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Effectiveness of Structured Educational Intervention on Knowledge Regarding Preventive Measures of Varicose Vein among Teachers of Selected Schools of Bhaktapur

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Abstract

Background: Varicose veins are enlarged, twisted veins that often affect the lower limbs, particularly among individuals engaged in prolonged standing occupations such as teaching. Preventive education is vital in minimizing its occurrence.

Objectives: To assess the effectiveness of a structured educational intervention on the knowledge regarding preventive measures of varicose veins among school teachers of selected school of Bhaktapur.

Methodology: Pre-experimental one group pre-test post-test design was used. Fifty-four school teachers from Khwopring English Academy were selected using enumerative sampling. A structured questionnaire assessed knowledge levels before and after a 40–45-minute teaching session. Data analysis was conducted using SPSS v27, employing descriptive and inferential statistics.

Results: Pre-test results revealed that 44.4% had inadequate knowledge and 55.6% had moderately adequate knowledge, with no participants scoring in the adequate range. Post-intervention, 55.6% achieved adequate knowledge. The mean pre-test score was 8.78, which increased to 13.61 in the post-test. The difference was statistically significant ($p < 0.001$).

Conclusion: The structured educational intervention was effective in significantly improving the knowledge of school teachers regarding preventive measures of varicose veins.

Keywords: Varicose Veins; School Teachers; Structured Educational Intervention; Preventive Measures; Knowledge

1. Introduction

Varicose veins, derived from the Latin word "varix" meaning twisted, are abnormally swollen veins that are at least 3 millimeters in diameter when measured while standing[1].These veins are characterized by their enlarged and twisted appearance and the backward flow of blood (reflux). While most commonly seen in the legs, varicose veins can develop in other parts of the body, including the esophagus[2].

Age, gender, occupation, pregnancy, family history, smoking habits, body mass index (BMI), obesity levels, exercise patterns, genetic predisposition, and lifestyle choices are all factors that can contribute to the development and progression of varicose veins. Additionally, chronic venous wall damage, genetic variations, and persistent high blood pressure in the veins may also play a role in the disease process[3].

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Several professions that involve prolonged standing and specific postures are associated with a higher incidence of varicose veins. These professions include nurses, healthcare professionals, educators, dentists, salon workers, security guards, bakery and department store workers, automotive technicians, and those in the tourism and entertainment industries. The risk of developing varicose veins is particularly elevated among women aged 30 and older who engage in prolonged standing work, compared to men in similar circumstances[4].

Globally, varicose veins affect 10% to 30% of population. In the USA the prevalence is approximately 4,500 per 100,000 people, affecting 22 million women and 11million men[5]. The prevalence of varicose vein in India is 46.7% among females and 27.8% among males. Furthermore 49.3% of females and 18.9% of males exhibit venous symptoms[1].

According to the Annual report of the Department of Health Services (DOHS) of Nepal for 2071/72) Nepal, Varicose vein incidence is (70.77%) in male and (29.23%) in female.

A study was conducted on 135 teachers in Dhulikhel municipality to assess their risk of varicose veins. Researchers used a convenience sampling method and collected data through a questionnaire developed by Robin Man Karmacharya. The majority of participants were young adults aged 20-30 (43.7%), and most were female (78.5%). A significant number (45.2%) experienced occasional tingling sensations in their legs. Over half of the teachers (56.3%) were identified as being at risk of developing varicose veins. Statistical analysis revealed that age, BMI, and years of work experience were significantly associated with the risk of varicose veins[6].

A descriptive study was conducted in primary school of Aurangabad to assess the knowledge regarding varicose veins among the teachers in selected primary schools. A sample of 50 teachers were selected using non- probability convenient sampling technique and structured knowledge questionnaire were used for data collection. The study revealed that majority 76% had an average knowledge, 18% had poor knowledge and only 6% had good knowledge regarding varicose veins[7].

An evaluative research approach with pre-experimental design was conducted in selected private school of Chennai to assess the effectiveness of structure teaching program on knowledge regarding prevention and management of varicose vein. A sample of 60 teachers were selected using non - probability convenient sampling technique and data was collected using self- structured questionnaire. The study revealed that the 67% of the sample had inadequate knowledge while moderately adequate knowledge was observed in 30% of sample and 3% have adequate knowledge. In the post-test there was marked improvement in the knowledge of the sample with majority 37% gained adequate knowledge and 53% gained moderately adequate knowledge, and 10% had inadequate knowledge[8].

Varicose veins are particularly common and tend to have higher prevalence among individual in occupation that required prolonged standing such as teaching. Varicose vein has become serious health concern for millions of people worldwide and most of the teachers are unaware regarding varicose vein. So, there is need to spread awareness among teachers regarding preventive measures of varicose veins.

