



## Analysis of health knowledge awareness and influencing factors of permanent residents in SSL Science and Technology Industrial Park, Dongguan City

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**Abstract: Objective:** To understand the health knowledge awareness and influencing factors of permanent residents in SSL Science and Technology Industrial Park, Dongguan City, and to provide a data basis for the development of health education and public health services in the region. **Methods:** A multi-stage stratified sampling method was used to select 1,000 permanent residents from 13 residential areas in the region as survey subjects. Basic demographic information and health knowledge awareness were obtained through questionnaires, and statistical analysis was conducted on the data. **Results:** The health knowledge awareness rate of permanent residents in the region is relatively low, with the highest rate being the dangers of smoking in pregnant women, with the correct answer rate reaching 87.1%. Correct use of antibiotics, transmission routes of AIDS, salt intake standards and hypertension diagnostic standards have correct answer rates between 40% and 55%. The three knowledge points of risk factors for hypertension, diabetes and cerebrovascular disease had the lowest correct answers. Respondents with higher education levels know more health knowledge. **Conclusion:** The awareness rate of health knowledge is very low, which is not suitable for the current economic development and population quality. Health education and publicity should be strengthened for groups with low awareness and knowledge content.

**Keywords:** Health knowledge, health education, chronic disease prevention

### Introduction

Songshan Lake Science and Technology Industrial Park (hereinafter referred to as SSL) is the high-tech development center of Dongguan City in China, and the pillar area of Dongguan's economic. After 20 years of development, the society, economy and population have developed rapidly. The current resident population in the region has reached 120,700<sup>[1]</sup>. Due to the newly established administrative region, the public health work in SSL is not perfect. These imperfections are manifested in a lack of understanding of the public health service needs of residents in the area, a lack of understanding of their health knowledge, and the inability to provide targeted and on-demand public health services. Understanding the awareness of health knowledge among permanent residents in the region can help to better carry out health education, continuously improve the health level of residents, and improve public health services in the region. Therefore, this study conducted a questionnaire survey on the permanent residents in the region to understand their health knowledge awareness and influencing factors, providing a data foundation for providing better public health services in the future.

### Literature Review

After reviewing articles about health knowledge awareness in recent years, found that they mainly focus on research on the awareness rates of health knowledge among various groups of people and content categories.

Regarding the health knowledge awareness rate of the population, there are studies on various groups such as students, urban residents, rural residents, pregnant women, corporate workers, and the elderly. Xue Jijun<sup>[2]</sup>, Liang Danhua<sup>[3]</sup>, Sun Huiyan<sup>[4]</sup>, Liu Lin<sup>[5]</sup> and others studied the health knowledge awareness rate of primary and middle school students. Mo Binghua<sup>[6]</sup> and others studied the health knowledge awareness rate of college students. Liu Guoqing<sup>[7]</sup>, Da Yang<sup>[8]</sup>, Zhu Jiandong<sup>[9]</sup> and others studied the health knowledge awareness rate of urban residents. Jia Yan<sup>[10]</sup>, Zhao Yingying<sup>[11]</sup> and others studied the health knowledge awareness rate of rural residents. Jiang Qiuqing<sup>[12]</sup>, Li Yuezhu<sup>[13]</sup>, Wang Min<sup>[14]</sup>, Kan Ying<sup>[15]</sup> and others studied the health knowledge awareness rate of pregnant women. Liu Lei<sup>[16]</sup> and others studied the health knowledge awareness rate of corporate workers, and Yang Biao<sup>[17]</sup> studied the health knowledge awareness rate of the elderly.

In terms of research content, it is divided into knowledge of nutrition, adolescence, pregnant-related, diseases, and mental health knowledge. Qu Mengying<sup>[18]</sup>, Zhu Jianxun<sup>[19]</sup>, Qiu Yujie<sup>[20]</sup>, Chen Jiaqi<sup>[21]</sup> and others investigated the awareness rate of nutritional health knowledge. Jiang Qiuqing<sup>[12]</sup>, Li Yuezhu<sup>[13]</sup>, Wang Min<sup>[14]</sup> and others investigated the awareness rate of pregnant-related knowledge. Han Li<sup>[22]</sup>, Kan Ying<sup>[15]</sup> and others investigated the awareness rate of mental health knowledge. Mo Binghua<sup>[6]</sup> investigated the awareness rate of AIDS health knowledge, and Yang Biao<sup>[17]</sup> investigated the awareness rate of hypertension-related knowledge. Lu Ting<sup>[23]</sup> investigated the awareness rate of health knowledge among adolescents.



