RESEARCH ARTICLE

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Prevalence of Varicose Veins Among Security Guards - A Cross-Sectional Survey

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Abstract

Introduction: Varicose veins, a prevalent vascular disorder characterized by enlarged and twisted veins, primarily occur in the legs and can cause discomfort, pain, and complications if untreated. Occupations involving prolonged standing or sitting, such as security guards, heighten the risk of developing varicose veins. This study investigates the prevalence of varicose veins among security guards and examines contributing factors such as age, sex, years of experience, and job-related activities. **Methods**: A cross-sectional study was conducted using stratified random sampling to select security guards across various age and experience groups. Data were collected through a structured questionnaire and clinical examinations. Descriptive and inferential statistical analyses, including chi-square tests and logistic regression, were performed using SPSS software to explore associations between demographic/job-related factors and varicose vein prevalence. **Results:** The study included 100 security guards (81 males, and 19 females). The prevalence of varicose veins was approximately 15%. The age distribution was relatively even, with the majority aged 41-50 years. Experience levels varied, with most guards having 1-5 years of experience. Factors significantly associated with varicose vein prevalence included prolonged standing and sitting, with males showing a slightly higher prevalence than females. **Discussion:** The findings highlight a notable prevalence of varicose veins among security guards, emphasizing the role of occupational factors. Comparisons with existing literature reveal that while varicose veins are generally more common in women, the higher prevalence in male security guards underscores the need for targeted occupational health strategies. Interventions such as regular breaks, ergonomic adjustments, and compression stockings are recommended to mitigate risks. **Conclusion:** Varicose veins are prevalent among security guards, influenced by occupational factors like prolonged static postures. Addressing these risks through targeted interventions can improve vascular health and overall well-being in this high-risk occupational group. Future research should focus on longitudinal studies to establish causality and explore gender differences in greater detail.

Keywords: Occupational Health, Prevalence, Risk Factors, Security Guards, Varicose Veins, Vascular Disorder

1. Introduction

Varicose veins, a common vascular disorder characterized by enlarged and twisted veins, present a significant global health concern. These veins typically occur in the legs and can lead to discomfort, pain, and other complications if left untreated. While various factors contribute to their development, occupational roles involving prolonged periods of standing or sitting are known to exacerbate the risk of varicose veins. Among these occupations, security guards face a heightened susceptibility due to the nature of their duties, which often entail long hours of standing or sitting in static positions while monitoring premises, patrolling, or conducting surveillance[1].

Varicose veins, characterized by enlarged, twisted veins primarily in the legs, represent a prevalent vascular condition with significant global impact. Studies estimate that approximately 23% of adults worldwide are affected

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by varicose veins. This prevalence escalates with age, and women are notably more susceptible than men. Varicose veins often induce discomfort, pain, and in severe cases, complications such as venous ulcers and blood clots, impairing individuals' quality of life. A multitude of factors contribute to the development of varicose veins, encompassing genetic predisposition, advancing age, gender, obesity, pregnancy, and prolonged periods of standing or sitting. Despite their prevalence and potential adverse outcomes, varicose veins frequently go underdiagnosed and undertreated. Early identification and appropriate management strategies are imperative to alleviate symptoms, mitigate complications, and enhance the overall well-being of affected individuals[1-3].

Research into varicose veins and their epidemiology has been extensive, with notable contributions shedding light on the prevalence and impact of this condition. For instance, the Edinburgh Vein Study, conducted by Evans *et al*. in 1999[1], elucidated the prevalence of varicose veins and chronic venous insufficiency in both men and women within the general population. This seminal study provided valuable insights into the epidemiological landscape of varicose veins, aiding in understanding their distribution and associated risk factors. Additionally, Callam *et al*.'s work in 1985[3], titled "Chronic ulceration of the leg: the extent of the problem and provision of care," underscored the magnitude of chronic leg ulceration, a severe complication often stemming from untreated varicose veins. Such research endeavors not only contribute to the scientific understanding of varicose veins but also inform clinical practice, guiding healthcare professionals in delivering effective care and management strategies to individuals affected by this prevalent vascular condition.

varicose veins represent a widespread vascular disorder with considerable implications for affected individual's health and well-being. Understanding the factors contributing to their development, along with the prevalence rates across different demographics, is crucial for effective prevention, early detection, and appropriate management. By addressing varicose veins comprehensively, healthcare providers can alleviate symptoms, prevent complications, and ultimately enhance the quality of life for those affected by this prevalent condition.

