

Effectiveness of a Structured Teaching Programme on Knowledge Regarding Prevention of Cervical Cancer among Women >35 Years in Selected Community Areas of Shimla, Himachal Pradesh: A Quasi-Experimental Study

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Abstract: Background: Cervical cancer remains one of the leading causes of cancer-related morbidity and mortality among women, despite being largely preventable through vaccination, timely screening, and early management of precancerous lesions. The burden is disproportionately higher in low- and middle-income countries, where inadequate awareness, poor utilization of screening services, and delayed health-seeking behaviour continue to hinder effective prevention. Women above 35 years constitute an important target population because persistent Human Papillomavirus (HPV) infection, prolonged exposure to behavioural risk factors, and limited participation in routine screening substantially increase their susceptibility to cervical malignancy. Improving knowledge through structured educational interventions represents an important nursing strategy to promote informed decision-making and encourage preventive health practices at the community level. Aim: To evaluate the effectiveness of a Structured Teaching Programme on knowledge regarding prevention of cervical cancer among women aged more than 35 years residing in selected community areas of Shimla, Himachal Pradesh. Methods: A quantitative research approach using a one-group quasi-experimental pre-test–post-test design was adopted. The study included 70 women aged more than 35 years selected through probability simple random sampling from selected community areas of Shimla, Himachal Pradesh. Baseline knowledge was assessed using a validated structured knowledge questionnaire developed following an extensive review of literature and expert validation. Following the pre-test, participants received a Structured Teaching Programme focusing on risk factors, warning signs, Human Papillomavirus infection, screening methods, HPV vaccination, lifestyle modification, and early diagnosis of cervical cancer. Post-test assessment was conducted after the educational intervention using the same questionnaire. Descriptive statistics including frequency, percentage, mean, standard deviation and inferential statistics using the paired t-test were employed to determine the effectiveness of the intervention. Results: Before the intervention, most participants demonstrated moderate knowledge regarding prevention of cervical cancer, while only a small proportion possessed adequate knowledge. Following the Structured Teaching Programme, a marked improvement in knowledge was observed, with the majority of women achieving adequate knowledge and none remaining in the inadequate category. The mean knowledge score increased significantly from 18.59 ± 4.04 (51.6%) during the pre-test to 24.67 ± 4.35 (68.5%) during the post-test, yielding a mean improvement of 6.08 points. Statistical analysis demonstrated a highly significant difference between pre-test and post-test knowledge scores ($t = 20.601$, $p < 0.001$), confirming the effectiveness of the educational intervention.

Keywords: Cervical cancer, Knowledge, Structured Teaching Programme, Women > 35 years, Cervical cancer prevention, Community health nursing, Health education

1. Introduction

Cervical cancer continues to cast a long shadow over women's health worldwide, emerging as a critical concern due to its widespread impact and the stark disparities in its prevention and management. This study focuses on women over 35 in Shimla, Himachal Pradesh, a region where geographic isolation and traditional norms further complicate efforts to combat the disease. By exploring the potential of structured teaching programs to enhance understanding and promote preventive practices, this research seeks to address a vital gap in community-based health education and contribute to reducing cervical cancer's devastating effects.

Globally, cervical cancer remains the fourth most frequently diagnosed cancer among women. Although advances in screening programmes and HPV vaccination have resulted in

substantial reductions in incidence across many high-income countries, similar progress has not been achieved in resource-constrained settings. The majority of new cases and cervical cancer-related deaths continue to occur in developing countries where organized screening programmes are either absent or inadequately implemented. Limited awareness regarding disease risk factors, misconceptions surrounding reproductive health, inadequate access to screening facilities, and socioeconomic barriers collectively delay diagnosis and adversely affect survival outcomes.

