Factors Related to Nurses and Physicians' Knowledge and Attitudes Towards Palliative Care

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Abstract

Background: Changes in the course of diseases, their treatment, and care provision result in the need for a specific type of care known as palliative care. Medical staff's knowledge and awareness of palliative care is important in this regard.

Objectives: This study aims to examine the caregivers' knowledge and awareness of palliative care and to determine the related predictors.

Methods: In this cross-sectional study, 277 subjects were selected from among the caregivers working in the selected teaching hospitals in Iran through non-randomized sampling method. The subjects were asked to fill the online questionnaire which consisted of 3 sections including demographic data, knowledge, and attitude toward palliative care. Descriptive, inferential statistics, correlation and regression analyses were performed.

Results: The mean scores of care providers' attitude and knowledge were 140.90 ± 11.56 and 19.36 ± 2.73 respectively. There was a significant relationships between some variables such as working place, education level, age, palliative care-related working experience, and the necessity to pass training courses and the mean scores of attitude and knowledge.

Conclusions: Since palliative care providers' level of knowledge and attitude were reported to be moderate, training courses at different levels in the form of clinical courses should be offered with the aim of improving care providers' skills and scientific abilities. It is essential to include the related topics in the curricula of academic programs.

Keywords: Care Providers, Palliative Care, End-of-Life Care, Knowledge, Attitude, Iran

1. Background

As comprehensive care, which is based on clinical, cultural, and ethical standards, and has a holistic and interdisciplinary perspective (1), palliative care improves the quality of life in the elderly and the patients with difficult-to-treat diseases, and their families by preventing and alleviating pain and suffering through early identification, as well as the evaluation and the flawless treatment of pain and other physical, psychological, social, and spiritual problems (2).

With the increase in the elderly population, the increasing number of chronic non-communicable diseases, and the proportion of patients with difficult-to-treat diseases, the demand for high-quality palliative care has increased (2). However, in most countries, there are still many unmet needs for palliative care services (2). Many of the patients suffering from life-threatening illnesses struggle with poor health in late life due to their unmet needs (3). According to The World Health Organization (WHO)

Global Atlas of Palliative Care in 2020, 568 401 23 people from all age groups, including the deceased and the non-deceased, are estimated to have global needs for palliative care; the need of the non-deceased to palliative care has been higher. Approximately 45.3% of all deaths in 2017 required palliative care. Cancer (28.2%), HIV/AIDS (22.2%), and cardiovascular diseases (14.1%) were among the most common adult diseases needing palliative care (4).

Palliative care services are influenced by the knowledge and attitudes of care providers (5). Nurses and other health care workers are often not sufficiently prepared to perform their duties regarding palliative care and need more expertise in pain and symptom management, communication, and confronting ethical problems (6). The WHO has developed a public health strategy (PHS) as an effective approach to the inclusion of palliative care in the country's health care system; one of these policies is the effective training of caregivers and policymakers (7). Education plays a key role in the effectiveness and continuity of palliative care services, and its inadequacy has been reported as a challenge in accessing these services (8). Attitude, on the other hand, is influenced by people's knowledge and is an effective factor in people's performance. According to the conducted studies, the physicians who had little knowledge of palliative care also had a negative or unclear attitude (9). Therefore, the existence of professionally trained palliative care personnel is a potential solution to improving the quality of life in patients facing life-threatening illnesses (10).

In Iran, palliative care is a new approach that is currently given incoherently for difficult-to-treat patients and no major steps have been taken to institutionalize it (11). On the other hand, the concepts and the principles of this approach have not been seriously included in the curriculum of medical sciences (12).

Therefore, it seems natural that care providers' knowledge and, consequently, their attitude is not at the desired level.

One of the most important barriers to providing palliative care services is the inadequate training of care providers, especially physicians and nurses (13). Therefore, it is necessary to study the factors affecting knowledge and attitude and to identify the improvable areas for better educational planning. Accordingly, and considering the increase in the country's elderly population, the development of training programs for physicians and nurses, and improving their ability to manage the patients needing palliative care seems necessary.

2. Objectives

The aim of this study was to determine the factors related to the knowledge and the attitudes of care providers about palliative care.

