

A Study on the Comparison and Enhancement of Health Literacy of College Students in Guangdong Province in 2020 and 2022

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Abstract. In order to compare the health literacy level of college students in Guangdong province in 2020 and 2022, so as to provide a scientific basis for targeted health literacy intervention and policy formulation for college students in Guangdong province, surveys were respectively conducted in 2020 and 2022. The data collation and analysis were performed using SPSS 19.0 statistical software. The χ^2 test was used to compare different health literacy, and logistic regression was performed to analyse the factors influencing health literacy. The results show that the general health literacy level of college students in Guangdong province in 2022 is 46.5%, 6.3% higher than 40.2% in 2020, which difference is statistically significant. The three dimensions and six aspects of health literacy all have improved. The results of both years showed that health skills, basic medical literacy and health information literacy were at a low level. According to logistic regression analysis, the health literacy level of senior students is higher than that of junior students, and those who have taken health related courses have higher health literacy level. The most desirable type of health knowledge is prevention and treatment of infectious diseases, and the new media access is becoming more popular among students to gain health knowledge. In conclusion, Guangdong college students' health literacy is relatively high, but still needs to be improved, especially in health skills, basic medical care and health information literacy. The government, colleges and universities should work together to improve college students' health literacy.

1 Introduction

The concept of health literacy was first proposed by Simonds SK at the Bangkok International Health Conference in 1974[1]. It refers to the ability of individuals to acquire, understand and process basic health information and services, and to use these information and services to make decision-making for improving and maintaining their own health [2].

Since 2008, Chinese government has attached great importance to residents' health literacy, and a series of documents and policies have been issued to bring the improvement of residents' health literacy into the goal of building a healthy China.

Especially, in 2017, The Ministry of Education issued *The Guidelines for Health Education in Universities and Colleges*, calls for improving the health literacy of college students. In 2021, The Ministry of Education and other five departments joint release the *Opinions on Comprehensively Strengthening and Improving School Hygiene and Health Education in the New Era*, proposed that schools adhere to the education concept of health first, and ensure that health education runs through all areas of education.

The students in our country account for 17.79% (61.23 million) of the youth population, and college students in Guangdong province is 2.3 million, which is a huge population. College students are an important

force to promote the development of our country and society. The level of their health literacy is not only related to their own, but also affects the future of the country.

2 Objects and methods

2.1 Object

A total of 7370 college students from 15 colleges and universities in Guangdong Province were selected by stratified cluster random sampling for the study. Inclusion criteria: students in grades 1-3 in college, students in grades 1-4 in undergraduate, who were willing to cooperate with the investigation and informed consent; exclusion criteria: unwilling to participate in the investigation.

2.2 Methods

2.2.1 Survey tools

The *2019 National Residents' Health Literacy Monitoring Questionnaire* was modified and applied for the survey. The questionnaire contains mainly two parts, one part is basic information of students objects, the

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other part is the main body, namely the health literacy. The main body includes three dimensions: basic health knowledge and concept, healthy lifestyle and behaviour, and health skills, and six aspects, namely scientific health concept, infectious disease prevention and control literacy, chronic disease prevention and control literacy, safety and first aid literacy, basic medical literacy, and health information literacy. The field survey used mobile terminal devices (mobile phones, iPads, etc.) to conduct face-to-face survey in the form of online questionnaires.

2.2.2 Scoring criteria

The main body of questionnaire includes 10 judgment questions, 26 single choice questions, 16 multiple choice questions and 4 situational questions, total 56 questions. One point will be given for each correct answer to the judgment question and single choice question, and two points to the multiple-choice question (no score will be given for more or less choices). A total of 73 points will be given. People whose score is equal to or higher than 80% of the total score (≥ 58 points) are considered to have health literacy.

2.2.3 Statistical analysis

SPSS 19.0 statistical software was used for general descriptive analysis, χ^2 test and logistic regression analysis.

2.2.4 Quality control

The investigators received normative training before the survey began, and 20% of the questionnaires were randomly selected for logic check after the survey. Double-blind entry of survey data was performed using Epidata 3.1.

