

## Prevalence and Awareness of Varicose Vein among School Teachers in Mumbai: A Cross-Sectional Study

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### ABSTRACT

Background: Varicose veins are large, tortuous, dilated and sometimes painful veins that are filled with an abnormal collection of blood in veins resulting from venous valves dysfunction. Teachers, due to their nature of profession are required to stand for a significant amount of time daily. This puts them at the risk of developing varicose veins. Hence, there is need to create awareness and educate the teachers about varicose veins. The aim of this study was to investigate the prevalence and awareness regarding varicose veins among school teachers. Method: A total of 318 teachers who fitted into the inclusion criteria were selected using convenient sampling method between the age group of 25-45 years. Participants were explained about the study and consent was taken. They were asked to fill a google form consisting of questionnaire regarding varicose veins. Results: The prevalence of varicose veins among male school teachers found to be more than female school teachers. and the teachers of both primary and secondary section were well aware about varicose veins. Conclusion: School teachers frequently experience venous insufficiency, sometimes known as varicose veins. Because of the long periods of standing that are required for their jobs, they are more likely to develop varicose veins. This perspective holds that in order to prevent individuals from acquiring varicose veins, it is important to raise their awareness of not only the condition but also of various risk factors, available treatments, and lifestyle changes.

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## 1. INTRODUCTION

Varicose vein refers to large, tortuous, and dilated veins, resulting from venous valvular dysfunction [1]. They are swollen and enlarged veins, usually blue or dark purple in colour. They may also be lumpy, bulging or twisted in appearance. It occurs mostly in the legs. The blood is prevented from flowing backwards by a series of tiny valves that open and close to let blood through [2].

The venous system in the legs is made up of superficial veins that are located outside of the deep fascia that surrounds muscle and deep veins that are located inside the muscle. The superficial veins connect to the deep veins by perforating through the deep fascia and hence through the muscle. There are two major connections that perforate this fascia: the saphenofemoral junction (SFJ), where the great saphenous vein (GSV) joins the femoral vein in the groin, and the saphenopopliteal junction (SPJ), where the small saphenous vein (SSV) joins the popliteal vein usually behind the knee, though the level can vary. Blood only travels upward into the heart or inward from superficial to deep veins, where it is then pushed upward toward the heart with the help of the valves in the deep and superficial veins. Varicose veins develop as a result of venous reflux, which happens when the valves in the great saphenous vein and/or the small saphenous vein fails to function correctly [2].

If the valves are weakened or are damaged, the blood flows backwards and gets collected in the vein, eventually causing it to be swollen and enlarged. This allows blood to flow backwards and they enlarge furthermore [3].

Incompetence of these venous valves hinders the unidirectional upward flow of the blood, resulting in reflux and backflow in the veins [1]. This incompetence of the deep, superficial and/or perforating vein leads to raised venous pressure in 3 lower leg, which results in complication such as pain, discomfort, swelling, itching, hyper-pigmentation of skin, leg cramps, ulceration and poor quality of life [3,4]. 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 [4]. Worldwide, the incidence of varicose veins varies between 10% and 60% [5].

While genetic and environmental factors may contribute to the development of varicose veins, some key risk factors have been identified, including age, body weight, parity (number of live birth), and prolonged periods of standing [5]. Teachers, for example, often spend a substantial portion of their workday standing while delivering lectures and conducting practical sessions. Consequently, they are at increased risk of developing varicose veins [4].

The symptoms associated with varicose veins can vary depending on their size and extent. In milder cases, the concern may be primarily cosmetic, but as the condition progresses, individuals may experience dull aching pain, a burning sensation, and itching. In more severe instances, varicosity can result in painful cramps, lipodermatosclerosis (skin changes due to inflammation), edema (swelling), hyperpigmentation (darkening of the skin), and even ulceration [6].

Prolonged periods of standing and the natural progression of age are recognized as significant factors contributing to the development of varicose veins. Among professionals, teachers stand for extended durations, particularly during lectures and practical sessions.

As a consequence, this prolonged standing elevates their susceptibility to chronic venous insufficiency, eventually leading to the emergence of varicose veins [4].

Furthermore, numerous cross-sectional studies have revealed strong positive associations between extended periods of standing at work and the incidence of varicose veins [7]. Consequently, there arises a necessity to enhance awareness and provide education to teaching staff about varicose veins, aiming to sustain a good quality of life. This study was thus conducted to evaluate the prevalence of varicose veins among teachers and to gauge their familiarity with this vascular condition [7,4].