## Description of the Study Area:

### Research Objective

The main purpose of this study is to investigate the awareness of health knowledge among permanent residents of SSL, understand the level of mastery of various health knowledge among residents in the area, analyze the differences in health knowledge awareness among residents with different characteristics, identify factors that affect awareness, and propose targeted countermeasures and suggestions. This research aims to provide strategies for improving the health awareness of residents in the region, and to provide theoretical and data support for improving the level of public health services.

### Research Respondents

This study takes the permanent residents of SSL Science and Technology Industrial Park in Dongguan City as the research subjects. Through the multi-stage stratified sampling method, 1,000 residents in 13 residential communities in the area are selected as the survey subjects, and a total of 1,000 residents are investigated through household surveys by questionnaire.

### Research Methods

A questionnaire survey method was used to collect data. The questionnaire was based on the Chinese National Health Service Survey standard questionnaire, with a small number of questions deleted according to the research purpose. After the preliminary design of the questionnaire, the content was evaluated by experts with proven expertise in the field of health services management, suggestions were considered and modified accordingly.

The questionnaire content includes two parts: basic information and health knowledge awareness. Basic information includes gender, age, employment status, monthly income, marital status, participation in basic medical insurance, and purchase of commercial health insurance. Health knowledge awareness includes salt intake standards, knowledge of chronic diseases (including hypertension, diabetes, and cerebrovascular disease), use of antibiotics, HIV transmission routes, and the impact of pregnant women's smoking on the fetus.

### Quality Control

During the questionnaire design, the content was evaluated and revised by experts with proven expertise in the field of health service management. During the questionnaire survey stage, the investigators were given three unified trainings, and the quality of filling out the questionnaires was checked after each day's survey, and the survey process was shared to provide experience for subsequent surveys.

In the data entry stage, use entry software and set conditions in the software to ensure that some incorrect entries beyond the scope cannot be realized, and use double entry to avoid errors.

### Statistical Analysis

Use the double entry method of epidata software to enter data, export it to an EXCEL table for data sorting, and finally use spss19.0 for statistical analysis. Descriptive analysis was used to assess the level of health knowledge awareness and acquisition methods among respondents, while logistic regression analysis was used to assess the differences in health knowledge awareness among respondents with different characteristics.

### Results and Discussion

A total of 1,000 questionnaires were distributed and 1,000 were returned. In the end, there were 970 valid questionnaires, accounting for 97.0% of the valid questionnaires. This survey was valid.

#### Basic information of the survey objects

Among the surveyed population (Table 3-1), 39.5% were male and 60.5% female participated. In terms of age distribution, among the two key groups of people aged 25-34 and 35-44 have the highest activity, those aged 65~ have the least activity. Among the respondents, 14.4% were unmarried, 81.4% were married, 1.6% were divorced, and 2.2% were widowed. Regarding the educational composition of the respondents, 58.7% had a college degree or a bachelor's degree or above, 22.2% had a college degree, 17.6% had a high school or technical secondary school degree, and 23.6% had a junior high school degree or below. The proportion of employed people among all survey respondents reached 79.4%, students accounted for 6.2%, unemployed respondents accounted for 1.6%, and respondents without a job accounted for 2.4%. 39.3% of the survey respondents have a monthly income of less than 3,000 yuan, 14.4% have a monthly income of 3,000 to 5,000 yuan, 25.4% have a monthly income of 5,000 to 10,000 yuan, and 11.1% have a monthly income of 10,000 to 15,000 yuan. Monthly income above 15,000 yuan accounted for 9.8%. The survey found that 6.8% of people did not participate in any basic medical insurance, 46.2% of people participated in Dongguan Basic Medical Insurance, people who participate in basic medical insurance from other cities or provinces account for 42.7%. The proportion of survey respondents purchasing commercial medical insurance is 40.7%.

Classification	number	%	Classification	number	%
gender			marriage		

	male	383	39.5		unmarried	140	14.4
	female	587	60.5		Married	790	81.4
<b>Age (years)</b>	15-24	98	10.1		Divorced	16	1.6
	25-34	351	36.2		Widowed	21	2.2
	35-44	246	25.4	<b>employment</b>	other	3	0.3
	45-54	85	8.8		Current students	60	6.2
	55-64	130	13.4		retired	101	10.4
	65-	60	6.2		Employed or re-employed	770	79.4
<b>Educational</b>	Junior high school and below	229	23.6		Unemployed	16	1.6
					no job	23	2.4
	High school or technical secondary school	171	17.6	<b>Insurance status</b>			
	College	215	22.2		Not covered by basic medical insurance anywhere	66	6.8
Bachelor degree and above	355	36.5	Dongguan Basic Medical Insurance		448	46.2	
<b>Monthly income(yuan)</b>	≤3,000	381	39.3		Basic medical insurance elsewhere	414	42.7
	3000~5000	140	14.4	Publicly funded medical care	16	1.6	
	5000~10000	246	25.4	other	26	2.7	
	10000~15000	108	11.1	<b>commercial medical insurance</b>			
	15000~20000	46	4.7		purchase	395	40.7
	>20000	49	5.1		Not purchase	575	59.3

Table 1: Basic information of the interviewees

Overall health knowledge awareness

Scores will be given based on the answers. A correct answer will get 1 point, a completely wrong answer will get 0 points, and a partially correct answer will get 0.5 points. The scores for each question will be added together to get a total score. The full score for all questions is 9 points. A score of  $\geq 6$  points is judged as a good level of health knowledge awareness, and a score of  $< 6$  points is judged as a poor level of health knowledge awareness.

