

Analysis of the Current Situation and Influencing Factors of First Aid Literacy among Non-Medical Vocational Students

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Abstract: Objective To investigate the current status of emergency literacy among non-medical vocational students, explore factors affecting their first aid literacy, and provide reference for improving emergency education and enhancing their first aid literacy. **Methods:** Data collection was conducted using cross-sectional survey research and convenience sampling. From May 2025 to August 2025, 202 non-medical vocational secondary vocational students studying at a vocational technical school in Shandong Province were selected as research subjects. The research assessment tools included a general data questionnaire and a resident first aid literacy questionnaire, analyzed using SPSS26.0 statistical software. **Results:** The total emergency literacy score of non-medical vocational secondary vocational students was (58.69 ± 8.81) , showing an overall positive attitude but weak skills; Univariate analysis showed that non-medical vocational students had significant differences in emergency literacy in terms of parental occupation, whether family members had illnesses, exposure to emergency science content on media and television platforms, life experiences related to first aid, whether schools offered emergency courses or lectures, and whether schools had organized practical emergency drills and first aid literacy. Multiple linear regression analysis showed that exposure to media emergency science content, parents' occupations, and family members having illnesses were factors influencing emergency literacy among non-medical vocational students, with statistically significant differences. **Conclusion:** Non-medical vocational secondary vocational students have an above-average level of emergency literacy, weak knowledge and skills, and good attitudes and beliefs. Media first aid science popularization is a core independent factor in improving students' first aid literacy, and family background is also an important factor. School emergency practical drills have potential for improvement.

Keywords: Non-medical; Secondary Vocational Students; First Aid Literacy; Influencing Factors.

1. Introduction

Public safety hazards persist, Various emergencies and accidental injuries occur frequently. According to the WHO report, accidental injuries are the leading cause of adolescent disability and death in most countries worldwide [1]. In our country, as many as 550,000 people suffer cardiac arrest each year, yet the survival rate is less than 1%, which means accidental injuries have become the leading cause of death among children and adolescents in the 21st century [2]. Against this backdrop, the importance of first aid literacy is extremely prominent, playing a crucial role in reducing harm to citizens and saving precious lives. Non-medical vocational students are an important part of the workforce. In the future, they will be widely distributed across various industries. If they master emergency first aid skills, they can not only improve their own health literacy but also popularize and spread first aid knowledge and skills at a broader social level [3]. China has always attached great importance to the physical and mental health of young people. The 1986 Compulsory Education Law stipulated that schools should carry out safety education [4]; In 2020, the Red Cross Society of China emphasized the inclusion of first aid knowledge in educational content [5]; In 2016, the former National Health and Family Planning Commission put forward the requirement to comprehensively improve public health emergency literacy [6-8]. However, emergency first aid in China started relatively late, and publicity efforts and training systems are still insufficient [9]. Based on existing research, systematic surveys and assessments specifically targeting the

group of non-medical vocational secondary vocational students are still relatively lacking, and research on related influencing factors is also weak. Therefore, it is necessary to comprehensively and systematically understand the current state of emergency literacy and its influencing factors in this group, providing a basis for improving and optimizing emergency education.

2. Objects and Methods

2.1. Research Subjects

Using convenience sampling, selected non-medical secondary vocational students who met the inclusion and selection criteria attending a vocational technical school in Shandong Province between May 2025 and August 2025 were selected as research subjects. Inclusion criteria: Vocational students currently enrolled in non-medical majors; Able to communicate normally and understand the questionnaire content; Participants voluntarily participated in this study and signed informed consent forms. Exclusion criteria: Prior emergency training or work experience; Presence of serious physical and mental illnesses affecting questionnaire surveys; Those who drop out or are unable to complete the questionnaire. This study used the Kendall sample size [10]. Rough estimation method, meaning the number of observations is at least 5~10 times the number of variables. The dimensions of each questionnaire in this study consisted of 18 items from the General Information Questionnaire and 2 dimensions from the Residents' First Aid Literacy Questionnaire, totaling 45 items. Considering that

samples may be lost due to non-response or various reasons during data collection, the sample size is increased by 10% on top of the original sample size, resulting in a calculated sample size of 111~220. The study ultimately enrolled 202 participants, meeting the sample size requirements. All survey participants informed and consented to participate voluntarily.

