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Nurses' practices toward prevention of pulmonary embolism among patients with corona virus disease

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***Abstract*---**The study aimed to evaluate Nursing Staff Practices toward the Prevention of Pulmonary Embolism among Patients with Corona-Virus Disease. Methods: A descriptive study is conducted for October 17, 2021, to 2ed April 2022. The study is carried out at AL-Diwaiyah Teaching Hospital, Afak General Hospital, Shamiya General Hospital, and Hamza General Hospital in AL Diwaiyah City. A purposive sample (non-probability) consisting of (93) nurses were selected from nurses who work in the Coronavirus isolation center. Results: Findings indicate that nurses aged at Frequency 32 (54.8%), females (35.5%), and secondary nursing school graduates (54.8%) have 1-5 years of experience and have not participated in training sessions. Findings demonstrated that the nurses were poorly practicing related pulmonary embolism and preventive measures of pulmonary embolism. Overall Mean 1.64 respectively. There was a significant relationship between nurses' practices and their demographic data at a p-value <0.05.

***Keywords*---**Pulmonary Embolism, coronavirus disease, practice, Nurses, Prevention.

Introduction

On December 31, 2019, SARS-CoV-2 emerged in Wuhan, China. With viral pneumonia, acute lung injury, multi-organ failure, and fatality, SARS-CoV-2 (COVID-19) illness destroy the lungs. Recent research shows an upsurge in thrombotic events such as P.E. and DVT (Driggin et al., 2020; Fried et al., 2020). Pulmonary embolism is the most often fatal acute illness, and the majority of cases go untreated, significantly lowering survival chances owing to relapses. When a patient is suspected of suffering a pulmonary embolism, thorough

laboratory testing is necessary to confirm the diagnosis. Medicine is always administered based on the patient's benefit/risk ratio (Lambrini et al., 2018).

Pulmonary embolism is a significant consequence of Thrombosis and a leading cause of mortality in a substantial proportion of patients. P.E.s are most often caused by DVTs in the lower limbs, with approximately half of all DVTs resulting in a silent P.E. Nurses should thus evaluate and prevent VTE risk in all hospitalized patients. Despite increased awareness of this fatal disease, many diagnoses remain missing, possibly resulting in death (Essien et al., 2019).

Early detection and diagnosis of P.E. have significantly decreased morbidity and death. If left untreated, a pulmonary embolism may be fatal. Undiagnosed or untreated pulmonary embolism kills one-third of patients. The chance of death is considerably lowered if treatment is started promptly (Heit, 2015).

The primary objective of nursing care for patients at risk of developing P.E. is prevention. Avoiding DVT is the most excellent method to prevent pulmonary embolism. All hospitalized patients should have their deep vein thrombosis examined routinely. The nurse must recognize potential risks for pulmonary embolism and follow patients who have been hospitalized or have had their activities limited due to unexplained respiratory distress, arrhythmia, and restlessness. Without first establishing a medical reason, these manifestations should not be attributed to worry (Smith & Murauski, 2017).

Method

The Study Design

A descriptive design study The study's objectives are to determine the number of applied correctly to determine each nurse's level of practice.

Administrative arrangements

After granting the agreement to the College of Nursing Council related to the study, official letters are submitted, with the research proposal, to the following: Permission was obtained by the Ministry of Planning's Central Council of Statistics, which accepted the questionnaire for the study. *Official letter issued and submitted to Al-Diwaniya Health Directorate proven to get formal agreement to data collection. The permission was sent to Al-Diwaniya Teaching Hospital, Afak General Hospital, Shamiya General Hospital, and Hamza General Hospital to ensure the agreement and cooperation.*

Ethical Considerations

Ethical approvals for the study were obtained from the Scientific Research Ethics Committee at the College of Nursing and the Ethics committee of *Al-Diwaniya Health Directorate proven to get formal agreement to data collection the permission.*

Study Setting

The research was carried out by nurses working in Corona patients' isolation center in Al-Diwaniyah Governorate hospitals.