The severity of varicose veins can be assessed by clinical grading from the CEAP classification system in which there are six classes. Class 0 is no visible or palpable signs of venous disease, Class-1 is telangiectasis, Class-2 is a varicose vein, Class-3 is varicose veins with oedema, Class-4 is varicose veins with pigmentation or lipodermatosclerosis, Class-5 is skin changes with healed ulcers and Class-6 is skin changes with an active ulcer [8,9].

## 2. NEED OF STUDY

According to the available literatures, there is lack of study done on teachers in Mumbai in association of varicose veins. Therefore, is need to investigate the prevalence and to determine the awareness as there is lack of awareness and educate the teaching faculties regarding varicose veins as teachers are at high risk of developing varicose veins as their job requires prolonged standing to take lectures.

**Aim:** To determine the prevalence and to find out the awareness of varicose veins among school teachers in Mumbai.

## 3. METHODOLOGY

Approval for the research was taken from the ethical committee. 385 Subjects were under inclusion criteria with the age group of 25-45 years, Both male and female school teachers and both Primary and secondary teachers working for more than a year were considered excluding patients who underwent any surgeries in past 6 months, Post-menopausal women's, Current deep vein thrombosis, Lower limb arterial disease. Pregnant or lactating women's and Participants who are not willing to participate. Participants were explained about the procedure. Each participant was been asked the questions included in the self-made questionnaire form and the answers were filled accordingly. Data was collected and analysed based from the findings of the questionnaire.

## 4. RESULTS

MS excel was used for data entry and graphical representation was done by using the pie charts and column charts. Details for the analysis were collected using a google form which included a self-made questionnaire regarding varicose veins.

### RESULT 1: [1A] Prevalence based on gender distribution.

a) **Prevalence of varicose veins among female school teachers**

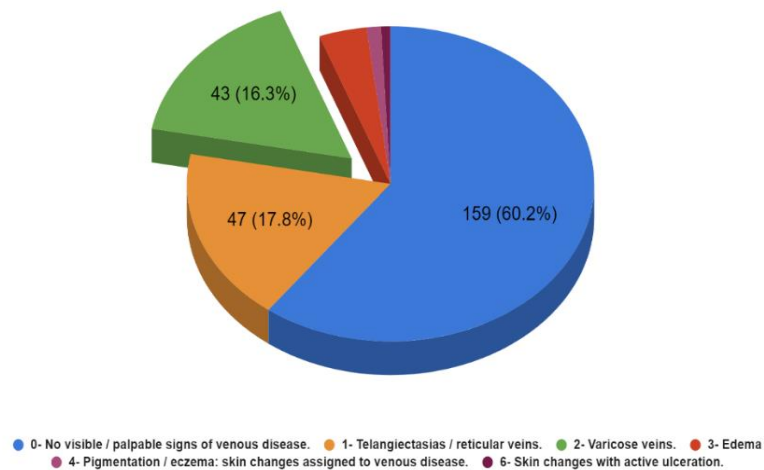


Figure 1. Female school teachers (prevalence)

Table 1. Prevalence among female school teachers

Prevalence	Frequency	Percentage
0- No visible / palpable signs of venous disease.	159	60.2%
1- Telangiectasias / reticular veins.	47	17.8%
2- Varicose veins	43	16.3%
3- Edema	10	3.8%
4- Pigmentation / eczema: skin changes assigned to venous disease	3	1.1%
6- Skin changes with active ulceration.	2	0.8%

**Interpretation:** The results revealed that out of the total response collected there were 82.2% (264) female school teachers out of which 16.3% (43) were suffering from varicose veins and 17.8% of them reported to have telangiectasias/reticular veins.

b)

**Prevalence of varicose veins among male school teachers.**

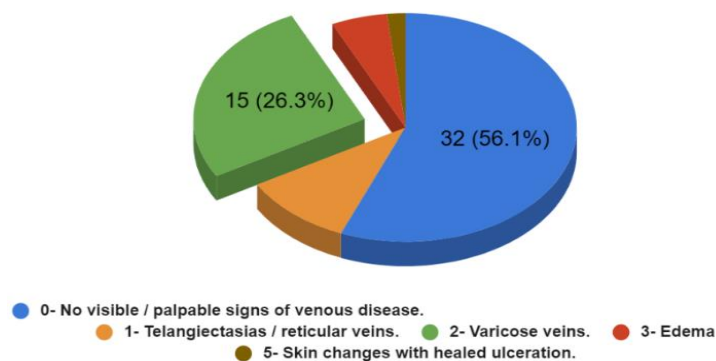


Figure 2. Male school teachers (prevalence)

Table 2. Prevalence among male school teachers

Prevalence	Frequency	Percentage
0- No visible / palpable signs of venous disease.	32	15.1%
1- Telangiectasias / reticular veins.	6	10.5%
2- Varicose veins.	15	26.3%
3- Edema	3	5.3%
5- Skin changes with healed ulceration.	1	1.8%

Interpretation: Out of the total response collected there were 17.8% (57) male school teachers out of which 26.3% (15) were suffering from varicose veins and 10.5% (6) were reported to have telangiectasias/reticular vein.

