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PREVALENCE OF VARICOSE VEINS AMONG NURSES WORKING IN DIFFERENT HOSPITAL DEPARTMENTS: A CROSS SECTIONAL STUDY

Maya Maziad
Student, Nursing Department, Faculty of Health Sciences, Beirut Arab University, Beirut, Lebanon, mayamaziad17@outlook.com

Hiba Deek
Assistant Professor, Nursing Department, Faculty of Health Sciences, Beirut Arab University, Beirut, Lebanon, h.deek@bau.edu.lb

PREVALENCE OF VARICOSE VEINS AMONG NURSES WORKING IN DIFFERENT HOSPITAL DEPARTMENTS: A CROSS SECTIONAL STUDY

Abstract

Varicose veins are common among people working in professions requiring long standing hours like nursing. The aim of this study was to determine the prevalence of varicose veins among nurses working in different hospital units and identify the protective and risk factors to varicose vein development. A Cross-sectional design with self-reported questionnaires was implemented; 110 nurses at Rafik Hariri University Hospital and Osseiran Hospital working at units assumed to have the longest standing hours such as Emergency Department, operating rooms and medical and surgical units participated in the study. The participants were surveyed on sociodemographic characteristics, clinical history and current working conditions. This study identified the risk and protective factors of varicose veins among people working in the nursing profession. Homemade food was found to be a protective factor against this condition along with normal bowel movement. Future studies should look into proper assessment of the study participants for accurate findings.

Keywords

Varicose veins; Nurses; Prevalence; Hospital departments; Cross sectional

1. INTRODUCTION

Varicose veins are enlarged and dilated veins of the lower extremities mainly. They are characterized by incompetent valves leading to venous congestion and hypertension. The most common signs and symptoms include pain, itching, heavy sensation in the legs, skin discoloration and prominence (Erding, Shuyan, Weiwei, & Ying, 2017). The prevalence of this condition varies between professions but those with 75% of their working time in standing positions are 1.78 times more likely to develop this condition (Tüchsen, Hannerz, Burr, & Krause, 2005). These professions include hairdressers, security personnel and nurses. Nursing is a stressful profession. Due to the workload, long standing hours and the distressing incidence such as death that take place in every hospital unit, nurses are subjected to mental and physical stress that lead to mental and physical symptoms (Ayed et al., 2014). Among those physical symptoms are fatigue, headache, back pain and varicose veins. The highest prevalence of varicose veins among the health care professionals are between nurses. The prevalence of varicose veins among nurses range between 16.18% and 64.6% (Ayed et al., 2014; Yun et al., 2018) and can go up to 73.9% in some instances when the significant risk factors are present (Sharifnia et al., 2010). Additionally, amongst the health care professions, nurses report the highest rates of leg cramping, feet swelling and numbness in the lower extremities (Hanif, Yousaf, Hanif, & Murad, 2017). Other reported symptoms associated with this health condition were leg pain (67%), low back pain (54.4%) muscle stiffness (45.5%, heaviness (35.6%), leg swelling (30.3%), and leg numbness (19.8%) (Hanif et al., 2017).The aim of the study was to identify the prevalence, risk factors, and protective factors of varicose veins among nurses working in units of long-standing hours in two hospitals in Lebanon.

2. METHODOLOGY

This study was conducted in the emergency department (ED) and operating rooms (OR) and medical and surgical units among two different hospitals. An official permission to conduct this study was obtained from the responsible authorities referred to institutional review board (IRB) at Beirut Arab University, and the ethical committee at the relevant clinical site after explaining the aim of the study. All nurses (110 nurses) who were actively working in the emergency department (ED) and operating rooms (OR) and medical and surgical units; registered and practical nurses; in the hospitals were eligible to be included in this study. The data collection tool was distributed to the nurse managers of the included hospital units and they were responsible for distributing and collecting the completed questionnaires. Thus, the sampling was convenient as to those who were on working at the time of data collection and the first comers. The tool used in the study was developed and used by BAU nursing students as part of the senior project. It took only 10 minutes to complete, and covered items on the sociodemographic data, lifestyle, clinical history, and current working conditions as follows: 1) Sociodemographic: data were collected on age, gender, height, weight, nationality, living region, marital status, and level of education; 2) Lifestyle Data: were collected on smoking, alcohol use, perceived physical activity as mild, moderate and heavy defined as the following: mild to include walking slowly, sitting at your computer, making the bed, eating, preparing food, washing dishes, moderate to include sweeping the floor, walking briskly, slow dancing, vacuuming, washing windows, shooting a basketball, heavy to include running around a track, heavy manual labor, heavy weightlifting. Additionally, participants were asked about their perceived healthy food consumption, and sleeping habits; 3) Clinical History: data were collected on past medical history, family history, pain, medication usage, and gastrointestinal symptoms; 4)Current working: data were collected on: level of education, unit type, hours of working, and standing hours. Data were entered using the Statistical Package for Social Sciences (SPSS) version 24. Analysis of variables was based on their types where categorical variables were presented as frequencies and percentages and continuous variables were presented as means and standard deviations. Group comparison between those with varicose veins and those with no varicose veins, were performed based on the normality of dependent variable. Chi square test was performed for categorical variables and student t test for continuous variables that are normally distributed. Group comparison for continuous variables that are not normally distributed were analyzed using the Mann-Whitney U test. Normality was assessed based on the Kolmogorov Smimov test. Response rate was calculated based on the returned surveys over the denominator which is the sum of nurses in the involved units.

