

Awareness of varicose veins among dental students – Pilot study

Nathasha A/P Sivakumar, Dhanraj Ganapathy*

ABSTRACT

Aim: The objective of this study was to evaluate the awareness of symptoms, causes, and treatment of varicose vein disorder among dental students. **Introduction:** Varicose veins are a very common problem usually neglected by patients due to lack of pain in the initial stages of the disease. Varicose veins are the disease of mainly lower limb veins. In this disease, the veins of legs become dilated and tortuous. This is because, the non-return valves present in these veins start leaking, leading to stagnation of impure (deoxygenated) blood in the leg veins. One must know the early symptoms of this disease so as to avoid complications, which can be dangerous. Visible dilated veins over legs and thighs are usually painless to start with; as time passes they become more dilated and tortuous. Other common symptoms are leg fatigue, cramps, edema, and pigmentation of the skin of lower legs. As varicose veins a major risk to dental students, this study will create awareness about this disease among them. **Materials and Methods:** The questionnaires study was conducted among 50 dental students aged 20–26 years old. Informations were collected through a structured pro forma which includes demographic variables. The students were asked to choose only one appropriate answer. All data collected were compiled for statistical analysis. **Results:** The results of the survey show that 70% of the students were aware of varicose veins from other sources, while 16% of them were alerted by their friends during casual chats and 8% of them by work colleagues and seniors. **Conclusion:** With the light of available evidence, this study concludes that there is a need to create awareness among undergraduate dental students regarding the complication of varicose veins considering their prolonged working hours standing by the patients. This may help the clinician to avoid complications in their general practice.

KEY WORDS: Varicose veins, Non-return valves, Deoxygenated blood, Pigmentation, lower limb veins

INTRODUCTION

Chronic venous disease is a common condition presented to general physicians worldwide. Varicose veins are a commonly reported venous disease. Varicose veins are tortuous, widened veins in the subcutaneous tissues of the legs and are often easily visible. Their valves are usually incompetent so they might have reflux of blood occurs, and this resulting venous hypertension can cause symptoms.^[1] Varicose veins are widely seen as a medically unimportant and deserving low priority for treatment. They are common, affecting nearly a third of adults in western societies, and few people with varicose veins are ever harmed by them. However, this can cause concern and distress on a large scale, most of which can be

dealt with by good explanation and reassurance, or by a variety of treatments which are evolving rapidly at present time. Patients can now be referred for more precise assessment and a greater range of therapeutic options than ever before.^[2]

Varicose veins are common disease which affects one-third of the population of which prevalence is observed in Western Europe and the United States. A study revealed that, from the affected population, around 1–73% of females (especially during pregnancy) were affected by this condition and on an average 2–56% of males were affected. Thus, we may conclude that women are more likely to be affected than men.^[3] Varicose veins or venous insufficiency is a disease which involves enlargement and gnarling of the veins usually of legs. In this disorder, there is reflux flow of blood through the valves of legs, and hence, instability in the circulation of blood.

The risk factors include age, hereditary, pregnancy, obesity, and occupation, which involve prolonged

Access this article online

Website: jprsolutions.info

ISSN: 0975-7619

Department of Prosthodontics, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India

*Corresponding author: Dr. Dhanraj Ganapathy, Department of Prosthodontics, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences, Saveetha University, 162, Poonamallee High Road, Chennai - 600 077, Tamil Nadu, India. Phone: +91-9841504523. E-mail: dhanrajmganapathy@yahoo.co.in

Received on: 14-03-2019; Revised on: 18-04-2019; Accepted on: 21-05-2019

hours of standing, diet, type of physical activity, excess use of hormones, and etcetera.^[4] These factors are not clearly known yet. Symptoms related to varicose veins may not be observed in case of some affected population. The symptoms of this disease at initial stages include severe pain, swelling, itching, heavy legs, and lipodermatosclerosis (skin thickening). If left untreated, further complications lead to bleeding veins, eczema, skin pigmentation, or discoloration. Later, it can cause venous ulcers, and hence, complete vein incompetence. Diagnosis of the varicose veins disease is done using the Duplex scan method of investigation.

