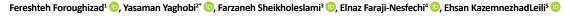**Original Paper**

Knowledge and Attitude Towards the Care For Self-harming Adolescents and the Related Factors in Emergency Department Nurses From Northern Iran

Fereshteh Foroughizad[1] , Yasaman Yaghobi[2*] , Farzaneh Sheikholeslami[3] , Elnaz Faraji-Nesfechi[4] , Ehsan KazemnezhadLeili[5]

1. Nursing (MsN), 17 Shahrivar Educational-Medical Center, Guilan University of Medical Sciences, Rasht, Iran.
2. Assistant Professor, Department of Nursing, School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran.
3. Instructor, Department of Nursing, School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran.
4. Nursing (MsN), Department of Nursing, School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran.
5. Associate Professor, Department of Biostatistics and Epidemiology, School of Health, Guilan University of Medical Sciences, Rasht, Iran.

ABSTRACT

Introduction: Self-harm is a serious health concern, and is relatively common among adolescents. The quality-of-service delivery to self-harming patients is related to the knowledge and attitude of nurses.

Objective: This study aimed to determine the knowledge and attitude of emergency department (ED) nurses from northern Iran regarding the care of self-harming adolescents and find the related factors.

Materials and Methods: This analytical cross-sectional study was conducted on 208 ED nurses with over 6 months of work experience in the ED of hospitals in Rasht, Iran. They were selected using a census sampling method. The data collection tool was a three-part questionnaire including a sociodemographic form, the attitudes towards deliberate self-harm questionnaire (ADSHQ), and Letho et al.'s knowledge scale. The collected data were analyzed using the Kolmogorov-Smirnov test, Shapiro-Wilks test, Mann-Whitney U test, multiple linear regression analysis, and the Spearman correlation test.

Results: The mean age of the nurses was 34.8±7.8 years, and the majority of them were female (90.9%) with a bachelor's degree (88.5%). The mean total score of knowledge was 0.67±0.12. Nurses' attitudes were mostly positive, and the total ADSHQ score was 3.59±0.28. The ADSHQ score was significantly different based on nurses' age (P=0.03) and experience in caring for self-harming adolescents (P=0.033). The ADSHQ score had a positive correlation with the knowledge score (r=0.252, P=0.001). The knowledge score was significantly different based on marital status (P=0.042) and experience in caring for self-harming adolescents (P=0.016). The significant factors for the ADSHQ score in the multiple regression model were the risk factors domain of the knowledge (β=0.334, 95%CI; 1.527%, 3.367%, P=0.001), age (β=0.184, 95% CI; 0.061%, 0.323%, P=0.004) and experience in caring for self-harming adolescents (β=2.4, 95% CI; 0.340%, 4.595%, P=0.023).

Conclusion: Nurses' knowledge in caring of the intentional self-harm adolescents was moderate and their attitude towards these adolescents was positive. In the EDs, it is recommended that nurses with experience dealing with self-harming adolescents be employed. Also, retraining programs should be provided to ED nurses to improve their knowledge and positive attitudes towards caring for self-harming adolescents, focusing on increasing empathy and perceived confidence.

* Corresponding Author:

Yasaman Yaghobi, Assistant Professor.

Address: Department of Nursing, School of Nursing and Midwifery, Guilan University of Medical Sciences, Rasht, Iran.

Tel: +98 (13) 33555058

E-mail: yaghobiyasaman@yahoo.com

Highlights

● Most of the emergency department (ED) nurses in northern Iran had a moderate knowledge of care for self-harming adolescents.

● Most of the ED nurses in northern Iran had a positive attitude towards the care for self-harming adolescents.

● The knowledge score of the ED nurses was significantly different based on marital status and experience in caring for self-harming adolescents.

● There is a positive correlation between the knowledge and attitude regarding the care for self-harming adolescents among ED nurses.

