

included. Additionally, we incorporated work-related questions in the questionnaire, including the duration of experience in the field, the frequency of weekly shifts, any prior diagnoses of VVs, and the amount of time spent standing and sitting during work. The questionnaires were distributed to participants through both electronic mail and social media platforms. Prior to their participation, individuals voluntarily expressed their verbal agreement and provided informed consent to be part of the research study. To safeguard the data, the questionnaire responses were recorded in an Excel spreadsheet and stored on a securely locked and password-protected laptop.

This study received ethical approval from the Regional Research Ethics Committee, Qassim Province, Registered at National Committee of Bio & Med. Ethics (NCBE) Registration No. H-04-Q-001. All gathered data was treated with confidentiality, and access was limited to the researchers involved. The publication exclusively presented a statistical summary and did not contain any personal information to ensure privacy and data protection.

All data were analyzed using IBM SPSS Statistics for Windows, Version 23 (Released 2015; IBM Corp., Armonk, New York, United States). Continuous data were summarized with the mean, mode, and standard deviation, while categorical data were described using numbers, percentages, and frequencies in descriptive statistics. To evaluate the relationships between variables, chi-square tests and t-tests were employed. A significance level of $p < 0.05$ was considered to indicate statistical significance.

Results

This study comprised a total of 91 participants, with the gender distribution showing that the majority of participants, 53 (58.2%), were male. In contrast, 38 (41.8%) were female, with the majority of the age group between 41 and 50 years (36.3%). Most of the participants, numbering 64 (70.3%), identified as Asian, with 20 (22%) classifying themselves as African. Regarding marital status, 70 (76.9%) of the participants were married, 20 (22%) were single, and 1 (1.1%) were widowed. In terms of workplace distribution, slightly more than half, 61 (67.0%), were physicians, and 26 (28.6%) were nurses. When it came to smoking habits, 76 (83.5%) were nonsmokers, and 15 (16.5%) were smokers. In terms of physical activity, nearly half of the participants, 54 (59.3%), engaged in physical exercise or sports four times a week or less, while 30 (33.0%) did not engage in these activities. Most of the participant's BMI, 31 (34.1%), lay between 25 and 29.9, while 27 (29.7) in between 30 and 34.9. Almost an equal number of participants reported either lifting heavy objects 44 (48.4%) or not 47 (51.6%). Forty-seven participants (51.6%) spent 10 years or more working in the field, 11 (12.1%) worked for 5-9 years, 22 (24.2%) worked for 1-4 years, and 11 (12.1%) worked from less than one year, and mainly majority of participants, 57 (62.6%), standing during their work, 2 (2.2%) were sitting, and 32 (35.2%) were in both positions. The maximum number of hours participants 47(51.6%) spent sitting was 1-2 hours, and 37 (40.7%) participants spent 5-6 hours while standing. The study found that 12 (13.2%) of the respondents were diagnosed with VVs, while the majority, 79 (86.8%), did not have this condition. The individuals had a comparatively low prevalence (46.2%) of illnesses such as deep vein thrombosis, coronary artery disease, hypertension, diabetes, rheumatoid arthritis, chronic constipation, past surgical history to lower extremities and past trauma history to the lower extremities, while the majority of the participants (53.8%) responded no for these health conditions. Additional details on contraceptive use, menopause status, the number of children, and the mode of delivery were provided by the female respondents. With the aid of these extensive data, participants in the study's demographics, lifestyles, and health features can be fully comprehended (Table 1). The age and BMI information was indeed obtained from the participants. However, in the Results section, we only presented the data in age categories for simplicity purposes. The standard deviation for age and height was not included in the table, but the BMI values were calculated using the participants' self-reported height and weight measurements.