3 Objects and methods

3.1 General data

In 2020, 3610 questionnaires were distributed, out of which 3215 questionnaires were effective, with an effective rate of 89.06%. In 2022, a total of 3760 questionnaires were distributed, out of which 3411 questionnaires were effective, with an effective rate of 90.72%. Specific data is shown in Table 1.

3.2 The health literacy level of college students in Guangdong province

The general health literacy level of college students in Guangdong province in 2022 is 46.5%, 6.3% higher than 40.2% in 2020, which difference is statistically significant ($P < 0.05$). From the three dimensions of health literacy, in 2020, the literacy level of health knowledge and concept, healthy lifestyle and behaviour and health

skills were respectively 49.7%, 44.1% and 39.2%, while in 2022, they are 54.6%, 49.8% and 41.3%, all of which differences are statistically significant ($P < 0.05$). The results of the two-year survey showed that the level of basic knowledge and concept literacy are the highest, followed by healthy lifestyle and behavior and health skills. From six aspects of health literacy, in 2020, the top 3 aspects were scientific health concept (55.7%), infectious disease prevention and control literacy (49.8%) and chronic disease prevention and control literacy (44.2%). While in 2022, the top 3 aspects are infectious disease prevention and control literacy (58.6%), scientific health concept (58.1%), and safety and first aid literacy (51.4%). The differences on infectious disease prevention and control, and literacy safety and first aid literacy in 2020 and 2022 are statistically significant ($P < 0.05$), as shown in Table 2.

3.3 Influencing factors of health literacy

First, taking the health literacy level of college students as the dependent variable, and referring to the factors with statistical significance (gender, grade, home address, whether taking health related courses and self-rated health status) as the independent variable, a multi-factor logistic regression analysis for data in 2020 and 2022 was conducted. The results of 2020 show that gender, grade, home address and whether taking health related courses are the influencing factors of health literacy. While in 2022, the influencing factors are grade and whether taking health related courses, as shown in Table 3. In summary, grade and whether taking health related courses are the influencing factors of health literacy for college students in Guangdong province.

3.4 Health knowledge needs of college students in Guangdong province

In 2020, the top 3 wanted types of health knowledge are prevention and treatment of infectious diseases, reasonable nutrition and a balanced diet, and TCM health care. The top 3 desirable accesses to gain health knowledge are: books, health lecture, and Wechat (a popular social networking APP in China). In 2022, the top 3 wanted types of health knowledge remain the same, while the top 3 desirable accesses turn out to be: books, Tiktok (a popular short video APP in China) and health lecture, as shown in Table 4.

Table 1. General data of the subjects

Demographic characteristics	2020		2022		Total	
	Numbers	Percentage	Numbers	Percentage	Numbers	Percentage
Gender						
Men	1539	47.9%	1662	48.7%	3201	48.3%
Women	1676	52.1%	1749	51.3%	3425	51.7%
Grade						
Freshman	1015	31.6%	986	28.9%	2001	30.2%
Sophomore	939	29.2%	1263	37.0%	2202	33.2%
Junior	862	26.8%	913	26.8%	1775	26.8%
Senior	399	12.4%	249	7.3%	648	9.8%
Major						
Natural science	1865	58.0%	1937	56.8%	3802	57.4%
Humanities and social science	1350	42.0%	1474	43.2%	2824	42.6%
Health related course						
Taken	1531	47.6%	1496	43.9%	3027	45.7%
Not taken	1684	52.4%	1915	56.1%	3599	54.3%
Home address						
Countryside	1759	54.7%	1682	49.3%	3441	51.9%
City and town	1456	45.3%	1729	50.7%	3185	48.1%
Monthly living expenses(RMB)						
<1500	1236	38.4%	1293	37.9%	2529	38.2%
>1500	1979	61.6%	2118	62.1%	4097	61.8%
Father's educational level						
illiteracy	69	2.1%	75	2.2%	144	2.2%
Primary and secondary education	2458	76.5%	2587	75.8%	5045	76.1%
Higher education	688	21.4%	749	22.0%	1437	21.7%
Mother's educational level						
illiteracy	86	2.7%	93	2.7%	179	2.7%
Primary and secondary education	2687	83.6%	2572	75.4%	5259	79.4%
Higher education	442	13.7%	746	21.9%	1188	17.9%
Self-rated health status						
Good	1997	62.1%	1863	54.6%	3860	58.3%
Poor	1218	37.9%	1548	45.4%	2766	41.7%