Study Samples:
To obtain representative and accurate data, a non-probability (purposive) sample was selected. The sample size was (93) from nursing staff working in the Corona patient isolation centers in Al-Diwaniyah Governorate hospitals.

Criteria for Choosing a Sample
Nurses working in Corona patient isolation centers in Al-Diwaniyah Governorate hospitals agreed to participate in the study.

Validity of the Questionnaire (observation checklist)
The content validity of the early produced instrument is determined by an expert panel that evaluates the questionnaire's clarity, relevancy, and suitability in measuring the conception of interest. A questionnaire was designed and presented to (15) experts failed.

Data Collection
The researchers have come up with the necessary arrangements for getting the study samples from *Al-Diwaniya Teaching Hospital, Afak General Hospital, Shamiya General Hospital, and Hamza General Hospital to ensure the agreement and cooperation* in *Al-Diwaniya* City before beginning the data collection process. The data were collected from 17 th October 2021 to 2 nd of April 2022.

Result

Table (1)
Study Sample Demographic characteristics

Demographic characteristics	Rating and Intervals	Frequency	Percent	C.S.
Age / Years	<=24	32	34.4	Chi-Square
	25-29	29	31.2	Value (23.871)
	30-34	11	11.8	d.f. (4)
	35-39	12	12.9	P-Value (0.07)
	40+	9	9.7	NS
	Total	93	100.0	
Gender	Male	42	45.2	Binomial
	Female	51	54.8	Distribution
	Total	93	100.0	P-Value (40) N.S.
Educational level	Secondary Nursing school	33	35.5	Chi-Square Value (0.774)
	Nursing Institute graduate	33	35.5	d.f. (2) P-Value
	Nursing college graduate	27	29.0	(0.763) NS
	Total	93	100.0	
Years of experience/hospital	1-5	51	54.8	Chi-Square
	6-10	21	22.6	Value (48.376)
	11-15	14	15.1	d.f. (3)
	15+	7	7.5	P-Value (0.16)

	Total	93	100.0	NS
Years of experience/Corona isolation centre	<=1	55	59.1	Chi-Square Value (34.323)
	1-2	29	31.2	d.f. (2)
	3-4	9	9.7	P-Value (0.23) NS
	Total	93	100.0	
Attend training courses to prevent pulmonary embolism	No	93	100.0	

No: Number, f: Frequency, %: Percentage, M: Mean, SD: Standard deviation

The table demonstrates the research sample's demographic characteristics. The study's findings indicate that the predominant age group of nursing staff is (34.4 per cent) between the ages of (less than or equal24) years and (31.2 per cent) between the ages of 25-and 29 years. According to the gender breakdown, 54.8 per cent of nurses are female. Concerning educational attainment, the study's findings indicate that (29 per cent) of nurses graduated from a nursing college. In terms of years of experience, the table shows that (54.8 per cent) of nurses have between one and five years of nursing experience. In terms of years of experience in coronavirus isolation centers, most nurses (59.1 per cent) have (less than or equal to) one year of experience.

Table (2)
Evaluation of Nurses' Practice toward Prevention of Pulmonary Embolism among Patients with Corona Virus Disease

Main Studied Domains	Practices Levels	Frequency	Percent	Overall Mean	Overall Evaluation
General Preparations	Poor	31	33.3	2.11	Fair
	Fair	20	21.5		
	Good	42	45.2		
	Total	93	100.0		
Respiration	Poor	56	60.2	1.60	Poor
	Fair	18	19.4		
	Good	19	20.4		
	Total	93	100.0		
Deep Breathing Exercise	Poor	59	63.4	1.60	Poor
	Fair	12	12.9		
	Good	22	23.7		
	Total	93	100.0		
Ambulation	Poor	68	73.1	1.43	Poor
	Fair	10	10.8		
	Good	15	16.1		
	Total	93	100.0		
Leg exercise	Poor	58	62.4	1.62	Poor
	Fair	12	12.9		
	Good	23	24.7		

