

Prevalence and awareness of varicose veins among teachers in Abha, Saudi Arabia

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ABSTRACT

Background: Teachers, compelled by the nature of their profession, are required to stand for a significant amount of time. This prolonged standing, being one of the risk factors for venous insufficiency, puts them at risk to develop varicose veins. Hence, as there is a need to educate and sensitize the teachers. This study was carried out to investigate the prevalence and awareness regarding varicose veins in school teachers. **Methods:** A cross sectional, questionnaire based study was carried out on 391 school teachers of the Aseer region, KSA, after obtaining ethical committee clearance and informed consent. Questions included personal, occupational, and varicose vein based questions. Responses were collected and analyzed using SPSS version 25.0 software. Frequencies and percentages were calculated. **Results:** Forty two percent of the teachers were found to have varicose veins most of which were females. Around 62% of the teachers suffering from varicose veins were between 36 and 45 years of age. Participants who did regular exercises were less prone to varicose than irregularly exercising participants ($P = 0.0001$). No association was observed between smoking and varicose veins (odds ratio 0.15, 95% confidence interval 0.05–0.44). **Conclusion:** Due to high prevalence of varicose veins among teachers, it is necessary to spread awareness regarding varicose veins among them and sensitize them with the methods to prevent its formation.

Keywords: Occupation, venous insufficiency, venous ulcers

Introduction

The venous system of lower extremities consists of two distinct circulatory systems, which is anatomically separated by the deep fascia into the epifascial or superficial venous system and subfascial or deep venous system.^[1] The deep veins are usually accompanied along with their arteries and drain the muscles and the bones. In contrast, the superficial veins run subcutaneously draining the muscles and the skin. The great saphenous vein and the small saphenous vein are the two major superficial veins, which finally drain into the deep veins either directly or through the perforating veins.^[2] Varicose vein refers to large, tortuous,

and dilated veins, resulting from venous valvular dysfunction. Incompetence of venous valves hinders the unidirectional upward flow of the blood, resulting in reflux and backflow in the veins.^[3] Worldwide, the incidence of varicose veins varies between 10% and 60%. This incidence is higher in the Asian region as compared to up to 30% in the Western world.^[4] Studies have shown the prevalence to be as high as 62% in Saudi Arabia, with increasing annual incidence of about 5% in females and 2% in males.^[5,6] In spite of being highly prevalent, varicose veins are not considered as a major health concern as it has low mortality. It is considered more of a cosmetic concern. However, varicose vein is one of the earliest manifestations of chronic venous insufficiency (CVI). Although it may not require treatment initially, if progressed it results in swelling, painful lower limb, and intense itching. In severe cases, these veins may rupture resulting in varicose ulcers. Therefore, these symptoms are associated with

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high morbidity and add up to healthcare expenses.^[7] Prolonged standing and advancing age are considered to be the important factors for the development of varicose vein. Teachers spend quite a considerable amount of time standing mainly when taking lectures and conducting practical. Hence, prolonged period of standing over a period of time makes them prone to CVI, hence varicose veins. Therefore, there is a need to increase the awareness and educate the teaching faculties regarding varicose veins to maintain a good quality of life. Hence, this study was planned and carried out to study the prevalence of varicose veins among teachers and also assess their perception and awareness regarding varicose veins. One review study described that from the 720 selected articles, 37 stayed after full-text assessment. Community medicine monitors the prevalence of certain conditions among specific groups of family physicians (varicose veins among teachers), thus providing them with the necessary preventive measures; further, family physicians and community medicine can help patients who have been diagnosed with varicose veins for counseling to give them healthy lifestyle behavior.

Among the 21 investigations on lower-limb varicose veins (LLVV), delayed standing was essentially related to a higher danger of varicose veins with an edge most likely around > 3–4 h/day. One study depicted that new cases of varicose disease are increasing among those whose professions extended standing.^[8-12]

Subjects and Methods

This questionnaire-based study was carried at schools of the Aseer region between October 2019 and February 2020. Institutional ethical approval was obtained before the study from King Khalid University. A total of 391 school teachers were selected for the study after obtaining their consent. The purpose of the study was explained to all the participants. All their queries and concerns were addressed before administering the questionnaire.