3. Methods

3.1. Study Design

The present study is a cross-sectional descriptive study that was conducted to determine the factors related to the knowledge and the attitudes of care providers about palliative care in Iran in 2021.

3.2. Study Environment and Participants

The study population included the physicians and the nurses of the country. The sampling method in this study was convenience sampling.

Totally, 18.4% of the participants of the study were from Tehran Province, 11.2% from Khuzestan and Lorestan, 26% from Golestan, Gilan, Mazandaran and Semnan, 9.6% from Fars, Bushehr, Yasuj and Bandar Abbas, 14.2% from Zanjan, Qazvin, Markazi, Alborz and Qom, 4.2% from Khorasan, 8.2% from Isfahan, Yazd, and Shahrekord and 3% from Tabriz, Uremia and Ardabil.

Considering the appropriateness of using online questionnaires during the COVID pandemic, invitations for the participants, along with a brief explanation of the study and its purpose were sent to several social networks as well as various groups on WhatsApp and Telegram, and the participants were asked to send the questionnaire link to their other colleagues through snowball sampling. Willing to participate in the study, the participants signed the online consent form before accessing the questionnaire. The inclusion criteria for care providers in the present study were having at least 6 months of clinical experience, having at least a bachelor's degree, and willingness to participate in the study.

In this study, the formula used for determining the sample size was $n = z^2pq/d^2$ with Z equal to 1.96, p = q = 0.5, and d = 0.05. Considering a 10% loss, the number of samples was estimated to be at least 200 people. At the end of the considered 1-month period, 277 people completed the questionnaire.

3.3. Data Collection Tools

In this study, a tool consisting of 3 sections was used including demographic characteristics, attitudes, and the knowledge of care providers towards palliative care.

The demographic and occupational characteristics questionnaire included age, gender, the field of study, specialty, work experience, work experience in the field of palliative care, previous attendance in workshops related to palliative care, and the need for passing training courses related to palliative care.

Considering the multiplicity of the questionnaires for examining the knowledge and the attitudes of care providers towards palliative care in the world, and the limited number of validated Iranian questionnaires, the researchers designed the relevant tools and performed the psychometric evaluation of them as part of the study.

The initial draft of the questionnaires was designed, using a systematic review of the tools available in the world. Regarding the attitude tool, the initial draft consisted of 61 statements. To evaluate the content validity, the opinions of 7 palliative care specialists, oncologists, and nurses working in the oncology ward were used. At this stage, 15 statements were removed due to semantic similarity. Then, to evaluate the face validity, the questionnaire was provided to 20 physicians and nurses, and they were asked to examine the statements in terms of difficulty, comprehensibility, and fluency. Changes were made to some items. In the next step, a 46-item questionnaire was filled out by 277 physicians and nurses working in medical centers, and its factor structure was examined, using exploratory factor analysis; 37 items of the final questionnaire were loaded on 4 factors. The subscales include "Attitude towards the Principles of Palliative Care" with 13 items, "Attitude Towards Family Participation in Palliative Care" with 6 items, and "Attitude towards End-of-Life Care" with 9 items, and "Attitude Towards Patient Autonomy" with 9 items.

The questionnaire was scored on a 5-point Likert scale (5 = strongly agree, 4 = agree, 3 = no opinion, 2 = disagree, 1 = strongly disagree). In this tool, the items 11, 13, 20, 21, 22, 23, 24, and 29 are reverse scored, and the item (strongly disagree) has 5 scores. The total score of the subject's attitude is obtained from the sum of these 4 subscales, falling between 37 and 185. A higher score indicates a better attitude.

Their internal consistency reliability was calculated, using Cronbach's alpha. The subscales included attitude towards principles of PC with 13 items ($\alpha = 0.68$), attitude towards family participation in PC with 6 items ($\alpha = 0.80$), attitude towards the end-of-life care with 9 items ($\alpha = 0.65$), and attitude towards patient's autonomy with 9 items ($\alpha = 0.70$). Cronbach's alpha for the whole scale was 0.80.

