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RESEARCH ARTICLE

Effect of leg exercise as nurses practice in the prevention of pulmonary embolism among patients with coronavirus disease

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ABSTRACT
Objectives: To evaluate the effect of leg exercise as nurse practice toward the Prevention of Pulmonary Embolism among Patients with Corona-Virus Disease Methods: A descriptive study is conducted from 17th October 2021 to 2nd 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 Less than 24 or equal to 34.4%, (54.8%) females, (35.5%), the secondary nursing school graduated, (54.8%) have 1-5 years of experience and no participated in training sessions. Findings demonstrated that evaluating the effect of leg exercise as nurses practices was poorly related to pulmonary embolism and preventive measures of pulmonary embolism. Overall Mean 1.62 respectively. There was a significant relationship between nurses' practices and their demographic data at a p-value <0.05. Nurses working in Coronavirus isolation center expressed poor effect leg exercise as nurse practice toward preventive measures of a pulmonary embolism due to low level of education and lack of training Recommendations: The study recommended the necessity of allocating special training courses for all nurses who work in the coronavirus isolation center to improve the practices of nurses toward preventive measure of pulmonary embolism, in addition to increasing the number of professional nurses graduating from the colleges of nursing the, enrolled in a coronavirus isolation center

Keywords: effect, leg exercise, nurse practice, pulmonary embolism, prevention

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INTRODUCTION

Early ambulation, range - of - motion, re-evaluation of Venous thromboembolism risks, and practical nursing interventions all contribute to a reduction in hospitalization and an increase in VTE prevention. Stuff nurses are responsible for evaluating patients' understanding of VTE prevention and prescribing appropriate measures. Nurses are responsible for teaching and notifying patients' families about mechanical prophylaxis and permitting physical therapy equipment application and reapplication. Due to the subcutaneous administration of low-molecular-weight heparin, nursing workers should inform and educate patients about the anatomical sites of injections. Mechanical prophylaxis has been shown to improve venous circulation and decrease the incidence of pulmonary embolism and recurrence of postthrombotic syndrome. However, all patients should receive the appropriate stocking size and adhere to the anti-embolism stocking fitting instructions. If difficulties do develop, the bulk of them may be resolved rapidly due to the degree of compression (Barp et al., 2018)

thrombotic pathways by decreasing the baseline level of pro-inflammatory cytokines and their percentage in the blood. Exercise has been shown to have a direct effect on coagulation. Even while acute and severe activities may provide pro-coagulant stimuli, regular exercise has decreased platelet activation at rest. Exercise reduces fibrinogen levels and increases plasma volume while maintaining an unchanged erythrocyte volume. Training has also been used to treat the post-thrombotic deep venous syndrome. Moderate aerobic exercise is utilized to boost immunity and address metabolic issues, which may help improve COVID-19's dismal prognosis (Batatinha et al., 2020)

It's good to teach patients how to perform leg and ankle motions, such as dorsiflexion and plantar flexion of the feet. While awake, this should be promoted 10 to 12 times every 1 to 2 hours. To minimize venous blood pooling, patients who are unable to execute this on their own will require assistance with a range of motion (Basavanthappa, 2015)

We may all reduce our risks of suffering a pulmonary embolism by changing our lifestyle. Getting at least 150 minutes of activity every week, for example. Quitting smoking is very important for avoiding pulmonary embolism. Balancing on one's toes, etc. As much as possible, avoid crossing your legs. If you're overweight, stay away from tight-fitting apparel until you've lost some weight. Leg stretching exercises include bending and straightening your legs, foot, and toes every 30 minutes while seated on long-haul flights and other extended journeys. Get up and stroll about whenever you have the chance. Take a few deep breaths. Drinking plenty of water will also help. Prepare to take off by donning your flight socks. If you are at risk of blood clots, get medical counsel before traveling long distances (British Lung Foundation, 2018).

Leg exercises, such as frequent plantarflexion and dorsiflexion, enhance the mean peak velocity in the popliteal vein (Krasiński et al., 2021).