### RESULT 1: [1B] Awareness based on gender distribution.

a)

#### Awareness of varicose veins among female school teachers.

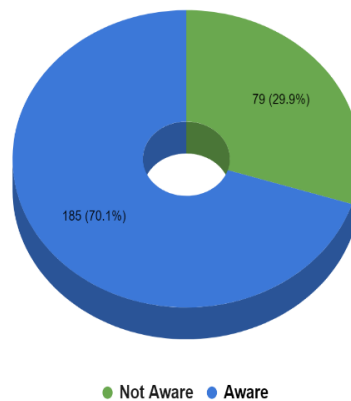


Figure 3. Female school teachers (awareness)

Table 3. Awareness among female school teachers

Prevalence	Frequency	Percentage
Aware	185	70.1%
Not aware	79	29.9%

Interpretation: Out of the total response collected, there were 264 female school teachers from which 70.1% of them were aware about varicose veins and 29.9% of them were not aware about it.

b)

### Awareness of varicose veins among male school teachers

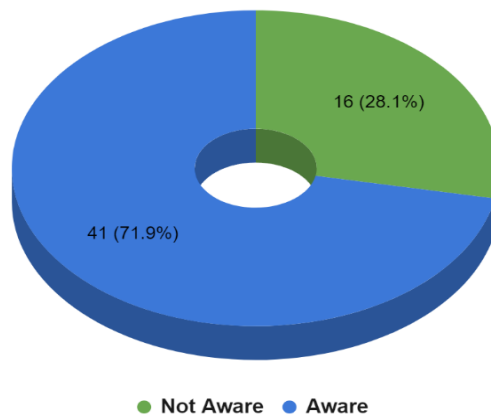


Figure 4. Male school teachers. (awareness)

Table 4. Awareness among male school teachers

Prevalence	Frequency	Percentage
Aware	41	71.9%
Not aware	16	28.1%

Interpretation: Out of the total response collected, there were 57 male school teachers from which 71.9% were aware about varicose veins and 28.1% of them were not aware about it.

## RESULTS 2: [2A] Prevalence based on level of teaching.

### a) Primary school teachers.

### Prevalence of varicose veins among primary school teachers

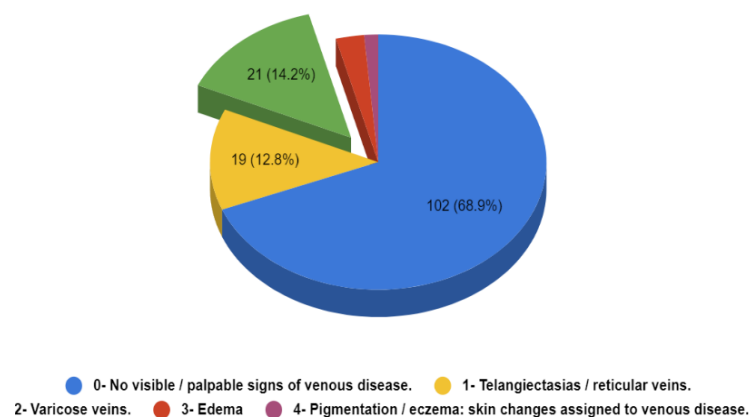


Figure 5. Primary school teachers.(awareness)

Table 5. Prevalence among primary school teachers

Prevalence	Frequency	Percentage
0- No visible / palpable signs of venous disease.	102	68.9%
1- Telangiectasias / reticular veins.	19	12.8%
2- Varicose veins.	21	14.2%
3- Edema	4	2.7%
4- Pigmentation / eczema: skin changes assigned to venous disease.	2	1.4%

Interpretation: Out of the total data collected there were 149 primary school teachers from which 14.2% of teachers were suffering from varicose veins and 12.8% of them reported of having telangiectasias/reticular veins.

