EFFECTIVENESS OF NURSE-LED EDUCATIONAL PACKAGE (NLEP) ON KNOWLEDGE REGARDING HPV INFECTION, HPV VACCINATION AND CERVICAL CANCER AMONG RURAL WOMEN IN SELECTED AREA

Mrs. Sudha Rani*| Dr. Raja A**

** Ph.D. Scholar, Himalayan University, Itanagar, Arunachal Pradesh, India.*

** Professor, Ambika College of Nursing, Mohali, Punjab, India.*

***Principal, Unity Academy of Education, Mangalore, India.*

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ABSTRACT

Aim: *The aim of the study is to develop a Nurse-Led Educational Program (NLEP) on HPV infection, HPV vaccination and cervical cancer.*

Method: *Quantitative research approach and True experimental research design of one group pre and post-test with control group used for the present study. Cluster sampling technique was used to select the samples. The researcher developed a Nurse-Led Educational Package on HPV infection, HPV vaccination and cervical cancer. The data was collected through the structured closed ended interview among rural women.*

Result: *Descriptive and inferential statistics was used to analyze the data. In the experimental group, highest percentage of the rural women were in the age group of 31-40 years (33.33%), married (50%), no formal education (26.67%), coolie (25%), nuclear family (56.67%), residing in urban area (61.7%) and were in the income group of Rs.7500 to Rs.10000 (55%), Hindus (58.34%), income of Rs.5000 – Rs.7500 (45%), no previous knowledge (63.33%) and 15 % obtained health information through mass media. In the control group, highest percentage of the caregivers were in the age group of 31-40 years 51-60 years (41.67%), married (61.66%), Primary education (30%), coolie(41.67%), nuclear family (60%), Hindus (51.67%), income of Rs.5000 – Rs.7500 (45%), 31.67% of them had previous knowledge and 10% received health information through mass media.*

In experimental group, significance of difference between pre-test and posttest was statistically tested using paired 't' test and it was found very highly significant (t_{59}=19.14, p<0.05). There was no association between pre-test knowledge score and post-test knowledge score with demographic variables.

Interpretation and Conclusion: *The findings of the study revealed that there was highly significant increase in the knowledge of rural women regarding HPV infection, HPV vaccination and cervical cancer. Hence, it is concluded that NLEP is highly effective in improving the knowledge of rural women.*

Key Words: *Nurse-Led Educational Program (NLEP), HPV infection, HPV vaccination and cervical cancer.*

ABOUT AUTHORS:

The author Mrs. Sudha Rani is research scholar, Himalayan University, Itanagar, Arunachal Pradesh, India.

The author Dr. Raja A is Principal at Unity Academy of Education, Mangalore, India. He has published research articles in various national and International journals.

INTRODUCTION

Worldwide, Human Papilloma Virus (HPV) is the mainly widespread sexually transmitted infection; Skin-to-skin genital contact is a well-recognized mode of transmission. Most sexually active women and men will be infected at some point in their lives and some may be repeatedly infected. (**CDC, 2017**). Usually, HPV genital infections are asymptomatic and 80% of infected people occurrence spontaneous recovery within a year (**Baseman JG & Koutsky LA, 2005**). However, relentless infection with high-risk types may progress to cancer at the infection site, mainly of the genital tract, in both men and women (**WHO, 2017**). HPV infection is nearly everyone common among less than 25 years young women with a global prevalence of 11.7% among women with normal cervical cytology. (**Baseman JG & Koutsky LA, 2005**). According to the **American Academy of Paediatrics (2012**), around 15 000 women are diagnosed with cancers attributed to HPV types 16 and 18 each year in the USA.

Worldwide, nearly all cases of cervical cancer can be attributable to HPV infection, which positions as the fourth the majority common cancer among women. Almost all cases of cervical cancer are caused by HPV (**Bruni L, Barrionuevo-Rosas L, Albero G, 2017**). Worldwide, it is estimated that in 2012, the number of cervical cancer cases was to be around 530000, all of which were attributed to HPV. In addition, HPV is involved in a range of anogenital malignancies in both genders (**WHO, 2017**).