2.2. Research Tools

2.2.1. General Data Survey Form

The researcher extensively reviewed literature based on the study's objectives and designed the findings, including age, gender, ethnicity, grade level, major category, family location, parents' occupation, father's education, mother's education, per capita monthly income, whether the child is an only child, primary caregiver in the family, whether there is religious belief, whether a family member has any illnesses, whether they have accessed emergency science content on the platform, whether they have had life experiences related to first aid, and whether the school offers emergency courses or lectures, Whether the school has organized practical emergency drills, etc. A total of 18 entries.

2.2.2. Resident First Aid Literacy Questionnaire

This scale was developed by Wan Zhiying et al [11]. The research includes two dimensions: first aid knowledge and skills and first aid beliefs, with a total of 45 entries. The first aid knowledge and skills section consists of 35 single-choice questions, each correct answer earns 10 points, incorrect answers earn 0 points, and a total score of 35 points. The emergency belief section consists of 10 items, with items 1~5. Each item is scored as "fully agree" as 5 points, "agree" as 4 points, "uncertain" as 3 points, "disagree" as 2 points, and "completely disagree" as 1 point. Items 6~10 are scored in reverse. The total score is 50 points; the higher the score, the more proactive the emergency response attitude. The Cronbach's scale' The sa coefficient is 0.897. In this study, the scale was developed by Cronbach' The sa coefficient is 0.739.

2.3. Data Collection and Quality Control Methods

Questionnaires are distributed to respondents through paper questionnaires and a combination of online and offline methods on the WenjuanXing platform, with reasonable collection deadlines set. After questionnaire collection, preliminary screening and organization are conducted to remove invalid questionnaires and abnormal data. This study was designed based on literature and advisor feedback, using an adaptive and reliable scale with good reliability and validity, strictly adhering to ethical standards, and ensuring reliability through multiple data quality controls.

2.4. Statistical Analysis Methods

An Excel database is established; all questionnaires are organized, coded, and checked and entered by two people. Data analysis and processing were conducted using SPSS26.0 statistical software. This study set a two-sided test with a test level of $\alpha=0.05$. Using statistics such as frequency, percentage, mean, and standard deviation to understand the demographic data and first aid literacy level of the research subjects; T-tests and one-way ANOVA were used to compare differences in first aid literacy among study subjects according to demographic characteristics; Multiple linear regression analysis was used to explore the influencing factors of first aid literacy among the research subjects.

3. Results

3.1. General Demographic Data for Non-Medical Vocational Secondary Vocational Students

A total of 220 people were surveyed, 220 questionnaires were distributed, and 202 valid responses were collected, accounting for 91.8% of the responses. Other general information Specifically, Table 1 as shown.

3.2. Emergency Literacy Score for Non-Medical Vocational Students

The results showed that the total emergency literacy score for non-medical vocational secondary vocational students was (58.69 ± 8.81) , with an average score of (1.30 ± 0.20) . Among them, the total score for the first aid knowledge and skills dimension was (23.23 ± 5.44) , with an average score of (0.66 ± 0.16) ; The total score for the emergency attitude and belief dimension was (35.47 ± 4.83) , with an average score of (3.55 ± 0.48) . For detailed scoring information, please refer to the details Table 2.

3.3. Univariate Analysis of First Aid Literacy of Non-Medical Vocational Students

The results show that the first aid literacy scores of non-medical vocational students differ significantly in parental occupation, whether family members have illnesses, exposure to emergency science content on media and television platforms, life experiences related to first aid, whether schools offer emergency courses or lectures, and whether schools have organized practical emergency drills. The differences are statistically significant ($P<0.05$), see details Table 3.

3.4. Analysis of Factors Influencing First Aid Literacy of Non-Medical Vocational Students

To further clarify the factors affecting the emergency literacy of non-medical vocational students, this study based on univariate analysis selected statistically significant variables (parents' occupation, whether family members are ill, whether they have accessed emergency science content on social media or TV platforms, whether they have had life experiences related to first aid, whether the school offers emergency courses or lectures, whether the school has organized practical first aid drills) for multiple linear regression analysis. To meet the requirements of the regression model, the emergency literacy score of non-medical vocational students was used as the dependent variable, and the factor with statistically significant differences in univariate analysis was used as the independent variable for linear regression analysis. For details on the assignment method for independent variables, see below Table 4.

