggestions for the promotion of the new pension model.

2. Literature Review and Research Hypothesis

A large number of literatures have studied the factors affecting the choice of pension mode from different angles and reached conclusions. Li Hua and Xinhui Wang believe that the pension choice of urban elderly is affected by gender, educational background, number of children, intergenerational support of children, pension insurance and income status, and emphasize the importance of children's maintenance obligation in the pension process [1]. Lingjun Liu and Hanwei Li believe that the willingness of the elderly in rural communities to participate in socialized pension is affected by individuals, family conditions, social environment and pension institutions. It is necessary to strengthen the guidance for the transformation of the elderly pension concept, optimize social support, and strengthen the guidance and supervision role of the government in this process [2]. Xiaohui Xu and Jia chen Zhang believe that economic conditions, pension concept and educational level have a major impact on the elderly's choice of ecological health care and pension mode, and the promotion of ecological health care mode needs to adjust measures to local conditions, actively make use of local owned resources, and develop new pension modes combined with consumption, health preservation, leisure tourism and so on [3]. Shuangyan Zhou and Jie Deng believe that the satisfaction of the "combination of medical care and nursing" pension model is most significantly affected by the characteristics of pension institutions, and family characteristics, cognitive characteristics and social characteristics are also important. Among them, specific factors such as the main source of income of the elderly, the recreational and sports activities provided by pension institutions and the service attitude of staff have a positive impact on their evaluation [4]. Jianmei Chen and Mengdi Wu believe that the comprehensive pension service system of "basic pension +characteristic pension" is reasonable. It can better adapt to the changes of current pension needs, and the factors affecting the selection of institutional pension and "combination of medical and nursing care" pension mode are similar [5].

The promotion of the new pension model needs to consider many factors, and people, as the main body of pension, is the most active part in the whole pension choice process. Therefore, this paper will study the factors affecting residents' pension choice intention from the perspective of residents. Consumption ability refers to the degree and ability of people to enjoy various consumer materials and consumer services in order to meet their personal life needs. Choosing how to provide for the elderly is also a kind of consumption. The consumption ability is expressed by the funds that residents can freely use every month. Different pension models are suitable for different consumption abilities. At present, the practice and application of the new pension model are not high in areas with low economic development level, and some residents have a low understanding of the new pension model, which affects the formation of the new pension concept to a certain extent, so that residents tend to the traditional pension model. And then, it affects the choice between the traditional pension model and the new pension model. Therefore, according to the above contents, this paper is based on the following two assumptions:

H1: Residents' choice intention of new pension model is related to consumption ability.

H2: Residents' choice intention of new pension model is related to the publicity of local new pension model.

3. Model Setting

This paper takes the choice of intentional pension mode as the dependent variable and divides it into three categories, which are defined as $Y = 1$, $Y = 2$ and $Y = 3$ respectively. Because the first type of pension mode includes home-based pension and community pension, the second type of pension mode includes mutual assistance pension and pastoral pension, and the third type of pension mode includes migratory bird-style sojourn pension and "combination of medical and nursing care". These three categories are only used as selection and classification, so there is no order. This paper aims to study the influencing factors of the promotion of the new pension model. The influencing factors are diverse, and the dependent variables are disordered three categories, so it is suitable to use disordered multi category Logistic regression model. Therefore, this paper uses the disordered multi classification logistic regression model to analyze the influencing factors affecting the promotion of the new elderly care model, and takes the first type of model, namely "home-based elderly care + community care", as the reference group for regression analysis. The corresponding models are as follows:

$$\ln \left[\frac{P(Y=2)}{P(Y=1)} \right] = \alpha_1 + \beta_{11}x_1 + \cdots + \beta_{1k}x_k + \varepsilon \quad (1)$$

$$\ln \left[\frac{P(Y=3)}{P(Y=1)} \right] = \alpha_2 + \beta_{21}x_1 + \cdots + \beta_{2k}x_k + \varepsilon \quad (2)$$

Where, $P(Y=i)$ represents the probability of choosing the type i pension mode, α_n represents a constant term, ε represents random error, β_{nk} represents the regression coefficient of the k -th influencing factor, x_k represents the main factors affecting the choice of intentional pension mode, and $P(Y=1) + P(Y=2) + P(Y=3) = 1$.