2. Material and Methods

Pre experimental one group pretest post- test design was used to assess the effectiveness of educational intervention on knowledge of varicose vein and its prevention. The research was conducted in Khwopring English Academy School Bhaktapur. This school was established in 2000 AD. It is situated in the heart of Historical city Bhaktapur. This school has good number of students around 1000+ and around 50 teachers are engaged in teaching. The study population was all teachers working in Khwopring English Academy school of Bhaktapur. All teachers total 54 engaged in Khwopring English Academy was taken as sample for study. Enumerative sampling technique was adopted for selecting sample of study. Structured self-administered questionnaire was used.

Validity of the Instrument was established by developing the questionnaire on the basis of literature reviews and consulting with research advisor and subject experts. Pre-testing of the instrument was done among 10% of the respondents in Suryadeep English Secondary School of Bhaktapur. Formal permission was obtained from the concerned authority of Khwopring English Academy School after submitting an official approval letter from Everest College of Nursing. A structured questionnaire was developed, consisting of demographic variables and knowledge-based questions regarding preventive measures of varicose veins. The purpose and objectives of the study were clearly explained to all participants to ensure transparency and voluntary participation. Verbal informed consent was obtained from each participant before the distribution of the questionnaire. A pre-test was conducted using the structured questionnaire to assess the participants' baseline knowledge regarding preventive measures of varicose veins. After the

pre-test, a structured educational intervention was delivered to the participants. The session lasted approximately 40–45 minutes and covered key concepts related to varicose veins. A post-test using the same questionnaire was administered seven days after the intervention. Administrative approval was obtained from the Research Committee of Everest College of Nursing and the concerned authority of Khwopring English Academy, Bhaktapur. The objectives and purpose of the research were clearly explained to all participants. Verbal and written consent were obtained from each participant prior to data collection. Confidentiality and anonymity of all participants were strictly maintained throughout the research process.

Demographic data was analyzed using frequency and percentage. Frequency and percentage were used for the distribution of samples based on their knowledge regarding preventive measure of varicose vein. Mean and standard derivation was used to assess pre and post-test knowledge of school teachers regarding prevention of varicose veins. Paired't' test was used to evaluate the effectiveness of structured teaching program on the knowledge of school teachers regarding preventive measures of varicose veins.

3. Results

3.1. Analysis of Socio demographic Variable

Table 1 Frequency and Percentage Distribution of the Demographic Variables of the Respondents N=54

Characteristics	Frequency	Percentage
Age		
20-25	9	16.7%
26-30	20	37%
31-35	10	18.5%
36-40	9	16.7%
41-45	4	7.4%
46-50	2	3.7%
Gender		
Male	5	9.3%
Female	49	90.7%
Educational Status		
Higher Secondary Level	8	14.8%
Undergraduate Level	38	70.4%
Post Graduate Level	8	14.8%
Family Background		
Medical Background	7	13%
Non-Medical Background	47	87%
Previous Knowledge of Varicose Veins		
Yes	1	1.9%
No	53	98.1%

Table 1 shows that majority of respondents (18.5%) were between age group of 31-35 and majority of respondents (90.7%) were female. Majority of respondents (70.4%) had completed education qualification of undergraduate level. Majority of respondents (87%) had non-medical family background and majority (98.1%) does not had previous knowledge of varicose veins.

Table 2a Preventive Measures Regarding Varicose Veins N=54

Characteristics	**Pre test**		**Post test**	
	Freq	**%**	**Freq**	**%**
Can maintaining a healthy weight help prevent the development of varicose veins? Correct response (Yes)	45	83.3%	54	100%
Incorrect response	9	16.7%	0	0.0%
Is it beneficial to wear compression stockings to help prevent varicose veins? Correct response (Yes)	22	40.7%	44	81.5%
Incorrect response	32	59.3%	10	18.5%

Table 2 shows that 83.3% of respondents correctly identified that maintaining a healthy weight can help prevent the development of varicose veins in the pre-test, increasing to 100% in the post-test. Additionally, awareness of the benefits of wearing compression stockings improved significantly—from 40.7% correct responses in the pre-test to 81.5% in the post-test

Table 2b Preventive Measures Regarding Varicose Veins N=54

Characteristics	**Pre test**		**Post test**	
	Freq	**%**	**Freq**	**%**
Can crossing legs for extended periods help prevent the varicose veins? Correct response (No)	35	64.8%	38	70.4%
Incorrect response	19	35.2%	16	29.6%
Can elevating the legs when sitting or resting help prevent the varicose veins? Correct response (Yes)	38	70.4%	48	88.9%
Incorrect response	16	29.6%	6	11.1%

Table 2 shows that 64.8% of respondents correctly answered “No” to whether crossing legs for extended periods helps prevent varicose veins in the pre-test, which slightly improved to 70.4% in the post-test. Regarding whether elevating the legs when sitting or resting helps prevent varicose veins, correct responses increased from 70.4% in the pre-test to 88.9% in the post-test, indicating a positive improvement in knowledge on preventive behaviors.

