Chinese Journal of Evidence-Based Medicine

# EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING VARICOSE VEINS AMONG INDUSTRIAL WORKERS OF SELECTED INDUSTRIES OF CITY.

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## ABSTRACT

Varicose veins, a common venous disorder, occur when the veins become dilated and twisted due to prolonged stress and strain. Normally, the one-way valves in the veins prevent blood from flowing backwards. However, when these valves fail, blood collects and pools in the vein rather than continuing its journey to the heart. Varicose veins predominantly affect the lower extremities, particularly the legs, as they are farthest from the heart and must work against gravity to return blood upward. This uphill battle against gravity makes it harder for blood to flow efficiently, leading to vein dilation and the formation of varicosities.[2] Varicose veins are a prevalent vascular condition characterized by the enlargement and twisting of veins, primarily in the lower extremities. It is a common chronic disorder affecting individuals of various age groups and occupations. However, certain occupational groups, particularly those involved in industrial work, may face a higher risk of developing varicose veins due to the nature of their work environment and job-related activities. Industrial workers often engage in prolonged standing or sitting positions, repetitive movements, heavy lifting, and exposure to factors such as vibration, heat, and hazardous substances. These factors, combined with the lack of opportunities for regular leg movement and inadequate ergonomic measures, contribute to the increased likelihood of developing varicose veins. The prevalence of varicose veins among industrial workers raises concerns regarding the occupational health and wellbeing of this specific population.

**Key words:** structured teaching programme, knowledge, varicose veins, industrial workers, industries.

## INTRODUCTION

Veins play a vital role in the circulatory system, working alongside arteries to ensure the proper flow of blood throughout the body. Compared to arteries, veins are less muscular and often located closer to the skin's surface. One notable feature of veins is the presence of valves that help prevent the

backward flow of blood, ensuring its unidirectional movement towards the heart.[1] Varicose veins, a common venous disorder, occur when the veins become dilated and twisted due to prolonged stress and strain. the one-way valves in the veins prevent blood from flowing backward. when these valves fail, blood collects and pools in the vein rather than continuing its journey to the heart. Varicose veins predominantly affect the lower extremities, particularly the legs, as they are farthest from the heart and must work against gravity to return blood upward. This uphill battle against gravity makes it harder for blood to flow efficiently, leading to vein dilation and formation of varicosities. Among industrial [4] employees, pain is a highly prevalent and incapacitating ailment, often resulting in decreased performance. the application of ergonomic principles is considered a crucial strategy for reducing discomfort associated with prolonged standing labour, including the development of varicose veins. Research focusing on industrial workers who frequently stand for extended periods is crucial in identifying effective strategies to minimize the negative health effects of prolonged standing, such as stiff necks and shoulders, varicose veins, swollen legs, aching feet, and o muscular tiredness.[7] understanding the anatomy and function of veins and the causes, symptoms, diagnosis, and treatment options for varicose veins is essential for individuals affected by the condition and various professionals. By implementing preventive measures, seeking appropriate medical intervention when necessary, and addressing ergonomic concerns in occupational settings, individuals can effectively manage varicose veins and improve their health and well-being.

**NEED OF STUDY**

Varicose Vein is a very common problem usually neglected by patients due to a lack of pain in the initial stage of the disease. varicose veins affect 22 million women and 11 million men between the ages of 40 and 80 years. Two million men and women will develop symptoms and signs of chronic venous insufficiency.13 Veins on the left side were more involved than on the right. The use of compression stockings in the workplace added with a newer procedure in management could help in quality of life.15. Industrial workers are frequently exposed to prolonged periods of standing or 8 sitting, repetitive motions, heavy lifting, and exposure to certain occupational hazards. These factors can contribute to the development or exacerbation of varicose veins. If left untreated it may cause serious complications. it is necessary to provide awareness about the risk factors, warning signs, prevention, and early treatment of varicose veins. The cost of managing varicose veins, including healthcare expenses and work absence due to complications, can place a financial strain on individuals and contribute to the overall healthcare costs. Occupational health and safety regulations aim to protect workers from work-related hazards and ensure their well-being. However, the specific risks and preventive measures related to varicose veins are often overlooked in occupational health guidelines. a study on varicose veins among industrial workers can help identify the occupational factors contributing to the condition and provide evidence-based recommendations for preventive measures to be integrated into occupational health and safety practices. There may be a lack of awareness and knowledge among industrial workers regarding the risk factors, early signs, and preventive measures

for varicose veins. These conditions not only have a significant impact on the quality of life for industrial workers but can also result in increased healthcare utilization and costs.[9]