Varicose vein is a dilated, elongated, tortuous, and it is often palpable superficial venous system of the body, and especially the lower extremities. Other commoner areas are the umbilicus (Capus medusa), scrotum/vulva (varicocele), and rectum (hemorrhoids).^[5] They can be found in the upper extremities along with the distributions of the cephalic and basilica veins, though rarely. Visible varicose veins in the lower extremities are estimated to affect at least a third of the population, and 28.6% of people with varicose veins progressed to develop serious venous diseases. Furthermore, 3–6% of people with varicose veins in their lifetime progress to develop venous ulcers.^[6]

In the lower extremities, there are two main superficial veins, namely, the great saphenous vein (GSV) and the small saphenous vein (SSV). The proportion of limbs whose GSV and SSV affected with varicosity ranges from 25% to 35%. Isolated SSV varicosity occurs in about 14% of limbs.^[7]

In the modern living and working conditions, dentists are working in an environment with more effort and holding fixed positions for a longer duration of time. Hence, the present study was undertaken to evaluate their knowledge among undergraduate dental students.

MATERIALS AND METHODS

Ethical Approval

The present cross-sectional study was carried out after obtaining ethical approval from the Institutional Review Board of Saveetha Dental College.

Study Design

The survey was conducted in a single dental school in Chennai. This was one of the first studies to assess the knowledge of undergraduate about varicose veins. Because it was easy to recruit the study population from a single dental school, purposive sampling technique was chosen. A sample of 50 undergraduate students in a Saveetha Dental School, Chennai, India, was included in the study.

The study was undertaken into two stages: Stage 1 and Stage 2.

Stage 1 comprised formulating, designing, and validating the questionnaire, whereas Stage 2 tested the validated questionnaire among 50 undergraduate dental students.

Stage 1 (designing and validation of questionnaire)

A standardized self constructed questionnaire was formulated by two investigators. Both the investigators independently formulated the questionnaire, and after a consensus, they arrived at a final list of 15 questions. The questionnaire was based on the source of knowledge, etiology, signs and symptoms, and its preventive measures. Initially, content validation of the questionnaire was performed by circulating the questionnaire to ten qualified general dentists. A panel discussion was conducted among ten qualified general dentists and they had rated the questionnaire using content validity ratio.^[8-10] There was a good agreement between the investigators, with a rating of >0.7. Finally, the questionnaire was distributed to ten random general dentists for face validation, and it was evaluated using 5-point Likert scale.

Stage 2 (testing of validated questionnaire)

After the content and face validation, the questionnaire was distributed to 50 undergraduate students to complete the questionnaire. Distribution and collection of the questionnaire were done by one graduate dentist (NS).

The questionnaire used in this research had been validated by content and face validation at the beginning of the study, based on the validation technique explained previously. The aim of this validation process was to gain the experts opinion and to modify the questionnaire in ease of understanding.

RESULTS

This survey shows that 70% of the dental students said they were aware of varicose veins from other sources, while 16% of them were alerted by their friends. About 8% of the dental students were aware of it by work colleagues [Table 1, Graph 1]. Among the 50 students, 50% of them were saying that standing for a long period of time is the most common cause of varicose veins. Meanwhile, 25% of the dental students were told that the disease might occur because of obesity. Nearly 12% of them were telling that aging might be the most common cause of this disease [Table 2, Graph 2]. In awareness regarding the signs and symptoms of varicose veins, 52% of the dental students were aware that visible bluish-purple cluster in the legs is the most common clinical feature seen in varicose veins followed by 16% of them told that varicose veins might be seen

as swelling of ankle and feet. About 10% of the dental students were telling that aching and itching in legs are the signs [Table 3, Graph 3]. In awareness about the preventive measures, out of the 50 students, 56% of the students say that it can be prevented by avoid standing for an extended period of time. Nearly 26% of them say it can be prevented by exercising to improve the strength of the leg, while 14% of them told that losing weight or maintaining a healthy weight could be the best preventive measure [Table 4, Graph 4]. Among the 50 students, 58% of them were not aware of the treatment for varicose veins, while 18% of them were telling it would be sclerotherapy and 14% says that it can be corrected by surgery [Table 5, Graph 5]. Almost 48% of the students were not aware of the investigative method, while 28% saying it might be Doppler ultrasound and 24% mentioning the ultrasound method [Table 6, Graph 6].

