

# A Comparison Study on the Health Literacy of Elderly in A Certain city of China in 2021 and 2023

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**Abstract. Objective** To compare the difference between the health literacy level of elderly in Guangzhou in 2021 and 2023, and thus to provide government and institutions with a scientific data for enhancing health literacy level. **Methods** Two surveys were conducted respectively in 2021 and 2023, and SPSS 19.0 was used for  $\chi^2$  test and Logistic regression analysis. **Results** The level of elderly's health literacy in Guangzhou in 2023 and 2021 are respectively 19.3% and 12.7%, but both of them are at a low level. Educational level and health state are the influencing factors for elderly's health literacy. **Conclusion** Health literacy of elderly in Guangzhou is relatively low and needs improving, especially in health skills, prevention and control of infectious diseases literacy. The government, community and elderly's family and elderly themselves should work together to improve the health literacy of elderly people.

## 1. Background

Simonds SK took the first to raise the concept of health literacy in 1974[1], while the most popular definition of health literacy is one's ability to access, understand and process basic health information and services, and to use them to make decisions to improve and maintain health [2-4].

It is a strategic consensus among developed countries that health literacy is of great significance to enhance the comprehensive national power [2,4-5]. In 2022, The General Office of the State Council of PRC issued *Notice of the 14th Five-Year Plan for the Elderly and Pension Service System*, calls for improving the health literacy of elderly [6].

The elderly population in China account for 19.8% (280.04 million) of the whole population [7], and elderly population in Guangzhou is 1.95 million, accounting for 18.9% of the population in Guangzhou [8]. It is very important for the elderly to have enough health literacy to solve the health problems related to the aging of the population [9]. In order to understand the level of health literacy, find the weak links of health literacy, and provide scientific basis for the formulation of relevant health policies and effective intervention measures, the results of health literacy of the elderly in Guangzhou in 2021 and 2023 were compared and analysed.

## 2. Subjects and methods

### 2.1. Subject

A total of 710 elderly people from five districts of Guangzhou were selected for survey. Inclusion criteria: aged 65 and above, living in Guangzhou for more than 6 months with no communication problems, and willing to take part in the investigation and informed consent.

### 2.2. Methods

The research was mainly conducted using the Guangzhou Residents' Health Literacy Questionnaire, and mobile terminal devices were used to collect data through questionnaires in field survey. The main body of the questionnaire contains three dimensions (basic health knowledge and concept, healthy lifestyle and behaviour, and health skills) and six aspects (scientific health concept, infectious disease prevention and control literacy, chronic disease prevention and control literacy, safety and emergency literacy, basic medical literacy, and health information literacy), making 56 questions in total. Those who get 80% of the total score or higher are regarded as having health literacy. Spss19.0 was used as the statistic software.  $\chi^2$  test and Logistic regression analysis were used for analysing the difference and influencing factors of elderly's health literacy.

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### 3. Results

#### 3.1. General data of the elderly

In 2021 and 2023, 360 and 350 questionnaires were respectively distributed, and ultimately 339 and 305 questionnaires were collected effectively. Specific data is shown in Table 1.

#### 3.2. The level of elderly's health literacy

The health literacy level of elderly in Guangzhou in 2023 is 19.3%, 6.6% higher than 12.7% in 2021, which difference is statistically significant ( $P < 0.05$ ). In aspect of three dimensions, in 2021, the level of health

knowledge and concept, healthy lifestyle and behaviour and health skills were respectively 11.8%, 19.4% and 2.9%, while in 2023, they are 17.7%, 26.6% and 5.2%, all except health skill's differences are statistically significant ( $P < 0.05$ ). The two years' results indicated that the healthy lifestyle and behavior level ranks the first. While to view from the six aspects, in 2021, the upper half aspects were scientific health concept (32.7%), safety and first aid (31.3%) and health information (26.3%). While in 2023, the top 3 aspects are safety and first aid (39.7%), scientific health concept (38.0%), and health information (29.8%). There are statistical significant differences on infectious disease prevention and control literacy, and safety and first aid literacy between 2021 and 2023, as shown in Table 2.