**AIM OF THE STUDY**

To study the Effectiveness of structured teaching programme on knowledge regarding varicose veins among industrial workers of selected industries of city.

**RESEARCH METHODOLOGY**

**OBJECTIVES**: Primary objective: A study to assess the effectiveness of structured teaching programme on knowledge regarding varicose veins among industrial workers of selected industries of city. Secondary objectives: 1. To assess the pre-test level of knowledge regarding varicose veins among Industrial workers of selected Industries of city. 2. To find effectiveness of structured teaching programme on knowledge scores regarding varicose veins among Industrial workers of selected Industries of city. 3.To find association between pre-test knowledge scores of varicose veins with selected demographic variables

**HYPOTHESIS: H0**: - There will be no significant difference between pre-test and post-test knowledge scores of industrial workers regarding varicose veins. (P=0.05) 11 H1: - There will be significant difference between pre-test and post-test knowledge scores of industrial workers regarding varicose veins. (P=0.05) Research design: A quantitative evaluatory approach was used for the study. The research design was used in this study is pre experimental one group pre-test post-test research design. In this study one group were selected for pre-test. Later, the group receives structure teaching programme on knowledge regarding varicose veins. Then post-test was conducted on same group after 7 days of application of the structured teaching programme. As this is Pre experimental one group pre-test post-test research design, only one group was selected by Non probability convenient sampling technique. Sample and sample size: In the present study, the sample comprises industrial workers of selected industries of city that fulfil the inclusion criteria of the study. For the study, the sample size is 60 by using power analysis formula.

**CRITERIA FOR SAMPLING**

Following criteria was set for the selection of sample

Inclusion criteria: The study includes industrial workers who are:

1. Standing more than 4 hours in a day.
2. Working in selected industries.
3. Able to communicate freely in English, Marathi or Hindi.
4. Willing to participate in the study.

Exclusion criteria: The study excludes industrial workers who are:

1. Have participated in similar type of study.
2. Are health professionals.
3. Have attended any training programme on varicose veins within 6 months.

Withdrawal criteria: Sample can withdraw from research at any point of time during the data collection. In this present study, a non-probability convenient sampling technique is adopted for the selection of

the workers. It entails the use of the most readily available persons as samples based on certain criteria. In the Non-Probability sampling technique, not every element of the population has an opportunity for selection to be included in the patients. The investigator preferred to choose this sampling technique mainly because of the time constraints, in order to complete the data within the stipulated time.

Data collection tool was an instrument that measures the variables interest of the study accurately, precisely and sensitively. In order to obtain content validity, the tool was given to a total. 12 experts in nursing. Medical Surgical Nursing-09, Physician-02, Statistician-01. The content validity index is calculated by the using formula of content validity ratio CVR= Item wise (ne-N/2) / (N/2) and CVI for this tool validity is 0.99 so the tool is valid.

In order to test the reliability of the tool, it was administered to the 6 samples. This was done to rule out any bias or any confusion with the questions, which will be elicited after the actual administration of the questionnaire. The tool was tested for reliability on industrial workers during a pilot study by using the 'test-retest' method. Karl Pearson's correlation coefficient was calculated to be 0.97 which is quite high to conclude that the tool is highly reliable. The formula used for reliability is: $r = (n (\sum xy) -(\sum x) (\sum y))/ (\sqrt{} [n \sum x2-(\sum x) 2] [n \sum y2– (\sum y) 2)$

