Research Article

IJCRR
Section: Healthcare
Sci. Journal
Impact Factor
4.016

LOWER LIMB VARICOSE VEINS AMONG NURSES: A CROSS SECTIONAL STUDY IN UDAIPUR

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ABSTRACT

Background: Varicose vein is a saccular, tortuous, dilated vein of lower limb invariably associated with local valvular incompetency. They not only can cause cosmetic problems but also can cause clinical symptoms such as pain and heaviness in the lower limb. It is most often associated with occupations requiring prolong orthostasis like teachers nursing staff, shopkeepers etc. In spite of this strong relationship with occupations requiring prolonged orthostasis, epidemiological studies on working population are limited. We conducted this study to identify the occupational and demographic risk factors of lower limb varicose vein which could be interventional in improving working atmosphere and quality of life for their long term nursing career.

Method: It was a cross sectional study conducted from February 2015 to March 2015 Data was collected through a self-filled preformed questionnaire from 364 nurses working at GMCH and Associated Hospitalsin Udaipur, Rajasthan. The nurses having lower limb VV were subject to clinical examination by the experts for confirmation of the diagnosis.

Results: A total of 364 nurses participated in the survey and 88 (24.17%) had lower limb VV. The female nurses had slightly higher prevalencecompared with their male counterpart (24.50% V/S 22.58%). The occupational risk factors responsible for lower limb VV among nurses were longer work history (40.42% P- 0.001) longer working hours (>8 hrs 38.70%, p- <0.001) and prolonged orthostasis (standing longer – 57.14%) beside patients bed. They are older in age (28.30%, p- 0.001) and also having a family history of VV (38.70%, p- 0.006)

Conclusion: In nurses older age, family history, longer work history, longer working hours and prolonged standing beside patient bed are major risk factors for developing lower limb varicose vein.

Key Words: Risk factor, Tortuous, Orthostasis, Occupation

INTRODUCTION

A varicose vein is a palpable subcutaneous vein that is dilated tortuous, saccular, and generally larger than 3mm and mainly seen in lower limbs. It is invariably associated with local valvular incompetency and more common in women than men.

Varicose vein are known to be more common among profession such as police men, teachers, nurses, shopkeeper& bus conductors who has to stand for longer time during their duties. Even though the exact cause of varicose vein is unknown there are some contributory factors responsible for varicose vein. Some of the major risk factors are age, gender, pregnancy, family history and prolonged standing Among these risk factors nurses have the two important risk factors-gender & prolonged standing during duty hours. They are at higher risk of developing varicose vein because of their nature of job which require prolonged standing at patient bedside& this increase their risk of getting varicose vein later in their life. With regards to the gender majority of the nurses are female nationwide & internationally. In UK male to female ratio among nurse is 1 : 10 in Canada it is 1 : 19 while in India it is around 1 : 5. The only way to avoid the varicose vein among nurses is to follow the preventive measures.

Varicose vein is the most common chronic condition in north America and western Europe, less common in the Mediterranean, south America and India and even less so in the far East & Africa. According to international statistics 25 percent of women & 18 percent of men in general population

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Received: 07.10.2015 **Revised:** 29.10.2015 **Accepted:** 25.11.2015

are affected by varicose vein. Framingham study reported that 27 percent of the Americans had some form of varicose disease in their legs. It is estimated that 20 to 25 million Americans have varicose vein. In India 10 to 20 percent of the general population eventually develop varicose vein in due course of their life.

METHOD AND COLLECTION OF DATA

Information was collected from nurses working in GMCH and Associated Hospitals in Udaipur, through a self-filled questionnaire &the physical examination was performed by the investigator for the varicose vein (C2) based on the clinical finding using CEAP standards.

(Clinical, Etiological, Anatomical & Pathophysiological classification for varicose vein)

Study Period:

February 2015 to March 2015.