Multiple linear regression analysis was conducted on the emergency literacy of non-medical vocational students with different characteristics, with specific results as follows Table 5 as shown. The analysis results show that the linear model's R^2 value is 0.211, and the adjusted R^2 value is 0.186, *The F statistic is 8.679*. The results showed that "the parents' occupations and whether they have been exposed to emergency science content on social media or TV platforms." "Variables had a significant positive effect on emergency literacy ($P<0.05$); "Whether a family member has

any illness” Variables have a negative impact on emergency literacy.

Table 1. Sociodemographic characteristics of non-medical vocational secondary vocational students (n=202, %)

Project	Category	Number of people (n)	Percentage (%)
Gender	Male	70	34.7
	Female	132	65.3
Project	Category	Number of people (n)	Percentage (%)
Ethnicity	Han ethnicity	182	90.1
	Other ethnic groups	20	9.9
Major category	Information Technology category	39	19.3
	Finance and Commerce	54	26.7
	Tourism services	27	13.4
	Culture and Arts category	64	31.7
	Agriculture, forestry, animal husbandry, and fishery	2	1.0
	Transportation	7	3.5
	Civil engineering and water conservancy category	5	2.5
	Processing and manufacturing category	4	2.0
The home of the family	City	99	49.0
	Rural areas	103	51.0
Parents' professions	Both parents are medical majors	16	7.9
	Both parents are non-medical professionals	156	77.2
	One of them is medical	30	14.9
Father's education	Elementary school and below	26	12.9
	Junior high	79	39.1
	High school/secondary vocational school	56	27.7
	College degree and above	41	20.3
Mother's education	Elementary school and below	41	20.3
	Junior high	68	33.7
	High school/secondary vocational school	53	26.2
	College degree and above	40	19.8
Only child	Yes	59	29.2
	No	143	70.8
Per capita household income	< 2000 yuan	13	6.4
	2000-3999 yuan	64	31.7
	4000-6000 yuan	67	33.2
	> 6000 yuan	58	28.7
Whether a family member has any illness	Yes	70	34.7
	No	132	65.3
Project	Category	Number of people (n)	Percentage (%)
Whether they have religious beliefs	Yes	12	5.9
	No	190	94.1
Have you been exposed to emergency science content on media platforms?	Never touched	8	4.0
	Occasional contact	157	77.7
	Frequent contact	37	18.3
Have you ever had any life experience related to first aid?	Yes	88	43.6
	No	114	56.4
Does the school offer first aid-related courses or lectures?	It has never been established	22	10.9
	Occasionally opened	129	63.9
	Held regularly	51	25.2
Has the school organized practical first aid drills?	Never organized	56	27.7
	Occasionally organized	103	51.0
	Organize regularly	43	21.3

Table 2. Current Status of First Aid Literacy Scores for Each Dimension (n=202, Score, $\bar{x} \pm s$)

Dimension	Overall score	Divide equally
First aid knowledge and skills	23.23±5.44	0.66±0.16
First aid attitude and belief	35.47±4.83	3.55±0.48
First aid literacy overall score	58.69±8.81	1.30±0.20

Table 3. Univariate analysis of emergency literacy among non-medical vocational students with different characteristics (n=202, Score, $\bar{x} \pm s$)