A pilot study was conducted on 06 industrial workers. After taking prior administrative permission from the authorities. The pilot study was conducted from 08/06/2023 to 15/06/2023 to assess the feasibility of the study and to decide the statistical analysis and practicability of the research. The researcher approached the subjects, informed them regarding the objectives of the study and obtained consent after assuring the subjects about the confidentiality of the data. Samples were selected by a nonprobability convenient sampling technique. The level of knowledge was assessed by using a structured questionnaire on varicose veins. The researcher applied paired t-test for the effectiveness of a structured teaching programme on knowledge scores regarding varicose veins among Industrial workers of selected Industries of the city. The average knowledge score in the pre-test was 7.5 which increased to 19.5 in the post test. T-value for this test was 8.6 with 5 degrees of freedom. The corresponding p-value was small (less than 0.05), and the null hypothesis is rejected. It is evident that the knowledge among industrial workers regarding varicose veins improved significantly after a structured teaching programme.

The tool consists of 2 parts 1. Part I Consent form 2. Part II Section A: Demographic data It consists of age, gender, duration of standing, education, family monthly income, dietary pattern, and year of work experience in the industry. Section B: Structured questionnaire to assess knowledge of varicose veins The structured knowledge questionnaire consisted of 25 questions. The correct answer is scored as "1" and the wrong answer as "0".

**RESULTS**

This study's primary aim was to assess the effectiveness of structured teaching programme on knowledge regarding varicose veins among industrial workers of selected industries of city.

**Section I: Findings related to demographic data of samples.**

The distribution of respondents according to their age in percentage terms reveals that 70% of the

industrial workers fell within the age range of 20-30 years, while 23.3% of them were aged between 31-40 years, and 6.7% of them were aged between 41-50 years.

The distribution of respondents according to their gender in percentage terms reveals that 70% of them were males, while 30% of them were females.

The distribution of respondents according to their standing duration in percentage terms reveals that 86.7% of them had standing duration of 4-6 hours and 13.3% of them had standing duration of 7-9 hours.

The distribution of respondents according to their education in percentage terms reveals that 31.7% of them had secondary education, 40% of them had higher secondary education and 28.3% of them had under graduation.

The distribution of respondents according to their monthly family income in percentage terms reveals that 35% of them had monthly family income Rs.10000- 20000, 36.7% of them had monthly family income Rs. 20001-30000 and 28.3% of them had monthly family income above Rs.30000.

The distribution of respondents according to their dietary pattern in percentage terms reveals that 20% of them were vegetarian and 80% of them had mixed diets.

The distribution of respondents according to their years of work experience in percentage terms reveals that 83.3% of them had 0-5 years of work experience, 10% of them had 6 to 10 years of experience and 33.3% of them had above 10 years of experience.
Section II: knowledge regarding varicose veins among industrial workers.

**Table 1. Pre-test knowledge regarding varicose veins among Industrial workers of selected Industries of city. N=60**

| **Knowledge** | **Pretest** | |
|---|---|---|
| | **Freq** | **%** |
| Poor (score 0-8) | 37 | 61.7% |
| Average (score 9-16) | 23 | 38.3% |
| Good (score 17-25) | 0 | 0.0% |

The pre-test results indicate that 61.7% of the industrial workers possessed poor knowledge (scored between 0 and 8) about varicose veins, while 38.3% of them exhibited average knowledge (scored

between 9 and 16) on the subject. The post-test, results revealed that 38.3% of the participants demonstrated average knowledge (scored between 9 and 16), while a significant improvement was observed, with 61.7% of the participants now possessing good knowledge (scored between 17 and 25) concerning varicose veins. This improvement underscores the enhanced knowledge level among industrial workers regarding varicose veins. The knowledge regarding varicose veins among industrial workers in selected industries of the city indicated that a significant majority, accounting for 61.7% of the workers, had a poor knowledge with scores ranging from 0 to 8. On the other hand, 38.3% of the workers demonstrated an average level of knowledge with scores ranging from 9 to 16.