3. RESULTS

3.1. Sociodemographic Characteristics of the Study Participants

Table 1: Sociodemographic characteristics of the study participants (N=110)

Sociodemographic characteristics	Total (n,%)
Age *	29.3 (6.9)
Body mass index*	25.81 (4.00)
• **Underweight**	• 3 (2.7)
• **Normal weight**	• 46 (41.8)
• **Overweight**	• 49 (44.5)
• **Obese**	• 11 (10)
• **Morbidly Obese**	• 1 (0.9)
Gender	
• **Female**	• 72 (65.5)
• **Male**	• 38 (34.5)
Nationality	
• **Lebanese**	• 99 (90)
• **Palestinian**	• 11 (10)
Living region	
• **Beirut**	• 45 (40.9)
• **South Lebanon**	• 34 (30.9)
• **Mount Lebanon**	• 26 (23.6)
• **North Lebanon**	• 4 (3.6)
• **Beqaa region**	• 1 (0.9)
Marital status	
• **Single**	• 62 (56.4)
• **Married**	• 46 (41.8)
• **Divorced**	• 2 (1.8)
Education level	
• **University degree**	• 71 (64.5)
• **Institute degree**	• 30 (27.3)
• **Masters degree**	• 7 (6.4)
Cigarette smoker	26 (23.6)
Water pipe smoker	50 (45.5)
Alcohol drinker	3(2.7)
Lifestyle	
• **Healthy**	• 68 (61.8)
• **Unhealthy**	• 40 (36.4)
Level of activity	
• **Active**	• 87 (79.1)
• **Sedentary**	• 20 (18.2)
Chronic condition	
• **Arterial disease**	• 4 (3.6)
• **DVT**	• 3 (2.7)
• **Peridontitis**	• 2 (1.8)
• **CHF**	• 1 (0.9)
• **Other**	• 7 (6.4)
Family history of varicose veins	43 (39.1)
Current varicose veins	33 (30)
Chronic medications	19 (17.3)
Normal bowel movement	88 (80)
Constipation	21 (19.1)
Past surgical history	36 (32.7)
Nursing position	
• **Registered nurse**	• 78 (70.9)

• **Practical nurse**	• 31 (28.2)
Work unit • **Medical/surgical** • **ED** • **OR** • **Other**	 • 55 (50) • 17 (15.5) • 11 (10) • 25 (22.7)
Work experience in years • **<1** • **1-3** • **3-5** • **>5**	 • 11 (10) • 24 (21.8) • 47 (42.7) • 26 (23.6)
Working hours/ week • **35-40** • **40-50** • **> 50**	 • 41 (37.3) • 61 (55.5) • 6 (5.5)
Female risk factors (n=72)	
Previous pregnancy	28 (25.5)
Menopausal	5 (4.5)
Use oral contraceptive	8 (7.3)
Type of contraceptives • **Estrogen** • **Progesterone** • **Both**	 • 2 (1.8) • 2 (1.8) • 1 (0.9)

Legend: *continuous variables presented in means and standard deviation; DVT: deep vein thrombosis; CHF: congestive heart failure; ED: emergency department and OR: operating room.

The mean age of these participants was 29.3 (SD=6.9) years with the majority being female (n=72, 65.5%), Lebanese (n=99, 90%) and registered nurses (n=78, 70.9%). Most of the study participants (n=45, 40.9%) were located in Beirut region followed by South Lebanon (n=34, 30.9%). More than half of the participants were single (n=62, 56.4%) and the majority (n=71, 64.5%) had a university degree. The distribution of the working units was the highest in the medical/surgical units (n=55, 50%), 17 (15.5%) were in the emergency department and only 11 (10%) were in the operating room. Most of the study participants (n=47, 42.7%) had three to five years of experience. Slightly over a third (n=41, 37.3%) worked the regular working hours of 35-40 hours /week while more than half (n=61, 55.5%) worked up to 50 hours. In terms of lifestyle practices, only 26 (23.6%) were cigarette smokers however, almost half of the participants were water pipe smokers (n=50, 45.5%) and only 3 were alcohol consumers. Most of the participants reported having an active lifestyle (n=87, 79.1%) and 62.8% reported having a healthy lifestyle. The majority reported not having any chronic medical condition while the most reported conditions were arterial diseases (n=4, 3.6%); deep vein thrombosis (DVT) (n=3, 2.7%), peritonitis (n=2, 1.8%) and CHF (n=1, 0.9%).More than half of nurses (n=64, 58.2%) reported not having family history of varicose veins. Currently, 30% of the study participants (n=33) reported having varicose veins. In terms of risk factors, 80% (n=88) reported having normal bowel movement while only 19% (n=21) reported frequent constipation. As for the female specific risk factors, only 28 participants (25.5%) reported having previous pregnancy while 60% (n=66) have reached the age of menopause. Only 8 nurses (7.3%) reported using oral contraceptives.