Table 3 Frequency and Percentage Distribution of Knowledge of School Teachers Regarding Prevention of Varicose Veins N=54

Level of Knowledge	**Pretest**		**Posttest**	
	Frequency	Percentage	Frequency	Percentage
Inadequate (<50%)	24	44.4%	0	0.0%
Moderately Adequate (50-75%)	30	55.6%	24	44.4%
Adequate (>75%)	0	0.0%	30	55.6%

Table 3 shows that before the intervention, 44.4% of respondents had inadequate knowledge (less than 50%), and 55.6% had moderately adequate knowledge (50-75%), with no respondents demonstrating adequate knowledge

(>75%). After the intervention, none had inadequate knowledge, 44.4% had moderately adequate knowledge, and 55.6% achieved adequate knowledge, indicating a substantial overall improvement in participants' understanding of varicose veins.

Table 4 Mean and Standard Deviation of Pre and Post-Test Knowledge Scores of School Teachers N=54

	Mean	**Standard deviation**
Pretest	8.778	2.138
Post test	13.61	2.201

Table 4 Shows The mean knowledge score increased from 8.78 (±2.14) in the pre-test to 13.61 (±2.20) in the post-test. This indicates a significant improvement in overall knowledge following the intervention, with a consistent level of variation among participants in both tests.

Table 5 Mean, Standard Deviation and 't" Value of Pre-Test and Post- Test Knowledge Scores N=54

	Mean	**Standard deviation**	**t value**	**p value**
Pretest	8.778	2.14	-11.883	<0.001
Post test	13.61	2.20		

Table 5 shows that the mean knowledge score significantly increased from 8.78 (±2.14) in the pre-test to 13.61 (±2.20) in the post-test. The paired t-test yielded a t-value of -11.883 with a p-value < 0.001, indicating that the improvement in knowledge after the intervention is statistically significant. Hypothesis H1 was accepted. Hence it can be inferred that the structured educational intervention was effective in increasing the knowledge of school teachers regarding preventive measures of varicose vein.

4. Discussion

This study was conducted to assess the effectiveness of a structured educational intervention on knowledge regarding preventive measures of varicose veins among school teachers in Bhaktapur. The findings indicated a statistically significant improvement in knowledge following the educational intervention, supporting the hypothesis that structured teaching improves awareness and understanding of varicose vein prevention.

A study conducted by among 60 school teachers in Chennai. In the pre-test, 67% had inadequate knowledge and only 3% had adequate knowledge. After the intervention, 37% demonstrated adequate knowledge and 53% had moderately adequate knowledge. This improvement trend mirrors the shift in the present study from 0% to 55.6% adequate knowledge, reinforcing the effectiveness of structured teaching programs in increasing awareness about varicose veins[8].

A study conducted a similar pre-experimental study in Gorakhpur, which found that 45% of teachers had inadequate knowledge prior to intervention and only 2% had adequate knowledge. After the intervention, 90% of participants demonstrated adequate knowledge[9]. This substantial improvement closely aligns with our findings, although the gain in the current study was slightly lower (55.6%), the pattern of improvement remains consistent.

A study conducted a descriptive study among primary school teachers in Aurangabad and reported that 76% had average knowledge, 18% had poor knowledge, and only 6% had good knowledge. These figures highlight the generally low baseline awareness among teachers, which validates the need for educational interventions as demonstrated in our study[7].

The current study also found that 98.1% of participants had no prior knowledge about varicose veins. This highlights a significant gap in preventive health education among teachers. Post-intervention improvements in responses to questions on definition, causes, risk factors, symptoms, diagnosis, and preventive strategies such as exercise, compression stockings, leg elevation, and diet indicate that the educational session was effective and comprehensive.

5. Conclusion

There was a significant lack of knowledge among school teachers regarding preventive measures of varicose veins before the intervention. The structured educational intervention significantly improved the knowledge level of the respondents, with more than half achieving adequate knowledge post-intervention. The study confirms that structured educational programs are an effective strategy to enhance awareness of occupational health risks among school teachers.

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest to be disclosed

Statement of informed consent

Informed and written consent was obtained from all individual participants included in the study.

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