**Section III: Paired t-test for the effectiveness of structured teaching programme on knowledge regarding varicose veins among industrial workers of selected industries of city.**

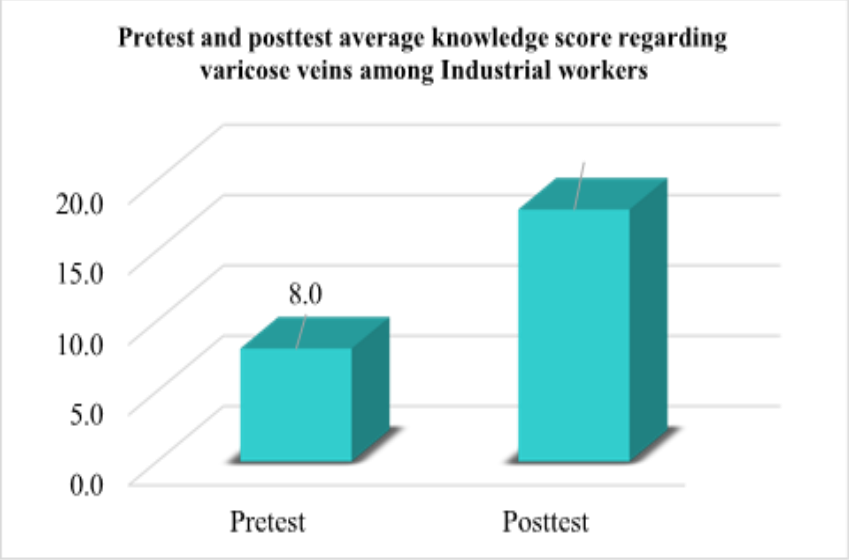


**Fig. 1 Bar diagram showing paired t-test for the effectiveness of a structured teaching program on knowledge scores regarding varicose veins among Industrial workers of selected Industries of city.**

A paired t-test was conducted to assess the effectiveness of a structured teaching programme on knowledge scores related to varicose veins among industrial workers from selected industries in the city. The average knowledge score during the pre-test was 8, and it saw an increase to 17.9 during the post-test. The t-value obtained for this test was 41.6, calculated with 59 degrees of freedom. With a corresponding p-value less than 0.05, the null hypothesis is rejected. These results provide clear evidence that the knowledge level of industrial workers concerning varicose veins experienced a substantial and significant improvement following the implementation of the structured teaching programme. In pre-test, 61.7% of the industrial workers had poor knowledge (Score 0-8) and 38.3% of them had average knowledge (score 9-16) regarding varicose veins. In post-test, 38.3% of them had average knowledge (score 9-16) and 61.7% of them had good knowledge (score 17-25) regarding varicose veins. This indicates that there is remarkably improvement in the knowledge among industrial workers regarding varicose veins

**Section IV: Fisher's exact test for the association between knowledge of varicose veins and selected demographic variables.**

As shown in the table, XII Since the p-value corresponding to education, monthly family income and years of work experience are small (less than 0.05), the demographic variables education, monthly family income and years of work experience were found to have a significant association with the knowledge among industrial workers regarding varicose veins.

Table. 2 Fisher's exact test for the association between knowledge of varicose veins and selected demographic variables. N=60

| Demographic variable | | Knowledge | | p-value |
|---|---|---|---|---|
| | | Average | Poor | |
| Age | 20-30 years | 14 | 28 | 0.249 |
| | 31 -40 years | 6 | 8 | |
| | 41- 50 years | 3 | 1 | |
| Gender | Female | 18 | 24 | 0.387 |
| | Male | 5 | 13 | |
| Duration of standing | 4-6 hours | 20 | 32 | 1.000 |
| | 7-9 hours | 3 | 5 | |
| Education | Secondary | 3 | 16 | 0.000 |
| | Higher secondary | 3 | 21 | |
| | Undergraduate | 17 | 0 | |
| Family Income | Mor 10001-20000 /- | 3 | 18 | 0.000 |
| | 20001-30000 /- | 3 | 19 | |
| | Above 30001/- | 17 | 0 | |
| Dietary pattern | Vegetarian | 7 | 5 | 0.183 |
| | Mixed | 16 | 32 | |
| Years of work experie | 0-5 years | 15 | 35 | 0.009 |
| | 6-10 years | 5 | 1 | |
| | 11 years and above | 3 | 1 | |
| | | | | |

Since p-value corresponding to education, monthly family income and years of work experience are less than 0.05, the demographic variables education, monthly family income and years of work experience were found to have significant association with the knowledge among industrial workers regarding varicose veins.