**Table 1.** Demographic characteristics of the subjects

Demographic characteristics	2021		2023		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Gender						
Men	186	54.9%	159	52.1%	345	53.6%
Women	153	45.1%	146	47.9%	299	46.4%
Age						
65-79	177	52.2%	168	55.1%	345	53.6%
80-	162	47.8%	137	44.9%	299	46.4%
Marriage state						
Unmarried	13	3.8%	18	5.9%	31	4.8%
In marriage	271	79.9%	231	75.7%	502	78.0%
Divorce	37	10.9%	41	13.4%	78	12.1%
Widow(er)	18	5.3%	15	4.9%	33	5.1%
Education level						
Illiteracy	47	13.9%	46	15.1%	93	14.4%
Primary school	91	26.8%	88	28.9%	179	27.8%
Junior & high school	158	46.6%	139	45.6%	297	46.1%
Colleges & Universities	43	12.7%	32	10.5%	75	11.6%
Housing population						
1-2	46	13.6%	51	16.7%	97	15.1%
3-	293	86.4%	254	83.3%	547	84.9%
Monthly living expenses						
0-1000	91	26.8%	118	38.7%	209	32.5%
1000-	248	73.2%	187	61.3%	435	67.5%
Health state						
Healthy	101	29.8%	97	31.8%	198	30.7%
Unhealthy	238	70.2%	208	68.2%	446	69.3%
Years of chronic diseases						
0	101	29.8%	97	31.8%	198	30.7%
<5	148	43.7%	143	46.9%	291	45.2%
5-10	68	20.1%	48	15.7%	116	18.0%
>10	21	6.2%	17	5.6%	38	5.9%

#### 3.3. Influential factors of elderly's health literacy in Guangzhou

A Logistic regression analysis for 2021 and 2023 were conducted, by taking the elderly's health literacy level in Guangzhou as dependent variable, and factors with

statistical significance (ages, educational level and health state) as independent variables. The results of 2021 show that ages, educational level and health state are the influential factors of health literacy, and educational level and health state in 2023, as shown in Table 3.

**Table 2.** The health literacy level of elderly in Guangzhou.

Health literacy	Health literacy level (%)		Three-year cumulative increase	$\chi^2$	<i>P</i>
	2021	2023			
Three dimensions					
basic knowledge and concept	11.8	17.7	5.9	4.492	0.034
healthy lifestyle and behaviour	19.4	26.6	7.2	4.579	0.032
basic skills	2.9	5.2	2.2	2.185	0.139
Six aspects					

scientific health concept	32.7	38.0	5.3	1.968	0.161
infectious disease prevention and control	8.6	15.4	6.8	7.249	0.007
chronic disease prevention and control	11.5	16.1	4.6	2.831	0.092
safety and first aid	31.3	39.7	8.4	7.524	0.006
basic medical literacy	21.2	27.2	6.0	3.135	0.077
health information	26.3	29.8	3.5	1.023	0.312
Total health literacy	12.7	19.3	6.6	5.342	0.021

**Table 3.** The Logistic regression analysis of influential factors.

Variables	2021			2023		
	<i>P</i>	<i>OR</i>	<i>95%CI</i>	<i>P</i>	<i>OR</i>	<i>95%CI</i>
Age						
65-79		1		-	-	-
80-	0.033	0.875	0.566-1.355	-	-	-
Education level						
Illiteracy		1			1	
Primary school	0.043	2.017	0.597-6.791	0.037	1.971	1.046-2.217
Junior & high school	0.037	3.153	0.926-10.729	0.000	2.573	1.687-4.012
Colleges & Universities	0.029	3.946	1.118-12.026	0.000	4.061	2.214-8.975
Health state						
Healthy		1			1	
Unhealthy	0.012	0.318	0.115-1.539	0.024	0.678	0.566-3.457

### 3.4. Health knowledge needs of elderly in Guangzhou

In 2021, the most desirable types of health knowledge for elderly in Guangzhou are prevention and treatment of infectious diseases (67.6%), TCM health care (63.7%) and prevention and treatment of chronic diseases (60.2%). The most ideal way to acquire health knowledge are:

community free medical diagnosis (88.8%), community health lecture (78.8%), and community festival activities (71.1%). In 2023, the top 3 desirable knowledge types become prevention and treatment of chronic diseases (83.3%), prevention and treatment of infectious diseases (79.0%), and TCM health care (72.5%), while most ideal ways remain the same, as shown in Table 4.