Variables	Frequency (n= 91)	Percentage (%)
Gender	-	-
Female	38	41.8
Male	53	58.2
Age group	-	-
25-30 years	18	19.8
31-40 years	24	26.4
41-50 years	33	36.3
>50 years	16	17.6
Ethnicity	-	-
Arabian	1	1.1

Asian	64	70.3
African	20	22.0
Other	6	6.6
Social status	-	-
Married	70	76.9
Single	20	22.0
Widow/Widowed	1	1.1
Divorced	0	0
Are you working as	-	-
Surgical physicians	55	60.4
OR Staff	36	39.6
What is your job in the operation room	-	-
Anesthesia technician	3	3.3
Nurse	26	28.6
OR technician	1	1.1
Physicians	61	67.0
Are you a smoker	-	-
No	76	83.5
Yes	15	16.5
How often do you perform physical or play sports exercise per week?	-	-
Five times or less	7	7.7
Four times or less	54	59.3
No	30	33.0
BMI	-	-
<18.5	5	5.5
18.5-24.9	7	7.7
25-29.9	31	34.1
30-34.9	27	29.7
>35	21	23.1
Lifting heavy objectives	-	-
No	47	51.6
Yes	44	48.4
How many years have you spent on work in the field?	-	-
Less than one year	11	12.1
1-4 years	22	24.2
5-9 years	11	12.1
Ten years or more	47	51.6
How many days per week you work on OR?	-	-
1-2 days	38	41.8
3-4 days	18	19.8

5-7 days	35	38.5
What is your role in the OR?	-	-
Mainly sitting	2	2.2
Mainly standing	57	62.6
Both	32	35.2
How many hours do you sit during your work per day?	-	-
1-2 hours	47	51.6
3-4 hours	30	33.0
5-6 hours	7	7.7
More than 6 hours	7	7.7
How many hours standing during your work per day?	-	-
1-2 hours	7	7.7
3-4 hours	29	31.9
5-6 hours	37	40.7
More than 6 hours	18	19.8
Do you have family history of varicose veins?	-	-
No	73	80.2
Yes	18	19.8
Have you ever been diagnosed with varicose veins?	-	-
No	79	86.8
Yes	12	13.2
Do you have deep vein thrombosis?	-	-
No	91	100
Yes	0	0
Do you have coronary artery disease?	-	-
No	89	97.8
Yes	2	2.2
Do you have hypertension?	-	-
No	80	87.9
Yes	11	12.1
Do you have diabetes?	-	-
No	86	94.5
Yes	5	5.5
Do you have rheumatoid arthritis?	-	-
No	88	96.7
Yes	3	3.3
Do you have chronic constipation?	-	-
No	79	86.8
Yes	12	13.2

Do you have a past surgical history of lower extremities?	-	-
No	87	95.6
Yes	4	4.4
Do you have past trauma history to the lower extremities?	-	-
No	86	94.5
Yes	5	5.5
Are you on contraceptive pills (only for female respondents)?	-	-
No	31	81.5
Yes	7	18.4
Menopause	-	-
No	38	100
Yes	0	0.0
How many children do you have	-	-
None	14	36.8
1 child	6	15.7
2 children	10	26.3
3 children	5	13.1
4 children	2	5.2
More than four children	1	2.6
Type of delivery	-	-
None	14	36.8
Vaginal	16	42.1
C-section	7	18.4
Both	1	2.6

TABLE 1: Demographic characteristics of participants working at Buraidah Center Hospital

Table 2 provides a thorough analysis of the correlation between various factors and the occurrence of VVs within the cohort of 91 participants in the study. Notably, the data revealed that in terms of gender ($p=0.547$), age group ($p=0.611$), ethnicity ($p=0.372$), and social status ($p=0.126$) no statistically significant associations with VVs were observed, as evidenced by p -values exceeding 0.05. However, some key associations stand out. Working as a surgical physician or OR staff, as well as being a nurse ($p=0.009$), showed a significant connection to VVs, highlighting potential occupational influences. Similarly, the number of days worked in the operating room ($p=0.040$) exhibits a significant link, suggesting that increased exposure to specific workplace conditions may contribute to VVs. The occupation in the operating room, particularly for those individuals predominantly standing ($p=0.001$), showed a significant association with VVs. Additionally, variables such as a family history of VVs ($p=0.056$), contraceptive pill usage ($p=0.000$), and the type of delivery, notably vaginal ($p=0.037$), showed statistically significant relationships with the presence of VVs. Other health-related conditions and lifestyle factors like smoking habits ($p=0.205$), physical exercise frequency ($p=0.995$), BMI ($p=0.562$), lifting heavy objects ($p=0.760$), and years in the field ($p=0.565$) did not exhibit any significant associations with VVs. In summary, Table 2 offers valuable insights into the factors associated with VVs within the studied population, shedding light on both potential risk factors and areas with no evident connections.

