A Survey on the Current Situation of Prehospital First Aid about Knowledge, Belief and Behavior among University Students in Jingzhou

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Abstract

Objective: To understand the current situation of prehospital first aid knowledge, attitude and behavior of university students in Jingzhou City. **Methods:** A prehospital first aid knowledge questionnaire and the convenience sampling method were used to survey 307 university students in Jingzhou City. **Results:** The mean score of prehospital first aid knowledge of university students in Jingzhou City was 12.85 ± 2.643, the mean score of attitude was 50.73 ± 4.114, and the mean score of behavior was 39.05 ± 8.898; There was a statistically significant difference in the scores of prehospital first aid knowledge, attitude, and behavior of university students depending on whether or not they had received prehospital first aid training ($P < 0.05$); there was also a statistically significant difference in the scores of prehospital first aid knowledge and behavior of university students with different majors, grade levels, and places of residence ($P < 0.05$). There is a positive correlation between the knowledge, attitude and behavior of prehospital emergency care of college students in Jingzhou City. Knowledge and attitude affect the level of behavior. **Conclusion:** Jingzhou University students have a positive attitude toward pre-hospital first aid, but the knowledge level and behavior are low, which suggests that the government, society and the school should create good conditions to promote the improvement of pre-hospital first aid knowledge and ability.

Keywords

Prehospital First Aid, University Student, Knowledge, Attitude, Behaviors

1. Introduction

With the rapid expansion of the social economy, science, and technology, the li-

kelihood of unintentional accidents and acute illnesses has increased dramatically, posing a serious threat to public health and safety. Correct, timely, and effective deployment of prehospital first aid for unintentional injury is critical to increasing rescue success rates while decreasing mortality and disability rates [1]. Prehospital first aid is not only a basic first aid skill that healthcare practitioners should have, but it is also a fundamental talent that every citizen should master. The 2022 "Expert Consensus on Public Response to Prehospital Emergency Waiting Period", emphasizes the importance of effective public rescue for patients in the "first time" [2], and whether the public can provide timely rescue to patients in the golden time window is the key to the success of rescue. College students are an important element of the public and will be the driving force of society in the future [3], so offering first aid education to the public, particularly college students, will result in a better outcome for prehospital first aid [4]. Training is a common key factor influencing prehospital emergency care knowledge attitudes and behaviors [5], and all three interact and promote each other. Based on this, this study investigates and analyzes the current status of knowledge, attitude, and behavior of prehospital first aid competence among college students in Jingzhou City to provide a basis for future targeted education and training.

2. Participants and Methods

2.1. Participants

From January 2024 to March 2024, 400 college students in Jingzhou City were selected as research subjects by convenience sampling method, and all research subjects gave informed consent and were willing to cooperate with this survey.

2.2. Methods

2.2.1. Survey Tools

1) The questionnaire was designed by reading domestic and foreign literature on prehospital emergency care and under the guidance of experts and supervisors, which including gender, grade, specialty, and whether they have received prehospital first aid training.

2) Prehospital first aid knowledge, attitude and behavior questionnaire. The questionnaire on prehospital first aid knowledge, attitude and behavior of college students compiled by Zhan Wei was used [5]. The content includes: a) First aid knowledge part: has 18 multiple choice questions, each correct answer counts as 1 point, wrong counts as 0 points, a total score of 18 points, pass set is 11 points; b) First aid attitude part: has 11 entries ranging from "completely" to "not at all" in order from 1 to 5, a total score of 55 points. The higher the score, the more positive the attitude toward pre-hospital first aid. The score rate = the actual score/55 × 100%. c) First-aid behavior part: has 10 entries ranging from "completely able" to "completely unable" in order from 1 to 5 points, a total score of 50 points. The higher the score, the better the prehospital first aid skills. The

score rate = actual score/50 × 100%. The content validity index (CVI) of the questionnaire was 0.993 and the reliability was 0.778. The questionnaire has good reliability and validity.

2.2.2. Survey Method

The survey adopts the form of questionnaire star, the questionnaire is distributed through WeChat or QQ, and the unified guidance language is used to guide the research subjects to fill out the questionnaire. A total of 400 questionnaires were issued and 400 were recovered, with a recovery rate of 100%, including 307 valid questionnaires.