Plain Language Summary

Since adolescence is often characterized as a time of impulsive and risky choices, there is a higher risk of unwanted injuries and violence, alcohol and drug abuse, unwanted pregnancy, and sexually transmitted diseases. Adolescents are psychologically weak to solve problems. To compensate for this weakness, they may commit self-harm. In the present study, the knowledge and attitude of the ED nurses regarding the care for self-harming teenagers were surveyed and the related factors were investigated. The findings showed that Iranian nurses' knowledge was moderate, and their attitude was positive. The knowledge and attitude of the nurses were significantly different among those with and without experience in caring for self-harming teenagers.

Introduction

Self-harm includes any self-inflicted injury or attempt to harm on oneself [1]. Non-suicidal self-injury refers to behaviors consciously and directly performed by the individual to harm body tissues without suicidal intent [2]. Adolescents engage in self-harming behaviors to regulate their current emotions. Self-harm is a way to cope with unbearable psychological pain or regain a sense of emotional balance [1, 2]. The rate of self-harm among children and young people is 7-14% [3]. In the United States, approximately 500,000 patients are admitted to emergency departments (EDs) annually due to deliberate self-harm [4]. In Northern Iran, a study reported a self-harm incidence rate of 54.9% among adolescents [5]. Another study in Iran found a self-harm prevalence of 12.3% among adolescents [6].

To reduce the risk of self-harm, it is important to identify the risk factors [7]. Adolescence is a developmental period characterized as a time of impulsive and risky choices, leading to an increased incidence of unintentional injury and violence [8-10]. Self-harming behaviors increase the serotonin and endorphin levels, resulting in feelings of pleasure and repetitive behavior [11]. Various factors, including environmental factors, family, friends, and genetic predisposition, may have a role in adoles-

cents' susceptibility to self-harming behaviors. There is evidence linking childhood trauma to a history of self-harm in adolescence [12, 13]. The risk of repeated self-harm is 18 times higher in individuals with a history of self-harm compared to the general population [13]. The complications of self-harm in adolescents include financial burdens on the healthcare system and significant on-time service delivery demands, as well as substantial psychological pressure on the affected families [14].

Nurses are an important part of the healthcare team, particularly in the EDs. Neglecting nurses' education and attitudes towards self-harming patients can negatively affect the delivery of care and patient safety [15, 16]. Nurses' attitudes towards self-harming patients and their knowledge of the issue can significantly influence their performance and patient outcomes [16]. The standard level of service management for adolescents with self-harm and the result of care are directly related to the knowledge and attitudes of nurses [17]. Therefore, sufficient knowledge and a positive attitude are necessary for delivering effective care to self-harming adolescents [18]. Various factors, including confidence in patient assessment, ability to effectively deal with patients, empathy, and ability to comply with hospital rules, can create a positive attitude in nurses [19].

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The ED nurses should have a positive attitude, mutual understanding, and sufficient knowledge to treat self-harming adolescents professionally and appropriately upon admission [20, 21]. Caring for self-harming adolescents is emotionally challenging for nurses, and ambivalence, powerlessness, and inefficacy are often seen in negative attitudes towards these patients [20]. Given the importance of nurses' attitudes and knowledge in providing care for self-harming adolescents, this study aims to determine the knowledge and attitudes of ED nurses in Rasht, Iran, regarding the care for self-harming adolescents and find the related factors.

Materials and Methods

This is an analytical cross-sectional study conducted from February to April 2021. The study population consisted of all nurses working in the ED of hospitals in Rasht, Iran. The required sample size was determined 249 based on the study by Letho et al. [17] and using the sample size formula based on a correlation by considering r=0.25, 95% confidence interval, and 90% test power. However, since the sampling included the whole population, 208 eligible nurses were included in the study. The inclusion criteria were: Having a bachelor's or master's degree, at least 6 months of work experience in the ED and willingness to participate in the study.