3.2. Lifestyle Characteristics of the Study Participants

Table 2: Lifestyle characteristics of the study participants (N=110)

Lifestyle characteristics	Total n (%)
Routine physical activity	58 (52.7)
Intensity of physical activity • Not active • Mild • Moderate • Heavy	 • 7 (6.4) • 37 (33.6) • 23 (20.9) • 16 (14.5)
Physical activity /week	3.7 (3.1)
Minutes of physical activity/session	38 (27)
Food consumption • Junk /street food • Homemade food	 • 28 (25.5) • 78 (70.9)
Balanced diet	72 (65.5)
Balanced food/week	3.3 (1.8)
Junk food /week	3(2.1)
Food rich in fiber	92 (83.6)
Fruits daily	86 (78.2)
Bread daily	72 (65.5)
Bread slices • 0-2 • 3-4 • >4	 • 66 (60) • 25 (22.7) • 5 (4.5)
Meat consumption	73 (66.4)
Meat meals /week • 0-2 • 3-6 • Every day	 • 51 (46.4) • 41 (37.3) • 3 (2.7)
Fat consumption	75 (68.2)
Fat consumption/ day	2 (1.5)
Fat consumption/ week	3.44(2)
Enough sleep	38 (34.5)
Hours of sleep/ night	7(2)
Lift heavy objects	68 (61.8)
Stand long period	78 (70.9)
Elastic socking	15 (13.6)
Raise legs	52 (47.3)
Hot water bathes	25 (22.7)

Almost half of the nurses (n=58, 52.7 %) performed routine physical activity. The intensity of this activity was divided between light (n=37, 33.6 %), moderate (n=23, 20.9 %) and heavy (n=16, 14.5 %). The results showed that the nurses performed physical activity to an average of 3.7 times per week (SD=3.1) for a mean of 38 minutes per session (SD=27). The majority of the participants (n=78, 70.9 %) reported consuming homemade food and almost the same number (n=72, 65.5%) reported following a balanced diet. The results showed that nurses consumed balanced food 3.3 times per week (SD=1.8) and junk food up to 3 times per week. Most of the nurses consumed food rich in fiber (n=92, 83.6%), daily fruits (n=86, 78.2%), daily bread (n=72, 65.5%), meat (n=73, 66.4%), and fats (n=75, 68.2%). More than half (n=66, 60%) reported having no more than two slices of bread daily. Similarly, slightly over half (n=51,

46.4%) reported not having meat meals more than two times weekly. As for fat consumption nurses consumed food rich in fat sources 2 times per day (SD=1.5) and up to 3.44 times per week (SD=2). One third of the nurses (n=38, 34.5 %) only reported getting enough sleep. With a mean of seven hours of sleep per night (SD=2). Almost two thirds (n=68, 61.8%) reported lifting heavy objects during work hours while more (n=78, 70.9%) reported standing for long hours without wearing elastic stockings (n=93, 84.5%). Approximately half of the nurses raise their legs (n=56, 50.9%) regularly to avoid complications while only 25 (22.7%) do hot water baths regularly after work.

3.3. Characteristics of the Veins in the Lower Extremities

Table 3: Characteristics of the veins in the lower extremities (N=110)

Characteristics of lower extremities	Total n (%)
Current leg pain	79 (71.8)
Time of pain • During work • During rest • When you lie down	 • 66 (60) • 21 (19.1) • 7 (6.4)
Bulged veins	24 (21.8)
Discoloration in legs (protruded veins)	40 (36.4)
Painful discolored veins	37 (33.6)

Leg pain was reported in 71.8% of the study participants (n=79). The most reported time of pain was at work (n=66, 60%), followed by during rest (n=21, 19.1%) and when lying down (n=7, 6.4%). Only 24 (21.8%) study participants reported having bulged veins while up to 40 (36.4%) reported having discoloration in their leg veins and 37 (33.6%) reported having both painful and discolored veins.