A questionnaire was constructed which consisted of three parts. First part consisted of personal and demographic information such as age, gender, weight, height, address, and personal habits. The second part of the questionnaire consisted of workplace-related information which included duration of service and work responsibilities. The third part of the questionnaire included information regarding varicose veins. The questionnaire was peer reviewed and approved after consensus of all the authors. Once finalized, the questionnaire was prepared using Google Form in English and Arabic and mailed to all the participants.

Once the responses of all the participants were collected, it was analyzed using Statistical Package for the Social Sciences Version 25.0 (SPSS/PC; SPSS-25.0, Chicago, USA). All data were expressed as frequency and percentage. Significance was determined using *t*-test and Chi-square test. Linear regression analysis was done to calculate the odds ratio with 95% confidence interval (CI). A $P < 0.05$ was considered statistically significant.

Results

A total of 391 teachers had participated in the study, of which 69.3% were female and 30.7% were male [Table 1]. About 42% of the participants gave a positive history of varicosity in the lower limb, of which 5% were not aware of this condition. The incidence of varicose veins was higher in females which was around 37% (146) as compared to 14% (17) in males. Age-wise distribution of the participants is summarized in Table 2. It was observed that the highest case of varicose veins, i.e., 37.4%, was between 36 and 40 years of age followed by 27.4% between 41 and 45 years of age. One hundred and sixty participants were primary school teachers, 127 were secondary school teachers, and the rest 104 were intermediate school teachers. As shown in Table 3, 46 out of 104 (44.2%) intermediate school teacher and 69 of 160 (43.1%) primary school teachers were more prone to varicose veins as compared to 37.7% of secondary school teacher. Inquiring about the lifestyle revealed a strong association between lack of regular exercise and development of varicose veins ($P = 0.0001$). It was observed that 69% of the participants who did not exercise regularly developed varicose as compared to those who exercise for minimum 3 h in a week. No association was seen between smoking and development of varicose veins as only four teachers with varicose veins gave a history of smoking (odds ratio = 0.15; 95% CI 0.05–0.44) [Table 3].

Discussion

Although the arteries and the veins have the same three layers, namely tunica externa, media, and intima, the smooth muscle and connective tissue content of the veins is lesser, thus making their walls much thinner and allowing them to hold large amount of

Table 1: The frequency (percentage) of gender distribution and awareness of varicose veins in participants

Gender	History of varicose veins			Total (%)
	Not present (%)	Present (%)	Present but aware (%)	
Females	125 (31.7)	131 (33.7)	15 (3.8)	271 (69.3)
Males	103 (26.3)	12 (3.1)	5 (1.3)	120 (30.7)
Total	228 (58.0)	143 (36.8)	20 (5.1)	391

Table 2: The frequency and percentage of participation in different age groups

Age range (years)	Frequency	Varicose veins	
		Not present (n=228), n (%)	Present (n=163), n (%)
25-30	38	32 (14.0)	6 (3.6)
31-35	70	42 (18.4)	28 (17.1)
36-40	118	55 (25.0)	61 (37.4)
41-45	95	50 (22.0)	45 (27.6)
46-50	47	32 (14.0)	15 (9.2)
51-55	15	9 (3.9)	6 (3.7)
56-60	8	6 (2.6)	2 (1.2)

Table 3: The distribution of participants (in frequency and percentage) according to their level of teaching, exercise, and smoking habits

	Varicose veins		Significance
	Not present (n=228), n (%)	Present (n=163), n (%)	
Type of school			
Primary school	91 (39.9)	69 (42.3)	
Secondary school	79 (34.7)	48 (29.5)	
Intermediate school	58 (25.4)	46 (28.2)	
Frequency of exercise per week			
>3 h	32 (14.0)	14 (8.6)	P=0.0001
1 h	26 (11.4)	26 (16.0)	
2 h	20 (8.8)	10 (6.1)	
I don't exercise regularly	150 (65.8)	113 (69.3)	
Smoking			
Yes	32 (14.0)	4 (2.5)	Not significant OR=0.15, 95% CI 0.05-0.44
No	196 (86.0)	159 (97.5)	