India contributes a considerable proportion of the global cervical cancer burden. Despite the availability of effective screening methods such as Pap smear cytology, Visual Inspection with Acetic Acid (VIA), and HPV DNA testing, population-level utilization remains inadequate. Women frequently seek medical attention only after the onset of

symptoms, resulting in diagnosis at relatively advanced stages when treatment becomes more complex, expensive, and less effective. This scenario emphasizes the importance of preventive education as a fundamental component of national cancer control strategies.

Women aged more than 35 years represent a particularly vulnerable population because persistent HPV infection requires several years to progress through cervical intraepithelial neoplasia before developing into invasive carcinoma. Consequently, this age group derives substantial benefit from enhanced awareness regarding risk factors, warning symptoms, routine cervical screening, and timely medical consultation. Community-based educational interventions targeting this population have demonstrated considerable potential for improving awareness and promoting preventive health behaviour.

Nurses occupy a pivotal position in cancer prevention through community education, early identification of risk factors, counselling, and promotion of evidence-based preventive practices. Structured Teaching Programmes provide standardized, scientifically validated educational content capable of improving health literacy while reducing misconceptions regarding cervical cancer. Unlike opportunistic health education, structured programmes ensure comprehensive coverage of disease causation, HPV infection, vaccination, screening recommendations, behavioural risk modification, and early recognition of symptoms.

Although several investigations have evaluated educational interventions related to cervical cancer prevention, limited evidence exists regarding their effectiveness among women above 35 years residing in community settings of Himachal Pradesh. Geographical barriers, cultural beliefs, limited access to healthcare services, and relatively low participation in organized screening programmes further justify localized research evaluating educational interventions in this population. The present study was therefore undertaken to determine whether a Structured Teaching Programme could significantly improve knowledge regarding prevention of cervical cancer among women aged more than 35 years residing in selected community areas of Shimla, Himachal Pradesh. The findings are expected to strengthen evidence supporting community-based nursing interventions aimed at reducing the burden of preventable cervical cancer.

2. Objectives

- 1) To assess the baseline knowledge regarding prevention of cervical cancer among women aged more than 35 years before administration of the Structured Teaching Programme.
- 2) To evaluate the effectiveness of a Structured Teaching Programme on knowledge regarding prevention of cervical cancer among women aged more than 35 years residing in selected community areas of Shimla, Himachal Pradesh.

3. Methodology

Quantitative research approach using a **one-group quasi-experimental pre-test-post-test design** to evaluate the

effectiveness was adopted to accomplish the main objectives of the study. The study was conducted among women >35 years at village baragaon of Shimla district, Himachal Pradesh, India. sample size was 70 women, selected by using simple random sampling technique (probability sampling technique). These communities were selected because they represented women who could benefit from structured health education regarding cervical cancer prevention while also reflecting the typical socio-demographic characteristics of women residing in semi-urban and rural Himalayan communities.

4. Results

4.1 Socio-demographic Characteristics

Seventy women above 35 years participated in the study. Participants represented diverse educational, occupational, marital, and socioeconomic backgrounds. The majority belonged to Hindu families and resided in nuclear households. Most women reported having previously heard about cervical cancer through healthcare workers or mass media; however, detailed understanding regarding risk factors, screening recommendations, and preventive measures remained inadequate before the intervention, indicating the necessity for structured educational programmes.

4.2 Baseline Knowledge Regarding Prevention of Cervical Cancer

Pre-intervention assessment demonstrated that knowledge regarding prevention of cervical cancer was generally unsatisfactory.

The majority of women (87.1%) demonstrated **moderate knowledge**, while 12.9% had **inadequate knowledge**. None of the participants demonstrated adequate knowledge before the educational intervention.

These findings indicate that although many women possessed partial awareness regarding cervical cancer, important deficiencies existed in understanding HPV infection, screening recommendations, vaccination, early warning signs, and preventive strategies.

Table 1: Distribution of Participants According to Pre-test and Post-test Knowledge Levels (N = 70)

Knowledge Level	Pre-test n (%)	Post-test n (%)
Adequate	0 (0.0)	44 (62.9)
Moderate	61 (87.1)	26 (37.1)
Inadequate	9 (12.9)	0 (0.0)

The findings demonstrate a substantial shift in knowledge distribution following implementation of the Structured Teaching Programme. None of the participants remained in the inadequate category after the intervention, while nearly two-thirds achieved adequate knowledge.