2.2.3. Statistical Methods

The collected data was statistically analyzed using SPSS26.0 software. Mean ± standard deviation was used to describe the measurement data; frequency and percentage were used to describe the count data; t-test and one-way analysis were used to compare the groups, and the difference was considered statistically significant at $P < 0.05$.

3. Results

3.1. General Information

Of the 307 survey respondents, 34 (11%) were male and 273 (89%) were female; 223 (72.6%) were medical students and 84 (27.4%) were non-medical students; 148 (48.2%), 113 (36.8%), 35 (11.4%), and 11 (3.6%) were freshmen to seniors, respectively; and from the city were 63 (20.5%) and from rural areas were 244 (79.5%); 179 (58.3%) had attended prehospital first aid training and 128 (41.7%) had never attended first aid training.

3.2. The Current Situation of Pre-Hospital First Aid Knowledge, Attitude and Behavior

3.2.1. Status of Prehospital First Aid Knowledge

The average correct rate of 307 Jingzhou university students' knowledge related to prehospital first aid was 71.4%, and the average score was (12.85 ± 2.643), which was at a low level. The higher correct rates were 284 (92.5%) for emergency calls, 301 (98%) for electric shock first aid, 273 (88.9%) for gas poisoning treatment, 272 (88.6%) for the parts of chest compressions, 267 (87%) for scald treatment, 248 (80.8%) for choking treatment, 274 (89.3%) for judging the practice of sobriety, and 245 (79.8%) for fire treatment. The lower accuracy is the frequency of chest compressions 197 (64.2%), the ratio of compressions to artificial respiration 228 (74.3%), the tolerance time of the brain to oxygen deprivation 208 (67.8%), the treatment of broken ends of fractures 100 (32.6%), the handling of falling patients 241 (78.5%), the treatment of daggers inserted into the body 151 (49.2%), the site of compression to stop bleeding 88 (28.7%), basis for determining cardiac arrest 213 (69.4%), basis for determining whether breathing is present 173 (56.4%), and treatment of ankle sprains 183 (59.6%). The results of univariate

analysis showed statistically significant differences ($P < 0.05$) in the comparison of the scores of different majors, grades, places of residence, and whether or not they had received prehospital first aid training, as shown in Table 3.

3.2.2. Current Situation of Prehospital First Aid Attitude

The average score of prehospital first aid attitude of 307 college students in Jingzhou City is (50.73 ± 4.114), and the score rate is 92.24%, which is at a high level, see Table 1; The results of one-way analysis show that the difference between the scores comparing with whether or not they have received training is statistically significant ($P < 0.05$) (see Table 3).

3.2.3. Current Situation of Prehospital First Aid Treatment Behavior

The prehospital first aid behavior score of 307 college students in Jingzhou City is (39.05 ± 8.898), and the score rate is 78.1%, which is at a medium level (see Table 2); The results of one-way analysis show that the difference in the score comparison between different majors, grades, places of residence, and whether or not they have received training is statistically significant ($P < 0.05$) (see Table 3).

3.3. Correlation Analysis of Pre-Hospital First Aid Knowledge, Attitude and Behavior of Jingzhou University Students

Using pearson correlation analysis to test the prehospital first aid knowledge, attitude and behavior scores of Jingzhou university students, the p-value is < 0.05. And the prehospital first aid knowledge, attitude and behavior of Jingzhou university students are positively correlated, see Table 4.

Table 1. The reality of college students' attitudes toward prehospital first aid in Jingzhou, China (n = 307).