In fight against cervical cancer, it is established that in addition to screening by cytological examination, vaccination against HPV can dramatically reduce cancers caused by the virus. So, it is important to educate a women regarding virus and HPV vaccination. The aim of this study was to provide insights on the knowledge status of HPV infection in Indian society and their attitudes towards the HPV vaccine.

NEED AND SIGNIFICANCE OF THE STUDY

HPV infection is commonly found in the ano-genital tract of women with and without clinical lesions. The etiological role of HPV infection among women with cervical cancer is well-established, and there is growing evidence of its central role in other ano-genital sites. HPV is also responsible for other diseases such as recurrent juvenile respiratory papillomatosis and genital warts, both mainly caused by HPV types 6 and 11 (**Lacey CJ, 2006**).

It has been estimated that more than 80% of sexually active women will acquire at least one HPV infection by the age of 45 years (**CDC, 2017**). However, most of them will be transient infections without any clinical impact. In women, 90% of incident HPV genital infections clear within two years (**WHO, 2017**).

The majority of HPV infections are benign and transient, persistent infection is associated with the development of carcinoma cervix (**Chandana V et al, 2018**). HPV is so common that almost every person who is sexually-active will get HPV at some time in their life if they don't get the HPV vaccine (**CDC, 2017**). The peak incidence of HPV infection occurs in most populations within 5–10 years of the first sexual experience and the highest prevalence rates are seen in women aged 20–24 years. India contributes to one-fifth of the total estimated annual global incidence of 500,000 cancers, and it is the persistent HPV infection which is the most important risk factor for cervical cancer (**Dunne EF, Unger ER, Sternberg M, 2007**).

Predominantly, all types of HPV result in cervical cancer. It is the second most common cause of cancer in women worldwide. The estimated number of new cases per year 4, 93,100 and leading to approximately 2, 73,000 deaths, of which 70% occur in developing countries. Cervical cancer is the most common cancer among India women. Approximately 20,000 new cases were detected in the yrs. 2000. India's cervical cancer age standardized incidence rate (30.7 per 100,000) and age standardized mortality rate (17.4 per 100,000) are the highest in south central Asia. In the past decade an among etiologic association between infection with high risk human papilloma virus and development of cervical cancer has been established (**Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, et al.(2013) Franco EL, Duarte-Franco E, Ferenczy A, (2001)**.

Cervical cancer is the fourth most common cancer in women and seventh most common cancer among all the known group of cancers found worldwide. 528,000 new cases of cervical cancer recorded in the year 2012. Death due to cervical cancer estimated to be 266,000 worldwide. It accounts for 7.5% of all female cancer deaths. 123,000 new cases of cervical cancer with 67,000 deaths recorded in India in the year 2012 (**WHO, 2017**).

About 96,922 new cervical cancer cases are diagnosed annually in India (estimates for 2018). Cervical cancer ranks as the second leading cause of female cancer in India. Cervical cancer is the second most common female cancer in women aged 15 to 44 years in India (**ICO, 2019**).

A descriptive study was conducted by **Arunachalam D, Chandrabose SG (2019)** to assess the knowledge and attitude on human papilloma virus among adolescent girls in selected school at Puducherry. Adolescent girls were selected on the basis of convenient sampling technique. Structured teaching program were provided for 60

adolescent girls. The results found that majority of adolescent girls having inadequate knowledge (56.7%). There are 36.7% of adolescent girls having moderately adequate knowledge and only 6.6% of adolescent girls are having adequate knowledge on HPV. The majority of the girls had poor knowledge and attitude on HPV. The students need to be encouraged to engage in safe sexual practice to prevent and reduce risk of HPV infection.