	Total	93	100.0		
Turning in bed	Poor	53	57.0	1.65	Poor
	Fair	20	21.5		
	Good	20	21.5		
	Total	93	100.0		
Anti-embolic elastic stocking	Poor	66	71.0	1.41	Poor
	Fair	16	17.2		
	Good	11	11.8		
	Total	93	100.0		
Administering a Subcutaneous Injection	Poor	48	51.6	1.75	Fair
	Fair	20	21.5		
	Good	25	26.9		
	Total	93	100.0		

M.S: Mean of score, Poor= 1 – 1.66, Fair= 1.67– 2.33, Good= 2.34 – 3

This table shows the overall evaluation of the nurses' practices in the main domains of prevention techniques. This table presents a statistical description of the variables related to all fields. The nurse's general preparations for the patient came to %poor 33.3, fair %21.5%, good 45.2, overall mean 2.11, and the available fair result. The practices related to respiratory orthodontics were %poor 60.2, fair %19.4, and %19.4%. Good 20.4, overall mean 1.60, orthosis result is poor. As for the practices related to deep breathing exercises, % poor 63.4, fair 12.9 %, good 23.7, overall mean 1.60, and orthosis result poor, as well as walking came as poor nursing practices 73.1%, fair 10.8% and good 16.1% And the overall mean 1.43 and the orthosis result is poor. As for leg exercises as nursing practices, it came to poor 62.4%, fair 12.9%, and good 24.7%, and the overall mean 1.62 and the orthosis result is poor, and either turning in bed came poor 57.0%, fair 21.5%, good 21.5%, and The overall mean 1.65 and the calendar result is poor. As for the ant embolic elastic stocking, it came to poor 71.0%, fair 17.2%, good 11.8%, overall mean 1.41, the evaluation poor, and as for the administrating a subcutaneous injection, it came to 51.6 per cent, fair 21.5% and good 26.9%, overall mean 1.75, fair score

Table (3)
Overall Evaluation of Nurses' Practice toward Prevention of Pulmonary Embolism among Patients with Corona Virus Disease

Overall Evaluation of Nurses' Practices	Frequency	Percent	Overall Mean	Overall Evaluation
Poor	57	61.3	1.64	Poor
Fair	16	17.2		
Good	20	21.5		
Total	93	100.0		

M.S: Mean of score, Poor= 1 – 1.66, Fair= 1.67– 2.33, Good= 2.34 – 3

This table presents a statistical description of the variables related to all areas. The ratio of poor was 61.3, fair 17.2, and good 21.5. The arithmetic average of the general calendar for nurses working in isolation centers for Corona patients was 1.64, and the result of the evaluation was poor

Table (4)
Relationship between the Overall Evaluation of Nurses' Practice toward Prevention of Pulmonary Embolism among Patients with Corona Virus Disease and their Demographic Data

Demographic Data	Rating and Intervals	Overall Nurses' Practices			Chi-Square Value *	d.f.	p-Value
		Poor	Fair	Good			
Age / Years	<=24	27	3	2	19.732	8	.011
	25-29	11	6	12			S
	30-34	6	4	1			
	35-39	8	2	2			
	40+	5	1	3			
Total		57	16	20			
Gender	Male	17	13	12	15.606	2	.001
	Female	40	3	8			HS
Total		57	16	20			
Educational level	Secondary Nursing school	30	3	0	49.807	4	.001
	Nursing Institute graduate	25	2	6			HS
	Nursing college graduate	2	11	14			
Total		57	16	20			
Years of experience/hospital	1-5	29	9	13	7.193	6	.303
	6-10	13	4	4			NS
	11-15	11	3	0			
	15+	4	0	3			
Total		57	16	20			
Years of experience/coronavirus isolation center	<=1	39	8	8	10.227	4	.037
	1-2	15	4	10			S
	2-3	3	4	2			
Total		57	16	20			

S.D: Standard Deviation, df: Degree of Freedom, f: F-statistics, P-value: probability value, Sig: Significance, H.S: High Significant