The study used a three-part questionnaire. The first part surveys demographic characteristics (age, gender, marital status, number of children, experience in caring for self-harming patients, work experience, educational degree). The second part was a knowledge scale developed by Letho et al. [17] included 24 items and four domains: Incidence (5 items), risk factors (4 items), management (5 items), and suicide prevention measures (7 questions). A score of 0 was for incorrect answers, while 1 was for correct answers. The total score ranges from 0 to 21. A score of 0-7 indicates low knowledge; 8-14, moderate knowledge; and 15-21, high knowledge. The third part was the attitudes towards deliberate self-harm questionnaire (ADSHQ) developed by McAllister et al. [13]. It has 29 items scored on a Likert scale and four domains, including: a) Perceived confidence in assessment and referral, (9 items) with a score range of 9-45, where a score of 9-22 indicates low confidence and a score of 23-37 shows high confidence; b) Ability to deal effectively with clients (6 items) with a score range of 6-24, where a score of 6-10 indicates low ability and a score of 11-24 shows high ability; c) Empathic approach (9 items) had a score range of 9-45, where a score of 9-21 indicates low ability and a score of 22-43 shows high ability; d) Ability to cope effectively with legal and

hospital regulations that guide practice (5 items) with a score range of 5-25, where a score of 5-12 indicates low compliance and a score of 13-25 shows high compliance.

The knowledge and attitude items were adapted from the article by Leto and McAllister and a review of the literature, respectively. The number of items used in these tools was reduced due to the lack of conformity of some parts with respect to the cultural context of Iran. In the knowledge tool, 3 questions were removed. Of course, all steps were communicated to Leto and colleagues through correspondence. Similarly, 4 questions were removed from the attitude items. Therefore, after adjusting the items, their validity and reliability were also taken. In the present study, a qualitative and quantitative approach was used to determine the content validity. For this purpose, the questionnaire was reviewed by 10 expert professors of the nursing department (faculty members of the School of Nursing and Midwifery and experts in the fields of medical education, psychiatric nursing, pediatric nursing, internal and surgical nursing). In order to determine the content validity using a qualitative method, the professors were asked to provide their corrective comments in writing regarding the clarity and simplicity of the questionnaires. After collecting and reviewing the comments by the research team, the necessary changes were made to the instruments. To determine the content validity of the knowledge and attitude instrument quantitatively, Lawshe content validity ratio [22] and Waltz and Bassel's content validity index [22] were used. After calculating the content validity ratio, it was determined that this value was greater than 0.62 for all items in the questionnaire and no items were deleted. After calculating the content validity ratio, the content validity index of the knowledge and attitude questionnaire was >0.88, therefore it is acceptable. [22]. The average CVI for the Persian versions of the two questionnaires were 0.97 and 0.95, respectively. For reliability, the test-retest method was used for the knowledge scale and ADSHQ. The intraclass correlation coefficient (ICC) for the Persian versions of the knowledge scale and ADSHQ were 0.89 and 0.86, respectively (P=0.001).

The data were collected after visiting the hospitals during all three work shifts (morning, afternoon, and night). The collected data were analyzed using descriptive and inferential statistics. The Kolmogorov-Smirnov test was used to test the normality of data distribution. Since the variables did not follow a normal distribution, non-parametric tests (Mann-Whitney U test and Kruskal-Wallis test) were employed. The Spearman correlation test

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was used to determine correlations, and multiple logistic regression models were used to adjust the effects of individual and organizational variables. The significance level was set at 0.05.

Results

The mean age of the participants was 34.8±7.8 years. The majority of them were female (90.9%) and married (69.2%). Also, 46.2% had children. The majority (88.5%) had a bachelor's degree, while only 11.5% had a master's degree. Most of the nurses (63%) had experience in caring for self-harming adolescents (Table 1). Furthermore, most of the nurses (53.85%) had a moderate knowledge of self-harming in adolescents, and 46.16% had a high level of knowledge (Table 2). None of the nurses had a low knowledge. Regarding the domains of the knowledge scale, the highest level was for the incidence domain (43.7%), followed by suicide prevention (37.5%), risk factors (26.9%), and management (9.13%). According to Table 3, The nurses' knowledge score in the knowledge of care from the range of 0-21 possible scores was equal to (14.05±2.43), the lowest score obtained was 8 and the highest was 19. The scores were leveled from the range of 0-1 possible scores, and the average total knowledge score was (0.67±0.12). According to Table 4, 96.2% of the nurses had a positive attitude towards the care for self-harming adolescents, where the highest positive attitude level was for the empathy (96.6%) and effective dealing (95.2%) domains and the lowest score was for the compliance with hospital regulations domain (60.1%).