Mathews S M J (2018) conducted study to assess knowledge and attitude about cervical cancer and HPV vaccines among the age group between 14 to 30 years in urban community of Maharashtra. The study adopted a quasi-experimental "one group" with 'pre-test' and 'post-test' approach with convenient sampling technique. A sample of 50 women of age group 14 to 30 years was selected. The effect of structured teaching program consisting of cervical cancer and HPV vaccine are evaluated. Pre and post-test study revealed significant differences in knowledge and attitude. In the pre-test, 44% had good knowledge and 60% agreed in the attitude. In post-test 62% had excellent knowledge and had positive attitude. The results show that there is a difference in knowledge and attitude by 18% and 2%, respectively, which shown effectiveness of structured teaching program. This increase in post-test scores suggests that education may increase knowledge of cervical cancer and HPV vaccine.

Nurses are well suited to educate women about transmission and prevention of HPV infection. Nurses can promote the common professional ideal of providing holistic care and advocacy for patients. It is critical to encourage the collaboration and creative brainstorming to develop education programs that can significantly reduce HPV infection and transmission and increase HPV vaccine uptake and series completion. Knowledge towards HPV, its vaccination and cervical cancer among Indian women is scanty. Hence, as an investigator carried out this present study in a rural area of southern India.

OBJECTIVES

1. To determine the pre-test level of knowledge and attitude of rural women on HPV infection, HPV vaccination and cervical cancer.
2. To determine the post-test level of knowledge and attitude of rural women on HPV infection, HPV vaccination and cervical cancer.
3. To evaluate the effectiveness of Nurse-Led Educational Package on HPV infection, HPV vaccination and cervical cancer in terms of gain in level of knowledge score and attitude score.
4. Find the association between demographic variables and pre-test level of knowledge and attitude among rural women on HPV infection, HPV vaccination and cervical cancer.
5. Find the relationship between Knowledge and attitude of pre and post test scores of rural women on HPV infection, HPV vaccination and cervical cancer.

HYPOTHESES

All Hypotheses will be tested for level of significance at 0.05.

1. H_1- There will be a significant difference in knowledge score of rural women between pre test and post test.
2. H_2- The mean post-test knowledge score of rural women on HPV infection, HPV vaccination and cervical cancer in the experimental group will be significantly higher than that of the control group as measured through structured knowledge questionnaire.
3. H_3- There will be a significant association between pre-test level of knowledge of rural women on their age, type of family, religion, family income, source of knowledge, any previous Knowledge.

ASSUMPTIONS

1. The rural women do have knowledge on HPV infection, HPV vaccination and cervical cancer
2. Nurse-Led Educational Package is an accepting interventional strategy which helps in improving knowledge of rural women on HPV infection, HPV vaccination and cervical cancer
3. Educating rural women through Nurse – Led Educational Package enhance the standard of living which can prevent HPV infections, promote HPV Vaccination and prevent cervical cancer.

DELIMITATION

The study is limited to rural women of selected area who are:

- Available during that time of data collection.
- able to understand Tamil

RESEARCH METHODOLOGY:

Quantitative approach and true experimental research design of pre and post-test with control group was selected to carry out the present study. The sample consists of 120 rural women who met the inclusion criteria were selected through cluster sampling technique. After an administrative permission from selected Valparai area, four villages were randomly selected. The sampling frame was done with help of village health nurse. Elements were listed and randomly assigned as experiment (n=60) and control group (n=60). Nurse-Led Educational Package (NLEP) was developed and a structured closed ended knowledge questionnaire on HPV infection, HPV vaccination and cervical cancer was used for the data collection. Reliability of the instrument was calculated by using Karl Pearson Correlation Coefficient formula and significance of correlation was tested using Spearman Brown prophesy formula. The 'r' value was 0.82 and the tool was found reliable. Pilot study was conducted and was found feasible and practicable. The main study was conducted in selected four areas of Valparai. Data was collected from 21.9.11 to 30.9.11. Pre-test was conducted using closed ended questionnaire to assess the level of knowledge .The investigator personally explained the need and importance of study to the students before data collection. Soon after pre-test the NLEP was implemented. Evaluation of post-test was conducted after 15 days of the pre-test, using the same questionnaire and by the same method as pre-test.