The third part was the questionnaire of caregivers' knowledge towards palliative care, the initial draft of which consisted of 40 items, which were reduced to 30 items after evaluating the face validity and the content validity and performing exploratory factor analysis. This questionnaire has 4 subscales.

The first subscale, "General Concepts", includes 5 items; the second, "Pain Management", 9 items; the third, "Physical Symptoms Management", 10 items; and, finally, the fourth, "Psychological Symptoms Management", contains 6 items. This tool is scored as correct or incorrect, where each correct answer has one point, and each incorrect one has none. Items 2, 3, 4, 5, 6, 10, 12, 17, 23, 28, 30 are reverse scored, i.e., the wrong answer has one point, and the correct answer, none. The total knowledge score is the sum of these 4 subscales, which ranges from 0 to 30. In other words, the higher the scale's score, the higher the knowledge of the care providers. The Cronbach's alpha of the whole tool $\alpha = 0.75$ and its dimensions were 0.70 to 0.83.

3.4. Statistical Analysis

SPSS-V24 software was used for data analysis. To evaluate the normality of the data, the Kolmogorov-Smirnov test was used, and P-value < 0.05 was considered the statistical significance level. Descriptive statistics tests (median, mean, frequency tables, and diagrams), and dispersion measures (variance and standard deviation) were used to report the frequency and the percentage of variables. Independent t test, Mann-Whitney, and Kruskal-Wallis tests were used to examine the relationship between the demographic variables and knowledge and attitude in terms of normality. In addition, to investigate the relationship between knowledge and attitude, first, Spearman and Pearson correlation tests were used according to the type of variable, and if the relationship between some variables was significant, univariate linear regression was used.

4. Results

A total of 277 care providers participated in this study, including physicians and nurses working in different wards, whose demographic and occupational information are presented in Table 1.

The mean scores of the attitude towards and the knowledge of palliative care were reported to be 140.90 ± 11.56 and 19.36 ± 2.73, respectively (Table 2).

Independent t test, the analysis of variance, and Kruskal-Wallis tests in terms of normality were used to examine the relationship between demographic and occupational variables and the mean score of care providers' attitudes towards and knowledge of palliative care. Table 3 shows the demographic and occupational characteristics of the participants in the research and the correlation between each of these characteristics and the mean scores of knowledge and attitude.

Accordingly, a statistically significant and positive relationship was found between gender, educational level,

Table 1. Demographic and Professional Characteristics of the Participants in the Study (n = 277)

Variables	No. (%)
Age (y)	
20 - 30	59 (21.3)
31 - 40	121 (43.7)
41 - 50	75 (27.1)
51 - 60	20 (7.2)
> 61	2 (0.7)
Sex	
Female	243 (87.7)
Male	34 (12.3)
Educational status	
Bachelor	203 (73.3)
Master of sciences	57 (20.6)
Medical doctor	1 (0.4)
PhD	15 (5.4)
Fellowship	1 (0.4)
Job	
General practitioner	1 (0.4)
Oncologist	1 (0.4)
Nurse	239 (86.3)
Faculty member	19 (6.9)
Other	17 (6.1)
Work experience (y)	
< 1	4 (1.4)
1 - 3	25 (9)
4 - 5	15 (5.4)
6 - 10	66 (23.8)
> 10	167 (60.3)
Workplace section	
Internal ward	16 (5.8)
Surgery ward	7 (2.5)
Maternity ward	8 (2.9)
Emergency	19 (6.9)
Pediatrics	6 (2.2)
CCU	62 (22.4)
ICU	28 (10.1)
Hematology- oncology	29 (10.5)
NICU	4 (1.4)
Neurology- neurosurgery	3 (1.1)
Psychology	3 (1.1)
Other	92 (33.2)
Do you have working experience in the field of PC?	
Yes	72 (26)
No	205 (74)
Is receiving formal education such as participating in workshops and attending lectures or courses necessary for providing PC?	
Yes	244 (88.1)
No	33 (11.9)
Do you need to take a PC course?	
Yes	243 (87.7)
No	34 (12.3)

Table 2. Descriptive Characteristics of Attitudes and Knowledge Towards Palliative Care