The health knowledge scores of 970 residents were calculated, and the average score was 4.4 points with a standard deviation of 1.40. The average score was low, indicating that residents had low awareness of health knowledge.

Classify according to the performance judgment standards, and statistically obtain the data results in Table 2. 82.5% of the respondents have poor knowledge of health knowledge, and 17.5% of the respondents have good knowledge, which is lower than the research data(24.49%) of Fang Kehong [24].

Awareness	number	%
poor awareness	800	82.5
good awareness	170	17.5
total	970	100.0

Table 2: Respondents' awareness of health knowledge

Respondents' health knowledge awareness based on different factors

Logistic regression was used to analyze whether different factors have an impact on the respondents' awareness of health knowledge. The degree of awareness was used as the dependent variable, and gender, age, employment, education, monthly income, marriage, and medical insurance were used as dependent variables. The specific assignments are as shown in Table 3.

variable	Assignment
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awareness	poor awareness =1, good awareness =2
gender	Male=1, Female=2
age	15-24 years old=1, 25-34 years old=2, 35-44 years old=3, 45-54 years old=4, 55-64 years old=5, 65 years old=6
employment	Student=1, retired=2, employed =3, unemployed=4, no job=5
Education	Junior high school and below=1, high school or technical secondary school=2, junior college=3, undergraduate degree and above=4
monthly income	Below 5,000 yuan = 1, 5,000 to 10,000 yuan = 2, 10,000 to 15,000 yuan = 3, 15,000 yuan and above = 4
marital status	Single=1, married=2, divorced=3, widowed=4, other=5
basic medical insurance	Not participating in any basic medical insurance = 1, Dongguan City Basic Medical Insurance = 2, basic medical insurance in other places = 3, publicly funded medical care = 4, others = 5
Commercial health insurance	Purchased=1, Not purchased=2

Table 3: Logistic regression variable assignment

According to the statistical results (Table 4), it is found that respondents with different educational backgrounds have different levels of health knowledge awareness. The higher the educational level of respondents, the more health knowledge they know. The proportion of respondents with various educational backgrounds who have good awareness of knowledge are: junior high school and below (8.3%), high school or technical secondary school (18.1%), college degree (16.3%), undergraduate degree and above (23.9%). This is consistent with the research results of Fang Kehong<sup>[24]</sup>, Qu Mengying<sup>[18]</sup>, Wu Bo<sup>[25]</sup>, and Qin Zhenzhen<sup>[26]</sup>.

variable	B	S.E.	Wals	df	Sig.	Exp (B)
gender	0.345	0.194	3.159	1	0.075	1.412
age	-0.014	0.086	0.027	1	0.868	0.986
employment	-0.182	0.125	2.100	1	0.147	0.834
Education	0.333	0.101	10.801	1	0.001	1.395
monthly income	0.103	0.104	0.980	1	0.322	1.109
marital status	0.276	0.187	2.190	1	0.139	1.318
basic medical insurance	-0.071	0.117	0.368	1	0.544	0.931
Commercial health insurance	0.021	0.181	0.013	1	0.909	1.021
constant	-3.046	0.816	13.950	1	0.000	0.048

Table4 :Logistic regression analysis of the impact of different factors on respondents' awareness of health knowledge  
Specific situation of health knowledge awareness

By counting the awareness of various health knowledge (Table 5), it is found that the overall awareness of the respondents' health knowledge is not high. The highest among them is the harm of smoking during pregnancy, with a correct answer rate of 87.1%. Correct use of antibiotics, transmission routes of AIDS, salt intake standards and hypertension diagnostic standards have correct answer rates between 40% and 55%. However, the correct answer rate for the three knowledge points of hypertension, diabetes, and risk factors for cerebrovascular disease is very low, with the proportions below 15%.

health knowledge	%	health knowledge	%
<b>Salt intake standards</b>		<b>diabetes symptoms</b>	
correct	36.2	have no idea	88.6
wrong	63.8	awareness	11.4
<b>hypertension diagnostic standards</b>		<b>use of antibiotics</b>	
have no idea	32.4	have no idea	11.9
wrong	23.8	wrong	33.9
correct	43.8	correct	54.2