Table 2. Health literacy level of college students in Guangdong Province

Demographic characteristics	Health literacy level (%)		Three-year cumulative increase	χ^2	<i>P</i>
	2020	2022			
Three dimensions					
basic knowledge and concept	49.7	54.6	4.9	5.843	<0.05
healthy lifestyle and behavior	44.1	49.8	5.7	4.972	<0.05
basic skills	39.2	41.3	2.1	1.263	>0.05
Six aspects					
scientific health concept	55.7	58.1	2.4	2.762	>0.05
infectious disease prevention and control literacy	49.8	58.6	8.8	8.571	<0.05
chronic disease prevention and control literacy	44.2	47.3	3.1	3.015	>0.05
safety and first aid literacy	43.6	51.4	7.8	7.903	<0.05
basic medical literacy	39.2	42.6	3.4	3.364	>0.05
health information literacy	36.1	38.2	2.1	2.315	>0.05
Total health literacy	40.2	46.5	6.3	6.361	<0.05

Table 3. The multi-factor Logistic regression analysis of influencing factors of health literacy of college students

Variables	2020			2022		
	<i>P</i>	<i>OR</i>	95% <i>CI</i>	<i>P</i>	<i>OR</i>	95% <i>CI</i>
Gender						

Men		1		-	-	-
Women	<0.05	1.435	1.102-1.859	-	-	-
Grades						
Lower grades		1			1	
Senior grades	<0.05	1.301	0.573-2.959	<0.05	1.412	1.142-1.732
Home address						
Countryside		1			1	
City and town	<0.05	1.339	1.1456-1.565	>0.05	1.307	0.986~1.674
Health related course						
Taken		1			1	
Not taken	<0.05	0.421	0.251-0.811	<0.05	0.447	0.379-0.527
Self-rated health status						
Good		1			1	
Poor	>0.05	0.638	0.045~1.005	>0.05	0.836	0.336-2.066

Table 4. health knowledge needs of college students in Guangdong Province

Items	2020		2022	
	Numbers	Percentage	Numbers	Percentage
Type of health knowledge desired				
Prevention and treatment of infectious diseases	1296	40.32%	1560	45.74%
Reasonable nutrition and a balanced diet	1241	38.61%	1338	39.22%
Traditional Chinese medicine health care	1198	37.26%	1308	38.34%
First aid	1139	35.43%	1159	33.97%
Desirable access to gain health knowledge				
Books	1933	60.12%	2171	63.66%
Tiktok	1621	50.42%	1847	54.14%
Health lecture	1648	51.26%	1783	52.26%
Wechat	1652	51.37%	1714	50.25%
Bilibili Website	1596	49.65%	1658	48.62%
Health promotion in public places(posters, advertisements, etc.)	1327	41.28%	1505	44.11%

4 Conclusions

The results of surveys show that the overall level of health literacy of college students in Guangdong province rises from 40.2% of 2020 to 46.5% of 2022, significantly higher than the national residents' health literacy monitoring level of 25.4% [3] and the national residents' health literacy level target 30.0% in 2030 [4], and also higher than the level of 28.6% of the residents in the central urban area of Guangzhou, provincial capital of Guangdong province [5]. This proves that the work of college students' health literacy in Guangdong province has achieved good results. However, taking data in 2022 for instance, compared with colleges and universities in other provinces and cities in China, it is lower than the survey results of 68.9% in Yunnan province [6], but higher than 41.3% in Henan province [7]. The overall health literacy of college students in Guangdong province is relatively high, but there is still a certain gap compared with students in some other provinces and cities in China.