Project	Category	Examples	First aid literacy scores	t/F	P
Gender	Male	70	57.24±10.19	-1.586	0.116
	Female	132	59.46±7.91		
Ethnicity	Han ethnicity	182	58.98±8.98	1.417	0.158
	Other ethnic groups	20	56.05±6.73		
Major category	Information Technology category	39	60.0±9.20	1.081	0.377
	Finance and Commerce	54	60.22±8.59		
	Tourism services	27	55.11±10.82		
	Culture and Arts category	64	58.52±7.53		
	Agriculture, forestry, animal husbandry, and fishery	2	57.50±16.26	1.081	0.377
	Transportation	7	57.71±10.66		
	Civil engineering and water conservancy category	5	56.20±5.07		
	Processing and manufacturing category	4	57.75±8.62		
The home of the family	City	99	59.13±9.30	0.692	0.490
	Rural areas	103	58.27±8.34		
Parents' professions	Both parents are medical majors	16	61.69±12.26	4.292	0.015*
	Both parents are non-medical professionals	156	57.72±8.31		
	One of them is medical	30	62.13±8.27		
Project	Category	Examples	First aid literacy scores	t/F	P
Father's education	Elementary school and below	26	60.88±6.79	1.027	0.382
	Junior high	79	58.66±8.37		
	High school/secondary vocational school	56	57.34±9.87		
	College degree and above	41	59.22±9.20		
Mother's education	Elementary school and below	41	58.17±8.64	1.858	0.138
	Junior high	68	58.79±8.14		
	High school/secondary vocational school	53	57.02±10.00		
	College degree and above	40	61.28±8.09		
Is she an only child?	Yes	59	60.29±8.80	1.660	0.098
	No	143	58.03±8.76		
Per capita monthly household income	< 2000 yuan	13	54.46±8.55	1.780	0.152
	2000-3999 yuan	64	58.03±9.67		
	4000-6000 yuan	67	58.76±8.51		
	> 6000 yuan	58	60.29±8.00		
Whether a family member has any illness	Yes	70	61.31±8.98	3.147	0.002**
	No	132	57.30±8.43		
Whether they have religious beliefs	Yes	12	54.33±10.04	-1.777	0.077
	No	190	58.97±8.62		
Have you been exposed to emergency science content on media, television, or other platforms?	Never touched	8	49.13±10.58	10.146	0.000***
	Occasional contact	157	58.18±8.55		
	Frequent contact	37	62.95±7.42		
Have you ever had any life experience related to first aid?	Yes	88	60.17±9.00	2.112	0.036*
	No	114	57.55±8.53		
Project	Category	Examples	First aid literacy scores	t/F	P
Does the school offer first aid-related courses or lectures?	It has never been established	22	55.77±10.30	7.634	0.001**
	Occasionally opened	129	57.64±8.53		
	Held regularly	51	62.61±7.68		
Has the school organized practical first aid drills?	Never organized	56	57.27±10.40	7.543	0.001**
	Occasionally organized	103	57.80±8.04		
	Organize regularly	43	62.70±7.20		

Note: * indicates significant at the P<0.05 level; ** indicates significant at the P<0.01 level; Indicates significant at the P<0.001 level, same below

4. Discussion

4.1. Current Status of First Aid Literacy among Non-Medical Vocational Secondary Students

Based on statistics and analysis of data on the emergency literacy of 202 non-medical vocational secondary vocational students, the results show that their emergency literacy is above average. This indicates that non-medical vocational

students have a certain foundation in emergency literacy, but there is still room for improvement.

From the perspective of various dimensions of emergency literacy, the first aid attitude and belief scores were relatively high, indicating that non-medical vocational secondary vocational students generally have a more positive attitude toward emergency care and a solid foundation of first aid belief; In terms of first aid knowledge and skills, non-medical vocational students still have relatively low levels of accumulated emergency knowledge and practical skills. This

is lower than other domestic research findings [12-14]. This indicates that vocational secondary school students still lack sufficient mastery of first aid knowledge [15], This forms a sharp contrast with positive attitudes and beliefs.

Table 4. Independent variable assignment table

variable	Assignment explanation
Parents' professions	1 = Both parents are medical, 2 = Both parents are non-medical, 3 = One parent is medical
Whether a family member has any illness	0 = yes, 1 = no
Have you ever encountered emergency science content on social media, television, or other platforms?	1 = never touched, 2 = occasional, 3 = frequent
Have you ever had any life experience related to first aid?	0 = yes, 1 = no
Does the school offer first aid-related courses or lectures?	1 = never offered, 2 = occasionally, 3 = held regularly
Has the school organized practical first aid drills?	1 = never organized, 2 = occasionally organized, 3 = regularly organized