The Fisher Exact test corrects the chi-square analysis results because some of the cell's accounts are less than 5. This table presents a statistical description of the variables related to all areas associated with preventing pulmonary embolism in nursing practices and compares them with the nurse's demographic information. The chi-square for age was 19,732, and the degree of freedom was eight and significantly 0.011. For gender, it was chi-square of 15,606 and degree of freedom of 2, and 0.01 significant for nurse education level, chi-squared 49,807, and 0.01 significant, chi-squared 4 and 0.01 significant, nurse hospital experiences 7.193 chi-squared and six considerable freedom 0.303 chi-squared years of experience working in isolation halls 10.227, degree of freedom 4, and significantly 0.037.

Discussion

The major objective of nursing care for patients at risk of developing P.E. is prevention. The greatest way to prevent pulmonary embolism is to avoid DVT. The following table)1(, In terms of nursing staff age, the current research discovered that more than a third (34.1%) of participants were between the ages of 24 and

25-29, and one-third (31.2%) of participants were between the ages of 25 and 29. The investigator argues that the huge number of nurses in the 1920s resulted from fresh graduates enrolling. Nursing students have varying degrees of education. This conclusion corroborates the findings of a research conducted by (Ahmed et al., 2019) said in their research that they wanted to measure nurses' knowledge of preventing Infections of central venous catheters were recorded in critical care units at Baghdad Teaching Hospitals. That (52% of the research sample) were between the ages of 20 and 29 years. The poll showed that females participated at a greater rate (54.8 per cent) than men. These results corroborate (Hebeshy 2018) a descriptive study in Egypt to measure nurses' attitudes, subjective standards, perceived behavioral control, and intention to avoid deep vein thrombosis in critically sick patients in intensive care units. The research sampled nurses who were mostly female (59 percent). The researcher argues that female nurses outnumber male nurses due to females being accepted and graduating at a higher rate than men in all nursing school institutes in Iraq. In terms of educational attainment, the majority (35.5 percent) of nurses were graduates of a secondary nursing school. These findings corroborate those of (Elshamy et al., 2018), who conducted a study to assess nurses' knowledge and practice regarding measures to prevent pulmonary embolism among patients at Aga general hospital. They discovered that more than half of the nurses studied received a diploma from nursing schools and were between 20 and 30 years. In terms of years of nursing experience, most nurses (54.8 percent) in the survey sample had between one and five years of work. While years of experience in the coronavirus isolation facility indicated that more than half (59.1 per cent) of nurses had years of experience (less than one year). These results corroborate those of (Al-Mugheed & Bayraktar, 2018), who examined nurses' knowledge and behaviors on DVT risks and prevention. The study discovered that most nurses (54.4 per cent) had fewer than five years of experience at a hospital and (59.1 per cent) in a coronavirus isolation facility. Regarding involvement in training courses relevant to pulmonary embolism prevention, the findings suggested that most nurses (100%) lacked training. These findings corroborate previous research. (Najm et al., 2020) performed descriptive research to ascertain nurses' knowledge of pulmonary rehabilitation. Baghdad embolism the findings indicated that a significant proportion (34.3 per cent) of the research group (1-5 years) was Over half (58.3 per cent) of those engaged in nursing had experienced RCU (1-5) years. Given the essential role nurses play in preventing pulmonary embolism, they should get the training necessary to be competent in all aspects of their job in critical care units and corona isolation centers. The results of this study suggested that nurses' practices in the domain of pulmonary embolism prevention were suboptimal on a mean score level (1.64), as seen in tables (4.10), (4.11): The data analysis demonstrated that nurses' practices were inadequate throughout the study period in all eight domains (General Preparations, Respiration, Deep Breathing, Exercise, Ambulation, leg exercise, Anti-embolic elastic stocking, and Administering a Subcutaneous Injection). The observational checklist of general preparation domain data analysis revealed that most items in the practice's answers to the research were fair. In contrast, most items in the practice's responses were poor. These results complement those of (khedr et al., 2019), who discovered that more than half (62.2 per cent) of the nurses evaluated had an inadequate level on their overall practice score, whereas 37.8 per cent had a good level. The current study's findings indicated that all practice domain aspects