**b) Secondary school teachers.**

**Prevalence of varicose veins among secondary school teachers.**

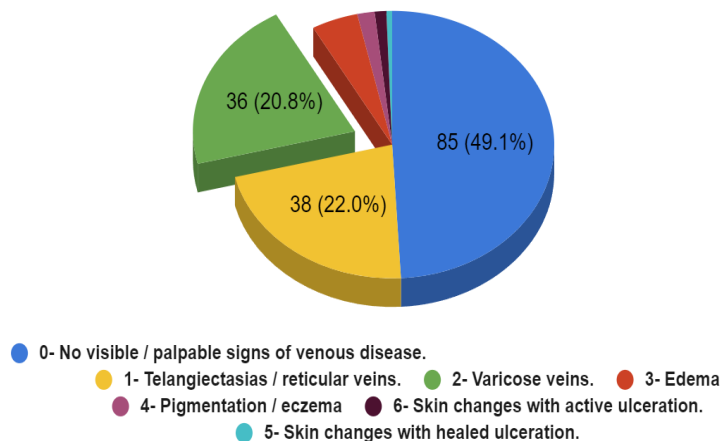


Figure 6. Secondary school teachers. (prevalence)

Table 6. Prevalence among secondary school teachers

Prevalence	Frequency	Percentage
0- No visible / palpable signs of venous disease.	85	49.1%
1- Telangiectasias / reticular veins.	38	22%
2- Varicose veins.	36	20.8%
3- Edema	8	4.6%
4- Pigmentation / eczema: skin changes	3	1.7%

assigned to venous disease.		
5- Skin changes with healed ulceration.	1	0.6%
6- Skin changes with active ulceration.	2	1.2%

Interpretation: Out of the total data collected there were 173 secondary school teachers from which 20.8% of teachers were suffering from varicose veins and 22% of them were reported of having telangiectasias/reticular veins.

## RESULTS 2: [2B] Awareness based on level of teaching.

### a) Primary school teachers.

#### Awareness of varicose veins among primary school teachers

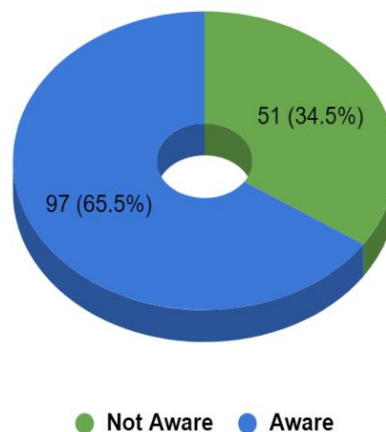


Figure 7. Primary school teachers (awareness)

Table 7. Awareness among primary school teachers

Prevalence	Frequency	Percentage
Aware	97	65.5%
Not aware	51	34.5%

Interpretation: Out of the total response collected, there were 149 primary school teachers from which 65.5% were aware about varicose veins and 34.5% of them were not aware about it.



**b) Secondary school teachers.**

**Awareness of varicose veins among secondary school teachers**

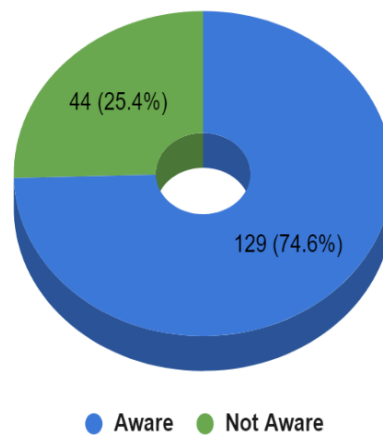


Figure 8. Secondary school teachers

Table 8. Awareness among secondary school teachers

Prevalence	Frequency	Percentage
Aware	129	74.6%
Not aware	44	25.4%

Interpretation: Out of the total response collected, there were 173 secondary school teachers from which 74.6% were aware about varicose veins and 25.4% of them were not aware about it.

Table 9. Frequency of varicose veins among different age groups

Age Groups	Frequency	Percentage
25-30	13	22.4%
31-35	11	18.9%
36-40	14	24.1%
41-45	20	34.4%

Interpretation: Out of the total response collected, the age that was commonly affected by varicose veins was between 41-45 with 34.4% of teachers suffering from varicose veins.