Variables Subscales	Mean ± SD	Minimum	Maximum
Attitudes Towards Palliative Care			
Total score of attitudes	140.90 ± 11.56	102	172
Principles of palliative care	52.45 ± 4.16	38	61
End-of-life care	29.02 ± 3.75	20	43
Family participation in palliative care	24.99 ± 3.39	10	30
Patient's autonomy	4.96 ± 1.27	0	7
Knowledge Towards Palliative Care			
Total score of knowledge	19.36 ± 2.73	10	26
Physical Symptom management	6.27 ± 1.66	2	10
Pain management	5.29 ± 1.29	2	9
Psychological symptom management	4.24 ± 0.87	1	6
General concept	3.55 ± 1.22	0	5

workplace ward, work experience in the field of palliative care, and the need to receive formal education in the field of care provision and pass a palliative care course with the mean score of attitude. In addition, the mean score of knowledge had a statistically significant and positive relationship with educational level, work experience, work experience in the field of palliative care, and the need to pass a palliative care course and receive formal education for providing care.

The results of univariate regression to examine the relationship between demographic and occupational variables with the mean scores of care providers' attitudes towards and knowledge of palliative care are shown in Table 4. Considering the regression coefficients, the mean score of knowledge has a significant relationship with the age range of 51 to 60 years, master's and Ph.D. degrees, working in pediatrics and other wards, work experience in the field of palliative care, and the need for formal education in palliative care. Considering that the significance level mentioned for these variables is lower than 0.05, it can be said that these variables are good predictors for the dependent variable or the mean score of knowledge.

Moreover, according to the regression coefficients, the mean score of attitude has a significant relationship with the age range of 31 to 60 years, female gender, master's and Ph.D. degrees, fellowship, job, working at the CCU, work experience in the field of palliative care, and the need to receive formal education in palliative care, and to pass a palliative care course. Considering that the significance levels of these variables are lower than 0.05, it can be said that these variables are good predictors of attitude.

Pearson correlation coefficient showed a positive and significant statistical relationship between the mean scores of knowledge and attitude (P-value = 0.000, r = 0.378). Considering the regression coefficients between the mean of these two scores (P-value = 0.000, b = 1.59, Beta: 0.378), it can be said that knowledge is a good predictor of attitude and affects it. The coefficient of determination (R^2) was 0.143, indicating that 14.3% of the variations in the mean score of attitudes towards palliative care have been explained by the variable of knowledge.

5. Discussion

Palliative care is a cohesive, patient-family-centered approach provided by an interdisciplinary team to improve the quality of life in the elderly and the patients with difficult-to-treat diseases and their families. Therefore, care providers must have sufficient knowledge and a favorable attitude in this regard (14). In the present study, which was conducted to investigate the care providers' knowledge of and attitudes towards palliative care and its predictors, the results showed that the samples had a moderate level of attitude towards palliative care. Consistent with the results some other studies the subjects were reported to have a moderate attitude towards palliative care despite having poor knowledge in this regard (15).

Based on the obtained results, the knowledge of palliative care providers is at a moderate level, which is insufficient, especially in responding to the specific items related to palliative care. The results of some other studies also show that nurses' level of knowledge in the field of palliative care is low (10, 16, 17) although, in the study of Yamamoto et al., the level of palliative care knowledge in the study population was moderate or acceptable (18). The reason for the difference observed in the results can be due

Table 3. Relationship Between Demographic and Professional Characteristics and Total Score of Attitude and Knowledge [a]