1. Knowledge about varicose veins among dental students¹.
 - Among 50 dental students, 96% of them were aware of varicose veins.
2. Source of knowledge
 - The source of knowledge about varicose veins was 70% from others, according to the dental students
3. Awareness about the causes
 - Among 50 dental students, 50% of them were aware that standing for a long period of time was the common cause of varicose veins
4. The most common signs and symptoms of varicose veins according to them
 - Nearly 52% of the dental students told that visible bluish cluster in the legs is the most common cause of varicose veins.
5. Awareness about the preventive measures
 - Among 50 of the dental students, 56% of them are saying that avoid standing for an extended

- period of time would be the best preventive measure for varicose veins.
- 6. Awareness about the treatment
 - Nearly 58% out of the 50 dental students do not know about the common treatment of varicose veins
- 7. Awareness about the investigative method of varicose veins
 - Among 50 of the dental students, 48% of them were telling that Doppler ultrasound was the common method to identify varicose veins nowadays.

DISCUSSION

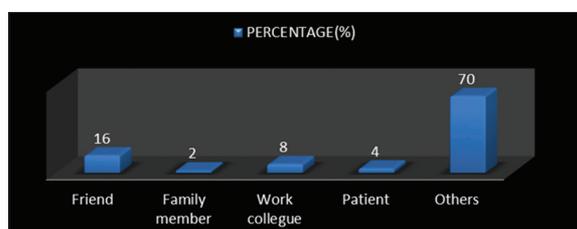
This is one of the first studies to exclusively evaluate the knowledge of varicose veins in undergraduate dental students. In the modern living and working conditions, dentists are working in an environment with more effort and holding fixed positions for a longer duration of time. Hence, the present study was undertaken to evaluate their knowledge about varicose veins to inculcate sitting dentistry practice.

The incidence of chronic venous insufficiency and related varicose veins is variable and fluctuates according to factors such as age, sex, and geographical locations. Extrinsic environmental factors and intrinsic pathological conditions contribute to the disease, including family history, obesity, older age, pregnancy, and female gender.^[11] The clinical features and Doppler ultrasonography are currently used in making pre-operative diagnosis. Current treatment procedures are divided into conservative and surgical.

The conservative methods are leg elevation, exercise, bandaging, and massage, generally referred to as

Table 1: Source of knowledge percentage (%)

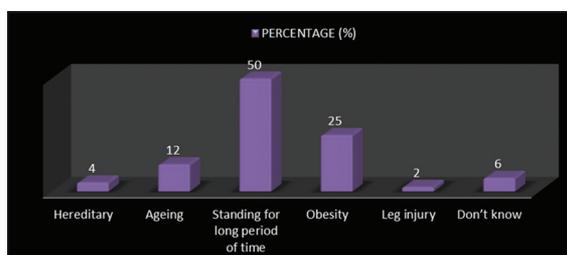
Statement	Number of students	Percentage (%)
Friend	8	16
Family member	1	2
Work colleague	4	8
Patient	2	4
Others	35	70



Graph 1: Source of knowledge percentage (%)

Table 2: Awareness about the cause's percentage (%)