4.3 Comparison of Mean Knowledge Scores

Comparison of mean knowledge scores further confirmed the effectiveness of the educational intervention.

Table 2: Comparison of Mean Pre-test and Post-test Knowledge Scores (N = 70)

Variable	Mean	SD	Mean %
Pre-test Knowledge	18.59	4.038	51.60
Post-test Knowledge	24.67	4.350	68.50
Mean Difference	6.08	—	16.90

Participants demonstrated an average improvement of **6.08 points** following administration of the Structured Teaching Programme, indicating a clinically meaningful increase in knowledge regarding prevention of cervical cancer.

4.4 Effectiveness of the Structured Teaching Programme

The effectiveness of the educational intervention was evaluated using the paired t-test.

Table 3: Comparison of Pre-test and Post-test Knowledge Scores Using Paired t-Test (N = 70)

Variable	Mean Difference	Paired t	df	p-value
Knowledge Score	6.08	20.601	69	<0.001

The calculated paired t value (**20.601**) was considerably higher than the critical value at 69 degrees of freedom and demonstrated **high statistical significance (p < 0.001)**.

These findings indicate that the observed improvement in knowledge was highly unlikely to have occurred by chance and strongly supports the effectiveness of the Structured Teaching Programme in improving knowledge regarding prevention of cervical cancer among women aged more than 35 years.

5. Discussion

The present study evaluated the effectiveness of a Structured Teaching Programme (STP) in improving knowledge regarding prevention of cervical cancer among women aged more than 35 years residing in selected community areas of Shimla, Himachal Pradesh. The findings demonstrated a statistically and clinically significant improvement in knowledge following the educational intervention. The results indicate that structured, evidence-based health education delivered at the community level is an effective nursing strategy for increasing awareness regarding cervical cancer prevention among middle-aged women.

The baseline assessment revealed that knowledge regarding prevention of cervical cancer was suboptimal among the study participants. Before implementation of the Structured Teaching Programme, **87.1%** of women demonstrated moderate knowledge, **12.9%** had inadequate knowledge, and none achieved an adequate level of knowledge. Although many participants had previously heard about cervical cancer through health workers, relatives, or mass media, substantial deficiencies remained regarding the causative role of Human Papillomavirus (HPV), recommended screening intervals, HPV vaccination, warning symptoms, and available preventive measures. These findings suggest that passive exposure to health information alone is insufficient to produce comprehensive understanding capable of influencing preventive health behaviour.

The present findings are consistent with those reported by **Kar et al. (2025)**, who evaluated the effectiveness of a Structured Teaching Programme among women in Odisha. Their study demonstrated a significant increase in knowledge scores following the educational intervention, with the mean score increasing from **11.30 ± 4.65** before teaching to **23.08 ± 4.07** after teaching ($t = 17.767$, $p < 0.001$). Both studies support the conclusion that systematic educational interventions substantially improve women's understanding regarding cervical cancer prevention irrespective of geographical location or educational background.

Comparable findings were reported by **Farheen Nazeer and Komila Singh (2024)** among menopausal women in rural Uttar Pradesh. Their structured educational programme produced highly significant improvement in knowledge following intervention, demonstrating that appropriately designed health education can effectively address existing knowledge gaps among middle-aged women living in rural communities. Similar improvements observed in the present study reinforce the value of community-based nursing education for cervical cancer prevention.

The results also agree with the investigation conducted by **Debnath et al. (2024)** among female college students in West Bengal. Although their participants belonged to a younger age group, health education significantly increased knowledge scores compared with the control group, confirming that educational interventions remain effective across different female populations. While younger women primarily benefit through improved awareness regarding HPV vaccination, women above 35 years derive additional benefit through increased understanding of cervical screening and early detection strategies.