Variables	Attitude	Knowledge
Age (y)		
20 - 30	137.50 ± 11.43	18.18 ± 2.91
31 - 40	141.55 ± 11.29	19.36 ± 2.66
41 - 50	141.76 ± 11.85	19.32 ± 2.65
51 - 60	143.20 ± 11.69	20.85 ± 2.73
> 61	147.00 ± 7.07	21.00 ± 1.41
P-value	0.064 [d]	0.126 [d]
Sex		
Male	135.61 ± 11.64	18.64 ± 2.74
Female	141.64 ± 11.38	19.46 ± 2.72
P-value	0.005 [c]	0.459 [b]
Educational status		
Bachelor	138.70 ± 10.32	19.03 ± 2.72
Master of sciences	143.92 ± 11.47	20.10 ± 2.59
PhD	157.26 ± 8.38	20.46 ± 2.41
Medical Doctor	-	-
Fellowship	-	-
P-value	> 0.000 [d]	0.004 [d]
Job		
General physicians	-	-
Oncologist	-	-
Nurse	139.87 ± 10.61	19.32 ± 2.73
Faculty member	156.73 ± 8.32	20.00 ± 2.49
Other	139.82 ± 11.90	19.35 ± 3.21
P-value	0.175 [d]	0.723 [d]
Work experience (y)		
< 1	133.25 ± 15.81	18.75 ± 4.34
1 - 3	141.28 ± 12.12	19.76 ± 2.27
4 - 5	136.93 ± 13.96	18.26 ± 2.63
6 - 10	138.93 ± 10.54	18.74 ± 2.65
> 10	142.16 ± 11.42	19.67 ± 2.76
P-value	0.061 [d]	0.048 [d]
Workplace section		
Internal ward	141.06 ± 13.35	18.25 ± 3.25
Surgery ward	141.28 ± 5.87	19.14 ± 1.57
Maternity ward	141.12 ± 10.49	19.12 ± 2.69
Emergency	144.10 ± 7.89	19.15 ± 2.03
Pediatrics	149.33 ± 11.79	20.66 ± 1.21
CCU	135.24 ± 10.68	18.66 ± 3.13
ICU	144.00 ± 9.79	19.64 ± 2.98
Hematology- oncology	141.10 ± 12.61	19.65 ± 2.22
NICU	-	-
Neurology- neurosurgery	-	-
Psychology	-	-
Other	-	-
P-value	0.005 [d]	0.279 [d]
Do you have working experience in the field of PC?		
Yes	143.45 ± 11.42	20.15 ± 2.33
No	140.00 ± 11.50	19.09 ± 2.82
P-value	0.018 [c]	0.081 [b]
Is receiving formal education such as participating in workshops and attending lectures or courses necessary for providing PC?		
Yes	141.96 ± 11.42	19.50 ± 2.64
No	133.09 ± 9.48	18.39 ± 3.23
P-value	> 0.000 [c]	> 0.000 [c]
Do you need to take a PC course?		
Yes	141.56 ± 11.16	19.43 ± 2.62
No	136.17 ± 13.36	18.91 ± 3.44
P-value	0.010 [c]	0.010 [c]

[a] Values are expressed as Mean ± SD.
[b] Based on independent sample *t* test for normal variables.
[c] Based on Mann-Whitney test.
[d] Based on KrusKal-Wallis test for un-normal variables.

Table 4. Result of Univariate Regression Between Demographic and Professional Characteristics and Total Score of Attitude and Knowledge