Ethical clearance: The ethical clearance was obtained from the Himalayan University, Itanagar, Arunachal Pradesh after the proposal submission. The written administrative permission was obtained from the village administrative officer of Valparai. Consent and willingness were established from all the subjects who met inclusion criteria.

RESULTS

In the experimental group, highest percentage of the rural women were in the age group of 31-40 years (33.33%), married (50%), formal education (26.67%), coolie (25%), nuclear family (56.67%), residing in urban area (61.7%) and were in the income group of Rs.7500 to Rs.10000 (55%), Hindus (58.34%). Highest percentages of them were in the income of Rs.5000 – Rs.7500 (45%). In the experimental group 63.33% had no previous knowledge and 15 % obtained health information through mass media. In the control group, highest percentage of the caregivers was in the age group of 31-40 years 51-60 years (41.67%), married (61.66%), primary education (30%), coolie (41.67%), nuclear family (60%), Hindus (51.67%). Highest percentage of them was in the income of Rs.5000 – Rs.7500 (45%). In the control group, 31.67% of them had previous knowledge and 10% received health information through mass media.

Table 1: Frequency and Percentage of Experimental and Control group Level of Knowledge on HPV Infection, HPV Vaccination and Cervical Cancer. N= (60+60) =120

Level of Knowledge	Experimental group				Control group			
	Pre test		Post Test		Pre test		Post test	
	f	%	f	%	f	%	f	%
Very Poor	10	16.67	0	0	13	21.67	7	11.67
Poor	45	75	0	0	42	70	48	80
Average	2	3.33	21	35	1	1.66	5	8.33
Good	3	5	31	51.67	4	6.67	0	0
Excellent	0	0	8	13.33	0	0	0	0

Table 1 show that poor knowledge was found in both experimental group 75% and control group 70% before the implementation of NLEP. In the experimental group, knowledge scores had improved after the implementation of NLEP, i.e., excellent knowledge is 13.33%, good knowledge is 51.67% and average knowledge was 35%. Further, in the control group. It was observed that in post-test 11.67% had very poor knowledge, 80% had poor knowledge and 8.33% had average knowledge. From the findings it can be interpreted that NLEP improved level of knowledge in the experimental group significantly than the control group.

Table 2: Comparison of Paired t test to assess Pre and Post-test Knowledge scores of Rural Women on HPV infections, HPV vaccination and cervical cancer in Experimental and Control group

N=60+60=120

Observation	Experimental group		Control group		t-test
	Mean	SD	Mean	SD	
Pre-test	11.08	5.48	9.91	4.59	**t=1.8179, P=0.07419**
Post-test	24.47	4.34	10.80	4.86	**t=17.04675, p=0.00001*** **
t-Test	**t=19.143, p=.00001*** **		**t=2.1036, p=.03968**		**Highly significant in Experimental group**

***** Very high significant at P_0.001**

At pre-test statistically no significant difference was found in the level of Knowledge between Experimental and Control group (t=1.8179, P=0.07419). Statistically positive significant improvement was found between experimental and control group in the Post test (t=17.04675, p=0.00001***) using student independent t-test. Hence it can be interpreted that NLEP was effective.

Chi square test was used to calculate the association. In experimental and control group, the pre and post test knowledge scores are independent of all variables that are age, marital status, education, occupation, religion , type of family, family monthly income, religion, previous knowledge source of information were non-significant.(p>0.01). Hence, null hypothesis with regard to pre and post -test knowledge scores and demographic variables are rejected.

IMPLICATIONS

The findings of the study have implication for nursing practice, nursing education and research.

