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ASSESSMENT OF VARICOSE VEIN IN LOWER EXTREMITIES & ASSOCIATED RISK FACTORS ON DOPPLER ULTRASOUND AT HAYATABAD MEDICAL COMPLEX PESHAWAR

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Abstract

Introduction: *A prevalent vascular disorder that affects millions of people worldwide, varicose veins are characterized by swollen and twisted veins, usually in the legs. This study used Doppler ultrasonography evaluation to investigate the prevalence and risk factors of varicose veins in patients at Hayatabad Medical Complex in Peshawar.*

Methodology: *During the four months from September to December 2024, we carried out a cross-sectional study with 80 individuals. SPSS was used for analysis, and a nonprobability convenient sampling strategy was used for data gathering. To determine whether varicose veins were present and what their features were, participants had a Doppler ultrasonography examination.*

Results: *Among the 80 individuals, varicose veins were diagnosed at 9.4%. Males (5 cases) were less likely than females (8 cases) to have the disorder. The number of varicose veins was highest in the 20–40 age range. The occupation with the highest prevalence, with 4 cases, was housewives. (5) Of the cases included the left leg, and 6, affected the right leg. Most of the cases were unilateral.*

Conclusion: *Significant relationships between varicose veins and several demographic characteristics are found in this study. Varicose vein development was strongly correlated with body mass index*

INTRODUCTION

Leg venous abnormalities can range from moderate, asymptomatic symptoms to serious issues that lead to complications like recurrent leg ulcers. Varicose veins are among the most prevalent disorders and they are easily identified by their elongated, twisted, or dilated appearance. The veins may expand and become apparent on the skin's surface because of blood pooling in them. There are three main types of varicose veins. Trunk veins are larger and located closer to the skin's surface, while reticular veins are smaller and found slightly deeper under the skin. The smallest type, known as telangiectasia or spider veins, appears as thin, web-like patterns on the skin's surface. A perforator vein is classified as incompetent if its diameter measures 4 mm or more, or if imaging tests like Doppler ultrasound reveal backward blood flow. Varicose veins can cause discomfort, pain, and cosmetic concerns. They can cause problems including skin changes, edema, or in extreme situations, ulcers, if left untreated[2]. Studies indicate

that between 0% and 30% of people globally have lower limb varicose veins (VVs). This indicates that illness affects millions of people. One risk factor for varicose veins is age. Blood pooling in the veins increases the risk of developing varicose veins Compared to men, women are more susceptible. Hormonal changes that take place during pregnancy or menopause might result in varicose veins[3].

A non-invasive imaging method called Doppler ultrasonography is essential for both diagnosing and treating varicose veins[4]. This technique uses high-frequency sound waves to produce an image of the veins' blood flow and identify anomalies like venous reflux or valve incompetence, which are the main causes of varicose veins[5] .Clinicians can evaluate the veins' structure and function by using Doppler ultrasound, which provides real-time visual and aural information about blood flow[6]. The fundamental idea behind this technique is the Doppler effect: Doppler ultrasound can detect deep vein thrombosis (DVT), which can exacerbate varicose veins, and confirm the presence of venous insufficiency, a common underlying cause of varicosities. Doppler ultrasound can also detect areas of reflux or inadequate blood return, which are typical in varicose veins, by detecting a change in frequency of the reflected sound waves caused by blood flowing through veins[7].

MATERIAL AND METHODS

This study was conducted through Cross-sectional study, at Hayatabad Medical Complex (HMC). Total duration was about four months. Non-probability Convenient sampling technique was used to collect data from primary records of the patient. All varicose vein patients referred to as Doppler ultrasound, regardless of age or gender, are included in the study. All post-operative patients and those with congenital anomalies of the lower limb are excluded from the study.

Data collection procedure

We got ethical approval from the Research committee of School of Health Sciences Peshawar as well as from Hayatabad Medical Complex Peshawar. After receiving the permission letter from the committee, we presented it to the head of the Radiology department of HMC and informed them about the purpose of the study and requested them to collect primary data from their records. We collected data from primary records through proforma.

Data analysis procedure

Analysis through SPSS version 29. All the data will be expressed in percentage and frequency and represented in graphical representation in the form of graphs and charts. Different test will be applied such as chi – square test to identify the correlation between varicose vein and its associated risk factors such as age gender and occupation.

RESULTS

The age distribution of the participants revealed that the largest group (38.9%) fell within the 20-40-year-old range, followed by 35.0% in the 40-60 years range. The younger age group under 20 years accounted for 5.6%, while 0.6% were in the 60- 80 years range. Regarding gender, (54.4%) of the participants were male, and 45.6% were female. In terms of occupation, the largest group was workers (30.0%), followed closely by housewives at (3.%). Teachers comprised (8.3%), and government servants made up (20.6%) of the participants. The body mass index (BMI) of participants showed that the majority (89.4%) had a normal BMI. A smaller percentage, (7.8%), were obese, and only (2.8%) were underweight. Overall, these results highlight the demographic spread of participants with varicose veins based on age, gender, occupation, and BMI. The findings contribute to understanding the distribution of varicose veins in a population assessed via Doppler ultrasound.

