Original Article

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# Effectiveness of Educational Intervention Regarding Cervical Cancer among Female Teachers in Government Schools, Jhapa

**Asmita Thapa[1*], Muna Rana Thapa[2], Gayetri Darshandhari Kapali[2]**

[1] Hospital Nursing Inspector, Gaurigunj Rural Municipality, Jhapa, Nepal

[2] Women's Health and Development, Maharajgunj Nursing Campus, IOM, TU, Kathmandu

[*]**Corresponding Author**: asmitathapa2049@gmail.com

## ABSTRACT

**Introduction:** Cervical cancer is the leading cause of cancer mortality among women in developing countries. Educational interventions on cervical cancer can decrease the resultant morbidity and mortality. Increasing knowledge on teachers can lead to higher rates of cervical screening and vaccination, both personally and through advocacy. Female teachers not only serve as educators but also act as community influencers and role models for students and other women in society. The aim of this study was to find out the effectiveness of educational intervention regarding knowledge on cervical cancer among female teachers in government schools.

**Methods:** Pre-experimental one group pretest-post test design was carried out on 105 female teachers from government schools of Gaurigunj rural municipality, Jhapa, Nepal by using non-probability purposive sampling. Pretest knowledge was assessed by using structured self-administered questionnaire. The educational intervention package was developed from literature review and guidelines. After four weeks, post test was conducted on the same participants using same instrument used in pretest. Descriptive and inferential statistics; wilcoxon signed rank test was computed for p-value.

**Results:** This study revealed that more than two third (69.5%) of the respondents had poor knowledge in the pre-intervention phase and almost all (92.4%) of the respondents had good knowledge in the post-intervention phase. There was a significant improvement in median score and range from 41.86 (34.88-51.16) to 88.37 (86.05-90.70) respectively ($p<0.001$).

**Conclusion:** Educational intervention on cervical cancer significantly enhanced the knowledge score of female teachers. Hence, it is recommended that nurses initiate such programs to provide appropriate cervical cancer information to motivate teachers and educate their students and guardians to recommend health behavior for cervical cancer prevention.

**Keywords:** Cervical cancer, educational intervention, knowledge, teachers

## INTRODUCTION

Globally, cervical cancer rank as the fourth most common malignancy among women with an anticipated 604,000 new cases in 2020. Cervical cancer is the leading cancer and the major cause of cancer mortality in women in developing nations.[1] In Nepal, cervical cancer is the first most common malignancy in women. There are 11.4 million women in Nepal who are 15 years of age or older and at risk of having cervical cancer.[2] It was anticipated that without any intervention, total 170,600 women in Nepal will die from cervical cancer by 2070 and 318,855 by 2120.[3]

Before cancer forms in the cervix, cells in the cervix undergo dysplasia. If they are not destroyed or removed, the abnormal cells at advance time

become cancerous and spread deeper into the cervix and surrounding areas.[4] More than 95 percent of cervical cancer is linked to infection with high-risk human papillomavirus (HPV).[5] All women are at risk for cervical cancer. HPV is so prevalent that most people get it at some time in their lives.[6]

Globally, female teachers play a pivotal role in the education sector, particularly in primary and secondary schools. According to UNESCO, women constitute nearly 94% of primary school teachers **in some countries and more than** 50% globally. **This trend is** significant because it positions female teachers not only as educators but also as community influencers and role models for both students and other women in society. Their educational background often allows them to be more receptive to health-related information and to serve as effective channels for health promotion.

The study conducted at Saudi Arabia concluded that interventions to increase knowledge on cervical cancer are essential and additional research is needed to understand and assess the effectiveness of different programme to increase uptake of cervical cancer screening.[7] Study conducted in Nepal concluded that teachers' awareness and knowledge on cervical cancer and vaccination was poor.[8]

## METHODS

Pre-experimental one group pretest-post test design based on quantitative approach was carried out on 105 female teachers from all the 30 government schools of Gaurigunj rural municipality, Jhapa, Nepal by using non-probability purposive sampling. Total enumeration sampling technique was used to give full statistical coverage because the population size was small and the entire population could be surveyed.

A structured self-administered questionnaire developed from a literature review and consultation with cervical cancer experts was used as per the objectives of the study. The instrument was translated into Nepali language and then back translated back into English language with help of bilingual translator holding a Master's degree in respective fields and have translated numerous documents and research papers. Pretesting was done in similar group and setting prior to data collection.