METHOD

AIMS OF THE STUDY

The study aims to

1. Evaluate the effect of leg exercise as nurse practice toward a preventive measure of the pulmonary embolism

2. Determine the relationship between nurses' practice and their sociodemographic characteristics

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 centers in Al-Diwaniyah Governorate hospitals.

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Study Samples: A non-probability (purposive) sample was selected to obtain representative and accurate data. 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.

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.

Demographic characteristics	*Rating and Intervals*	*Frequency*	*Percent*
Age / Years	*Less than 24 or equal*	*32*	*34.4*
	25-29	*29*	*31.2*
	30-34	*11*	*11.8*
	35-39	*12*	*12.9*
	equal or More than 40	*9*	*9.7*
	Total	*93*	*100.0*
Gender	*Male*	*42*	*45.2*
	Female	*51*	*54.8*
	Total	*93*	*100.0*
Educational level	*Secondary Nursing school*	*33*	*35.5*
	Nursing Institute graduate	*33*	*35.5*
	Nursing college graduate	*27*	*29.0*
	Total	*93*	*100.0*
Years of experience/hospital	*1-5*	*51*	*54.8*
	6-10	*21*	*22.6*
	11-15	*14*	*15.1*
	More than 15	*7*	*7.5*
	Total	*93*	*100.0*
Years of experience/Coronavirus isolation center	*Less than 1*	*55*	*59.1*
	1-2	*29*	*31.2*
	2-3	*9*	*9.7*
	Total	*93*	*100.0*
Attend training courses to prevent pulmonary embolism	*No*	*93*	*100.0*

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.

RESULTS

Table (1) summarizes the research sample's demographic characteristics. The study's findings indicate that the predominant age group of nursing staff is (34.4 percent) between the ages of (less than or equal24) years and (31.2 percent)

between the ages of 25-29 years. According to the gender breakdown, 54.8 percent of nurses are female. Concerning educational attainment, the study's findings indicate that (29 percent) of nurses graduated from a nursing college. In terms of years of experience, the table shows that (54.8 percent) 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 percent) have (less than or equal to) one year of experience.

This table 2presents a statistical description of the variables (1. Request that the patient sits in a semi-posture or fowler's 2. Bend one knee, raise and hold the leg above the mattress for a few seconds 3. Straighten the extended leg. 4. Lower the leg back to the bed gradually. 5. Do the same with the other leg. 6. Rest both legs on the bed. 7. Point the toes toward the mattress and then toward the Head 8. Move both feet in clockwise and then counter-clockwise circles. 9. Repeat this exercise five times every 2hours while waking 10. Documentation) related to the field of leg exercises as nursing practices. We note the number of observations, as it always came as 23, sometimes 12 and never 58, as well as the arithmetic mean 1.62 and standard deviation 0.859, and the evaluation result is poor.

This table3 presents a statistical description of the variables related to all areas associated with preventing pulmonary embolism in nursing practices and comparing them with the demographic information of the nurse, where chi-square for age was 19,732 and degree of freedom eight and significantly 0.011 and 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 important freedom 0.303 chi-squared years of experience working in isolation halls 10.227, degree of freedom 4, and significantly 0.037.

Table (1): Study Sample Demographic characteristics

Table (2): Distribution of nurses' practice toward Prevention of Pulmonary Embolism among Patients with Corona Virus Disease / Leg Exercise Domain

Items	Rating	Frequency	Percent	Mean	S. Dev.	RS%	Evaluation
1. Request that the patient sit in a semi-posture or fowler's	Never	58	62.4	1.62	.859	54.12	Poor
	Sometimes	12	12.9				
	Always	23	24.7				
2. Bend one knee, raise and hold the leg above the mattress for a few seconds	Never	58	62.4	1.62	.859	54.12	Poor
	sometimes	12	12.9				
	Always	23	24.7				
3. Straighten the raised leg.	Never	58	62.4	1.62	.859	54.12	Poor
	sometimes	12	12.9				
	Always	23	24.7				
4. Lower the leg back to the bed gradually.	Never	58	62.4	1.62	.859	54.12	Poor
	sometimes	12	12.9				
	Always	23	24.7				
5. Do the same with the other leg.	Never	58	62.4	1.62	.859	54.12	Poor
	sometimes	12	12.9				
	Always	23	24.7				
6. Rest both	Never	58	62.4	1.62	.859	54.12	Poor