Outcomes	Total Score of Knowledge					Total Score Attitude				
Parameter	Beta	SE	95% CI for Beta	t	P	Beta	SE	95% CI for Beta	t	P
Age										
20 - 30	Ref	-	-	-	-	Ref	-	-	-	-
31 - 40	0.48	0.42	[-0.35, 1.32]	1.27	0.259	4.04	1.80	[-0.47, 4.95]	5.00	0.025
41 - 50	0.43	0.46	[-0.47, 1.35]	0.87	0.349	4.25	1.98	[0.09, 5.89]	4.60	0.032
51 - 60	1.96	0.69	[0.60, 3.33]	7.98	0.005	5.69	2.94	[0.37, 9.12]	3.72	0.053
> 61	2.11	1.93	[-1.67, 5.91]	1.19	0.274	9.49	8.18	[-7.19, 18.89]	1.34	0.246
Gender										
Male	Ref	-	-	-	-	Ref	-	-	-	-
Female	0.82	0.49	[-0.15, 1.79]	2.72	0.099	6.02	2.08	[1.94, 10.11]	8.38	0.004
Educational status										
Bachelor	Ref	-	-	-	-	Ref	-	-	-	-
Master of sciences	1.07	0.39	[0.29, 1.85]	7.22	0.007	5.22	1.57	[2.14, 8.30]	11.06	0.001
Medical doctor	4.96	2.66	[-0.25, 10.18]	3.47	0.062	0.29	10.50	[-20.29, 20.88]	0.001	0.978
PhD	1.43	0.71	[0.03, 2.82]	4.05	0.044	18.56	2.80	[13.06, 24.05]	43.83	0.000
Fellowship	4.96	2.66	[-0.25, 10.18]	3.47	0.062	33.29	10.50	[12.70, 53.88]	10.04	0.002
Job										
General practitioner	Ref	-	-	-	-	Ref	-	-	-	-
Oncologist	2.00	3.85	[-5.55, 9.55]	0.26	0.604	43.00	14.80	[13.99, 72.00]	8.44	0.004
Nurse	1.32	2.73	[-4.03, 6.67]	0.23	0.629	37.87	10.48	[17.31, 58.42]	13.04	0.000
Faculty member	2.00	2.79	[-3.48, 7.48]	0.51	0.475	54.73	10.73	[33.69, 75.78]	25.98	0.000
Other	1.35	2.80	[-4.14, 6.85]	0.23	0.630	37.82	10.76	[16.71, 58.93]	12.33	0.000
work experience										
< 1	Ref	-	-	-	-	Ref	-	-	-	-
1 - 3	1.01	1.44	[-1.83, 3.85]	0.48	0.86	8.03	6.13	[-3.98, 20.04]	1.71	0.190
4 - 5	-0.48	1.51	[-3.44, 2.48]	0.10	0.750	3.68	6.40	[-8.87, 16.24]	0.33	0.565
6 - 10	-0.00	1.35	[-2.72, 2.70]	0.00	0.996	5.68	5.86	[-5.80, 17.18]	0.94	0.332
> 10	0.92	1.36	[-1.74, 3.58]	0.45	0.499	8.91	5.76	[-2.37, 20.20]	2.39	0.122
Workplace section										
Internal ward	Ref	-	-	-	-	Ref	-	-	-	-
Surgery ward	0.89	1.20	[-1.47, 3.26]	0.54	0.461	0.22	4.98	[-9.54, 9.99]	0.00	0.964
Maternity ward	0.87	1.15	[-1.39, 3.14]	0.57	0.449	0.06	4.76	[-9.27, 9.39]	0.00	0.990
Emergency	0.90	0.90	[-0.86, 2.68]	1.00	0.316	3.04	3.73	[-4.27, 10.35]	0.66	0.415
Pediatrics	2.41	1.27	[-0.08, 4.92]	3.57	0.059	8.27	5.26	[-2.04, 18.59]	2.46	0.116
CCU	0.41	0.74	[-1.05, 1.87]	0.30	0.583	-5.82	3.08	[-11.86, 0.22]	3.56	0.059
ICU	1.39	0.83	[-0.24, 3.03]	2.77	0.096	2.93	3.44	[-3.81, 9.69]	0.72	0.394
Hematology- oncology	1.40	0.83	[-0.22, 3.03]	2.85	0.091	0.04	3.42	[-6.67, 6.75]	0.00	0.990
NICU	1.00	1.49	[-1.92, 3.92]	0.44	0.503	-5.81	6.14	[-17.86, 6.23]	0.89	0.344
Neurology- neurosurgery	3.08	1.67	[-0.20, 6.37]	3.36	0.066	-0.06	6.91	[-13.62, 13.50]	0.00	0.993
Psychology	1.75	1.67	[-1.54, 5.04]	1.08	0.294	-4.39	6.91	[-17.95, 9.16]	0.40	0.525
Other	1.53	0.72	[0.11, 2.95]	4.49	0.034	1.75	2.97	[-4.08, 7.59]	0.34	0.556
Do you have working experience in the field of PC?										
Yes	Ref	-	-	-	-	Ref	-	-	-	-
No	-1.06	0.36	[-1.78, -0.33]	8.25	0.004	-3.44	1.56	[-6.52, -0.37]	4.83	0.028
Is receiving formal education such as participating in workshops and attending lectures or courses necessary for providing PC?										
Yes	Ref	-	-	-	-	Ref	-	-	-	-
No	-1.10	0.50	[-2.09, -0.12]	4.84	0.028	-8.87	2.07	[-12.93, -4.80]	18.30	0.000
Do you need to take a PC course?										
Yes	Ref	-	-	-	-	Ref	-	-	-	-
No	-0.52	0.49	[-1.50, 0.45]	-2.21	0.298	-5.39	2.08	[-9.48, -1.29]	6.66	0.010