Items	Score ($\overline{x} \pm s$)
Do you think cardiac arrest patients can be revived	4.27 ± 0.63
Do you think college students should have first aid skills	4.85 ± 0.37
Do you think it is necessary to have first aid facilities on campus	4.84 ± 0.42
Do you think college students should promote first aid knowledge	4.86 ± 0.40
Do you think universities should have volunteer first aid teams	4.79 ± 0.49
Do you think you are capable of learning first aid skills	4.45 ± 0.75
Are you interested in learning first aid skills	4.52 ± 0.59
Are you interested in taking first aid training	4.45 ± 0.68
Would you like to join a volunteer first aid team to teach others	4.51 ± 0.71
Are you willing to rescue a stranger when they need first aid	4.47 ± 0.76
Are you willing to rescue your acquaintances when they need first aid	4.70 ± 0.56
Total average score	(50.73 ± 4.114)

Table 2. The reality of college students' practical ability toward prehospital first aid in Jingzhou city (n = 307).

items	score ($\bar{x} \pm s$)
Are you able to judge the safety of your surroundings	4.13 ± 0.95
Are you able to dial the emergency number correctly?	4.73 ± 0.72
Are you able to perform trauma care?	3.60 ± 1.09
Are you able to administer artificial respiration?	3.68 ± 1.26
Are you able to perform chest compressions?	3.79 ± 1.26
Are you able to organize emergency care for those around you?	3.83 ± 1.15
Are you able to perform emergency care under the guidance of a professional?	4.04 ± 1.02
Are you able to administer first aid according to the patient's condition?	3.60 ± 1.21
Are you able to correctly judge the effectiveness of the rescue?	3.57 ± 1.20
Are you able to actively seek out first aid information?	4.09 ± 0.99
Total average score	(39.05 ± 8.898)

Table 3. Comparison of prehospital emergency care knowledge, attitude, and behavior scores among people with different characteristics.

item	categorization	knowledge	t/F	P	attitude	t/F	P	practice	t/F	P
gender	boy	12.50 ± 3.04	−0.819	0.414	14.76 ± 4.56	0.126	0.448	39.44 ± 9.02	0.272	0.786
	girl	12.89 ± 2.59			15.33 ± 4.06			39.00 ± 8.90		
major	medicine	13.32 ± 2.60	5.275	0.000	51.00 ± 4.18	0.005	0.061	41.66 ± 7.78	9.524	0.000
	non-medicine	11.61 ± 2.36			50.01 ± 3.88			32.12 ± 7.95		
grade	freshman	13.43 ± 2.27	4.877	0.003	51.07 ± 4.26	0.795	0.497	42.64 ± 7.58	22.269	0.000
	sophomore	12.25 ± 3.13			50.51 ± 4.09			36.96 ± 9.00		
	junior	12.49 ± 1.98			50.03 ± 3.39			33.29 ± 7.50		
	senior	12.36 ± 2.20			50.55 ± 4.55			30.45 ± 6.61		
residence	city	12.14 ± 2.76	−2.401	0.017	50.83 ± 4.46	−0.207	0.836	36.03 ± 8.79	−3.06	0.002
	urban	13.03 ± 2.59			50.70 ± 4.03			39.83 ± 8.78		
Whether anyone in the family works in the medical profession	yes	12.43 ± 4.00	−0.610	0.542	49.57 ± 4.35	1.079	0.282	37.50 ± 10.11	−0.666	0.506
	no	12.87 ± 2.57			50.78 ± 4.10			39.12 ± 8.85		
Received first aid or not	yes	13.20 ± 2.59	2.782	0.006	51.16 ± 4.04	−2.162	0.031	41.35 ± 8.01	5.610	0.000
	no	12.36 ± 2.65			50.13 ± 4.16			35.84 ± 9.11		

Table 4. Training is a common key factor influencing prehospital emergency care knowledge attitudes and behaviors, and all three interact and promote each other.

item	knowledge	attitude	behavior
knowledge	1		
attitude	0.168**	1	
behavior	0.326**	0.411**	1

Note: **indicates significant correlation at the $P < 0.01$ level.