The questionnaire consists of two parts- Part I- Structured questionnaire of 7 items to assess socio demographic information. Part II- It consists of 20 multiple choice questions (MCQ) and multiple response questions (MRQ) related to knowledge regarding cervical cancer. Scoring for Knowledge- The answer was evaluated using answer keys prepared by researcher. For each correct response score 1 and for incorrect response score 0 was given. The obtained score was converted into percentage. The total possible score was 0-43. Overall adequacy of knowledge was graded according to following criteria; poor knowledge :< 50% (< 22 score),moderate knowledge: 50-75% (22-32 score),and good knowledge:> 75% (32-43 score).

### Educational Intervention Package

The educational intervention package on cervical cancer was developed on the basis of the literature review, subject expert consultations and national and international guidelines; WHO Guideline for Screening and Treatment of Cervical pre-cancer lesions for Cervical Cancer Prevention, 2022, American Cancer Society Guideline for Human Papillomavirus Vaccine, 2020, HPV Vaccination Recommendations by Centers for Disease Control and Prevention, 2021, Reference Manual, Facilitator's Guide and Trainee's Guide on Cervical Cancer Screening and Prevention in Nepal, 2015 and National Guidelines on Cervical Cancer Screening and Prevention in Nepal, 2078.

For the content validity assessment of the manual, a total of six experts were involved. The content validity of the instrument was established on the basis of extensive literature review, consultation with research advisor and subject experts. Item-Level Content Validity Index (I-CVI) of each individual item was measured using a 4-point scale.

The Scale-Level Content Validity Index (S-CVI): CVI of overall scale 0.9 was obtained.

Data collection was done in month of August to September. Ethical approval was obtained from Institutional Review Committee of IOM, Tribhuvan University. Written and verbal informed consent was obtained from the respondents. Confidentiality was maintained by assigning code number rather than other identification. The educational intervention was given to three groups, each group with 35 participants, total 3 sessions- each session lasting about 45 minutes by using interactive lecture and discussion method with LCD, charts and pamphlets. Meeting hall of Gaurigunj Rural Municipality was used for the intervention program by taking permission with municipality officer. Post test was done after four weeks of intervention to evaluate effectiveness using same instrument of pretest. For the benefits of respondents, screening test via Visual Inspection with Acetic Acid (VIA) for the eligible and willing teachers were done in the post test day with the collaboration of health coordinator and facilitator of the rural municipality.

The obtained data were entered in statistical package for social science (SPSS) version 16 and analyzed according to the objectives and hypothesis of the study by using descriptive statistics (frequency, percentage, mean, standard deviation, median and quartiles) and inferential statistics (Shapiro Wilk test and Wilcoxon Signed Rank Test).

## RESULTS

Nearly half (49.5%) of respondents belonged to the age group of 31-40 years with mean age 36.90 ±7.699 SD years. There were 48.6 % Janajati, 93.3 % followed Hinduism, 45.7% had completed bachelor degree, 5.7% respondents' major teaching subject was health. The mean age of marriage was 22.949 with SD ± 3.102 years and 57.3% of married respondents had 2 children (Table 1).

**Table 1: Socio-demographic Characteristics of Respondents (n=105)**

| Characteristics | Number | Percentage |
|---|---|---|
| **Age (in years)** | | |
| <30 | 24 | 22.9 |
| 31-40 | 52 | 49.5 |
| 41-50 | 23 | 21.9 |
| 51-60 | 6 | 5.7 |
| *Mean Age ± SD = (36.90 ± 7.699) yrs. Min = 24 yrs, Max = 57 yrs* | | |
| **Ethnicity** | | |
| Brahmin/Chhetri | 39 | 37.1 |
| Janajati | 51 | 48.6 |
| Madhesi | 11 | 10.5 |
| Dalit | 4 | 3.8 |
| **Religion** | | |
| Hinduism | 98 | 93.3 |
| Christianity | 3 | 2.9 |
| Others * | 4 | 3.8 |
| **Education** | | |
| Higher Secondary Level | 48 | 45.7 |
| Bachelors Level | 48 | 45.7 |
| Master Level | 9 | 8.6 |
| **Major Teaching Subject** | | |
| Multiple Subjects (more than one) | 49 | 46.7 |
| Nepali | 33 | 31.4 |
| Mathematics | 13 | 12.4 |
| Health | 6 | 5.7 |
| Science | 4 | 3.8 |
| **Marital Status** | | |
| Married | 99 | 94.3 |
| Unmarried | 6 | 5.7 |
| **Age of Marriage (n=99)** | | |
| < 20 | 8 | 8.1 |
| 20 – 24 | 62 | 62.6 |
| ≥25 | 29 | 29.3 |
| *Mean Age of Marriage ± SD = (22.949 ± 3.102) yrs. Min = 18 yrs, Max = 30 yrs* | | |
| **Number of Children (n=89)** | | |
| 1 | 28 | 31.5 |
| 2 | 51 | 57.3 |
| 3 | 10 | 11.23 |