4. Variable Selection and Descriptive Analysis

4.1. Variable Selection

In order to understand the attitude and choice intention of residents in the survey area towards the new pension model, the survey team took the choice intention of the pension model as the theme, set up a survey questionnaire, distributed online and offline questionnaires, and conducted a survey in Longyang District, Baoshan City, Yunnan Province by random sampling. The survey lasted two months. A total of 270 questionnaires were distributed and 261 valid questionnaires were recovered. The effective rate of the questionnaire was 96.67%. In order to ensure the integrity and effectiveness of the data, the remaining questionnaires with missing values and invalid filling will not be used.

The questionnaire is designed from the aspects of personal basic information, health status, social needs, loneliness frequency, family relations, living expenses, living environment, basic elderly care service status, intentional elderly care mode selection, etc. A total of 25 questionnaire questions are set to collect relevant data on residents' choice of elderly care mode. Considering the difference of the application level of different age groups for the network, the survey group divided the respondents according to their age distribution, and collected questionnaire information through different channels. Among them, the group under 60 years old mainly investigated through the form of network questionnaire, and the group aged 60 or above mainly conducted a questionnaire survey through the form of offline visits.

In addition to the relevant data on the choice of intentional pension mode, SPSS statistical software was used for data processing and disorderly multi classification logistic regression analysis on the data including the number of children, discretionary use amount, loneliness frequency, family relations, community medical services and policies, publicity, climate conditions and new pension understanding channels, find out the factors that affect the choice of residents' new pension model, and put forward suggestions accordingly.

4.2. Descriptive Analysis

In this paper, SPSS 25.0 statistical software is used for descriptive statistical analysis of independent variables. The results are shown in Table 1.

Table 1. Definition and descriptive statistical analysis of independent variables

Variable	Definition	Mean value	Standard deviation
Number of children	0 means none; 1 means 1; 2 means 2 or more.	1.140	0.710
Discretionary use amount	0 means less than 1000 yuan; 1 means 1000-3000 yuan; 2 means 3000-5000 yuan; 3 means more than 5000 yuan.	1.440	0.933
Lonely frequency	0 means frequent; 1 means general; 2 means occasionally; 3 means almost none.	1.850	0.926
Family relations	0 means harmony; 1 indicates disharmony.	0.070	0.247
Community medical services and policies	0 means perfect; 1 indicates imperfection.	0.500	0.501
Publicity	0 means yes; 1 means none.	0.670	0.470
Climate	0 means suitable; 1 means not suitable.	0.150	0.353
Understanding channels	0 means relevant department; 1 indicates active internet access; 2 means newspaper and television; 3 means that people around talk.	1.750	1.048

Note: sample size n = 261.

Through the statistical analysis of the questionnaire data, it can be learned that in this survey, men accounted for 47.1% and women accounted for 52.9%. Among them, 26.1% were aged 18-39, 53.3% were aged 40-59, 16.5% were aged 60-79 and 4.2% were aged 80 and over; 3.4% came from first tier cities, 14.9% from second tier cities, 22.2% from third tier cities and 59.4% from fourth tier cities; 53.3% thought they were in good health, 42.1% thought they were in average health, and 4.6% thought they were not healthy; 22.2% of them have junior high school education or below, 25.7% have senior high school education, 50.2% have university education, and 1.9% have postgraduate education or above; 19.9% were unmarried, 75.1% were married and 5% divorced. In terms of the attitude of the surrounding people towards the new pension model, 13.8% are very eager, 31% are highly accepted, 42.9% are generally concerned, 3.1% are difficult to accept, and 9.2% don't care.