4. Discussion

4.1. Low Level of Prehospital First Aid Knowledge of University Students in Jingzhou City

The results of the study show that the average score of prehospital first aid knowledge of university students in Jingzhou City is (12.85 ± 2.643), which is at a low level (passing line 11 points). The correct rate is 71.4%, which is lower than the results of the study of Luo *et al.* [1] and Wang *et al.* [4] but higher than Zhou *et al.* [6] reported in his study. The reason for this is that their poll is mostly based on enterprise employees, teachers, police officers, transportation industry workers, and other incumbent workers, who account for 81% and fewer university students, respectively, and the incumbent workers have received necessary training. Although medical students were in the majority in this survey, however, it is mostly in the lower grades and the relevant knowledge learned is less. Survey respondents to the first aid telephone number of this entry have the highest correct rate, a total of 284 people answered correctly, accounted for 92.5%. The item "Where to apply pressure to stop bleeding when cutting a finger" has the lowest correct rate, with 88 respondents answering correctly (28.7%), and only 32.6% were correct for the item "Handling of broken ends of fractures". This could be because issues like gas poisoning, electricity safety, and first aid numbers are closely related to life and are widely publicized in the media, but terms like "fracture" and "compression to stop bleeding" are more uncommon and specialized, making it likely that study participants were not familiar with this portion of the material. This is consistent with the results of Zhang [7], who concluded that weak first aid knowledge and skills among college students are now common throughout the country, indicating that the dissemination of prehospital first aid knowledge and the degree of importance attached to it are insufficient, and that, while college students have a certain degree of knowledge of prehospital first aid, they do not have enough comprehensive knowledge of the specific information, which suggests that the E. Excel needs to be trained and popularized.

Univariate analysis showed that varied majors, grades, areas of residence, and whether or not they had undergone prehospital first aid training all had an impact on the prehospital first aid knowledge of university students in Jingzhou. Students majoring in medicine scored higher on relevant knowledge than non-medical majors, which was due to the fact that the medical students' major courses covered prehospital first aid, this is consistent with the results of Chen [8]. Students in lower grades had higher knowledge ratings than students in higher grades, which might be attributed to the fact that they are new to the school, have a strong desire to study, and are more active and time-intensive. Students in rural areas had higher knowledge scores than those in metropolitan areas, which could be attributed to the fact that medical services in rural areas were less developed, as was the economy and transportation. For self-protection, students in rural areas had more first-aid knowledge than students in urban

areas, and their awareness of first-aid was higher. Students who had undergone prehospital first aid training scored higher than those who had not, indicating that such training could successfully improve students' knowledge of prehospital first aid. Therefore, schools should increase their publicity and the quantity of public courses available in various formats to enhance students' motivation to learn prehospital first aid.

Based on the results of the above study, education is the cornerstone of knowledge, and schools need to increase the availability of public courses on prehospital emergency care in a variety of forms to provide students with means to acquire knowledge and increase their motivation to learn about prehospital emergency care.

4.2. Positive Attitudes toward Prehospital First Aid among University Students in Jingzhou City

The average score of prehospital first aid attitude of university students in Jingzhou is (50.73 ± 4.114), which is at a high level (full score of 55), consistent with the studies of Luo *et al.* [1], Wang *et al.* [4], and Zhan *et al.* [5], indicating that the university students in Jingzhou city have a positive attitude towards prehospital first aid. The most plausible explanations are as follows: first, it is related to the surroundings in which university students grow up and live. Students have intuitive feelings about the problems of accidental injuries and sudden illnesses and realize the importance of first aid to improve patient survival; the second is related to the fact that governments have attached great importance to the prevention of common accidents and unforeseen incidents, and have increased the publicity of prehospital first aid and the popularization of related knowledge; However, Maalim *et al.* [9] and Wan *et al.* [10] found that witnesses are still reluctant to administer first aid when encountering an emergency incident, and a minority of them in this study shared this sentiment, too. The study found that some individuals were hesitant to perform first aid due to concerns about legal issues, infection, or blackmail. This suggests that departments at all levels should promote prehospital first aid and foster a positive social environment to increase public motivation and initiative.

Univariate analysis showed that the attitude towards prehospital first aid was strongly connected to whether or not they had received training. Students who had received first aid training had a more active attitude towards prehospital first aid, which was consistent with the findings of Ling *et al.* [11], because college students who had received training were fully aware of the importance of prehospital first aid and the value of its application. The prehospital first aid training could help to increase their prehospital first aid competency and self-confidence, as well as encourage college students to participate in prehospital first aid. As a result, society and schools must pay attention to prehospital first aid, widely implement prehospital first aid training and popularization, and increase college students' knowledge.