Definitions:

Varicose Vein-Dilatedpalpablesubcutaneous veins of leg, generally more than 3mm in diameter (C2)

Reticular Vein- Dilated non-palpable subcutaneous veins less than 3mm in diameter.

Telangiectasia- Dilated intradermal veins less than 1mm in diameter.

Chronic venous insufficiency- Varicosevein with its complication (C3-C6) or symptomatic varicose vein.

Procedure & Assessment:

The collected data were entered in to the MS office including MS word, MS excel and MS access for assessment of prevalence and relationship of risk factors of varicose veins among nursing staff and further data were processed and analyzed for percentages, proportions.

Appropriate statistical tests were applied to draw the inferences andsignificance and observations were presented as tables, graphs and figuresaccordingly.

Ethical Clearance

Ethical clearance was obtained from Human Resource Ethical Committee of the Geetanjali Medical College and Hospital, Geetanjali University, Udaipur.

Results

A total of 364 nurses participated in the study, including 302 female nurses and 62 male nurses. The average age was 46.22 years and the male to female ratio was 1:4.8.

There were88 cases of lower limb VV showing the prevalence of 24.17%. The prevalence among female nurses was slightly higher than male (24.50% V/s 22.58%) VV of lower limb were more common in older age group i.e. in the age group of 36-50 years (28.88%) and in the age group of 51-66 years (28.30%).

In comparison with nurses without lower limb VV,those who had lower limb VV were more experienced having 6 or more years of experience (40.42% p<0.001), had more than 8 hours duty per day (38.70% p <0.001) and more hours of standing in working (57.14%, p <0.001). Constipation, habits of smoking and drinking of alcohol did not appear to be significant risk factor of lower limb VV, so are the OCP use and hormone replacement therapy(HRT) in female nurses. Among the other risk factors positive family history (38.70%, p 0.006) & number of child birth (3 or more child birth 38.37%, p 0.002) appeared to be a significant predictor.

DISCUSSION

Varicose vein of the lower limbs is a penalty which a human being has to pay for his erect posture.

The reported prevalence rate of VV differed from one series to another ranging from 2 % to 56% in men and 1% to 73% in women probably affected by various factors like age, sex, gender etc. A study conducted by[1]on 541 Japanese women the prevalence rate was 45% while in other study[2] conducted in Shanghai area of China on 30712 workers the prevalence rate was 8.39% of lower limb VV. In our study the prevalence rate of lower limb in nurses was 24.17% which was within the reported range.

In our study the incidence of VV was nearly similar in women and men (24.50% and 22.58%) and increased consistently with age. Similar findings were observed by[3,4] and study by[5,6] among nurses reported very high incidence rate (73.9% and 62.5%) not match to our results.

Family history was very strong risk factor for VV. In our study (38.70%) nurses had family history of VV, our results are supported by[5,7-10] but study of[11] not support our results. However the study by[8] revealed that the risk of developing VV was 90% when both parents presented the disease and 25% for males and 62% for females when only one of the parents was affected.

The published data on the effect of smoking and drinking alcohol are limited.A large case control study conducted by[10] on 1806 patients of lower limb venous insufficiency found that smoking more than 10 cigarettes per day was associated with a higher prevalence of VV but smoking less was not. A study by[17] found that alcohol intake and smoking were not risk factors for venous insufficiency. In our study alcohol or

smoking was not found to have a significant association with VV.

There is significant relationship between VV and hours of positional factors such as sitting and standing. Similar results were observed by[7,10,16]but contrasts with[17,18].

The effect of prolonged standing beside the patient bed and long working hours (> 8 hours/ day) are the primary focus of this study, we found that both the occupational risk factors prolonged standing (57.14%, p <0.001) and long working hours (38.70%, p <0.001), were significantly associated with the lower limb VV. A study[18] on 387 male European workers also foundthat prolonged standing was an aggravating factor of lower limb VV. A study on female cotton workers[19]also found a greater prevalence of lower limb VV in those who worked standing up. A prospective study in Denmark conducted by[20]found that jobs requiring prolonged standing were associated with a relative risk of 1.75 for hospitalization due to VV. A cross sectional study conducted by[12] in Germany on 9935 civil servants also reported similar results. Our results are also supported by[6,14,15].

