

Analysis on health literacy status and influence factors of three college students

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Abstract. This study tried to learn health literacy of college students and analyze the influence factors so that we could improve health. Stratified random cluster sampling was employed to recruit 1460 college students in 3 universities in Shandong among which Health Literacy Questionnaires were distributed. 64.4% of students had satisfactory health literacy. Grade, specialty, course of health education, time of health education outside classroom, health information acquisition capacity, health information evaluation capacity and health information practice capacity in health-related activities were the main factors affecting the health literacy level of students. The health literacy level of college students in the three universities is higher than the overall level of college students in China. The possession rate of basic knowledge and ideas is low, so it is necessary to establish the academy health education model to enhance the individual's acceptance of health education, distinguish the value needs and cognitive structure of the educational objects, increase the times of participating in health education and practice activities to improve the acceptance ability of educational objects and the coverage of health education, and pay attention to the cultivation of electronic health literacy to further improve the level of health literacy.

1. Introduction

Health Literacy is defined as the degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions [1]. Residents' health literacy, as an evaluation index that comprehensively reflected the development of national health undertakings, had been incorporated into the national health undertakings development plan. Health was the basis of all-round development of adolescents. Strengthening health education in universities and improving students' health literacy were the important contents of improving the health quality of the Chinese nation in an all-round way [2]. College students, as senior professionals of new technology, new ideas and social progress, had attracted wide attention from the state and society in terms of their physique and health status. Relevant studies showed that the overall health literacy level of college students in China was 12.08%, and the level of healthy lifestyle and behavior literacy was low [3]. In order to implement the work requirements for school health education putting forward in the Outline of the "Healthy China 2030" Program, in the Norms for Health Education in Universities and Colleges issued by the National Health and Health Commission in November 2017, the implementation objectives, contents, implementation and evaluation of health education for college students were defined. In order to understand the effectiveness of health education in Colleges and universities at this stage, this study investigated and analyzed the health literacy status and influence factors of 3 universities in Shandong Province from May to June, 2018, and provided reference for further improving health education in Colleges and universities.



2. Object and Methods

2.1 Object

Stratified random cluster sampling was used in the quantitative survey. Medical specialty, science and engineering specialty, and liberal arts were selected from 3 universities in Shandong Province. 3 classes were randomly selected from each grade of the 3 specialties. The students were investigated with informed consent. A total of 1500 questionnaires were distributed and 1460 questionnaires were effectively recovered, with an effective rate of 97.3%.

2.2 Methods

We applied Self-designed questionnaire "Norms of Health Education in Universities and Colleges" [4]which included: the basic information of the subjects, including gender, origin, grade, specialty, health education (whether or not opening health education courses, the times of receiving health education outside classroom), health information literacy (health information acquisition capacity, health information evaluation capacity, and health information practice capacity [5]). There were 54 items of health literacy, including basic knowledge and concept (23 items), healthy lifestyle and behavior (22 items), and basic skills (9 items). Question types were multiple-choice, single-choice and judgment questions. The correct answers to the items were judged to be 1 point, with a total score of 54 points. The respondents were judged to have health literacy by correct answers to 80% or more of the items [6], and the same judgement was judged to have three aspects of health literacy. The on-site survey was distributed to students by the uniformly trained investigators at the school site, filled in independently by anonymity, checked and recovered on the spot, and filled in three items or more (complete rate<95%) or answer options randomly as the criteria for determining invalid questionnaires.

2.3 Statistical analysis

Using EpiData2.0 to build database, double entry and logical verification. SPSS 18 software was used for statistical processing of data. The scores of each dimension of college Students' health literacy were described by $\overline{x\pm s}$. The data were analyzed by independent sample t test, one-way ANOVA and Logistic regression. The difference was statistically significant (P < 0.05).

3. Results

3.1 Basic situation and score comparison of health literacy of the respondents

Health literacy score of the respondents was 41.37 ± 10.34 , and 940 (64.4%) had health literacy. The scores and possession rates of basic knowledge and concept, healthy lifestyle and behavior, and basic skills were 16.28±4.58(49.6%), 17.24±4.99(70.3%), and 7.85±1.58(83.7%) respectively. There were significant differences in the scores of basic knowledge and concept (F=2.730, P=0.046), healthy lifestyle and behavior (F=4.203, P=0.006), basic skills (F=2.921, P=0.040) and health literacy (F=3.324, P=0.019) among the respondents of different grades (P<0.05). There were significant differences in scores of healthy lifestyle, behavior (F=18.667, P=0.000) and health literacy (F=4.264, P=0.014) among different specialties (P<0.05). There were significant differences in scores of basic knowledge and concept (t=4.270, P=0.000), healthy lifestyle and behavior (t = 2.619, P = 0.009), basic skills (t = 2.824, P = 0.005) and health literacy (t = 3.684, P=0.000) after taking health education courses (P<0.05). There were significant differences in scores of basic skills ($F=4.363 \sim 8.773$, P<0.05) and health literacy($F=3.729 \sim 3.903$, P<0.05) between different time of receiving health education outside classroom and capacity of evaluating health information ($P \le 0.05$). Different health information acquisition capacity and health information practice capacity had statistical significance on the scores of basic knowledge and concept (F=8.043~8.155, P<0.05), healthy lifestyle and behavior(F=6.576~7.979, P<0.05), basic skills($F=19.641 \sim 20.879$, P<0.05) and health literacy($F=10.104 \sim 10.456$, P<0.05).