to the tools used to measure the level of care providers' knowledge, the differences in the characteristics of the study population such as profession, educational level, work ward, and passing a training course in the field of palliative care (19, 20). Jordan is located in the Middle East and has a similar health system and social, economic, cultural, and religious conditions similar to those of Iran in the field of human resources and training, and has been holding both optional and compulsory palliative care courses in the undergraduate curriculum of nursing, in the subject of principles of internal medicine-surgery in several public and private universities, a palliative care nursing program at postgraduate level at the school of nursing, and an academic diploma program in the field of palliative care in collaboration with the University of Germany and the Palliative Care Association of Jordan (5).

In examining the relationship between the attitude and the knowledge of care providers with some variables, the results showed that age is among the demographic variables related to the participants' level of attitude and knowledge, and, especially, in the age range of 31 to 60 years, has good predictive power. Some studies have suggested that age has no significant correlation with the attitude towards palliative care (15) and the knowledge of palliative care (8, 17). Some other studies have shown that older care providers have a more positive attitude (21) and younger health care staff, a more negative attitude towards palliative care (22, 23). It seems that obtaining information and awareness along with the ability to analyze the incoming data increase with an increase in age and lead to one's improved performance in cognitive and functional dimensions. As age increases, one becomes stronger and more developed in terms of thinking and action (24). Therefore, due to the low level of knowledge in younger people, it is recommended to focus more on training younger staff in training programs.

In the present study, female gender was mentioned as a predictor of the variable of attitude. Although no study has found a relationship between gender and knowledge of and attitudes towards palliative care (16, 17, 25-28), female caregivers appear to be more inclined to provide palliative care and end-of-life care. Gender affects the quality of this type of care (29).

The results also show that when the educational level increases, care providers' knowledge of and attitude towards palliative care increases, too. The results of a study conducted by Paknejadi et al., and Balicas, show that the higher caregivers' educational level, the higher their knowledge of palliative care (17, 19). The increase in the educational level will be followed by an increase in the level of knowledge and professional skills (19) and it seems that care providers with higher educational levels receive

more information regarding palliative care. In Iran, unlike geriatrics-related courses, palliative care education is not centralized, and non-university education is provided in the form of formulated and non-formulated education, and to a limited extent, by governmental and non-governmental educational institutions. In some postgraduate nursing courses, the concepts related to palliative care are briefly mentioned, and a limited number of its syllabi are taught both practically and theoretically as the role of the nurse in palliative care and oncology nursing, (13). As a result, an increase in the educational level, which is accompanied by an increase in knowledge and deeper attitudes, leads to an increase in the motivation to provide quality services and effective performance (30).

In the present study, the work ward is related to the level of palliative care knowledge and is considered a predictor in this regard. In line with some previous studies (11-14), it was observed that the CCU staff showed a more positive attitude toward palliative care, and the pediatric staff had more knowledge of it. Choi et al. reported that the nurses working in oncology and cancer wards had a higher level of palliative care knowledge than those working in general and intensive care units (31). Besides, Sato et al. noted that the level of palliative care knowledge is significantly higher in the care providers working in specialized cancer centers in comparison with the ones working in general hospitals, although the criteria for assessing the level of knowledge may be different in different studies (32). However, contrasting findings were observed in the studies, too (33, 34). Perhaps this is because palliative care was first widely introduced and developed in the field of caring for end-stage cancer patients and their families, and the training programs were initially implemented for the health care group that provided care for these patients (1). Therefore, the level of palliative care knowledge of the care providers to other patients with non-cancer diseases may be due to the lack of experience and special training in this field (35). Thus, it is necessary to develop training programs for all health care providers according to their work ward and the type of patients who are hospitalized in these wards and will need palliative care.