3.4. Comparison Between Those Who Developed Varicose Veins and Those Who Did Not

Table 4: Group comparison on sociodemographic and clinical characteristics

Variable	Varicose veins (n=33) n (%)	Non-varicose veins (n=72) n (%)	P value
Dietary habits			
Homemade food	20 (27)	54 (73)	0.045*
Fiber rich food	25 (28.1)	64 (71.9)	0.052**
Daily bread consumption	27 (38.6)	43 (61.4)	0.013*
Clinical characteristics			
No Family history	11 (17.7)	51 (82.3)	0.000*
Current pain	31 (40.8)	45 (59.2)	0.001*
Bulged veins	14 (60.9)	9 (39.1)	0.000*
Discolored veins	24 (63.2)	14 (36.8)	0.000*
Normal bowel movement	24 (28.2)	61 (71.8)	0.072**
Constipation	15 (75)	5 (25)	0.000*
Work associated risks			
Prolonged standing time	29 (38.7)	46 (61.3)	0.018*
Female risk factors			
Use of oral contraceptive	5 (71.4)	2 (28.6)	0.061**

Legend: *significant p value; **near significant finding.

It was found that those who did not develop varicose veins significantly consumed more homemade food when compared to those having varicose veins (n=54, 73% vs. n=20, 27%; p=0.045 respectively). In line with this finding, it was found that those with varicose veins consumed less fibers than those who did not (n=25, 28.1% vs. n=64, 71.9%; p=0.52 respectively. However, it was found that those who did not develop this condition significantly consumed more bread than those who did develop this condition(n=43, 61.4% vs. n=27, 38.6%; p=0.013 respectively. In terms of clinical characteristics, it was found that those not having varicose veins significantly had less family history of varicose veins compared to those with varicose veins (n=51, 82.3% vs. n=11, 17.7%; p=0.00 respectively). Those with varicose veins significantly had more bulged veins, more discolored veins and more discoloration when compared to those not having varicose veins, however, and surprisingly they had significantly less pain and irregular bowel movement (near significant). Similarly, those with varicose veins reported significantly fewer standing hours than those without varicose veins. In terms of female risk factors, the use of oral contraceptive was associated with more varicose veins although not significant. The presence of varicose veins was not associated with age or BMI.

4. DISCUSSION

The aim of the study was to identify the prevalence, risk factors, and protective factors of varicose veins among nurses working in different units of long-standing hours in two hospitals in Lebanon. This aim was addressed through a cross-sectional study with self-reported questionnaires. The prevalence of varicose veins among nurses in Lebanon was 30% which fell between those reported in the literature between 16.18% and 64.4% (Ayed et al., 2014; Yun et al., 2018). The current study found risk factors for the development of varicose veins to be positive family history, which was in line with what was reported in the literature review(Sharif Nia et al.2015). Another common risk factor to this condition was the irregular bowel movements. Although it was near statistical significance in the current study, the numbers showed clinical significance (28.2% vs. 71.8%) and was comparable to what was reported in the literature (Sharif Nia et al.2015). On the other hand, age and BMI did not proof to be risk factors in the current study. This contradicts the findings in the literature, which stated that increased age and higher BMI to be significant correlates to varicose veins development (Sharif Nia et al.2015).

The current study showed some surprising findings which included that those who consumed more bread were less likely to develop varicose veins. The questions of the study did not differentiate between white bread and brown-high fiber bread where the latter could be a protective factor. Additionally, it was found that those who stand for long hours were less likely to develop varicose veins. These results should be further investigated in the future with larger sample sizes that are calculated based on the primary outcomes.Another finding worthy of investigation is the pain reported in nurses that did not have varicose veins. This also contradicts the findings in the literature which were reported by Palfreyman, Dreweny-Carter, Rigby, Michales, & Tod (2004) and should be evaluated in later studies.

The study has some limitations that are worthy to mention. First, there was no assessment of the participants for their lower extremities nor was there a recent medical diagnosis of varicose veins, but the condition was reported by the participants without valid evaluation. Another limitation was the sample size of the study which should have been calculated based on the primary outcome. Moreover, the psychometric properties of the developed tool were not evaluated which should be done in future studies. On the other hand, the study had some strengths among which is being a multisite study involving two hospitals in two different regions of Lebanon. Additionally, despite the limitations in travel and movement of the researchers within the country due to the country's events of strikes and road closures, the sample size reached 110.

5. CONCLUSION

This study was carried out to identify the prevalence, risk factors, and protective factors of varicose veins among nurses working in units of long-standing hours in two hospitals in Lebanon. To achieve this aim, a cross-sectional design was adopted with self-reported questionnaires. The results showed that homemade food and food rich in fiber were associated with lower rates of varicose veins. On the other hand, it was found that family history of varicose veins was positively

associated with the incidence of varicose veins. Moreover, the nurses with varicose veins surprisingly reported significantly less standing hours and less pain. This finding should be further investigated in future studies with larger sample sizes and with more accurate assessments and diagnosis.

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