**DISCUSSION**



**Vol. 20, No. 1. (2024)**
**E ISSN**: 1672-2531

This study was done to assess the Effectiveness of structured teaching programme on knowledge regarding varicose veins among industrial workers of selected industries of city. the study investigated the efficacy of structured teaching programs aimed at enhancing knowledge about varicose veins among industrial workers. This study sought to improve industrial workers' comprehension of varicose veins by analysing detailed demographic data encompassing age distribution, gender ratios, standing durations, education levels, family incomes, dietary preferences, and work experience. The initial assessment exposed a substantial deficiency in knowledge, with 61.7% exhibiting poor knowledge and 38.3% displaying average knowledge. This prompted the implementation of the structured teaching program. Post-test outcomes revealed significant progress. This improvement was strongly supported by statistical analyses, including an increase in average knowledge scores from 8 to 17.9, alongside the rejection of the null hypothesis through paired t-test analysis. Among the 50 industrial workers surveyed, the majority were aged between 26-30 years, predominantly male, possessed secondary education, and had a monthly family income of Rs. 20,001-30,000. The initial assessment highlighted a 70 more pronounced knowledge gap, with 88% demonstrating inadequate knowledge and 12% exhibiting moderate knowledge. post-teaching program results exhibited significant improvement (66% achieving adequate knowledge, 34% attaining moderate knowledge). a connection between pre-test knowledge and educational status was established. These interventions yielded substantial improvements in knowledge levels, by the notable rise in post-test scores. These results underscore the effectiveness of structured teaching programs in elevating industrial workers' understanding of varicose veins. Overall, these investigations collectively highlight the affirmative influence of educational interventions in augmenting knowledge levels among industrial workers. This contributes significantly to heightening awareness about varicose veins and their associated risk factors. The findings provide compelling evidence that the structured teaching programs had a considerable positive impact on the industrial workers' knowledge scores pertaining to varicose veins.

**CONCLUSION**

Varicose veins are a common chronic disorder affecting individuals, particularly those involved in industrial work, may face a higher risk of developing varicose veins due to the nature of their work. The study demonstrated the effectiveness of a structured teaching programme in improving the knowledge of industrial workers regarding varicose veins. The findings highlight the importance of educational interventions in enhancing worker knowledge and ultimately contributing to a safer and healthier working environment. By disseminating the research findings to the concerned fraternity and relevant stakeholders, the study aims to create awareness and promote further initiatives to improve the well-being of industrial workers. This study's findings had implications for various dimensions of the nursing profession, including nursing practice, nursing education, nursing administration, and nursing research. Research played a crucial role in advancing knowledge and improving the level of information in the nursing field. To enhance the robustness and generalizability of the study's findings, several recommendations can be made. The study established the positive impact of a structured teaching programme on industrial workers' knowledge of varicose veins. The findings emphasize the

importance of targeted interventions in enhancing knowledge among this population. This research contributes to our understanding of effective educational strategies for improving healthcare awareness and promoting well-being in industrial settings.

**RECOMMENDATIONS**

On the basis of the present study, the investigator suggested the following recommendations.

- A similar study may be replicated on large samples thereby findings can be generalized.
- The study can be replicated in different settings.
- The study can be replicated by changing the samples for the study.
- Other interventions rather than a knowledge questionnaire can also be used in the study.
- A comparative study can be performed using different types of interventions.
- A similar study can be conducted with different research designs and large samples.
- A study may be conducted to evaluate the effectiveness of an information booklet on knowledge related to varicose veins.

Conflict of Interest:

The authors certify that they have no involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper.

Funding Source: “There is no funding Source for this study"

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