Nursing Practice

Nurse is the core member in preventive action and significant personnel in educating rural women. The findings of the present study showed that NLEP was effective in improving the knowledge and attitude. The content of the NLEP will help the Nursing personnel in all areas like hospital as well as community area and clinics for teaching the rural women on HPV infection, HPV vaccination and cervical cancer. The nurse educators in the hospitals can use the NLEP may be implemented as a part of routine care to teach the family members and adolescents also can motivate them for vaccination against HPV. It provides a frame work that it helps rural women to understand about illness, develop positive attitude towards patient care, increases knowledge in taking care of patient. Thus, the NLEP should be practiced as a routine care.

Nursing Education

Considering the met and unmet needs of the rural area people, as an educator the nurse has to be encouraged in the preparation of interventional module for the adolescents and their family members. This NLEP can guide the educators to prepare modules based on their objectives. Continuing education programs for nurses can improve their competence and awareness about the importance of adherence in health care.

Nursing Research

- A longitudinal study is needed to measure the effect of NLEP overtime.
- A study can be conducted by using different instructional media for rural women and adolescents who are at risk group of sex.
- The tools developed by the researcher for this study can be used with or without modifications in different settings.
- Needs of the adolescents who are at risk of sex can be assessed and the particular aspects can be focused more and retested.

LIMITATIONS

- Informal teaching by the health care professionals could not be controlled.
- No control over the routine care and treatment.

RECOMMENDATIONS

- The study could replicate on a larger sample.
- Longer follow up period may be used in order to understand the long-term effects of NLEP.
- Need based study to be designed and different innovative methods can be developed for the rural women who are unable to read and write.
- A similar study with more sessions can be conducted.

DISCUSSION

In the experimental group the mean knowledge score of post-test was 24.47±4.34 was significantly higher than the pre-test 11.02±5.35, whereas, in control group, mean knowledge score of post-test was 10.27±3.53 was more or less similar in pre-test 9.45±3.46. The computed experimental group paired t test value (t= 19.14, p< 0.001) found highly significant compared to control group (t= 2.10, p< 0.03). The findings of the present study indicate significant improvement in knowledge among the experimental group than the control group. Hence H_{01} is rejected and H_1 is accepted. Hence, it can be concluded that NLEP is effective in terms of gain in knowledge score. The proportion which reported to have heard about HPV was low (11.6%) compared to other studies on rural women published in the Western literature. A total of 24% of women from a rural area of the southern USA reported having heard of HPV (Cates JR, Brewer NT, Fazekas KI, Mitchell CE, Smith JS., 2009). A Canadian study reported 15% had heard about HPV in a sample of combination of urban and rural populations (Sauvageau C, Duval B, Gilca V, Lavoie F, Ouakki M., 2007). Nevertheless, a recently published study of rural women in China reported even a lower rate, with only 9.3% having knowledge about HPV (Li J, Li LK, Ma JF, Wei LH, Niyazi M, Li CQ, et al.. 2009) In Australia, the first country worldwide to commence a government funded universal HPV vaccine program, a high level of HPV awareness was reported, with 51.2% of women in Victoria reported to have heard of HPV (Pitts MK, Dyson SJ, Rosenthal DA, Garland SM., 2007). A study conducted by Sharma M in India shows that a high prevalence of HPV infection in women attending the Gynaecology and Cancer OPD of a tertiary care hospital. Based on evident facts, cervical cancer is easily preventable unlike most other cancers, with effective implemented programs to diagnose and manage at early stages. Ineffective utilization of prevention services by women in the 30–60 years (i.e. high-risk age groups) could be because of various factors such as unawareness of health professionals and women about the screening test, poor availability and accessibility of screening tools, compromised quality of care provided, and cultural/ behavioral restrictions (Sharma, M., & Kapoor, C. S.,2020).

CONCLUSION

From the findings it is clear that there was improvement in knowledge through NLEP in experimental group than control group. Therefore, it is concluded that NLEP helps in increasing knowledge of rural women on HPV infection, HPV vaccination and cervical cancer. Based on the study findings, it is concluded that all subjects have poor knowledge. Hence, those health personnel in contact with rural women should consider screening them for HPV infection and motivate them for HPV vaccination and early detection of cervical cancer symptoms.

CONFLICT OF INTEREST: None

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