P<0.05 is considered statistically significant. OR: Odd ratios, CI: Confidence interval

blood in comparison to arteries. However, venous return from the lower extremities against the gravitational force is maintained by interconnecting perforating veins, connecting the two sets of lower limb venous system: (1) the superficial and deep venous system and (2) the venous valves which are derived from the folds of the endothelium and connective tissue.^[12,13] These valves play a very important role in maintaining unidirectional blood flow from the caudal to cephalic end. Incompetency of these valves results in venous reflux causing dilation of venous walls, resulting in the formation of varicose veins. The symptoms associated with varicose veins may vary depending upon its size and extent. In the mildest form, it may have only cosmetic implications, and as it progresses, it is accompanied by dull aching pain, burning sensation, and pruritus. In severe cases, varicosity leads to severe cramps, lipodermatosclerosis, edema, hyperpigmentation, and ulceration.^[14] Although genetic and environmental factors may play an important role in the development of varicose veins, some important risk factors identified are age, body weight, parity, and prolonged standing.^[15] Teachers are required to spend good amount of their working time standing while taking lectures and practical sessions. This in turn makes them a potential candidate for developing varicose veins. Hence, this study was carried to assess the prevalence and awareness regarding varicose veins.

The prevalence of varicose veins in adults shows a wide range, i.e., from 10% up to 60%.^[16,17] Al-Shammeri *et al.* in their study reported a prevalence of 62% which was higher among females.^[5] In our study, we observed a similar pattern. The total prevalence was 42%, and in females alone, it was 37%. This predisposition of females to develop varicose veins could be due to the effect of the hormones, estrogen and progesterone. Progesterone binds to its receptor on the venous walls, thereby reducing the synthesis of collagen and causing hypotonia of smooth muscle of the veins.^[17] The most common age group for developing varicose veins was between 36 and 45 years of age. It was observed that around 65% of the participants were in this age category. Similar findings were reported in other studies. In one study, 62.5% of varicose vein patients were between 21 and 40 years of age, and

in another study, 65% of the study population fell in this age group. This could be due to the fact that aging is associated with weakening and damage to the venous valves, which would make these patients prone to develop varicose veins. Healthy lifestyle requires a healthy diet and a regular exercise. In our study, it was observed that those participants who did a regular exercise of a minimum 3 h in a week had lower tendency to develop varicose veins as compared to those who were either irregular or did not perform any exercise ($P = 0.0001$). Similar findings were reported by Araujo *et al.*^[18] Physical exercise provides strength to the muscles of the lower limb, especially the gastrocnemius which provides a good pumping action. Moreover, regular exercise maintains a good blood flow, thereby preventing venous stasis. Although smoking is considered as a risk factor for the development of venous insufficiency, there are conflicting reports regarding this. In our study, no association was found between smoking and varicose veins (odds ratio = 0.15; 95% CI 0.05–0.44). Similar finding was reported by Lee *et al.* as they too found no association between the two.^[19] It was interesting to observe that majority of the participants, about 91%, were nonsmokers. This could be because most of the participants were females, and perhaps, the teachers had a better awareness regarding harmful effects of smoking. Such a low percentage of smokers could also be the reason for a negative association. The main new message of this study is that the schools teachers have to spend good number of hours standing which make them prone to develop varicose veins, so they are in danger, and family physicians should increase their efforts to find the remedies and solutions.

Conclusion

Varicose veins or venous insufficiency is a common problem having a high prevalence. Schools teachers have to spend good number of hours standing which make them prone to develop varicose veins. Female teachers are more prone as to develop varicose veins as they undergo various hormonal changes during their reproductive life. In this view, it is necessary to increase

their awareness, educate them, and sensitize them with various treatment options and lifestyle modification to prevent them from developing varicose veins.

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Conflicts of interest

There are no conflicts of interest.

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