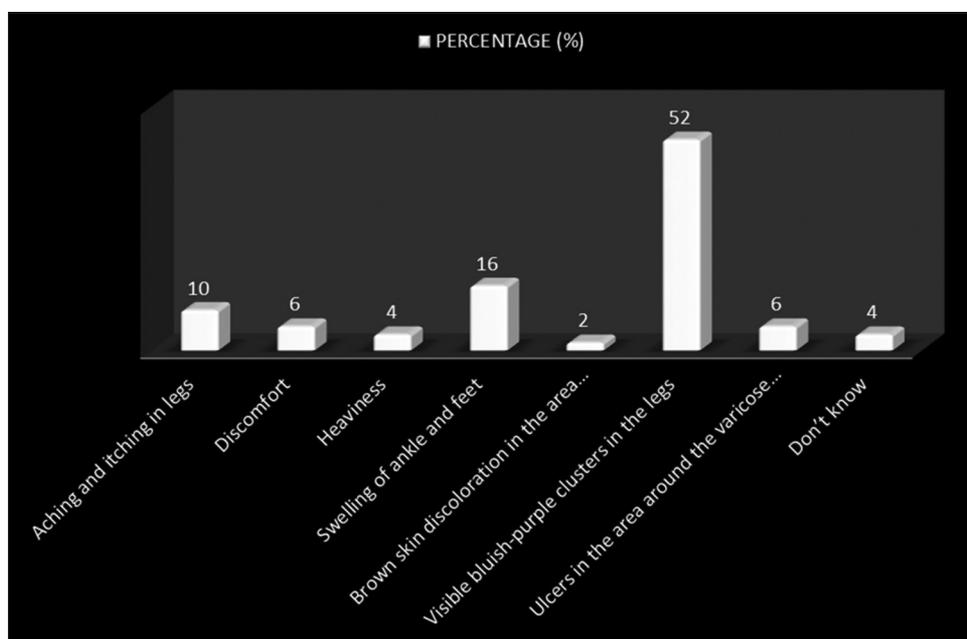
Statement	Number of students	Percentage (%)
Hereditary	2	4
Ageing	6	12
Standing for long period of time	25	50
Obesity	13	25
Leg injury	1	2
Do not know	3	6



Graph 2: Awareness about the cause's percentage (%)

Table 3: Awareness of the signs and symptoms (%)

Statement	Number of students	Percentage (%)
Aching and itching in legs	5	10
Discomfort	3	6
Heaviness	2	4
Swelling of ankle and feet	8	16
Brown skin discoloration in the area around the varicose veins	1	2
Visible bluish-purple clusters in the legs	26	52
Ulcers in the area around the varicose vein problem	3	6
Do not know	2	4



Graph 3: Awareness of the signs and symptoms (%)

Bisgaard regime. The surgical methods are high ligation, multiple ligation and stripping, endovenous laser ablation, sclerotherapy, and ambulatory phlebectomy.^[12]

Varicose veins do occur when there are incompetent perforators, incompetent valves of the superficial veins, deep-vein thrombosis, arteriovenous fistula, and pelvic mass(es) such as pregnancy, tumors obstructing blood flow toward the heart. Other causes include hereditary and idiopathic.^[13,14]

A study on large population of the UK has shown age-adjusted prevalence's of 40% in men and 32% in women, although women more often present for treatment. The age of onset varies; some people develop varicose veins in their teenage years, but prevalence rises with age. Varicose veins often appear in the first pregnancy, and further pregnancies can make them worse. A family history is common, but people should be reassured that having close relatives with severe symptoms from varicose veins do not confer any great likelihood that they will have similar problems.^[15]

Varicose veins can cause a variety of symptoms of discomfort in the legs, but it is important to try to differentiate these from the many other reasons for leg pains. The Edinburgh Vein Study found that the symptoms significantly associated with varicose vein were itching, heaviness, and aching, but the relation of these with varicose veins was inconsistent, particularly in men.^[16] Traditional pointers to symptoms being caused by varicose veins include worsening of symptoms after prolonged standing or walking and toward the end of the day, relieving symptoms by elevating the legs or wearing support hosiery, and tenderness over the veins.^[8]

There are several factors which can be related to the development of varicose veins that include age, gender, family history, obesity, and most importantly, the standing occupation.^[9] The reverse flow of blood in veins is prevented by one-way valves. The veins start leaking, leading to the stagnation of the deoxygenated blood in the leg veins.^[10]

Extensive evaluation of the venous disease and the ligation of the site deep to the superficial reflux are one of the ways of preventing the recurrence.