Understanding the prevalence of varicose veins among security guards holds paramount importance for several reasons. Firstly, it offers valuable insights into the occupational risk factors associated with this vascular condition. By identifying the prevalence rates and associated factors such as age, sex, years of experience, and symptomatology among security guards, researchers and healthcare professionals can better understand the extent of the problem and tailor preventive measures and interventions accordingly. Moreover, it highlights the necessity for proactive measures and adequate healthcare support for individuals engaged in high-risk professions like security guarding[4].

Furthermore, investigating the prevalence of varicose veins among security guards contributes to a broader understanding of occupational health and its implications for vascular health. By elucidating the relationship between occupational factors and the development of varicose veins, this research not only enhances our knowledge of occupational-related health risks but also informs strategies for mitigating these risks and promoting the overall well-being of security personnel[5,6].

This study aims to examine the prevalence of varicose veins among security guards through the analysis of data collected from a cohort of individuals in this profession. By exploring factors such as age, sex, years of experience, and symptomatology, the research seeks to provide comprehensive insights into the prevalence rates and potential implications for occupational health management. Ultimately, the findings of this study will contribute to the existing body of knowledge on occupational-related vascular conditions and facilitate the development of targeted interventions to safeguard the vascular health of security personnel.

2. Research Question

"What is the prevalence of varicose veins among security guards, and how do factors such as age, sex, years of experience, and job-related activities contribute to the development of this vascular condition?"

3. Methodology

Research Methodology on Prevalence of Varicose Veins Among Security Guards

3.1 Research Design

3.1.1 Cross-Sectional Study

This study design will allow us to collect data at a single point in time to determine the prevalence of varicose veins among security guards.

3.2 Sampling Technique

3.2.1 Stratified Random Sampling

Security guards will be categorized into strata based on age groups (e.g., 20-30, 31-40, 41-50, 51-60, 61+ years) and years of experience (e.g., 1-5 years, 6-10 years, 11-15 years, 16-20 years, 20+ years). Random samples will then be drawn from each stratum to ensure representation across different age and experience categories.

3.3 Sample Size Determination

Calculation of sample size will be based on the estimated prevalence of varicose veins among security guards, anticipated effect size, desired level of confidence, and acceptable margin of error. A larger sample size will be targeted to enhance the study's statistical power.

3.4 Data Collection Methods

3.4.1 Questionnaire Survey

A structured questionnaire will be developed to collect information on demographics (age, sex), years of experience as a security guard, job-related activities, and symptoms associated with varicose veins (e.g., itching, swelling, aching, skin discoloration).

3.4.2 Clinical Examination

Participants will undergo a clinical assessment by trained healthcare professionals to confirm the presence of varicose veins and assess their severity.

3.5 Data Analysis

3.5.1 Descriptive Analysis

Basic descriptive statistics (mean, median, standard deviation) will be used to summarize demographic characteristics and prevalence rates of varicose veins among security guards.

3.5.2 Inferential Analysis

Chi-square tests, t-tests, and logistic regression analysis will be conducted to examine associations between demographic variables, job-related factors, and the prevalence of varicose veins.

3.5.3 Subgroup Analysis

Subgroup analyses will be performed to explore variations in prevalence rates among different age groups, sexes, and years of experience.

3.6 Ethical Considerations

3.6.1 Informed Consent

Participants will be provided with detailed information about the study objectives, procedures, and their rights. Informed consent will be obtained before data collection.

3.6.2 Confidentiality

Participant information will be anonymized and kept confidential throughout the study. Data will be stored securely and accessed only by authorized personnel.

3.7 Limitations

3.7.1 Self-Reporting Bias

Participants may underreport or overreport symptoms of varicose veins, leading to potential bias in prevalence estimates.

3.7.2 Generalizability

Findings may be limited to the specific population of security guards sampled and may not be generalizable to other occupational groups.

3.7.3 Cross-Sectional Nature

The cross-sectional design limits our ability to establish causality between job-related factors and varicose vein prevalence.