** Buddhism. Kirat, Islam*

The knowledge score of the respondents on general information, risk factors, time taken to develop cervical cancer, sign and symptoms, preventive measures, screening test, HPV Vaccine and common treatment of precancerous cervical cancer lesion was significantly changed after the intervention. There was statistically significant difference on knowledge among female teachers before and after educational intervention at 5% level of significance (p<.05) [Table 2].

**Table 2: Differences on Pre and Post intervention Knowledge on Various Variables of Cervical Cancer (n=105)**

| Variables | Pre-intervention | Post-intervention | Maximum possible score | p value |
|---|---|---|---|---|
| | Median (Q1, Q3) | Median (Q1, Q3) | | |
| General information | 3(2,4) | 5(4,5) | 5 | <.001 |
| Risk factors | 3(1,5) | 8(7,8) | 8 | <.001 |
| Sign and symptoms | 2(2,3.5) | 6(5,6) | 6 | <.001 |
| Preventive Measures | 2(2,4) | 6(6,6) | 6 | <.001 |
| Screening Test | 7(5.5,9) | 13(12,14) | 15 | <.001 |
| HPV Vaccine | 0(0,1) | 1(1,1) | 1 | <.001 |
| Precancerous cervical lesion | 0(0,1) | 1(1,2) | 2 | <.001 |

*Significance level is 0.05 Wilcoxon Signed Rank –Test is computed for p-value*

The total median score and range of pre and post intervention was 41.86 (34.88-51.16) and 88.37 (86.05-90.70) respectively. Changed median score in the pretest and posttest was 46.51. Change in score was significant within the group. Null hypothesis was rejected and research hypothesis was accepted i.e. post intervention knowledge of the respondents was significantly different than pre intervention knowledge (Table 3).

**Table 3: Differences of Pre- and Post-Intervention Knowledge Score of Cervical Cancer (n=105)**

| Variables | Median Score | Range (Q1, Q3) | Change Score | p Value |
|---|---|---|---|---|
| **Pre- Intervention** | 41.86 | (33.72,51.16) | | |
| | | | 46.51 | <.001 |
| **Post-Intervention** | 88.37 | (86.05,90.70) | | |

*Significance level is <0.05 Wilcoxon Signed Rank –Test is computed for p-value*

Before Intervention, more than two third (69.5%) of the respondents had poor and less than one third (30.5%) had moderate knowledge on cervical cancer. After intervention, the knowledge was increased. Almost all (92.4%) of the respondents had good knowledge and 7.6% had moderate knowledge **(**Table 4).

Table 4: Comparison of Pre and Post Intervention Knowledge Level on Cervical Cancer (n=105)

| Knowledge level | Score category (possible score:0-43) | Pre intervention | | Post intervention | |
|---|---|---|---|---|---|
| | | Number | Percent | Number | Percent |
| Poor (< 50%) | <22 | 73 | 69.5 | - | - |
| Moderate (50-75%) | 22-32 | 32 | 30.5 | 8 | 7.6 |
| Good (>75%) | 32-43 | - | - | 97 | 92.4 |

## DISCUSSION

This study showed that before intervention, more than two third (69.5%) of the respondents had poor and less than one third (30.5%) had moderate knowledge. After intervention, the knowledge was increased. Almost all (92.4%) of the respondents had good knowledge and 7.6% had moderate knowledge. Study done in Nigeria (n=185) supports the findings which revealed 54.4% had poor, 29.73% had moderate and 15.86% had good knowledge which resulted to 3.43% poor knowledge, 24.13% good knowledge and 72.43% very good knowledge after the intervention .[9] The significant increase in knowledge observed in both studies can be attributed to the structured, targeted educational approach that effectively addressed knowledge gaps through clear, accessible information. Additionally, the use of pre-and post-intervention assessments allowed for a within-group comparison, effectively capturing the magnitude of change in knowledge due to the intervention.