Variables	With varicose vein frequency (n=12)	p-value	Without varicose vein frequency (n=79)	p-value
Gender	-		-	

Female	6	0.035	32	0.547
Male	6		47	
Age group	-		-	
25-30 years	4		14	
31-40 years	2	0.054	22	0.611
41-50 years	4		29	
>50 years	2		14	
Ethnicity	-		-	
Arabian	0		1	
Asian	11	0.592	53	0.372
African	1		19	
Other	0		6	
Social status	-		-	
Married	12		58	
Single	0	0.232	20	0.126
Widow/Widowed	0		1	
Divorced	0		0	
Are you working as	-		-	
Surgical physicians	3	0.009	52	0.140
OR Staff	9		27	
What is your job in the operation room	-		-	
Anesthesia technician	2		1	
Nurse	2	0.057	24	0.040
OR technician	0		1	
physicians	8		53	
Are you smoker	-		-	
No	12	0.002	64	0.205
Yes	0		15	
How often do you perform physical or play sports exercise per week	-		-	
Five times or less	1	0.933	6	0.995
Four times or less	7		47	
No	4		26	
BMI	-		-	
<18.5	0		5	
18.5-24.9	0	0.77	7	0.562
25-29.9	5		26	
30-34.9	5		22	
>35	2		19	
Lifting heavy objectives	-		-	

No	7	0.151	39	0.760
Yes	5		5	
How many years you spend on work in the field	-		-	
Less than one year	2		9	
1-4 years	3	0.210	19	0.565
5-9 years	0		11	
Ten years or more	7		40	
How many days per week you work on OR	-		-	
1-2 days	3	0.052	35	0.015
3-4 days	0		18	
5-7 days	9		26	
What is your role in the OR	-		-	
Mainly sitting	0	0.042	2	0.001
Mainly standing	2		55	
Both	10		22	
How many hours sitting during your work per day	-		-	
1-2 hours	8		39	
3-4 hours	4	0.022	36	0.435
5-6 hours	0		7	
more than 6 hours	0		7	
How many hours standing during your work per day	-		-	
1-2 hours	2		5	
3-4 hours	3	0.204	26	0.567
5-6 hours	4		33	
more than 6 hours	3		15	
Do you have Family history of Varicose Veins	-		-	
No	7	0.056	66	0.536
Yes	5		13	
Do you have Deep vein thrombosis	-		-	
No	12	0.832	79	0.577
Yes	0		0	
Do you have coronary artery disease	-		-	
No	12	0.678	77	1.000
Yes	0		2	
Do you have hypertension	-		-	
No	11	0.673	69	1.000
Yes	1		10	
Do you have diabetes	-		-	
No	11	0.373	75	0.515
Yes	1		4	

Do you have rheumatoid arthritis	-	-	
No	12	0.160	76
Yes	0		3
Do you have chronic constipation	-	-	
No	10	0.468	69
Yes	2		10
Do you have a Past surgical history of lower extremities	-	-	
No	12	0.098	75
Yes	0		4
Do you have past trauma history to the lower extremities	-	-	
No	12	0.059	74
Yes	0		5
Are you on Contraceptive pills	-	-	
No	1	0.567	30
Yes	5		2
Menopause	-	-	
No	6	0.932	32
Yes	0		0
How many children do you have	-	-	
None	1		13
1 child	1		5
2 child	1	0.521	9
3 child	2		3
4 child	1		1
More than 4 child	0		1
Type of delivery	-	-	
None	1		13
Vaginal	4	0.567	12
C-section	0		7
Both	1		0

TABLE 2: Comparison of categorical and continuous variables of participants with and without varicose veins

Discussion

Lower-limb varicose veins, or VVs, manifest as twisted and visible veins in the lower extremities due to blood reflux within the veins. This reflux occurs as a result of the dilation of vein walls and the failure of valves in superficial veins to function properly. This condition is quite common, affecting a significant portion of the general population, with estimates ranging from 10% to 30% [13]. Importantly, once VVs develop, they do not spontaneously improve, and their associated symptoms tend to worsen with time. Therefore, it is crucial to actively address VVs during their early stages. Even more significantly, it is essential to take preventive measures against their risk factors before symptoms become apparent. This discussion delves into the key findings and implications of a study aimed at understanding the