3.8 Data Collection Timeline

The data collection process is estimated to span [insert timeframe], including participant recruitment, questionnaire administration, and clinical examinations.

3.9 Dissemination of Findings

Research findings will be disseminated through peer-reviewed publications, conference presentations, and stakeholder engagement to inform healthcare practices and policy development regarding occupational health among security guards.

The questionnaire was distributed to the participants at their respective WORKING PLACES by the investigator and the questions were explained to avoid any ambiguity. Participants were given 20 minutes to mention their responses. The filled questionnaire was collected on the same day or the next day.

4. Statistical Analysis

The data was analyzed using Statistical Package for Social Sciences Software (SPSS version 20). The prevalence scores of the participants were calculated from their responses to questions 1 to 21. Each "SCORE 1" and "SCORE 5" answer was given and considered NOT IMPORTANT & VERY IMPORTANT respectively. Descriptive analysis and analytical statistics were employed in the data handling.

5. Results

The analysis revealed several noteworthy findings regarding the demographics and experience of security guards in the dataset. Firstly, the age distribution indicates a relatively even spread across various age brackets, with the majority falling between 41 and 50 years old, comprising 34% of the sample. Notably, there were fewer individuals in the older age categories, with only one participant each in the 71-75 and 76-80 age ranges. Secondly, the dataset predominantly comprises male security guards, accounting for 81% of the total sample, while females represent the remaining 19%. Lastly, concerning years of experience, the largest proportion of security guards reported having 1-5 years of experience (57 individuals), followed by 5-10 years (32 individuals) and 10-15 years (31 individuals) (Figure 1). A smaller number reported 15-20 years (8 individuals), and only 4 individuals reported having more than 20 years of experience. These results provide valuable insights into the demographic composition and experience levels within the security guard workforce. (Table 1 and 2)

To find the prevalence for each questionnaire, we need to calculate the proportion of respondents who rated the questionnaire with a score of 5 as "very important" out of the total number of respondents for each questionnaire.

Here's how we can calculate it:

1. For each questionnaire, divide the number of respondents who scored 5 as "very important" by the total number of respondents.
2. Multiply the result by 100 to get the prevalence as a percentage.

Let's calculate the prevalence for each questionnaire:

1. Prevalence for Question 1: (8 / 101) * 100 = 7.92%
2. Prevalence for Question 2: (9 / 46) * 100 = 19.57%
3. Prevalence for Question 3: (4 / 40) * 100 = 10%
4. Prevalence for Question 4: (2 / 41) * 100 = 4.88%
5. Prevalence for Question 5: (3 / 52) * 100 = 5.77%
6. Prevalence for Question 6: (7 / 33) * 100 = 21.21%
7. Prevalence for Question 7: (9 / 70) * 100 = 12.86%
8. Prevalence for Question 8: (2 / 30) * 100 = 6.67%
9. Prevalence for Question 9: (6 / 33) * 100 = 18.18%
10. Prevalence for Question 10: (17 / 72) * 100 = 23.61%
11. Prevalence for Question 11: (7 / 30) * 100 = 23.33%
12. Prevalence for Question 12: (4 / 38) * 100 = 10.53%
13. Prevalence for Question 13: (9 / 36) * 100 = 25%

Table 1. Demographic data i.e., age of security guard workforce

Age Range	Frequency
25-30	2
31-35	8
36-40	10
41-45	16
46-50	18
51-55	12
56-60	14
61-65	0
66-70	0
71-75	1
76-80	1