Table 5. Multiple linear regression analysis of factors influencing emergency literacy among non-medical vocational students with different characteristics

variable	B	SE	Beta	T	P
Constant	45.211	4.764		9.491	0.000***
Parents' professions	2.740	1.215	0.147	2.255	0.025*
Whether a family member has any illness	-5.149	1.215	-0.279	-4.239	0.000***
Have you ever encountered emergency science content on social media, television, or other platforms?	5.056	1.362	0.259	3.713	0.000***
Have you ever had any life experience related to first aid?	-0.954	1.163	-0.054	-0.821	0.413
Does the school offer first aid-related courses or lectures?	1.616	1.125	0.107	1.436	0.153
Has the school organized practical first aid drills?	1.817	0.923	0.144	1.967	0.051

Note: B is the partial regression coefficient, SE is the standard error, and β is the standard partial regression coefficient

4.2. Analysis of Factors Influencing First Aid Literacy of Non-Medical Vocational Students

4.2.1. Parental Profession

Whether parents are medical professionals is one of the factors influencing the emergency literacy of non-medical vocational students, and this conclusion aligns with Peng

Lijun et al [16], Lü Ling, and others [17]. HumanResearchIt is consistent that medical workers possess systematic and standardized emergency theory and practical experience, frequently encounter various sudden injury scenarios in daily work, and can accurately distinguish key points for handling different accidental injuries. Compared to ordinary families, it is easier to proactively convey standardized emergency knowledge in daily life. In family interaction scenarios, medical parents can use daily health education, handling sudden minor family injuries and illnesses, and participating in community emergency volunteer activities to teach by example, transforming core skills like CPR, hemostasis and bandaging, and airway obstruction emergency into practical science content, subtly shaping their children's awareness of first aid, confidence, and behavioral habits over time [18]. Some medical families also provide emergency simulation teaching aids and home first aid kits, regularly conducting scenario simulation drills to create low-cost, high-frequency practical emergency scenarios for young people, effectively addressing the shortage of on-campus emergency practical resources. At the same time, medical practitioners generally have a stronger awareness of life safety and a sense of responsibility for public rescue, which can convey to their children the positive belief of "first witness rescue," alleviating adolescents' psychological concerns about "not daring or knowing how to help" in sudden accidents, and simultaneously improving scores for emergency attitude and belief. In contrast, families with no medical experience have fragmented and insufficient self-disciplined emergency knowledge, lack awareness and professional capability to actively carry out family emergency science education, and lack regular emergency communication and practical scenarios within the family. Students can only obtain emergency information through school courses, short videos, and other external channels, resulting in a fragmented knowledge system and lack of practical experience, resulting in overall low first aid literacy [19].

4.2.2. Have you been Exposed to Media First Aid Science Content?

Whether one is exposed to media emergency science content is a key positive factor affecting the emergency literacy level of non-medical vocational students, consistent with multiple similar studies both domestically and internationally, as reported by Wang Xueqing et al [20]. Qualitative research on short video emergency science popularization confirms that young people who regularly browse online emergency science popularization have significantly higher mastery of emergency knowledge and confidence in on-site rescue compared to those who rarely interact with media science popularization; A quasi-experimental study targeting non-medical youth also pointed out that respondents participating in social media emergency science topics showed significantly higher cognitive scores on basic life support than those who did not engage with online science popularization [21]. Non-medical vocational secondary vocational students are aged 16-20At this stage, students are more active in receiving information,Daily access to extracurricular information heavily relies on short video platforms, social apps, TV science programs, and other mass media channels, while traditional channels like print books and offline lectures generally have low usage rates [22]. Compared to the school's unified and standardized offline emergency classes, short videos and graphic science popularization content are vivid and intuitive, with short

durations and low barriers to communication. They can break down professional procedures such as CPR, airway foreign object obstruction, and trauma hemostasis and bandaging into visualized simple tutorials, perfectly matching vocational students' preferences for concrete, lightweight, and fragmented learning [23]. At the same time, online popular science content has the ability to browse independently, allowing students to freely choose viewing periods and learning content based on their interests, increasing their willingness to learn proactively, and the long-term retention of related skills and knowledge points is better than the one-way traditional classroom lecture model [24]. Social platforms like WeChat and Douyin also support the sharing of popular science content and interactive comments. Peer sharing can further expand the spread of first aid knowledge, creating a collective learning atmosphere [25]. Therefore, we should make full use of internet platforms to launch more emergency science popularization content [26]. This greatly enhances students' first aid literacy.