Table 4: Awareness about the preventive measures (%)

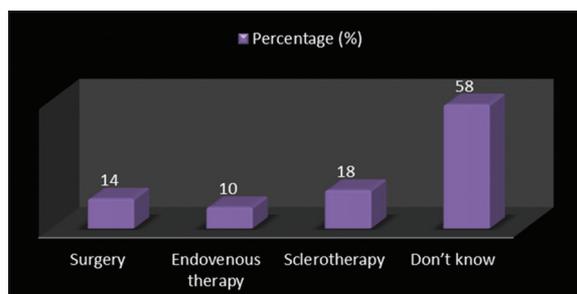
Statement	Number of students	Percentage (%)
Avoid standing for extended periods of time	23	56
Exercise to improve your leg strength	13	26
Loss weight or maintain a healthy weight	7	14
Elevate your legs whenever you are resting or sleeping	3	6
Wearing support stockings	4	8



Graph 4: Awareness about the preventive measures (%)

Table 5: Awareness of the most common treatment (%)

Statement	Number of students	Percentage (%)
Surgery	7	14
Endovenous therapy	5	10
Sclerotherapy	9	18
Do not know	29	58



Graph 5: Awareness of the most common treatment (%)

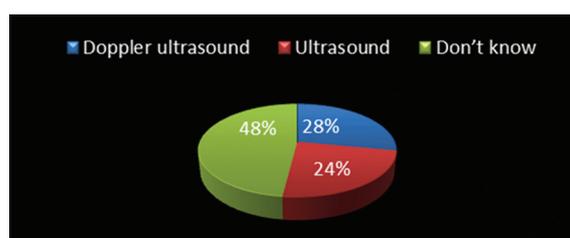
On recurrence, Doppler sound is accurate in deep venous assessment and in demonstrating the leakage of the veins.^[17] Few studies have revealed that up to 15% of men and 25% of women have visible varicose veins. One should know early symptoms of this disease so as to avoid complications, which can be dangerous as visible dilated veins over the thighs and legs.^[18]

It is also a very common disorder usually neglected by patients due to lack of pain in the initial stages of the disease. Varicose veins said to be responsible for a variety of symptoms such as swelling, aching, cramps, and tingles.^[19]

The early recurrence is found in a few cases due to an incorrect diagnosis. Late recurrence, in the majority of cases, is due to incorrect surgery or the overlooking

Table 6: Awareness about the investigative method pf varicose veins (%)

Statement	Number of students	Percentage (%)
Doppler ultrasound	14	28
Ultrasound	12	24
Do not know	24	48



Graph 6: Awareness about the investigative method pf varicose veins (%)

of gastrocnemius vein incompetence. In some cases, deep reflux, soleal arch compression or left iliac vein compression was found to be the possible causes of recurrence.^[20]

The condition of varicose veins is significantly common in the population of Tamil Nadu, especially in older individuals and women. Individuals whose occupations involve standing for long hours are prone to varicose veins. A large portion of affected population failed to undergo treatment for varicose veins. The awareness about the treatments available for varicose veins may encourage the affected population to undergo the required treatment.^[21]

Among 50 students, 48 students were aware of the signs and symptoms of varicose veins, while two students were ignorant about the signs and symptoms. Questions regarding the preventive measures, 56% of students stated that avoiding standing for a long period of time can be the best preventive measure. Questions regarding the treatment options, most of the undergraduate (58%) were not aware of the common treatment modality for varicose veins. Finally, questions regarding the investigative methods for varicose veins, 48% of undergraduates were aware of the investigative measures such as Doppler ultrasound.

Based on the results of the present study, it is clearly evident, that knowledge and the information regarding

the etiology, preventive measures, investigations, and treatment options of varicose veins are not sufficient among undergraduate dental students.

CONCLUSION

With the light of available evidence, this study concludes that there is a need to create awareness among undergraduate dental students regarding the complication of varicose veins. This may help the clinician to avoid complications in their general practice. Because even in this modern era, varicose veins have been the major problem seen in the dentists. Hence, it is beneficial and important for every dental student's to have knowledge of varicose veins.