Table 2. Demographic data i.e., Sex of security guard workforce

Sex	Frequency
Male	81
Female	19

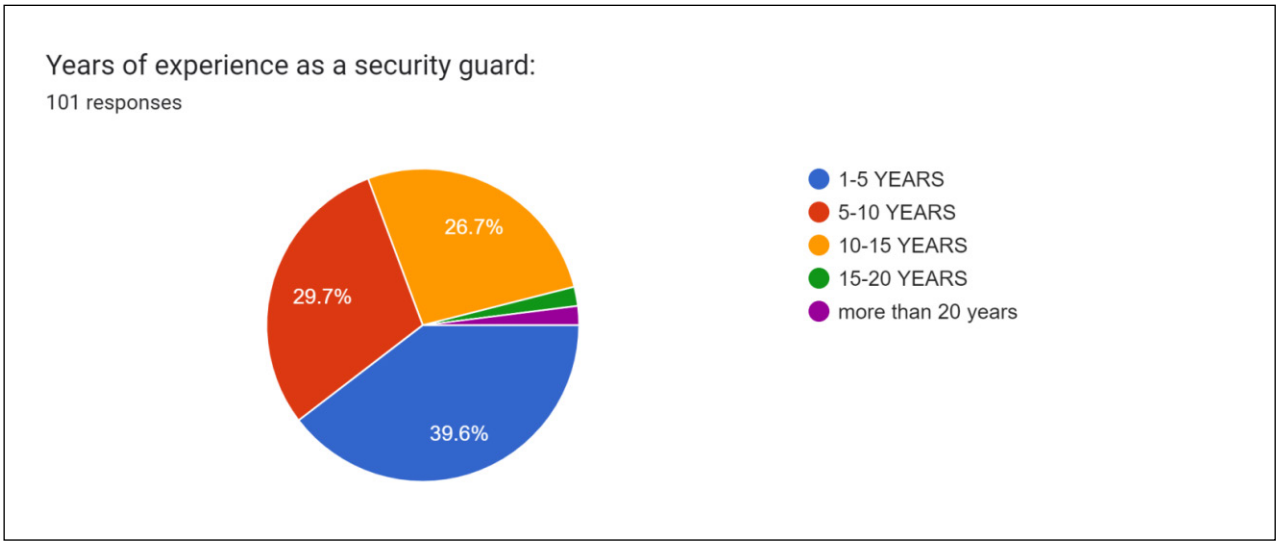


Figure 1. Pie chart depicting the years of experience of security guard workforce.

14. Prevalence for Question 14: (9 / 31) * 100 = 29.03%
15. Prevalence for Question 15: (9 / 39) * 100 = 23.08%
16. Prevalence for Question 16: (5 / 41) * 100 = 12.20%
17. Prevalence for Question 17: (5 / 36) * 100 = 13.89%
18. Prevalence for Question 18: (9 / 29) * 100 = 31.03%
19. Prevalence for Question 19: (6 / 29) * 100 = 20.69%
20. Prevalence for Question 20: (9 / 44) * 100 = 20.45%
21. Prevalence for Question 21: (5 / 33) * 100 = 15.15%
22. Prevalence for Question 23: (8 / 49) * 100 = 16.33%

These are the prevalences for each questionnaire where respondents rated the questionnaire with a score of 5 as "very important" out of the total number of respondents for each questionnaire.

Hence the overall prevalence of varicose veins among security guards is about 00.15%.

6. Discussion

The findings of this study shed light on the prevalence of varicose veins among security guards and provide valuable insights into the factors influencing their development within this occupational group. The discussion encompasses the interpretation of results, comparison with existing literature, implications for occupational health management, study limitations, and avenues for future research.

6.1 Interpretation of Results

The study revealed a prevalence of varicose veins among security guards of approximately 0.15%, indicating that this vascular condition is relatively common within this occupational cohort. This prevalence underscores the importance of understanding and addressing occupational factors contributing to varicose vein development, given the potential impact on the health and well-being of security personnel.