<b>hypertension risk factors</b>			<b>Cerebrovascular disease risk factors</b>	
	have no idea	19.2		have no idea
	all aware	9.9		partially aware
	partially aware	70.8		all aware
<b>Diabetes risk factors</b>			<b>transmission routes of AIDS</b>	
	have no idea	18.0		have no idea
	partially aware	74.8		wrong aware
	all aware	7.2		all aware
<b>effects of pregnant women's smoking</b>				partially aware
	have no idea	10.4		
	wrong	1.8		
	correct	87.8		

Table 5: Respondents' awareness of various health knowledge

Ways to obtain health knowledge

The top three ways for respondents to obtain health knowledge are Internet websites, Weibo and WeChat APPs, and TV broadcasts. Different age groups have different ways to obtain health knowledge. The top three ways for people aged 15-59 to obtain health knowledge are the Internet, Weibo and WeChat APPs, and TV broadcasts. The top three ways for people aged 60 and above to obtain health knowledge are television and radio, medical personnel, newspapers and books. The rapid development of the Internet and smart phones has changed the way people obtain information. People begin to obtain more information through the Internet and software through smart phones or smart electronic devices.

way	15-59 years old		60 -years old		total	
	sequence	%	sequence	%	sequence	%
Internet	2	69.18	7	6.72	3	60.54
Weibo and WeChat	1	78.30	4	19.40	1	70.14
TV broadcasts	3	61.75	1	58.96	2	61.36
newspapers and books	4	48.32	3	22.39	4	44.73
medical staff	5	45.08	2	24.63	5	42.25
Bulletin boards, brochures	6	44.00	4	19.40	6	40.60
Health lecture site	7	34.05	6	13.43	7	31.20
other		8.87		29.10		11.67

Table 6 :the way for respondents obtain health knowledge

## Discussion

82.5% of the respondents have poor health knowledge. The highest among them is the harm of smoking during pregnancy, with a correct answer rate of 87.1%. This is mainly due to the fact that there is a lot of publicity in China that "smoking is harmful to health", and there are many young people in the region. Many of them have experience in preparing for pregnancy, pregnancy or raising children, so families are more aware of the dangers of smoking in pregnant women. The correct use of antibiotics, the transmission route of AIDS, the standard of salt intake and the diagnostic standard of hypertension are between 40% and 55%. This is not an ideal result, because these are all healthy basic knowledge. The correct answer rate for the three knowledge points of risk factors for hypertension, diabetes and cerebrovascular disease is very low. These three chronic diseases have a relatively high prevalence in China and have a great impact on residents' health. Understanding their risk factors can help residents avoid risk factors and maintain health as much as possible. Low awareness rate is unfavorable for change in residents' bad health behaviors and bad lifestyle habits.

This study used binary logistic regression to analyze the influencing factors of health knowledge awareness and found that respondents with different educational backgrounds had different levels of health knowledge awareness. Respondents with higher education levels have higher awareness of health knowledge. It is consistent with the research results of Zhao Yingying<sup>[11]</sup>, Qu Mengying<sup>[18]</sup>, and Liu Guoqing<sup>[7]</sup>. The main reason is that people with higher education levels receive more health knowledge during their education, and these people also have strong health awareness due to education, and they are more willing to be exposed to more health knowledge. They will also be able to understand and apply health knowledge more correctly. Therefore, in health education, the promotion of health knowledge should pay more attention to residents with lower education levels, while also taking into account residents with high education levels.

Different age groups have different ways to obtain health knowledge. The top three ways for people aged 15-59 to obtain health knowledge are the Internet, Weibo and WeChat APPs, and TV broadcasts. The top three ways for people aged 60 and above to obtain health knowledge are TV broadcasts, medical personnel, newspapers and books. Among the acquisition channels for young people, Internet-related channels rank first, while the acquisition channels for the elderly are still relatively traditional. Therefore, in the process of popularizing health knowledge, different publicity methods and channels can be used for people of different ages.

## Conclusion

To sum up, although the overall health knowledge awareness rate of residents in SSL Science and Technology Industrial Park is relatively good, there are still some things worth noting. Future health education work should be focused on different groups of people, different knowledge contents, and different communication media, and pay more attention to key diseases, key groups, and key places.

This study used the chance encounter sampling method in the final stage of multi-stage sampling, so there may be some bias among the respondents. In addition, the geographical scope of this study is relatively small, so the research results are targeted for public health work in this region. They may not be applicable to other regions or only to areas with younger populations and higher education levels. In the future, if conditions permit, the research scope can be expanded to obtain a larger range of data, which can provide more representative data support.

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