4.2.3. Whether Family Members have Illnesses

Whether a family member has a disease has a significant negative impact on first aid literacy, revealing the special role of special family experiences—especially real events like relatives falling ill—in the formation of youth first aid literacy. This result is highly consistent with the findings of Hua Xiaoqian and others [27]. Hua Xiaoqian and others found in qualitative studies on stroke patients' families that families often experience insufficient emergency response ability and feelings of helplessness when their loved ones suddenly fall ill. The study further points out that this lack of emergency response capability is not an isolated phenomenon but is closely related to the multiple burdens brought by long-term care—family members must invest significant time and energy in long-term care, while psychological stress increases significantly [28]. These factors greatly squeeze their time and energy resources for self-directed learning and practice of emergency knowledge, making it difficult for them to effectively accumulate emergency knowledge and practical skills. From the perspective of real-life care scenarios, when family members suffer from chronic or severe illnesses, students need to take on long-term care tasks, including medication supervision, monitoring physical signs, accompanying follow-up visits, and daily life care. Relevant foreign studies have also confirmed that family caregivers with chronic diseases generally face a heavy caregiving burden and anxiety [29]. When family members suddenly experience fluctuations in their condition, most teenagers tend to feel tense and panicked, have low self-efficacy in emergencies, and generally show issues such as insufficient emergency response ability and a strong sense of helplessness in handling situations. At the same time, long-term care occupies a large portion of adolescent children's spare time and energy. Physical fatigue combined with ongoing psychological pressure significantly reduces their free time for independent extracurricular learning, making it difficult to spare extra energy to actively focus on and learn general first aid theories and practical skills. Research shows that caregivers' first aid knowledge, attitudes, and behavioral levels are generally low [30]. In addition, during the process of a family member falling ill, students' information search directions tend to become noticeably biased. When consulting health data, their focus is highly concentrated on specialized medical information such as the pathogenesis of relatives' diseases, medication regimens, disease control methods, and

subsequent treatment plans. The scope of information is limited to specific disease fields, and there is little motivation to pay attention to general pre-hospital emergency knowledge such as airway foreign body obstruction, cardiac arrest, and hemostasis from trauma [31], the frequency of actively browsing emergency science content has significantly decreased. Long-term bias in information selection has led to a monotonized knowledge structure, accumulating only specialized care knowledge without a general reserve of emergency first aid content, ultimately resulting in a low overall emergency literacy. This finding also suggests that targeted interventions for this group are needed when promoting first aid in the future. For secondary vocational students with sick relatives, emergency response courses for acute onset of common illnesses can be designed based on their family care scenarios, combining key points of specialized disease emergency response with general first aid skills. This fills gaps in emergency knowledge while meeting their actual needs, eliminating the negative impact of family caregiving experiences on their literacy.

5. Summary

Non-medical vocational secondary vocational students generally have a moderate level of emergency literacy, showing the notable characteristics of "positive attitude but weak skills." They score high in the dimension of attitude and belief in first aid, but low in the dimension of first aid knowledge and skills, which is the main shortcoming in cultivating first aid literacy. Parents' occupations, exposure to media emergency science content, and whether family members have illnesses are independent factors affecting the emergency literacy of non-medical vocational students. Among them, parents with medical professions who frequently engage with emergency science content on social media/TV platforms have a significant positive impact on students' first aid literacy, with exposure to media emergency science content having the most significant positive effect; Family members suffering from illnesses have a very significant negative impact on students' first aid literacy. The results show that new media platforms are the most effective channels for enhancing the emergency literacy of non-medical vocational students, and their dissemination characteristics are more consistent with their study habits, making them a key focus for emergency science popularization. At the same time, family-related factors (parents' occupations, family members' illnesses) have a significant impact on students' first aid literacy, indicating that emergency education needs to be jointly promoted by schools and families.

However, this study has certain limitations: the sample size included is relatively small, and the generality and applicability of the results may be affected; The research subjects come from a specific region or school, which may vary by region, so it is not possible to fully reflect the overall level of first aid literacy among all vocational students. Therefore, future joint research across regions and universities can be conducted to expand the sample size and further explore the influencing factors of the current emergency literacy status of non-medical vocational secondary vocational students under different backgrounds.

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