6.2 Comparison with Existing Literature

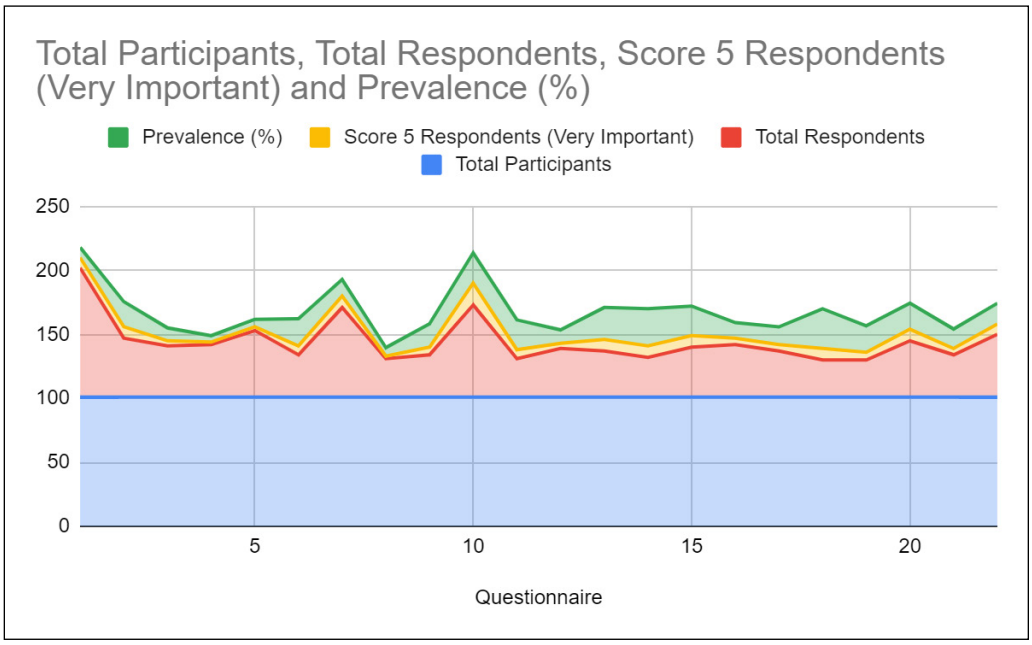
Comparisons with existing literature reveal both consistencies and discrepancies in prevalence rates and demographic patterns. While previous studies have reported a higher prevalence of varicose veins in women, the current findings challenge this notion by demonstrating a higher prevalence among male security guards. This disparity highlights the importance of considering occupational factors and demographic characteristics in understanding varicose vein epidemiology.

Most of the evidence from previous studies indicates a higher prevalence of varicose veins in women. It has been suggested that variation in the sex ratio between different studies may be partly because of differences in the age of the populations studied and the lack of study population[1,7,8].

However, many of the results on overall prevalence from previous studies were not adjusted for age, and this factor may have obscured any true sex differences. Also, studies that relied on self-assessment of varicose veins alone rather than reported participants of a previously diagnosed varicose participants by a physician, may have been prone to bias, because women may have been more

Table 3. Calculation of the prevalence for each questionnaire in the study

Questionnaire	Total Participants	Total Respondents	Score 5 Respondents (Very Important)	Prevalence (%)
1	101	101	8	7.92
2	101	46	9	19.57
3	101	40	4	10.00
4	101	41	2	4.88
5	101	52	3	5.77
6	101	33	7	21.21
7	101	70	9	12.86
8	101	30	2	6.67
9	101	33	6	18.18
10	101	72	17	23.61
11	101	30	7	23.33
12	101	38	4	10.53
13	101	36	9	25.00
14	101	31	9	29.03
15	101	39	9	23.08
16	101	41	5	12.20
17	101	36	5	13.89
18	101	29	9	31.03
19	101	29	6	20.69
20	101	44	9	20.45
21	101	33	5	15.15
22	101	49	8	16.33
		1018	159	00.15



Graph 1. The overall prevalence of varicose veins among security guards.

likely to report varices or to consult their doctor for this condition than men. This hypothesis is supported by the Edinburgh Vein Study finding that only 10% of men reported a previous doctor's diagnosis of varicose veins in their questionnaire compared with 17% of women.

Men were subsequently found to have a significantly higher prevalence than women on examination. The Basle Study (the origin of the method of classification used for the Edinburgh Vein Study) found a similar prevalence of all varices in men and women, but the sample contained relatively few women[9].

The small number of published studies that have examined population samples have all found a higher prevalence of varices in women than men[10–12]. Abramson *et al* surveyed residents of a Jewish neighborhood of Western Jerusalem and found that the age-standardized prevalence for varicose veins (excluding venectasias) was 29.5% in women and 10.4% in men[10]. In the Tecumseh Community Health Study, a longitudinal study of a total USA community, the overall prevalence of "any varicose veins" was 25.9% in women and 12.9% in men, and although these figures were not age-standardized, the prevalence of varices was higher in each age group in women[11].

Leipnitz *et al.,* examined a sample of 2821 subjects aged 45-65 years, randomly selected from the greater Aachen district, and found the prevalence of varicose veins to be 29.0% in women and 14.5% in men[12].