The results in Table 5 showed a positive correlation between the overall knowledge and ADSHQ scores (r=0.252, P=0.001). The score of the perceived confidence domain of the ADSHQ had a significant positive correlation with the scores of the incidence (r=0.162, P=0.019) and risk factors (r=0.230, P=0.001) domains of the knowledge scale, as well as the total knowledge score (r=0.221, P=0.001). The score of the empathy domain of the ADSHQ had a significant positive correlation only with the score of the risk factors domain (r=0.275, P=0.001) and the total score of the knowledge (r=0.202, P=0.003). The domain of ability to deal effectively with patients had a significant positive correlation with the risk factors domain (P=0.001, r=0.252) and total score of the knowledge (r=0.212, P=0.002). According to the

Table 1. Characteristics of the nurses (n=208)

Variables		No. (%)
Age (y)	≤25	21(10.1)
	26-35	95(45.67)
	≥36	92(44.23)
	Mean±SD	34.85±7.84
Sex	Female	189(90.87)
	Male	19(9.13)
Marital status	Married	144(69.23)
	Single	64(30.77)
Having children	No	112(53.85)
	Yes	96(46.15)
Educational degree	Bachelor's degree	184(88.46)
	Master's degree	24(11.54)
Experience in caring for self-harming patients	Yes	131(62.98)
	No	62(29.81)
	Do not remember	15(7.21)

SD: Standard deviation.

Table 2. The scores of the knowledge scale and its domains

Knowledge		No. (%)	95% CI	
			Lower	Upper
Incidence	Low (score 0-2)	10(4.81)	2.5	8.36
	Moderate (score 3-4)	107(51.44)	44.67	58.18
	High (score 5-6)	91(43.75)	37.13	59.54
Management	Low (score 0-3)	36(17.31)	12.64	22.88
	Moderate (score 4-6)	153(73.56)	67.27	79.2
	High (score 7-8)	19(9.13)	5.78	13.61
Suicide prevention	Low (score 2)	24(11.54)	7.73	16.41
	Moderate (score 2)	106(50.96)	44.19	57.7
	High (score 2)	78(37.5)	31.13	44.22
Risk factors	Low (score 0-2)	29(13.94)	9.74	19.14
	Moderate (score 3-4)	123(59.13)	52.37	65.65
	High (score 5)	56(26.92)	21.24	33.24
Total	Low (score 0-7)	0(0)	0	0
	Moderate (score 8-14)	112(53.85)	47.06	60.53
	High (score 5-21)	96(46.16)	39.47	52.94

coefficient of determination (R^2=0.087), 8.7% of the changes in the attitude score can be explained by the knowledge score.

According to the results in Table 6, the knowledge score was significantly different based on nurses' marital status (P=0.042) and experience in caring for self-harming adolescents (P=0.016). Married nurses had higher mean knowledge scores (14.3±2.4; median=15) compared to single nurses (13.5±2.5; median=14). Nurses with experience caring for self-harming adolescents had higher mean knowledge scores (14.4±2.3; median=15) than those without such experience (13.3±2.4; median=13).

The ADSHQ score was significantly different based on nurses' age (P=0.03) and experience in caring for self-harming adolescents (P=0.033). Older nurses and those with experience in caring for self-harming adolescents had higher ADSHQ scores compared to younger nurses and those without experience.