Similar observations were reported by **Gnanadhinahari and Sheema (2023)**, who demonstrated a significant improvement in knowledge regarding cervical cancer among women following a Structured Teaching Programme. Their findings indicate that educational interventions facilitate improved understanding of disease causation, risk factors, and preventive measures, findings that closely parallel the outcomes observed in the present investigation.

The findings of the present study are further supported by **Thakuria (2023)**, who evaluated a Structured Teaching Programme among higher secondary school students in Assam. Although the study population differed considerably in age, the educational intervention produced a statistically significant increase in knowledge ($t = 43.35$, $p < 0.05$). The consistency of positive outcomes across adolescent girls, college students, reproductive-age women, menopausal women, and women above 35 years suggests that structured educational programmes remain universally effective when content is appropriately tailored to the target population.

International evidence also supports the present findings. **Mili et al. (2025)** conducted a quasi-experimental study among 400 rural women in Bangladesh and demonstrated significant improvements in awareness regarding cervical cancer, HPV vaccination, and cervical cancer screening after implementation of a structured health education programme. Particularly noteworthy was the increase in awareness

regarding HPV vaccination from **14.8%** before intervention to **98.3%** after intervention. These findings indicate that educational interventions can rapidly improve knowledge even in resource-limited rural settings that share socioeconomic characteristics with many Indian communities.

Further support is provided by the systematic review and meta-analysis conducted by **Zhang et al. (2022)**, which analysed educational interventions designed to improve cervical cancer screening among rural women. The review concluded that community-based educational programmes delivered by healthcare professionals consistently increased knowledge and significantly improved willingness to participate in cervical cancer screening. Importantly, theory-based interventions demonstrated greater effectiveness than routine health education, emphasizing the importance of structured and scientifically developed teaching programmes similar to the intervention used in the present study.

The present findings are also consistent with those reported by **Sonawane and Mendagudli (2020)**, who demonstrated significant improvement in knowledge regarding cervical cancer prevention following implementation of a Structured Teaching Programme among women of reproductive age. Similarly, **Archana (2019)** observed marked improvement in knowledge among adolescent girls following educational intervention, while **Prakasam and Choudhary (2019)** reported substantial improvement in nursing students' knowledge regarding HPV vaccination after structured teaching. Collectively, these investigations provide strong evidence that educational interventions consistently improve knowledge regardless of educational level, age group, or geographic setting.

Although the present study demonstrated highly significant improvement following the intervention, the baseline findings also deserve careful consideration. None of the participants possessed adequate knowledge before the Structured Teaching Programme despite cervical cancer being one of the most preventable malignancies affecting women. This observation reflects continuing deficiencies in community awareness programmes and suggests that opportunistic counselling provided during routine healthcare encounters may not be sufficiently comprehensive. Similar deficiencies have been reported in several Indian studies, where awareness regarding HPV infection, vaccination, and screening remains unsatisfactory despite increasing availability of preventive services.

From a public health perspective, these findings have important implications. Cervical cancer prevention depends heavily upon informed participation in screening programmes and timely healthcare utilization. Women who understand the relationship between persistent HPV infection, cervical precancerous lesions, and invasive cancer are more likely to participate in screening, seek medical advice promptly when symptoms occur, and encourage preventive healthcare among family members. Consequently, improving knowledge has benefits extending beyond the individual participant to the wider community.

From a nursing perspective, the present findings reinforce the central role of community health nurses in cancer prevention. Structured educational programmes represent cost-effective, easily reproducible interventions that can be integrated into routine outreach activities conducted through Health and Wellness Centres, primary healthcare facilities, Village Health and Nutrition Days, women's self-help groups, and community outreach clinics. Unlike expensive technological interventions, structured health education requires relatively limited resources while producing measurable improvements in health literacy.