Hormonal factors in women, number of births were related to VV. In our study, a trend was detected between pregnancy and increased incidence of VV, our results are supported by[5,10,12]. In study done by[9] found that the changes occur with only one pregnancy. According to[13] pregnancy was no longer a risk factor.

There is no evidence that OCP cause VV but our study shows slight increase.

A study by[21]foundthat there is a slight increased risk of VV due to hormone replacement therapy (HRT).This is in contrast to our results.

In summary there are sufficient evidences to support that prolonged standing beside the patient's bed and long duty hours are associated with the occurrence of lower limb VV in nurses.

CONCLUSION

Family history of varicose vein, prolonged standing, and long working hours are the major risk factors for developing lower limb varicose vein. There for preventive measures such as compression stockings and taking small breaks at work during long duty hours and prolong standing to rest leg can help in prevention of lower leg varicose vein among nurses.

ACKNOWLEDGEMENT

Authors acknowledge the immense help received from the scholars, whose articles are cited and included in references of this manuscript. The authors of this manuscript are also grateful to editors, publishers, and authors of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

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Comparison of risk factors between nurses with and without lower limb varicose vein

Variables	With VV N (%)	Without VV N (%)	p-value
Total (364)	88 (24.17)	276 (75.82)	
Sex			
Women 302)	74 (24.50)	228 (75.49)	
Men (62)	14 (22.58)	48 (74.41)	0.639
Age			
20-35 (78)	6 (7.69)	72 (92.30)	
36-50 (100)	52 (28.88)	128(71.11)	
51-60 (106)	30 (28.30)	76 (71.69	0.001
Family history			
Yes (62)	24 (38.70)	38 (61.29)	
No (302)	64 (21.19)	238(78.80)	0.006
Constipation			
Yes (32)	12 (37.50)	20 (62.50)	
No (332)	76 (22.89)	256 (77.10)	0.100
Smoking			
Yes (36)	6 (16.66)	30 (83.33)	
No (328)	82 (25.00)	246 (75.00)	0.370
Alcohol			
Yes (45)	6 (13.33)	39 (86.66)	
No (319)	82 (25.70)	246 (74.24)	0.119
Mobility At work (>50% of working time)			
Sitting			
Yes (6)	2 (33.33)	4 (66.66)	
No (20)	4 (20.00)	16 (80.00)	0.606
Standing			
Yes (84)	40 (57.14)	36 (42.85)	
No (39)	6 (10.16)	53 (89.83)	<0.001
Walking			
Yes (159)	5 (3.14)	154 (96.85)	
No (36)	23(63.88)	13 (36.11)	
Working hours per day			

< 6 hrs (45)	12 (26.66)	33 (73.33)	
6-8 hrs. (195)	28(14.35)	167(85.64)	
> 8 hrs (124	48 (38.70)	76 (61.29)	<0.001
Work experience			
2-4 years (49)	2 (4.08)	47 (95.91)	
4-6 years (221)	48(21.71)	173 (78.28)	
6-10 years (94)	38 (40.42)	56 (59.57)	<0.001
Pregnancy (302)			
Zero (15)	3 (20.00)	12 (80.00)	
1-2 (201)	38 (18.90)	163 (81.09)	
3 or more (86)	33 (38.37)	53 (61.62)	0.002
OCP use (302)			
Yes (58)	17 (29.31)	41 (70.68)	
No (244)	57 (23.36)	187 (76.63)	0.443
HRT (302)			
Yes (37)	7 (18.91)	30 (81.08)	
No (265)	67 (25.28)	198 (74.71)	0.530