Table 6 presents the association between the domains of knowledge and ADSHQ in the multiple linear regression model after adjusting for individual variables such as age, gender, marital status, having children, educational degree, and experience in caring for self-harming adolescents. The significant factors for the ADSHQ score

Table 3. Statistical indicators of raw and leveled scores of nurses' knowledge and attitude

Scores	Max	Min	Median	Mean±SD
Raw score, knowledge score (0-21)	19	8	14	14.05±2.43
Leveled Score, Knowledge Score (0-1)	0.9	0.38	0.67	0.67±0.12
Raw score, attitude score (29-145)	121	75	104	104.21±8.19
Leveled Score, attitude Score (1-5)	4.17	2.59	3.59	3.59±0.28

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Table 4. The scores of the attitudes towards deliberate self-harm and its domains

Domains		No. (%)	95% CI	
			Lower	Upper
Perceived confidence in assessment and referral	Negative	22(10.58)	6.94	15.3
	Positive	186(89.42)	84.7	93.06
Compliance with the hospital regulations and monitoring system	Negative	83(39.9)	33.43	46.66
	Positive	125(60.1)	53.34	66.57
Empathy	Negative	7(3.37)	1.52	6.49
	Positive	201(96.63)	93.51	98.48
Ability to deal effectively with patients	Negative	10(4.81)	2.5	8.36
	Positive	198(95.19)	91.64	97.5
Total	Negative	8(3.85)	1.83	7.13
	Positive	200(96.15)	92.87	98.17

in the multiple regression model were the risk factors domain of the knowledge (β=0.334, 95%CI; 1.527%, 3.367%, P=0.001), age (β=0.184, 95% CI; 0.061%, 0.323%, P=0.004) and experience in caring for self-harming adolescents (β=2.4, 95% CI; 0.34%, 4.595%, P=0.023). Therefore, the knowledge of risk factors, age and experience in caring for self-harming adolescents were the predictors of the attitude score (Table 7).

Discussion

The results of this study indicate that the ED nurses had a moderate level of knowledge about the care for self-harming adolescents, which is consistent with the findings of Letho et al., who also reported that most of the nurses had moderate knowledge [17]. Kawanishi et al. found that nurses, nursing students, and psychiatric social workers had insufficient knowledge about

Table 5. Correlation coefficients between the knowledge and the attitudes towards deliberate scores

Domains		Knowledge				
		Incidence	Management	Suicide Prevention	Risk factors	Total
Perceived confidence in assessment and referral	r	0.162	0.031	0.104	0.23	0.221
	P*	0.019	0.652	0.134	0.001	0.001
Compliance with the hospital regulations	r	0.043	-0.019	-0.051	0.091	0.032
	P*	0.54	0.79	0.467	0.192	0.649
Empathy	r	0.087	0.03	0.058	0.275	0.202
	P*	0.211	0.665	0.406	0.0001	0.003
Ability to deal effectively with patients	r	0.091	0.082	0.007	0.252	0.212
	P*	0.191	0.239	0.916	0.0001	0.002
Total	r	0.145	0.055	0.038	0.313	0.252
	P*	0.037	0.429	0.588	0.0001	0.0001

*Spearman correlation test

Table 6. Comparison of the knowledge and the attitudes towards deliberate scores based on sociodemographic factors

Variables		Attitudes Towards Deliberate Score			Knowledge Score		
		Mean±SD	Median	P	Mean±SD	Median	P
Age (y)	≤25	13.62±2.65	14		101.29±7.07	104	
	26-35	13.81±2.28	14	0.12*	103.28±9.23	103	0.03*
	≥36	14.4±2.51	15		105.84±6.93	106	
Sex	Female	14.06±2.42	14	0.934**	104.2±8.35	104	0.947**
	Male	14±2.54	14		104.37±6.61	105	
Marital status	Married	14.28±2.36	15	0.042**	104.66±7.83	104.5	0.358**
	Single	13.53±2.53	14		103.2±8.94	104	
Having children	No	13.81±2.43	14	0.097**	103.22±8.27	104	0.083**
	Yes	14.33±2.41	15		105.36±7.99	104.5	
Educational degree	Bachelor's degree	14.05±2.47	14	0.767**	104.16±8.24	104	0.612**
	Master's degree	14.04±2.14	14		104.58±7.98	106	
Experience in caring for self-harming patients	Yes	14.37±2.32	15		105.25±7.73	105	
	No	13.34±2.38	13	0.016*	102.26±8.9	102	0.033*
	Do not remember	14.27±3.01	14		103.2±7.96	105	

SD: Standard deviation.