The magnitude of improvement observed in the present study is particularly encouraging because the educational intervention consisted of a single Structured Teaching Programme followed by post-intervention assessment. It is reasonable to anticipate that periodic reinforcement sessions, audiovisual educational materials, community awareness campaigns, and integration of cervical cancer education into routine maternal and reproductive health services may produce even greater long-term retention of knowledge and potentially improve participation in cervical cancer screening programmes.

Overall, the present investigation provides strong evidence that a Structured Teaching Programme is an effective educational strategy for improving knowledge regarding prevention of cervical cancer among women aged more than 35 years. The findings are consistent with contemporary national and international literature and further strengthen existing evidence supporting nurse-led community education as an essential component of cervical cancer prevention programmes. Expanding similar educational interventions within community health services may contribute substantially toward achieving national and global goals for reducing cervical cancer incidence, promoting early detection, and ultimately decreasing cervical cancer-related mortality among Indian women.

6. Strengths, Limitations, Nursing Implications, Conclusion and Future Recommendations

6.1 Strengths of the Study

The present investigation possesses several methodological strengths that enhance the credibility and applicability of its findings. A quasi-experimental pre-test–post-test design enabled objective evaluation of changes in participants' knowledge following the Structured Teaching Programme. Selection of participants through probability simple random sampling minimized selection bias and improved the representativeness of the study population. The educational intervention was developed following an extensive review of current literature and expert validation, ensuring scientific accuracy and content validity.

The study specifically targeted women aged more than 35 years, an age group that represents one of the highest-risk populations for cervical cancer because of prolonged exposure to persistent Human Papillomavirus infection and increasing incidence of precancerous cervical lesions.

Focusing on this vulnerable population enhances the practical relevance of the findings for community health nursing.

Furthermore, standardized administration of both the pre-test and post-test questionnaire under similar conditions reduced measurement variability. The statistically significant improvement observed following the intervention indicates that the educational programme itself was responsible for the observed increase in knowledge rather than random variation.

7. Limitations

Despite producing statistically significant findings, several limitations should be considered while interpreting the results.

The study employed a one-group quasi-experimental design without a parallel control group. Consequently, although a significant improvement in knowledge was observed following the intervention, external influences occurring during the study period cannot be completely excluded.

The investigation was confined to selected community areas of Shimla district, Himachal Pradesh. Therefore, caution should be exercised while generalizing the findings to women residing in urban metropolitan regions or culturally different populations.

Knowledge retention was evaluated only during the immediate post-intervention period. The study did not determine whether the improvement in knowledge was sustained over several months. Longitudinal follow-up could provide valuable information regarding long-term retention of educational outcomes.

The study assessed knowledge using a structured questionnaire. Although the instrument demonstrated satisfactory validity and reliability, questionnaire-based assessment cannot completely eliminate response bias or socially desirable responses.

Finally, the present manuscript specifically evaluated knowledge regarding prevention of cervical cancer. Actual behavioural outcomes such as participation in cervical cancer screening, HPV vaccination uptake, or healthcare-seeking behaviour were beyond the scope of this publication and therefore require further investigation.

8. Nursing Implications

1) Nursing Practice

The findings emphasize that nurses are uniquely positioned to improve women's awareness regarding cervical cancer prevention through structured educational interventions. Community Health Nurses, Auxiliary Nurse Midwives (ANMs), Accredited Social Health Activists (ASHAs), and Primary Health Centre personnel should integrate cervical cancer education into routine maternal and reproductive health services.

Structured Teaching Programmes similar to the present intervention can be incorporated into regular health education

sessions conducted during Village Health and Nutrition Days, women's health clinics, and community outreach programmes.

2) Nursing Education

Nursing curricula should continue to strengthen competencies related to cervical cancer prevention, HPV vaccination, screening recommendations, and communication strategies for community education. Student nurses should receive practical training in planning and implementing structured educational interventions targeting high-risk populations.

3) Nursing Administration

Healthcare administrators should encourage periodic community awareness programmes focusing on cervical cancer prevention. Development of standardized educational modules, audiovisual teaching aids, and culturally appropriate information materials may improve the consistency and effectiveness of health education delivered by nursing personnel.