3.2 Analysis of influencing factors on health literacy of respondents

Grades, specialties, courses of health education, times of receiving health education outside classroom, health information acquisition capacity, health information evaluation capacity and health information practice capacity were taken as independent variables. Bi-categorized Logistic regression analysis was conducted with the health literacy of the respondents as dependent variable (score \geq total score * 80% is 1, < total score * 80% is 0. Each variable was included in the model in the form of dumb variable, SLE = 0.10, SLS = 0.15). The final seven factors all entered the model. The results showed that the respondents were junior and senior students, medical students, students who had taken health education courses, received health education more than six times outside classroom, had high ability to obtain health information, evaluating health information and practicing health information, and had high scores of health literacy (P< 0.05). As shown in Table 1.

dependent variable	Independent variables		B (S.E.)	Wald	Sig.	OR
Health literacy	Grades (Control group = Freshmen)	Sophomores	0.187(0.134)	1.635	0.325	0.631
		Juniors	0.239(0.239)	2.412	0.037	0.980
		Seniors	0.415(0.357)	6.738	0.000	1.902
	Specialties (Control group=Liberal arts)	Medicine	0.543(0.194)	7.829	0.005	1.722
		Science and engineering	0.158(0.190)	0.690	0.406	1.171
	Open courses of health education	Yes	0.674(0.167)	15.056	0.000	0.524
	Times of receiving health education outside	Over 6	0.614(0.185)	11.050	0.001	0.541
	classroom (Control group=below 3)	3~6	0.341(0.198)	2.979	0.084	0.711
	Health information acquisition abilities	High	0.959(0.267)	12.889	0.000	0.383
	(Control group=low)	Commonly	0.814(0.288)	7.995	0.005	0.443
	Health information evaluation abilities	High	0.818(0.299)	7.509	0.006	0.441
	(Control group=low)	Commonly	0.550(0.306)	3.222	0.073	0.577
	Health information practice abilities	High	0.888(0.317)	7.849	0.005	0.411
	(Control group=low)	Commonly	0.847(0.311)	7.441	0.006	0.429

Table 1. Logistic regression analysis of influencing factors of health literacy

4. Discussion

The results of this study showed that the health literacy level of college students in three universities was 64.4%, which was higher than the overall health literacy level of 12.08% of college students in China [3]. According to the results of the retrieval of relevant information from schools, carrying out publicity and practical activities on health-related topics, expanding electronic information media such as school hospital websites, wechat grade groups, health education public numbers and so on, effectively promoted the overall improvement of college students' health literacy. There was no significant difference in scores of basic knowledge and concept, healthy lifestyle and behavior, basic skills and health literacy between the gender, which was consistent with Du Guoping's research results [7]. There was no significant difference in students' scores of basic knowledge and concept, healthy lifestyle and behavior, basic skills and health literacy between the places of origin, which was consistent with Ren Liping's research results [8]. After receiving health education, there was no obvious difference in the mastery of health knowledge between gender and region with high quality. There were significant differences in scores of basic knowledge and concept, healthy lifestyle and behavior, basic skills and health literacy among grades, which was consistent with the results of Chen Hui [9]. Senior students had comprehensive knowledge and participated in many times of practical education. They had high scores in health literacy and three aspects. Because of its disciplinary nature and good executive ability, medical specialty scored significantly higher in health literacy, healthy lifestyle and behavior than science, technology specialty and liberal arts, which was consistent with Zhou Weiwei's [10] research. There was no obvious difference in basic knowledge and concept, basic skills between medical specialty, science and technology specialty and liberal arts, which might be related to the consistency of health education work in universities and the requirements of Health Education Standards for General Universities.

In the aspect of health education, both health education courses and times of receiving health education outside classroom were related to the level of health literacy, which was consistent with the research results of Liu Huaqing [11]. Health education curriculum was still the main channel of classroom teaching. Extracurricular activities, as a useful supplementary form of health education, could improve the awareness rate of college students' health-related knowledge and the formation rate of health behavior. 28.09% did not take health education courses, 39.04% received health education outside classroom less than three times, which might be related to the individual's willingness to accept health education and education coverage. In terms of health information literacy, there were correlations between health information acquisition capacity, health information practice capacity and health literacy, which was consistent with Meng Shuxian's research results [12]. Good health information literacy could promote the generation of health behavior and control the spread of AIDS. Improper use or poor quality of network health information might lead to poor health outcomes, which might be related to the inadequate training of health information ability at this stage.

To sum up, in order to further improve the health literacy of students, colleges and universities should carry out relevant education and guidance from the following aspects: Firstly, establishing academy-based health education model [13]. Give full play to the characteristics of academy management in which students participate in management, clarify the two-way teaching mode of health education, participate in the independent design of specific health education courses, lectures and activities according to their own needs, enhance the initiative of receiving health education, let them know their own health responsibilities and learn self-health management. Secondly, we should establish a health education teaching plan that is in line with the characteristics of grade or specialty, distinguish the value needs and cognitive structure of the educational objects, increase the number of health education and practical activities, and improve the receiving ability and coverage of the educational objects. In addition, training seminars and courses on the skills of searching or evaluating network health will be conducted to inform authoritative health information websites and methods of searching, evaluating and utilizing health information, so as to cultivate awareness and discriminating ability of searching network health information. In a word, health education in colleges and universities should design teaching plans according to the theoretical basis, characteristics of interest and receptive ability of the educators, so as to make positive feedback on the contents, knowledge explanations, health responsibilities and behaviors of the textbooks, and improve the effectiveness of health education teaching in an all-round way.

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