In order to facilitate the subsequent regression analysis, according to the model setting, the intended elderly care mode selection includes home-based elderly care, community elderly care, mutual aid elderly care, pastoral elderly care, migratory bird living elderly care and the combination of medical and healthcare, of which the first category accounts for 40.2%, the second category accounts for 24.1% and the third category accounts for 35.6%. It can be seen that residents still prefer the traditional pension model, but their acceptance of the new pension model has also improved. It may be that some residents are more willing to try the new pension model due to the gradual popularization of the new modern pension concept.

5. Regression Analysis Results and Analysis

In this paper, SPSS 25.0 is used to conduct disordered multi classification logistic regression analysis on variables. The regression results are as follows:

Table 2. Model fitting information

Model	Model fitting conditions	Likelihood ratio test		
	-2 log likelihood	Chi square	Freedom	Significance
Intercept only	487.750	76.399	30	.000
Final	411.351			

As shown in Table 2, according to the model fitting information, the - 2 log likelihood ratio of the final model decreases significantly when there is only intercept term, from 487.750 to 411.351, indicating that the model has been improved. The significance of the model is $p < 0.001$, indicating that the partial regression coefficient in the model is not all 0. The model has statistical significance, and the model is established.

Table 3. Logistic regression results

Variable		Model 1 (Category 2 / Category 1)		Model 2 (Category 3 / Category 1)	
		Regression coefficient	Odds ratio	Regression coefficient	Odds ratio
Number of children (2 or more)	None	0.967*	2.629	1.183**	3.265
	1	-0.542	0.582	0.438	1.549
Discretionary use amount (more than 5000 yuan)	Less than 1000 yuan	-2.008***	0.134	-2.230***	0.108
	1000-3000	-0.989*	0.372	-0.640	0.527
	3000-5000	0.002	1.002	-0.061	0.940
Loneliness frequency (almost none)	Often	1.800**	6.052	-0.512	0.599
	Commonly	0.397	1.488	-0.852*	0.426
	Occasionally	0.971**	2.639	-0.147	0.864
Family relations (disharmony)	Harmony	0.985	2.678	0.991	2.693
Community medical services and policies (imperfect)	Perfect	-0.587	0.556	-0.113	0.893
Publicity (none)	Yes	0.517	1.677	-1.111**	0.329
Climate (not suitable)	Fit	-0.808*	0.446	-0.543	0.581
Understand the channel (people around talk about it)	Relevant Departments	-0.424	0.654	-0.217	0.805
	Active internet access	0.468	1.596	-0.031	0.969
	Newspaper TV	0.402	1.495	-0.196	0.822
	Constant term	-0.666		0.391	

Note: () means reference group,* Indicates $P < 0.1$,** Indicates $P < 0.05$,*** Indicates $P < 0.01$.

As shown in Table 3, in model 1, compared with category 1, that is, "mutual care + pastoral care" is compared with "home care + community care", the amount of discretionary use and the frequency of loneliness have significant impacts. In model 2, category 3 is compared with category 1, that is, "migratory bird-style sojourn pension + combination of medical care" is compared with "home care + community care", the number of children, discretionary use amount and publicity have significant impacts. However, family relations, understanding

channels and community medical services and policies have no significant impacts in the two models. Publicity has no significant impact in model 1, and climate has no significant impact in model 2.

As far as model 1 is concerned, the discretionary use amount has a significant impact. Among them, the regression coefficients of less than 1000 yuan and 1000-3000 yuan in the two groups are negative, and the residents with a monthly discretionary use amount of less than 1000 yuan and 1000-3000 yuan choose "mutual pension + pastoral pension", which is 0.134 and 0.372 times that of the residents with a monthly discretionary use amount of more than 5000 yuan. It shows that the residents with lower monthly discretionary use amount are more likely to choose "home-based elderly care + community elderly care", which may be because the weak consumption ability makes the residents unwilling and unable to try the new model, while the residents with strong consumption ability have more choices and can use the surplus funds for the experience of the new model. The frequency of loneliness has a significant impact. The residents who often and occasionally feel lonely choose "mutual aid pension + pastoral pension" is 6.052 and 2.639 times higher than those who hardly feel lonely, indicating that the more lonely residents are, the more willing they are to choose a new pension model, which may be because mutual aid and pastoral pension provide residents with more opportunities to communicate with others. The number of children and climate impact are relatively significant. The odds ratios of residents with 0 children and residents who think the local climate is suitable choose "mutual pension + pastoral pension" are 2.629 and 0.446 respectively, that is, residents with 0 children choose category 2, which is 2.629 times that of residents with 2 or more children, Residents who think the local climate is suitable choose category 2, which is 0.446 times that of residents who think the climate is not suitable, indicating that the more children residents have and the more suitable the local climate is for elderly care, the more likely they are to choose "home-based elderly care + community elderly care".