From Table 2, the level of basic knowledge and concept literacy are the highest, followed by healthy lifestyle and behavior and health skills, which comply with the theoretical model of Knowledge, Attitude and Practice (KAP model). Students may possess the knowledge and concept, but find it hard to turn them into

daily life behavior.

Also from Table 2, the No.1 aspect of health literacy of both years is scientific health concept, indicating colleges and universities have achieved good results in health concept education. The No.2 aspect of both years is infectious disease prevention and control literacy, which may due to COVID-19 pandemic. The No.3 aspect in 2022 changes from chronic disease prevention and control literacy to safety and emergency literacy. This may also be related to the COVID-19 pandemic, in that people stay in their home more often due to the quarantine, and there are many accidents happened, such as students drowning in wild swimming near their homes. The television news reported many accidents, and colleges and universities intensified education on personal safety and first aid, contributing to the level rise of safety and emergency literacy. However, the level of basic medical literacy and health information literacy are always the lowest, suggesting that colleges and universities should appropriately increase the content of basic medical knowledge to guide students to correctly access to medical and health information when making health education plans.

4.1 Discussions on the influencing factors of health literacy

Students from high grades are better than lower grades,

which is consistent with a survey in Shandong province [8], indicating maturity and long term study can contribute to the health literacy enhancement. Students who have taken health-related courses have higher health literacy than those not, and it is same with survey held in Chengdu[9] and Dezhou city[10]. This demonstrates the importance of health-related courses in improving health literacy. The 2020 and 2022 regression model were not consistent in gender, home address and self-rated health status, which may due to the difference of sample and survey period. But more attention can still be paid to male students and students from countryside.

4.2 Health literacy enhancement strategy

The level of health literacy is directly related to health outcomes [11], and improving the health literacy of the people is one of the most fundamental, economical and effective measures to improve the health quality of the population [12]. College students are the future of a country and society, so it is of great importance to improve their health literacy.

First of all, the government should hold the responsibility to enhance health literacy. A series of policies like *The Healthy China 2030 Plan* and so on have been promulgated as mentioned at the beginning of this essay, however, at provincial level, there is no specific policies or regulations to students' overall health enhancement, let alone the health literacy. Provincial regulation can be formulated, together with the funding added, can colleges and universities have rules to follow and money to spend on the health literacy enhancement.

Colleges and universities are the main places for college students' health education, which have the advantages of high organizational efficiency, high plasticity of educational objects, relative low cost of health education and greater benefit of social communication, as well as academic authority [7]. Colleges and universities should first reform the existing health education mode. Besides the access of traditional health lecture, books, health promotion in public places (posters, advertisements, etc.), health education can be added as a compulsory course; and official accounts can be set in TikTok, Wechat, and Bilibili website, on which health education can be carried out. In the accounts' initial stage, knowledge of infectious diseases and TCM should be emphasized because they are students' favorite. Later, students' weak knowledge of chronic diseases and so on should be added, thus to improve their overall health literacy. On the other hand, an evaluation mechanism can be set up to promote the change of health knowledge into health behaviour. Health knowledge contest, healthy class rating can all be effective methods. In this way, knowledge and practice, online and offline education can be bind effectively to enhance the health level of college students.

Acknowledgments

This research is a 2020 scientific research project "Research on the improvement of college students'

health literacy level in Guangdong province" funded by Guangdong Provincial Department of Education, and "Innovative Talents Training Program for Outstanding Young People in Guangdong Universities" (NO. 2020KQNCX171). Also, it is supported by a project of "Science and Technology Resources Sharing Service Innovation Center" funded by Guangdong Food and Drug Vocational College's "Double-high Plan" project (SG03-02.6), and a project of "Research on community intelligent nursing system for the aged based on Internet of things" funded by Guangdong Food and Drug Vocational College's Pan Deng project(pdjh2021b0801).

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