Regarding the comparison of pre and post intervention knowledge score, the findings of the study reveals that the total median score and range was 41.86 (34.88-51.16) and 88.37 (86.05-90.70) respectively. There was statistically significant difference between pre and post intervention. Wilcoxon signed rank test was computed for p-value. The p-value was <.001. There was statistically significant difference at 5% level of significance (p<.05). This finding is supported by the study of Nigeria where the pre and posttest differences in adherence score was significant at p value <.05.[9]

Concerning the meaning of cervical cancer, only one fifth (20.0%) of the respondents stated the correct meaning of cervical cancer before intervention. After intervention the correct response was expanded to 96.2%. This finding is supported by the study conducted at Tanta Egypt to find the effectiveness of teaching program where knowledge of meaning of cervical cancer raised from 48.8% to 81.5% after the intervention.[10] The notable increase in both studies can be attributed to the use of educational materials and repeated reinforcement of key concepts.

Before intervention, 35.2% mentioned the correct answer of most common causative organism of cervical cancer as Human Papilloma Virus whereas after intervention, the correct response was expanded to more than 85.7%. In pre intervention, 67.6% of the respondents answered that the causative organism of cervical cancer spreads through sexual contact with the infected person followed by increment to 92.4% in post intervention. These findings underscore the critical role of educational interventions in enhancing awareness and understanding of cervical cancer and its primary cause, HPV.

Regarding the knowledge on risk factors of cervical cancer, this study reveals that the majority (62.0%) respondents answered that unprotected sexual relationship and minority (16.0%) answered low intake of fruits and vegetables prior to intervention. Similarly, after the intervention, the correct response increased to cent percent and 81.0% respectively.

This study shows that correct responses of sign and symptoms of cervical cancer ranged from 29.5% to 57.1% in the pre intervention to 88.6 % to 98.1% after the intervention. The correct answers of knowledge regarding cervical cancer prevention, ranged from 20.0% to 56.2% in the

pre intervention which significantly elevated to 90.5 % to 100% in the post intervention. This finding is consistent with the interventional study conducted at Akwa Ibom State of Nigeria at 2022 by Ijezie where the knowledge of cervical cancer preventive methods within the intervention group increased from 31.4% to 91.3% after the intervention.[9] The consistency between these studies suggests that educational interventions can significantly enhance awareness and understanding of cervical cancer prevention.

In this study, the accurate response regarding screening test of cervical cancer expanded from 63.85% to 96.2%. Before intervention, the correct responses of government service sites for cervical cancer screening in Nepal ranged from 20.3% to 28.8%. After intervention, the correct response ranges heighten by 94.3%-100%. This study revealed that respondent's knowledge regarding appropriate age for HPV vaccine after intervention increased to 92.4% from 37.1%.The findings of the interventional study conducted in Chandragiri municipality, Kathmandu Nepal showed knowledge about the appropriate age to take HPV vaccine increased to 35.5% from 8.1%.[11] The reason of low knowledge on HPV vaccine might be different due to the various occupations and educational status of Chandragiri study.

Similarly, the findings of this study showed that the time taken for precancerous stage to develop into cancer stage was raised from 44.9%to 72.4% after intervention. The correct answer for the common treatment method used in Nepal increased from 17.1% to 50.5% after the intervention. Only half, 50.5% responded correctly. This might be because teachers were new to medical treatment term.

In this study, there was significant difference in knowledge between pre and post intervention at general information, risk factors, sign and symptoms, preventive measures, screening test, HPV Vaccine and precancerous lesion at P value <.001. Similar study done in Turkey (n= 37) revealed statistically significant difference on risk factors and early diagnosis between pre and post test scores at p value<.05.[12] These findings collectively highlight the pivotal role of educational interventions in improving knowledge on cervical cancer. Given that teachers often serve as information disseminators within communities, enhancing their understanding can have a cascading effect, potentially leading to increased awareness and preventive behaviors among the broader population.

## CONCLUSION

Based on the findings of the study, it is concluded that the knowledge median score was doubled on variables of cervical cancer after the intervention. Educational package on cervical cancer significantly enhanced the knowledge score of female teachers. Hence, it is recommended that nurses lead educational initiatives can bridge the gap between healthcare services and the community, ensuring that accurate information reaches a broader audience. Organizing interactive sessions in community, schools, and healthcare facilities can facilitate knowledge dissemination. By expanding its implementation through strategic integration into school programs, active involvement of healthcare professionals, community engagement and supportive policies, the program can contribute to reduce the incidence of cervical cancer.

**Confict of Intrest:** No

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