REFERENCES

1. Beebe-Dimmer JL, Pfeifer JR, Engle JS, Schottenfeld D. The epidemiology of chronic venous insufficiency and varicose veins. *Ann Epidemiol* 2005;15:175-84.
2. Hobbs JT. Surgery and sclerotherapy in the treatment of varicose veins. A random trial. *Arch Surg* 1974;109:793-6.
3. Abramson JH, Hopp C, Epstein LM. The epidemiology of varicose veins. A survey in Western Jerusalem. *J Epidemiol Community Health* 1981;35:213-7.
4. Arenander E. Hemodynamic effect of varicose veins and results of radical surgery. *Acta Chir Scand Suppl* 1960;260:26.
5. Carter JF. Comparison of the stripping operation with other methods of treatment. *Lancet* 1954;1:743-5.
6. Willee AW. How to avoid the occupational hazards of dentistry. *Aust Dent J* 1967;12:348-59.
7. Laurikka JO, Sisto T, Tarkka MR, Auvinen O, Hakama M. Risk indicators for varicose veins in forty to sixty-year-olds in the Tampere varicose vein study. *World J Surg* 2002;26:648-51.
8. Mundy L, Merlin TL, Fitridge RA, Hiller JE. Systematic review of endovenous laser treatment for varicose veins. *Br J Surg* 2005;92:1189-94.
9. Jakobsen BH. The value of different forms of treatment for varicose veins. *Br J Surg* 1979;66:182-4.
10. Bountouroglou DG, Azzam M, Kakkos SK, Pathmarajah M, Young P, Geroulakos G, *et al.* Ultrasound-guided foam sclerotherapy combined with sapheno-femoral ligation compared to surgical treatment of varicose veins: Early results of a randomised controlled trial. *Eur J Vasc Endovasc Surg* 2006;31:93-100.
11. Mekky S, Schilling RS, Walford J. Varicose veins in women cotton workers. An epidemiological study in England and Egypt. *Br Med J* 1969;2:591-5.
12. Campbell WB, Niblett PG, Peters AS, MacIntyre JB, Sherriff S, Palfreyman S, *et al.* The clinical effectiveness of hand held Doppler examination for diagnosis of reflux in patients with varicose veins. *Eur J Vasc Endovasc Surg* 2005;30:664-9.
13. Goodwin H. Litigation and surgical practice in the UK. *Br J Surg* 2000;87:977-9.
14. Michaels JA, Brazier JE, Campbell WB, MacIntyre JB, Palfreyman SJ, Ratcliffe J, *et al.* Randomized clinical trial comparing surgery with conservative treatment for uncomplicated varicose veins. *Br J Surg* 2006;93:175-81.
15. Ratcliffe J, Brazier JE, Campbell WB, Palfreyman S, MacIntyre JB, Michaels JA, *et al.* Cost-effectiveness analysis of surgery versus conservative treatment for uncomplicated varicose veins in a randomized clinical trial. *Br J Surg* 2006;93:182-6.
16. Mor D, Dande P. Varicose veins: An overview of current and herbal treatments. *Int J Pharm Sci Res* 2017;8:1959.
17. Cabrera J, Cabrera J Jr., Garcia-Olmedo MA. Treatment of varicose long saphenous veins with sclerosant in microfoam form: Long-term outcomes. *Phlebology* 2000;15:19-23.
18. Renitha K, Shashidhara YN, Nayak MG. Risk factors of varicose veins among security guards. *Int J* 2015;3:669-74.
19. Campbell WB, Kumar AV, Collin TW, Allington KL, Michaels JA. Randomised and Economic Analysis of Conservative and Therapeutic Interventions for Varicose veins Study. *et al.* The outcome of varicose vein surgery at 10 years: Clinical findings, symptoms and patient satisfaction. *Ann R Coll Surg Engl* 2003;85:52-7.
20. Swathy S, Thenmozhi MS. A study on prevalence of varicose veins in 30-80 years old individuals. *Res J Pharm Technol* 2015;8:1179-83.
21. Vijayalakshmi B, Ganapathy D. Medical management of cellulitis. *Res J Pharm Technol* 2016;9:2067.

Source of support: Nil; Conflict of interest: None Declared