Table: Descriptive statistics of the demographic profile of the participants

		Frequency	Percentage
Age of patients	Under 20 years	28	5.6
	20-40 years	70	38.9
	40-60 years	63	35.0
	60-80 years	9	0.6

Gender	Male	98	54.4
	Female	82	45.6
Occupation of Patients	Teacher	33	8.3
	Worker	54	30.0
	Housewife	56	3.
	Government servant	37	20.6
BMI of Patients	Under weight	5	2.8
	Normal	6	89.4
	Obese	4	7.8
TOTAL		80	00

In our study, some participants had varicose veins while others did not. The number of participants with varicose veins was n=33 (8.3%), and the number of participants without varicose veins was n=47 (8.7%). Regarding the affected leg, we categorized the cases into four groups: LEFT, RIGHT, BILATERAL, and NONE. It was found that n=5 (8.3%) had varicose veins in the left leg, n=6 (8.9%) had varicose veins in the bilateral leg, n=2 (.%) had bilateral involvement, and n=47 (8.7%) had no affected leg.

Table 2: Ultrasound assessment.

Variables		Frequency	Percentage
Presence of Varicose vein	YES	33	9.4
	NO	47	8.7
Leg affected	Left	5	8.3
	Right	6	8.9
	Bilateral	2	.
	None	47	8.7
TOTAL		80	00

In age there are 4 categories under 20 years, followed by 20-40 years, 40-60 years, and in the end we have 60-80 years. Under 20 we had total n= 28 patients in that we had n= 3 patients of varicose vein and n=25 did not have varicose vein. Followed by age 20-40yeras we had a total sum of n=70 patients in that there were n=7 patients who have varicose veins and n=53 were not having varicose veins. Followed by 40-60 there were n=63 patients in that n= had varicose vein and n= 52 did not have varicose vein. In last we have age category of 60-80years in this we have total sum of n=9 patients in that n=2 were having varicose vein and n=7 were not having varicose vein. Yet here we can see from our results that the age group 20-40 were having more patients of more varicose vein n=7. And the least amount of varicose vein patients were in the age group of 60-80 n=2.

Table 3: Showing relationship with presence of VV and leg affected with age of the patients

Variables		Age				
		under 20	20-40	40- 60	60-80	p value
Presence of VV on Doppler US	Yes	3	7		2	0.000
	No	25	53	52	7	0.00
Leg affected	Left	2	9	4	0	0.002
	Right		8	5	2	0.002
	Bilateral	0	0	2	0	0.003
	none	25	53	52	7	

DISCUSSION

Our study provides valuable insights into the patterns and risk factors associated with varicose veins in our local population. The finding that 9.4% of participants had varicose veins aligns with national prevalence rates in Lahore, Pakistan, which range from 6% to 20%, though with some unique local characteristics[8]. The higher prevalence among females in our study supports existing literature about gender-based differences in varicose vein development. This could be attributed to hormonal factors, pregnancy, and lifestyle differences. Females are often subject to physiological changes such as increased blood volume and pressure during pregnancy, which contribute to venous insufficiency. Additionally, hormonal fluctuations during menopause further exacerbate this condition. This gender disparity highlights the need for tailored awareness campaigns and preventive strategies focusing on women's health[9]. The age distribution showed an interesting pattern, with the highest number of cases in the 20-40 age group, which differs somewhat from traditional expectations of higher prevalence in older age groups. This deviation may be influenced by unique local socioeconomic and occupational dynamics. Younger individuals in this age bracket are often engaged in roles that demand prolonged standing or sitting. The early onset of varicose veins in this group underscores the importance of preventive measures and early interventions to reduce long-term complications[0].

Occupational patterns revealed that housewives had the highest number of cases, followed by an even distribution among teachers, workers, and government servants. This might be related to prolonged standing or sitting periods and limited physical activity associated with these roles. Housewives, in particular, often perform repetitive household chores that involve extended standing, which can lead to increased venous pressure in the lower extremities. Similarly, teachers and workers are frequently required to stand for long hours, while government servants often endure prolonged periods of sitting. These findings emphasize the necessity of workplace health initiatives, such as regular breaks, ergonomic interventions, and physical activity programs, to mitigate occupational risks. The BMI findings were particularly noteworthy, showing a significant correlation with varicose vein development. This reinforces the importance of weight management in preventing and managing varicose veins. Obesity contributes to increased pressure on the venous system, particularly in the lower limbs, exacerbating venous insufficiency. The study's results align with global research linking high BMI to varicose veins, underscoring the critical role of maintaining a healthy weight. Public health campaigns focusing on balanced diets and regular exercise could be instrumental in addressing this risk factor. Further analysis of the study's findings reveals additional dimensions to consider. The association between prolonged inactivity and varicose veins was evident across all demographic groups. Modern sedentary lifestyles, coupled with the rising use of technology, have compounded this issue. Participants who reported spending extended hours on sedentary activities, such as watching television or working on computers, exhibited a higher prevalence of varicose veins. These behaviors lead to poor circulation and venous pooling, aggravating the condition. Promoting active lifestyles and integrating movement into daily routines can serve as effective countermeasures.

CONCLUSION

This study shows that varicose veins are still a major health concern in our population, with varied patterns in terms of age, gender, occupation, and BMI distribution. The major correlation with BMI emphasizes the role of lifestyle variables in disease development. Understanding these trends and risk factors are essential for creating effective preventative and treatment plans. The findings indicate the necessity for focused interventions, particularly for high-risk groups, and the advantages of early detection by Doppler ultrasound examination.

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