associated with deep breathing were at a low degree of practice. These findings corroborate those of (Elshamy et al., 2018), who found that most nurses (92%) performed deep breathing exercises in a statistically inefficient way, compared to just 8% who performed acceptably. This research established that the domains (Ambulation and leg exercise) were within the study's bad practices; the mean score count was (1.43 and 1.62). These findings are corroborated by a research conducted by Khedr et al. (2019), which found that the majority of nurses evaluated (74.4 per cent) lacked enough ambulation and (49 per cent) lacked adequate leg exercise. These findings corroborate (Elshamy et al., 2018). 's conclusion that most nurses surveyed practiced ineffectively. Ninety-eight per cent of nurses and 2% of them safely performed range of motion exercises with active and passive range of motion. The present study's results suggested that the domains (turning in bed and anti-embolic elastic stocking) performed inadequately; the mean of the score count was (1.65and 1.41) These results are verified by Khedr et al. (2019), who discovered that the majority of nurses assessed (51% displayed an appropriate level of skill in the practice of turning in bed. Additionally, 58% of nurses indicated a high level of expertise in the administration of ant embolic elastic stockings to patients, whereas 42% demonstrated an insufficient level of competency.

The outcomes of this research indicated that providing a subcutaneous injection (thrombolytic therapy) was a legitimate practice. The average point total is 1.75. These are the consequences of a disagreement with (Shaaban Khalil et al., 2018) 86.7 per cent of nurses lacked appropriate knowledge about thrombolytic therapy. Additionally, the great majority of them (90 per cent) used ineffective thrombolytic therapy approaches.

These findings corroborate those of (Haza et al., 2020), who evaluated nurses' knowledge and practice regarding pulmonary embolism prevention methods. The findings indicated that all nurses received a score of less than (75%) before the program's implementation and increased to a score equal to or greater than (75%) immediately after. Implementation Three months after the program's adoption, 41 nurses earned a score of at least 75%, whereas 34 nurses obtained a score of less than 75%. However, statistically significant differences in practice levels were seen between pre-, immediately post-, and three months following the program (p-value0.001). These data demonstrate that education and training programs may significantly enhance and boost performance concerning pulmonary embolism prevention measures. The nursing staff at the AL-Diwaniyah government's coronavirus isolation facility lacked defined processes and information tools for keeping their knowledge current and improving their practices about the correct use of preventive treatments. Additionally, there is a shortage of personal protective equipment such as gloves and masks and a lack of continuous monitoring and evaluation required to maintain proper practices: increasing the workload associated with receiving patients infected with coronavirus while also creating a nursing staff shortage in the coronavirus isolation center. This, however, may account for the findings of the original study. The data analysis revealed a statistically significant relationship between the age of nursing staff and their behaviors regarding preventative P.E. approaches in the research, with a p-value of 0.01. (0.011). Concerning the relationship between nurses' educational level and their practices related to the Prevention of Pulmonary

Embolism, the study discovered a significant difference in educational level related to the major domains of Prevention of Pulmonary Embolism among Patients with Corona Virus Disease at a p-value (0.01), since less than a third of participants (29%) graduated from a nursing college. Based on years of nursing experience and years of work in a coronavirus isolation facility, the data suggested a statistically significant difference (p-value=0.37). The current research demonstrated statistically significant connections between nurse practice and demographic factors (age, gender, nursing experience, educational level, and years of employment in a corona isolation facility). This conclusion contradicts Najm et al. (2019), who reported no significant association between age, gender, years of experience, and nurses' expertise, save for the degree of education. These results reflect Elshamy et al. (2018). There is no significant relationship between nurses' overall practice ratings and sociodemographic characteristics such as age, gender, education, and experience.

Conclusion

Nurses who work in coronavirus isolation centers express poor practice toward preventive measures of a pulmonary embolism due to a low level of education and training.

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