legs on the bed.	sometimes	12	12.9				
	Always	23	24.7				
7. Point the toes toward the mattress and then toward the Head	Never	58	62.4	1.62	.859	54.12	Poor
	sometimes	12	12.9				
	Always	23	24.7				
8. Move both feet in clockwise and then counter clockwise circles.	Never	58	62.4	1.62	.859	54.12	Poor
	sometimes	12	12.9				
	Always	23	24.7				
9. Repeat this exercises five times at least every 2hours while wake	Never	58	62.4	1.62	.859	54.12	Poor
	sometimes	12	12.9				
	Always	23	24.7				
10. Documentation	Never	58	62.4	1.62	.859	54.12	Poor
	sometimes	12	12.9				
	Always	23	24.7				

Poor (mean of scores 1-1.66), fair (mean of scores 1.67-2.33), good (mean of scores (2.34-3)

Table 3 Table (3) Relationship between the Overall evaluation effect leg exercise as nurse practice toward Preventive of Pulmonary Embolism among Patients with Corona Virus Disease and their Demographic Data

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Demographic Data	Rating and Intervals	Overall Nurses' Practices			Chi-Square Value *	d.f.	p-Value
		Poor	Fair	Good			
Age / Years	Less than or equal to 24	27	3	2	19.732	8	.011 S
	25-29	11	6	12			
	30-34	6	4	1			
	35-39	8	2	2			
	Equal or more than 40	5	1	3			
Total		57	16	20			
Gender	Male	17	13	12	15.606	2	.001 HS
	Female	40	3	8			
Total		57	16	20			
Educational level	Secondary Nursing	30	3	0	49.807	4	.001

	school						HS
	Nursing Institute graduate	25	2	6			
	Nursing college graduate	2	11	14			
Total		57	16	20			
Years of experience/hospital	1-5	29	9	13	7.193	6	.303 NS
	6-10	13	4	4			
	11-15	11	3	0			
	More than 15	4	0	3			
Total		57	16	20			
Years of experience/coronavirus isolation center	Less than 1	39	8	8	10.227	4	.037 S
	1-2	15	4	10			
	2-3	3	4	2			
Total		57	16	20			

DISCUSSION

The primary objective of nursing care for patients at risk of developing PE is prevention. The most excellent way to prevent pulmonary embolism is to avoid DVT. Following the table1 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 significant 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., 2020) said in their research that they wanted to measure nurses' knowledge on 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 percent) 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 primarily 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. At the same time, years of experience in the coronavirus isolation facility indicated that more than half (59.1 percent) of nurses had years of experience (less than one year). These results corroborate (Al-Mugheed & Bayraktar, 2018) who examined nurses' knowledge and behaviors on DVT risks and prevention. The study discovered that most nurses (54.4 percent) had fewer than five years of experience at a hospital and (59.1 percent) 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 results indicated that a significant proportion (34.3 percent) of the research group (1-5 years) was Over half (58.3 percent) 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 findings of this research established that the (leg exercise) was within the scope of the study's poor practices; the mean score count was (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 percent) lacked enough ambulation and (49 percent) lacked adequate leg exercise. These findings corroborate (Elshamy et al., 2018) .'s conclusion that most nurses surveyed practiced ineffectively. Ninety-eight percent of nurses and 2% safely performed a range of motion exercises with active and passive range of motion.
The data analysis revealed a statistically significant relationship between the age of nursing staff and their behaviors regarding preventative PE 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., 2020), 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.

CONCLUSIONS

Nurses who work in coronavirus isolation centers were express the effect of leg exercise as nurse practice poorly practice toward

preventive measures of a pulmonary embolism due to a low level of education and training.

ETHICAL CONSIDERATIONS COMPLIANCE WITH ETHICAL GUIDELINES

This study was completed following obtaining consent from the University of Baghdad.

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AUTHOR'S CONTRIBUTIONS

Study concept, Writing, Reviewing the final

edition by all authors.

DISCLOSURE STATEMENT:

The authors report no conflict of interest

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