In the present study, the nursing profession was identified as a predicting variable for attitude. In line with the results obtained in a study, it was found that nurses had a positive attitude towards palliative care and end-stage care (36), and another study also showed that physicians were less inclined to provide palliative care (26). Due to the nature of their profession, nurses have a major role and the most communication with patients and their families and are responsible for providing most of the services in the health sector. They also have a great desire and interest in communicating with patients and their families and

solving their problems (37). Nursing and palliative care are inseparable parts of clinical practice, and the necessary knowledge and skills in this field are to be acquired by all nurses. The principles of high-quality palliative care are consistent with the values and the beliefs governing nursing (38). The task of providing effective palliative care is primarily the responsibility of nurses (39).

Another factor influencing care providers' level of knowledge and attitude was their work experience in providing palliative care. In this regard, some studies indicate that the history of exposure to the patients needing palliative care has a direct and positive effect on care providers' knowledge and attitude (23, 28). As an expected result, the level of knowledge and attitude was lower in those who had perceived the need to receive formal education in regard with palliative care provision and to pass palliative care courses. Such a correlation is not observed in some studies (5, 23, 40). Various studies have emphasized the importance of recognizing educational needs in the form of training workshops to improve care providers' knowledge and attitude both theoretically and practically (41, 42), and the lack of palliative care training courses in academic and clinical training programs has been reported as one of the most important executive barriers to palliative care (43).

As the last statement of the study, a significant relationship was found between the care providers' knowledge and attitudes. As experts' level of knowledge increases, their attitudes improve, too. The results of a study by Budkaew and Chumworathayi and Shih et al. suggest that learning palliative care through medical school education may reinforce physicians' positive attitudes towards providing end-of-life care to cancer patients by providing the right concepts and palliative care knowledge (44, 45). The findings of these studies emphasize that if experts are encouraged to learn the correct principles of palliative care, along with training in the medical program, a positive attitude towards palliative care will be created.

5.1. Study Limitations

One of the limitations of the present study was that due to the COVID-19 pandemic, the researchers could not be present in the research environment; therefore, the questionnaire was prepared online, which made it impossible to control the proportion of the population groups in care providers. As a result, there were more female nurses than in other groups.

5.2. Conclusions

The findings of the present study show that care providers in Iran have a moderate level of knowledge and attitude towards palliative care. Studying the factors affecting the level of knowledge and attitude, it was found that

work experience in the field of providing palliative care was a predictor for both variables of knowledge and attitude. Educational level, work experience, and work ward are related to the level of knowledge and the attitude towards palliative care. The findings of this study emphasize the need for educating and training the care providers to provide quality palliative care services as an essential element, which should become part of the educational curricula of various disciplines, and continuous medical and nursing education programs. Further studies in this field are needed to clearly understand the problems existing in the educational environment to adopt a model of palliative care that is culturally sensitive and meets the needs of Iranian society.

Footnotes

Authors' Contribution: L. Kh., M. E. A., H. A., S. B., S. B., A. E. D., M. K., F. Kh., E. K., M. E. A., A. Sh. F., and M. R. designed the study, E. K. and M. R. supervised and directed the study, L. Kh., M. E. A., H. A., S. B., S. B., A. E. D., M. K., and F. Kh. carried out the implementation, L. Kh., H. A., T. S. Kh., and S. B. processed the experimental data, performed the analysis, and drafted the manuscript, L. Kh., H. A., and S. B. aided in designing the study and worked on the manuscript. All authors discussed the results, commented on the manuscript, and approved the final manuscript.

Conflict of Interests: The authors declare that they have no competing interests.

Data Reproducibility: The data that support the findings of this study are available from the Cancer Research Center of Shahid Beheshti University of Medical Sciences but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are, however, available from the authors upon reasonable request and with permission of the Cancer Research Center of Shahid Beheshti University of Medical Sciences.

Ethical Approval: Research involving human participants have been performed following the Declaration of Helsinki and code of ethic from the Institutional review board approval was obtained from the Ethics Committee of the Cancer Research Center of

Shahid Beheshti University of Medical Sciences, Tehran (IR.SBMU.CRC.REC.1400.018).

Informed Consent: Before study enrollment, informed written consent was obtained for all study participants.

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