*Kruskal Wallis, **Mann Whitney.

suicide-related issues [23]. The moderate knowledge of nurses can be due to inadequate education, high job pressure, or the lack of in-service training based on evidence-based practice, which can negatively affect the treatment of self-harming adolescents. The knowledge domain of "risk factors" had the highest score among ED nurses. In contrast, Letho et al. reported that this domain had the lowest score in nurses, while the "suicide prevention" domain had the highest score [17]. There are limited studies on surveying nurses' knowledge in

different domains; therefore, the results of this study can pave the way for further studies in the future. Understanding the specific areas where nurses need education can enhance their knowledge and consequently improve their performance in treating self-harming adolescents.

In this study, nurses with experience in caring for self-harming adolescents had higher knowledge scores, consistent with the results of Letho et al. [17]. Experience

Table 7. The regression coefficients for investigating the predictors of the attitude score after adjusting the effects of sociodemographic variables

Variables	Unstandardized Coefficients		Standardized Coefficients	P	95% CI	
	B	Std. Error	Beta		Lower	Upper
(Constant)	91.838	2.228		0.001	85.494	98.182
Knowledge of risk factors	2.447	0.467	0.334	0.001	1.527	3.367
Age	0.192	0.066	0/184	0.004	0.061	0.323
Experience in caring for self-harming patients	2.468	1.079	0.146	0.023	0.34	4.595

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in caring for self-harming adolescents may motivate nurses to improve their knowledge in this area through study and follow-up, enabling them to provide effective care. Thus, the results of this study highlight the importance of the related experience for having higher knowledge in ED nurses.

In this study, nurses had a positive attitude towards caring for self-harming adolescents, consistent with the studies by Perboell et al. and McCarthy [24, 25]. These studies showed that nurses experienced a range of positive emotions, such as understanding, interaction, and hope, when caring for patients hospitalized for self-harm. The nurses found that working with these adolescents could significantly improve their quality of life. However, Khajeddin et al. showed contrasting results [26]. The discrepancy may be due to cultural and local differences [27].

Cultural competence in nurses can improve their motivation to respect patient rights and have ethical and socially acceptable behaviors. There is a positive and significant relationship between nurses' ethical beliefs and attitudes towards patient rights [28]. The findings of this study showed the highest percentage of positive attitudes towards the empathic approach and the highest rate of negative attitudes towards compliance with hospital regulations among the ED nurses, consistent with Perboell et al.'s findings [24]. These results underscore the importance of empathy in caring for self-harming adolescents.

We found a positive correlation between knowledge and attitude scores in the ED nurses, consistent with Letho et al.'s findings [17]. However, Wheatley et al. found no correlation between the domains of attitude and knowledge [29]. Moreover, the current study showed that, with increasing age, nurses' attitudes towards self-harming adolescents improved, while Letho et al. found no significant relationship between age and attitude [17]. Our study also showed a significant difference in nurses' attitudes among those with and without experience in caring for self-harming adolescents. With the increase in the years of work experience in the EDs, nurses seemed to be more confident in the assessment and referral of these patients.

This study showed that the knowledge of the ED nurses in northern Iran about the care for self-harming adolescents was moderate, and their attitudes were positive. Their attitude is positively correlated to their knowledge. The knowledge of the ED nurses is significantly different based on their marital status and experience in caring for self-harming adolescents, while their attitude is significantly different based on age and experience in caring for self-harming adolescents. Given the moderate knowledge of nurses, it is recommended to identify the educational needs of nurses and enhance their knowledge, thus fostering a positive change in their attitudes and improving their care for self-harming adolescents. Related educational materials should be integrated into the undergraduate nursing curriculum. The findings of this study can serve as a model for future studies in this field. Considering that the data collection of this study was done during the COVID-19 pandemic, the responses of nurses to the questions may be biased due to being busy, which can be considered a limitation of the present study.

Ethical Considerations

Compliance with ethical guidelines

Ethics approval was obtained from the Ethics Committee of Guilan University of Medical Sciences, Rasht, Iran (Code: IR.GUMS.REC.1399.413). Informed consent was obtained from all participants. They had the right to leave the study at any time and were assured of the confidentiality of their information.

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