In terms of model 2, the amount of discretionary use, the number of children and publicity have significant impacts, and their odds ratios are 0.108, 3.265 and 0.329 respectively, that is, the residents with discretionary use amount of less than 1000 yuan choose the "sojourn pension + combination of medical and nursing care" is 0.108 times that of residents with discretionary use amount of more than 5000 yuan. Residents with 0 children choose "sojourn pension + combination of medical and nursing care", which is 3.265 times that of residents with 2 or more children, and residents with relevant local publicity choose "sojourn pension + combination of medical and nursing care", which is 0.329 times that of residents without relevant publicity, indicating that the less the amount of discretionary use, the more the number of children and the more comprehensive the relevant local publicity, the more residents are inclined to choose "home-based pension + community pension". Among them, the tendency of publicity may be because most residents in the survey area have not formed a new concept of pension. Due to the restrictions of local economic development level and the influence of mainstream pension model, even if the publicity of new pension model increases, residents will still conservatively choose familiar traditional pension model. The influence of loneliness frequency is relatively significant, and its odds ratio is 0.426, that is, the residents who feel the general level of loneliness choose the "sojourn pension + combination of medical and nursing care" is 0.426 times that of the residents who feel almost no loneliness. The results show that the residents who feel more lonely tend to choose the "home-based elderly care + community elderly care", which may be because compared with the elderly care model of the sojourn pension and integrated elderly care and medical services, The traditional pension model can better reflect the characteristics of family companionship and social activities, so as to attract residents to choose.

6. Conclusions and Suggestions

Through the random sampling survey of residents in Longyang District, Baoshan City, Yunnan Province, the data are collected in the form of questionnaire, sorted and analyzed, and the factors affecting residents' choice intention of pension mode are studied by using disordered multi classification logistic regression model. Based on the above regression results, the following conclusions are drawn: first, residents' consumption ability has the most significant impact on their choice intention of pension mode. The weaker their consumption abilities are, the more inclined they are to choose the traditional pension mode of "home-based pension + community pension". Second, residents' loneliness frequency, local publicity and the number of children have a significant impact on their choice intention of pension mode. Among them, compared with "home-based pension + community pension", with the improvement of loneliness, they are more inclined to choose "mutual pension + pastoral pension". The more children there are, the more inclined they are to choose the traditional pension model. Publicity has different effects due to local conditions. Third, the local climate has a significant impact on the choice intention of their pension model. Residents who believe that the local climate is suitable are more willing to choose the traditional pension model.

Accordingly, this paper puts forward the following suggestions: first, improve the pension system, ensure that residents have certain disposable funds after retirement, and increase the amount as much as possible to improve their ability to try a new pension model. Second, improve the mental health service mechanism for the elderly, pay attention to their mental health, provide them with psychological counseling in time, and arrange social activities or volunteers to accompany them. For the elderly who choose the traditional pension mode, pay close attention to their pension status. If their children fail to fulfill their maintenance obligations, urge them to fulfill their obligations. At the same time, Provide relevant help for the elderly with poor pension conditions, improve their pension status and enhance their sense of acquisition. Third, the promotion of the new pension model needs the support of the new pension concept, and also needs to meet certain material conditions and consider the needs of different groups. Therefore, we should do a good job in the publicity of the new pension model, deepen the understanding of residents, promote the new concept to replace the old concept, integrate resources in combination with local conditions, and introduce the new pension model "according to local conditions". It is very necessary to combine the old and new models harmoniously and effectively meet the diversified pension needs of the elderly.

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