

A QUASI EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF AN EDUCATIONAL INTERVENTIONS ON KNOWLEDGE REGARDING CERVICAL CANCER AND HPV VACCINATION AMONG ADOLESCENT GIRLS IN SELECTED SCHOOLS OF SURAT DISTRICT

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ABSTRACT

Introduction: Cervical cancer is the second most common malignancy among women in India, marked by a high rate of mortality owing to socio-economic inequalities and a lack of screening. The main causative factor is attributed to the persistent infection with high-risk strains of Human Papillomavirus (HPV), namely types 16 and 18. Although the HPV vaccine represents a major breakthrough in the prevention of this malignancy, the level of awareness among Indian adolescent girls is shockingly low.

Objective of the Study: The main objective of this study was to evaluate the effectiveness of educational interventions (role play and booklet) on knowledge about cervical cancer and HPV vaccination among adolescent girls in selected schools of the Surat district.

Materials and Methods: A two-group pre-test and post-test design was used in this quasi-experimental study. The study was conducted on 80 adolescent girls aged 15-17 years, selected school of Surat, using a probability simple random sampling method. The data collection instrument consisted of a socio-demographic part and a 24-item self-constructed knowledge scale. The experimental group was administered a planned educational intervention through role play and an informative booklet, whereas the control group was not.

Results: In the pre-test, most participants (90% in the experimental group and 85% in the control group) had only moderate knowledge. After the intervention, 50% of the experimental group attained "Adequate" knowledge, while none in the control group attained the same. The mean score of the experimental group on knowledge significantly improved from 11.97 to 16.45. Effectiveness was proved by the paired t-test, which gave a calculated value of 11.65, significant at $p < 0.05$. Chi-square test revealed a significant relationship between knowledge in the pre-test and variables like religion and area of residence in the experimental group.

Conclusion: The conclusion of this study is that educational interventions, particularly role play and booklets, are highly effective in improving knowledge related to cervical cancer and HPV vaccination in adolescent girls. Incorporating these interventions into school health services is a crucial strategy for improving health behaviors and future acceptance of vaccination.

KEYWORDS: Cervical cancer, HPV vaccination, Adolescent girls, Educational intervention, Knowledge, Effectiveness, Surat district.

INTRODUCTION

Cervical cancer remains a major public health concern worldwide and is the fourth most common cancer among women. According to the World Health Organization, approximately 660,000 new cases and 350,000 deaths were reported globally in 2022, with nearly 90% of deaths occurring in low- and middle-income countries. Persistent infection with high-risk types of Human Papillomavirus (HPV), particularly HPV-16 and HPV-18, is the primary cause of cervical cancer.

India carries a significant burden of cervical cancer, largely due to limited awareness, inadequate screening services, and low uptake of HPV vaccination. HPV vaccination is a highly effective preventive measure and is recommended by the World Health Organization for girls aged 9–14 years before exposure to HPV infection.

Adolescent girls often have insufficient knowledge regarding cervical cancer, HPV infection, and vaccination. School-based educational interventions provide an effective strategy to improve awareness, correct misconceptions, and promote

preventive health behaviors. Therefore, the present study aimed to evaluate the effectiveness of an educational intervention on knowledge regarding cervical cancer and HPV vaccination among adolescent girls.

METHODS

A quantitative quasi-experimental two-group pre-test–post-test design was used to evaluate the effectiveness of an educational intervention on knowledge regarding cervical cancer and HPV vaccination among adolescent girls. The study was conducted at Selected school, Surat, Gujarat. A total of 80 adolescent girls aged 13–18 years were selected using simple random sampling and allocated to experimental (n=40) and control (n=40) groups.

Data were collected using a structured knowledge questionnaire consisting of demographic variables and 24 multiple-choice questions related to cervical cancer and HPV vaccination. The educational intervention included a booklet and role-play session, which was administered only to the experimental group. Content validity was established through expert review, and the tool demonstrated good reliability (Spearman–Brown coefficient = 0.82).

After obtaining institutional permission and informed consent, a pre-test was conducted for both groups. The experimental group then received the educational intervention, while the control group received no intervention. A post-test was conducted after seven days using the same questionnaire. Data were analyzed using descriptive statistics, paired t-test, independent t-test, and chi-square test, with statistical significance set at $p < 0.05$. Ethical principles of confidentiality, voluntary participation, and informed consent were strictly maintained throughout the study.

DATA ANALYSIS AND INTERPRETATION

Analysis is the process of breaking down something complex into simpler and smaller parts.

It is also defined as the process of systematically applying statistical and logical techniques to describe, summarize and compare data.⁶

According to polite, D.F., and Hungler (1999), analysis is the process of organizing and synthesizing of data in such a way that research question can be answered and hypothesis tested.⁴

The main purpose of this chapter was to organize as well as summarize the data for the purpose of an easy interpretation. Analysis is the process of breaking up the whole study into integral parts of categories. It is the process which enters into research in one from or another from the very beginning. The collected data are analyzed and interpreted in accordance with the research study objectives.

ORGANIZATION AND INTERPRETATION OF THE DATA :

Analysis and interpretation of data are based on the objectives and hypothesis.

Organization of data has been presented using tables and graphs under following headings:

Section A : Analysis and interpretation of the socio-demographic variables of adolescent girls.

Section B : Analysis and interpretation of the pre-test and post-test level of knowledge among adolescent girls.

Section C : Analysis and interpretation about the effectiveness of educational intervention on knowledge regarding cervical cancer and HPV vaccination among adolescent girls.