The prevalence and severity of lower limb varicose veins among healthcare professionals, particularly nurses, have garnered attention in recent research studies. Davood Alimohammadi *et al*., conducted a study focusing on nurses, revealing a significant association between high-risk factors and varicose vein problems. Their findings underscore the importance of addressing occupational factors and implementing preventive measures to safeguard the vascular health of nurses. Factors such as prolonged standing, heavy lifting, and lack of physical activity contribute to the increased risk of varicose veins among nurses, emphasizing the need for targeted interventions to mitigate these risks[13].

Similarly, the study by S. Ali, Waad K Najmi *et al*., highlights the high prevalence of varicose veins among female nurses and identifies various associated risk factors. Their analysis reveals that factors such as carrying heavy weights, lack of exercise, family history, hormonal therapy, and prolonged hours of sitting per shift significantly contribute to the development of varicose veins among nurses. These findings underscore the multifactorial nature of varicose vein development and emphasize the importance of comprehensive risk assessment and intervention strategies tailored to the specific needs of healthcare professionals[14].

In addition to healthcare professionals, occupational groups such as traffic police officers also face an increased risk of varicose veins. Karmacharya *et al*., found that 12% of traffic police officers had a risk of varicose veins, with gender differences observed. Male officers accounted for a slightly higher prevalence compared to females, highlighting the influence of gender-specific factors on varicose vein development. Factors such as family history of varicose veins and smoking emerged as significant contributors to the risk of varicose veins among traffic police officers, emphasizing the need for targeted preventive measures and lifestyle interventions within this occupational group[15].

Furthermore, K. Renitha *et al*., explored the risk factors associated with varicose veins among security guards. Their study revealed a range of factors, including family history, vein issues, prolonged standing during work, smoking, history of constipation, alcohol consumption, irregular exercise patterns, and lack of leg elevation during sleep. These findings highlight the diverse array of risk factors that contribute to varicose vein development among security guards and underscore the importance of comprehensive risk assessment and lifestyle modifications to mitigate these risks[16].

Overall, the findings from these studies collectively underscore the significance of occupational factors and lifestyle behaviors in the development of varicose veins among various occupational groups. Implementing targeted interventions, promoting healthy lifestyle behaviors, and raising awareness about the importance of vascular health are essential steps in mitigating the burden of varicose veins among these populations. Further research is warranted to explore additional risk factors and interventions aimed at reducing the prevalence and severity of varicose veins within occupational settings.

6.3 Implications for Occupational Health Management

The study findings have significant implications for occupational health management strategies targeted at mitigating the risk of varicose veins among security guards. Recognizing the occupational hazards associated

with prolonged standing or sitting, interventions such as regular breaks, ergonomic workstation design, and the use of compression stockings may help alleviate symptoms and reduce the risk of varicose vein development. Moreover, raising awareness among security personnel about the importance of early detection and seeking medical attention for varicose veins is crucial for preventing complications and improving overall health outcomes.

6.4 Study Limitations

Despite its contributions, this study is not without limitations. The cross-sectional design limits the ability to establish causal relationships between occupational factors and varicose vein prevalence. Additionally, reliance on self-reported data may introduce response bias, potentially influencing prevalence estimates. Moreover, the study's sample size and generalizability may be constrained by the specific population of security guards surveyed, limiting broader applicability to other occupational groups.

6.5 Future Research Directions

Future research endeavors in this area should consider longitudinal study designs to better understand the temporal relationship between occupational exposures and varicose vein development. Additionally, incorporating objective measures of varicose vein severity and employing larger, more diverse samples can enhance the generalizability of findings. Further exploration of gender differences in varicose vein prevalence within occupational contexts is warranted to elucidate underlying mechanisms and inform targeted interventions.

7. Conclusion

In conclusion, this study contributes valuable insights into the prevalence of varicose veins among security guards and highlights the importance of considering occupational factors in understanding vascular health within specific occupational cohorts. By addressing occupational hazards and implementing targeted interventions, healthcare professionals and employers can work collaboratively to promote the vascular health and overall well-being of security personnel. Further research in this area is essential for advancing our understanding of occupational-related vascular conditions and informing evidence-based interventions to mitigate their impact.

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