**Table 4.** Health knowledge needs of elderly in Guangzhou.

Items	2021		2023	
	Numbers	Percentage	Numbers	Percentage
Desirable types				
Prevention and treatment of infectious diseases	229	67.6%	241	79.0%
Traditional Chinese medicine health care	216	63.7%	221	72.5%
Prevention and treatment of chronic diseases	204	60.2%	254	83.3%
First aid	197	58.1%	206	67.5%
Ideal way to acquire health knowledge				
Community free medical diagnosis	301	88.8%	274	89.8%
Community health lecture	267	78.8%	243	79.7%
Community festival activities	241	71.1%	212	69.5%
Online resources	201	59.3%	198	64.9%
Home visit service of family doctor	197	58.1%	167	54.8%
Community health service centre	141	41.6%	129	42.3%
University for the elderly	127	37.5%	101	33.1%

## 4. Conclusion

### 4.1. A relative low level of elderly's health literacy in Guangzhou

The level of elderly's health literacy in Guangzhou in 2023 and 2021 are respectively 19.3% and 12.7%, which difference is statistically significant ( $P < 0.05$ ), proving that the work of elderly's health literacy in Guangzhou has achieved good results.

However, the level of elderly's health literacy in Guangzhou is lower than the residential level of health literacy (25.4%) in China [10] and the national residential level target (30.0%) in 2030 [3], as well as the residential level (28.6%) in Guangzhou [11]. On the other hand, compared with elderly living in other areas of China, it is higher than the results (3.7%) in Xinjiang Uygur Autonomous Region [12], 14% in Heilongjiang Province [13] and 6.19% in Guilin city [14]. It is fair to say that the elderly in Guangzhou have a relatively high level of health literacy in China and have made significant progress, but it still falls short of the targets set by the Chinese government.

The level of healthy lifestyle and behaviour ranks the top, and health skills the least, which is different with the KABP model. This is maybe the elderly's cognition and memory are fading away, but they can still keep the behaviour and lifestyle unchanged.

There are the statistically significant differences on infectious disease prevention and control literacy, and safety and first aid literacy in 2021 and 2023 ( $P < 0.05$ ). This maybe the result of the COVID-19 pandemic in China, where the news and knowledge related to the epidemic were well developed online and offline, so that the elderly learned a lot before they knew it and make a great progress. However, although the infectious disease prevention and control literacy has a significant difference in two years' contrast, it is one the lowest among the 6 aspects of health literacy, along with the chronic disease prevention and control literacy. This suggests that more efforts should be made to increase these two aspects, as it is highly related to elderly's health.

### 4.2. Analysis of influencing factors of elderly's health literacy in Guangzhou

Educational level is one of the main influencing factor of health literacy level of elderly in Guangzhou, which is same with a survey in Heilongjiang Province [13] and Guilin city [14] in China, as well as with a survey in Catalonia [15] in Spain and in south Asia [16]. This illustrates the importance of health education in enhancing health literacy. And the health state is another influencing factor, which is consistent with the survey in Shanxi Province [17], Shanghai city [18] and Egypt [19]. The 2021 and 2023 regression model were not consistent in age, whose cause maybe the sample and time, but those who aged over 80 are still worthy of attention.

### 4.3. Health literacy enhancement strategy

Enhancing people's health literacy is one of the most fundamental, economic and effective measures to improve people's health quality [20]. With the fastening of aging in China, it is easily to see that the healthier of the elderly, the less expenses will be cost, therefore, it is important to improve the health literacy of the elderly.

Undoubtedly, the government should take the initiative to improve elderly's health literacy. A number of policies have been promulgated as mentioned above, and a document named *Suggestions on Strengthening the Work on Ageing in the New Era* has been issued at provincial level [21]. However, there are no policies on comprehensively improving the health level of the elderly in Guangzhou, let alone their health literacy. Hence the very first step now is to formulate a municipal regulation with financial support to enable the institutions and communities concerned to comply with the regulation and to invest in improving health literacy.

Community is a vital place for elderly's health education, in that it is the smallest administrative unit near the elderly. Medical institutes need to actively take the advantage of health knowledge popularization, and make health promotion throughout the free medical diagnosis and treatment process. As the free medical diagnosis ranks the first need of elderly in Guangzhou, maybe it should be held more frequently, once a month for instance. The community neighbourhood committee should hold more health lectures and festival activities to meet the elderly's needs, and can increase the participation of the elderly through kinds of game interaction, gift distribution and so on. The elderly has the lowest level of literacy for prevention and treatment of infectious and chronic diseases, so they should be taken as the focus of health education. Possible ways include providing targeted health education materials for individuals and putting up health education posters to public; offering guidance to the elderly with chronic diseases to help them develop a healthy and positive lifestyle.

As for the family who have elderly at home, family members should actively participate in improving the health literacy level of the elderly, providing technical help and family care, and encouraging elderly to participate in activities held in community. The elderly themselves should establish a scientific concept of health, cultivate the awareness of actively obtaining health information and seeking health services.

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