Administrators should also facilitate collaboration between oncology services, community health centres, and primary healthcare institutions to strengthen preventive cancer education.

4) Nursing Research

The present findings provide a foundation for future research evaluating larger community populations using randomized controlled designs. Future investigations should also determine whether improvements in knowledge translate into measurable increases in cervical cancer screening uptake, HPV vaccination acceptance, early diagnosis, and reduction in disease burden.

Research evaluating digital health education, mobile health applications, telehealth counselling, and repeated reinforcement sessions may further strengthen evidence regarding effective community-based cervical cancer prevention strategies.

9. Conclusion

Cervical cancer remains one of the most preventable malignancies affecting women, yet inadequate awareness continues to limit the utilization of effective preventive measures such as HPV vaccination and routine cervical screening. The present study demonstrated that women aged more than 35 years possessed insufficient baseline knowledge regarding prevention of cervical cancer despite previous exposure to general health information.

Implementation of a Structured Teaching Programme resulted in a statistically highly significant improvement in participants' knowledge. The increase in mean knowledge score from 18.59 ± 4.038 before the intervention to 24.67 ± 4.350 after the intervention, together with the highly significant paired t value (20.601 , $p < 0.001$), confirms that structured educational intervention substantially enhanced participants' understanding regarding cervical cancer prevention. These findings indicate that systematic, evidence-based educational programmes are considerably more

effective than routine informal health education for improving knowledge among community women.

From a public health perspective, improved knowledge constitutes the first and most essential step toward increasing participation in cervical cancer screening programmes, promoting early recognition of warning symptoms, encouraging timely healthcare utilization, and ultimately reducing cervical cancer-related morbidity and mortality. Although knowledge alone does not guarantee behavioural change, it establishes the cognitive foundation required for informed health-related decision-making.

The findings reinforce the critical role of nursing professionals in community-based cancer prevention. Through structured educational interventions, nurses can significantly contribute to national efforts aimed at improving women's awareness regarding cervical cancer and strengthening preventive healthcare services. Integration of Structured Teaching Programmes into routine community health activities may therefore represent a practical, low-cost, and sustainable strategy for reducing the burden of cervical cancer among Indian women.

Overall, the present study provides robust evidence that a Structured Teaching Programme is an effective nursing intervention for improving knowledge regarding prevention of cervical cancer among women aged more than 35 years residing in community settings. Wider implementation of similar educational programmes through primary healthcare systems has the potential to strengthen cervical cancer prevention initiatives and contribute meaningfully toward achieving national and global cervical cancer elimination goals.

10. Recommendations

Based on the findings of the present study, the following recommendations are proposed:

- 1) Similar studies should be conducted using randomized controlled trial designs to provide stronger evidence regarding the effectiveness of Structured Teaching Programmes.
- 2) Future research should include larger sample sizes drawn from multiple districts and states to improve generalizability.
- 3) Long-term follow-up studies should be undertaken to evaluate retention of knowledge six months and one year after the educational intervention.
- 4) Future investigations should assess whether improved knowledge results in increased participation in cervical cancer screening programmes, HPV vaccination, and early healthcare-seeking behaviour.
- 5) Comparative studies evaluating different educational strategies- including multimedia interventions, mobile health applications, peer education, and telehealth counselling- should be conducted to identify the most effective approaches for community education.
- 6) Integration of structured cervical cancer education into routine reproductive health services should be evaluated at the district and state levels to determine feasibility, cost-effectiveness, and sustainability.

- 7) Similar educational interventions should be implemented among younger women, adolescent girls, spouses, and family caregivers to improve community-wide awareness regarding cervical cancer prevention.
- 8) Future multicentric studies should evaluate the influence of socioeconomic status, educational level, health literacy, and cultural beliefs on knowledge acquisition and long-term behavioural outcomes following structured educational interventions.