**RESULTS 3: Prevalence of varicose veins among different age group.**

### Prevalence of varicose vein among different age group.

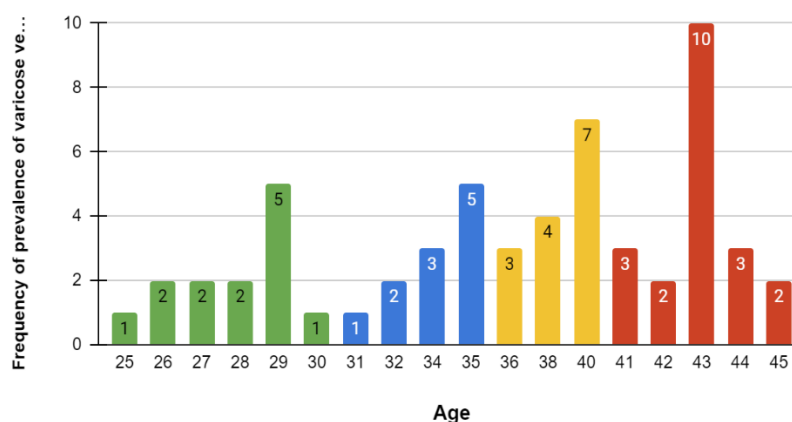


Figure 9. Frequency of age groups affected by varicose veins

## 5. DISCUSSION

The study was conducted on school teachers including primary and secondary section school teachers. A total of 321 teachers participated in our study. After obtaining their consent and describing the process to them, they were requested to fill a google form which included a self-made questionnaire asking about their work environment, lifestyle and understanding of the prevalence of varicose veins in school teachers. When analyzing the total responses collected, it was found that the prevalence of varicose veins was higher among males, specifically at 26.3%. Out of the total 57 school teachers who participated, 10.5% of them exhibited telangiectasis or reticular veins which puts them into risk of developing varicose veins in future. Among the female participants, the prevalence of varicose veins was noted to be 16.3% out of a total of 264 female school teachers. In the study of C J Evans et al., who also observed a higher prevalence of varicose veins among men, stated that higher prevalence in man could be due to lifestyle, working environment or work practices, also women are more likely to report varicose veins or to seek medical consultation for this condition compared to men.<sup>[3]</sup>

In the current study, it was discovered that there was equal awareness, with 71.9% (41) of males out of 57 total numbers of male school teachers and 70.1% (185) of females out of 264 total numbers of female school teachers being aware of varicose veins. According to Zaki Busbain et al., (2022) the increase of awareness in recent population regarding varicose veins is the result of mass media, medical campaigns, health checkup camps and an increase in level the of education. All of this helps to create awareness among school teachers.<sup>[10]</sup>

The results of the present study showed that both primary and secondary school teachers had a higher level of awareness. Primary school teachers had 65.5% (97) aware out of 149 total primary school teachers, and secondary school teachers had 74.6% (129) aware out of 173 total high school teachers.

The prevalence of varicose veins among primary and secondary school teachers was equal, with 14.2% (21) of primary school teachers having varicose veins and 12.8% (19) having telangiectasis/reticular veins out of 149 primary school teachers. The frequency of varicose veins was 20.8% among secondary school teachers and 22% for telangiectasis/reticular among the 173 secondary school teachers.

According to the study, both primary and secondary school teachers have prevalence of varicose veins due to the genetic and environmental factors which contributes to the risk factors like age, body weight, parity, and prolonged standing, also teachers spend good amount of time giving lectures and conducting practical sessions. Ali L. Ali et al., (2019) states that standing for long periods of time increases the venous pressure in the leg veins as a consequence of the hydrostatic effect that occurs in the upright position, causing the vein wall come to be gradually dilated and elastic, thus resulting in valvular impairment and incompetence. <sup>[11]</sup>

The most common age group affected by varicose veins was 41-45 years. In the study of Abdullah Dalboh et al., (2020) the common age group was 36-45 years, he states that the difference in the age group could due to the fact that ageing is associated with weakness and damage to the venous valves and makes the patient prone to develop varicose veins. <sup>[4]</sup> Also, according to Zaki Busbaih et al (2022) in his study stated that due to the weakening of the calf muscles, leads to increased pressure on superficial veins accompanied by the gradual deterioration of vessel walls over time. <sup>[10]</sup>

## 6. CONCLUSION

School teachers frequently experience venous insufficiency, sometimes known as varicose veins. Because of the long periods of standing that are required for their jobs, they are more likely to develop varicose veins. This perspective holds that in order to prevent individuals from acquiring varicose veins, it is important to raise their awareness of not only the condition but also of various risk factors, available treatments, and lifestyle changes.

## LIMITATION

- Gender bias could be prevented by taking equal population.

## RECOMMENDATION FOR FUTURE SCOPE

- Research for Standardized tool for varicose veins can be done.
- Wider age range can be taken.
- Extended study focusing on the risk factor of smoking can be carried out.
- Study on teachers of rural area or teachers from different field can be carried out.

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