Based on the above research, the society and the government need to pay attention to pre-hospital first aid work, improve the laws and regulations on ambulance service, increase the publicity and reward mechanism for "good people and good deeds", create a clean and positive social atmosphere, and widely carry out pre-hospital first aid training and popularization to improve the awareness of college students' knowledge of first aid, and to promote self-rescue and mutual aid.

4.3. Inadequate Pre-Hospital First Aid Practice of Jingzhou University Students

According to the study, survey respondents have an average pre-hospital first aid practice of (39.05 ± 8.898) points, placing them in the medium category. However, there is room for improvement in this area. The item "trauma care and artificial respiration" has the lowest marks, which is due to college students' lack of life experience and competence to deal with emergencies, as well as an insufficient theoretical connection to practice, among other factors. Especially the scores for trauma treatment and cardiopulmonary resuscitation (CPR) are particularly low in comparison to the other categories, which could be related to the fact that they require more knowledge and experience. This is consistent with the findings of Song [12] and Xiong [13]. The above implies that there is still a long way to go in terms of training university students in prehospital first aid and popularizing first aid in Jingzhou.

Univariate analysis showed that the differences in different majors, grades, places of residence and whether or not they had received prehospital first aid training were statistically significant ($P < 0.05$), and were significant factors affecting college students' prehospital first aid practice. The higher scores of medical majors may be attributed to the fact that medical students study majors or elective courses that include prehospital first aid, so they have more confidence in performing ambulance rescue than non-medical students, as well as a sense of professional responsibility and mission. Junior college students had greater participation rates in prehospital emergency care practice than seniors, which could be attributed to variables such as seniors' lack of time due to academics, internships, and work. The prehospital first aid practice scores of students whose families lived in rural areas were higher than those who lived in urban areas, which might be related to the fact that basic medical facilities were underdeveloped and that the economy and transportation systems in rural areas lagged behind those in urban areas. Students from rural areas are more behaviorally competent in first aid practice and have stronger safety awareness for self-defense. Consistent with Luo *et al.*'s findings [1], students who underwent prehospital first aid training performed better. Actually, first aid training not only provides individuals with first aid knowledge, but also leads to more positive first aid attitudes and behaviors towards first aid, demonstrating the importance of the prehospital first aid courses and training in schools.

Based on the above research, it is necessary to clarify the weak links, carry out the construction of first aid knowledge training system in a targeted manner, and unite social organizations such as the Red Cross to carry out training and drills in a hierarchical and categorical manner, so as to continuously improve the level of pre-hospital first aid in Jingzhou City.

4.4. Correlation Analysis of Prehospital First Aid Knowledge, Attitude and Behavior of University Students in Jingzhou City

The findings of this study indicate that there is a positive association between prehospital first aid knowledge, attitude, and behavior among university students in Jingzhou City, all of which influence and support one another. This demonstrates that college students' attitudes and behaviors about prehospital first aid are positively correlated with their level of prehospital first aid education. In order to raise the standard of prehospital first aid, the educational system and society as a whole should give college students greater access to prehospital first aid information and assist them in developing appropriate and constructive attitudes about prehospital first aid.

5. Limitations and Prospects

Only 307 college students in Jingzhou City were chosen as study participants, and the sample size has certain limitations. The study's findings only reflect the state of prehospital emergency care for college students at the time of the survey; the distribution of grades and gender in the sample is not uniform, which somewhat affects the analysis of the influencing factors. To gain additional insight into the current state of prehospital first aid for college students in Jingzhou City and the associated influencing factors, a multi-center large-sample survey should be conducted as part of the follow-up study.

6. Summary

In the future, college students will form the core of societal development and construction. Following graduation, they'll enter a variety of societal sectors, and their familiarity with first aid can serve as a gauge for the state of public first aid in a given nation. The study's findings demonstrate that while university students in Jingzhou lack sufficient behavioral practice and a low level of prehospital first aid knowledge, they exhibit positive and proactive attitudes. It is suggested that the public and educational institutions should improve awareness of pre-hospital first aid and provide targeted pre-hospital first aid training to raise the knowledge and proficiency of Jingzhou college students in this area, which is extremely important to raise the standard of pre-hospital first aid in Jingzhou.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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