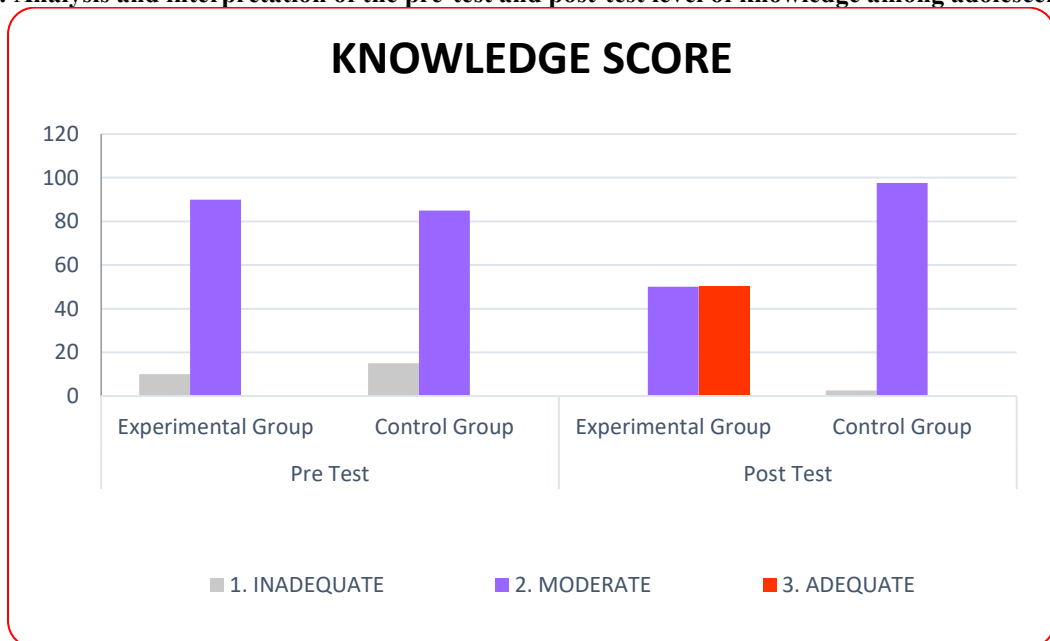
Section D : Analysis and interpretation of the association between pre-test level of knowledge with their selected socio-demographic variables among adolescent girls.

Section A: Analysis and interpretation of the socio-demographic variables of adolescent girls

| Sr. No. | Socio-demographic variables | Experimental Group | | Control Group | |
|---------|-----------------------------|--------------------|---------|---------------|---------|
| | | Frequency | Percent | Frequency | Percent |
| 1 | AGE (YEARS) | | | | |
| | A. 12-14 | 0 | 0.00 | 1 | 2.50 |
| | B. 15-17 | 26 | 65.00 | 33 | 82.50 |
| | C. 18-20 | 14 | 35.00 | 6 | 15.00 |
| 2 | EDUCATION | | | | |
| | A. SECONDARY | 7 | 17.50 | 9 | 22.50 |
| | B. HIGHER SECONDARY | 33 | 82.50 | 31 | 77.50 |
| 3 | RELIGION | | | | |
| | A. HINDU | 31 | 77.50 | 33 | 82.50 |
| | B. CHRISTIAN | 1 | 2.50 | 4 | 10.00 |
| | C. MUSLIM | 7 | 17.50 | 3 | 7.50 |
| | D. OTHER | 1 | 2.50 | 0 | 0.00 |
| 4 | AREA OF RESIDENCE | | | | |
| | A. URBAN | 16 | 40.00 | 16 | 40.00 |
| | B. SEMI URBAN | 4 | 10.00 | 8 | 20.00 |

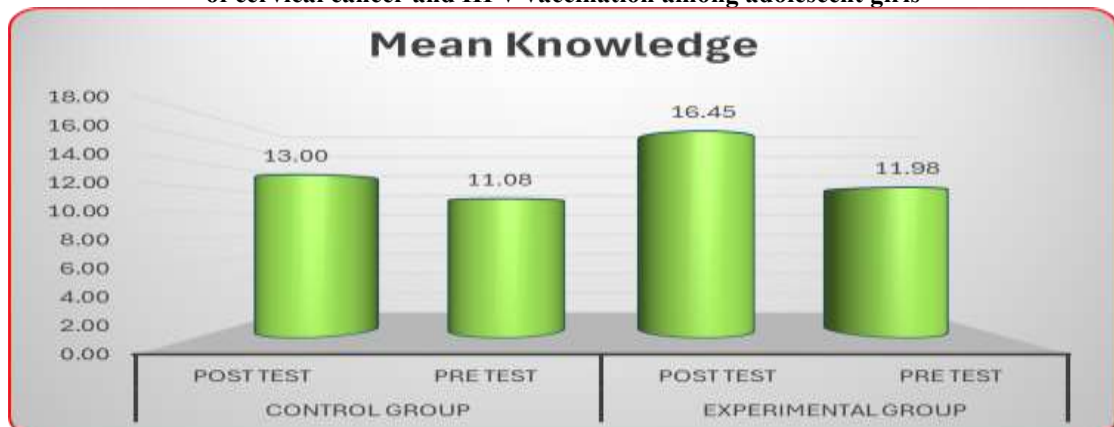
| | | | | | |
|---|--|----|-------|----|-------|
| | C. RURAL | 20 | 50.00 | 16 | 40.00 |
| 5 | TYPE OF FAMILY | | | | |
| | A. JOINT | 24 | 60.00 | 28 | 70.00 |
| | B. NUCLEAR | 16 | 40.00 | 12 | 30.00 |
| 6 | PREVIOUS KNOWLEDGE OF CERVICAL CANCER | | | | |
| | A. SOCIAL MEDIA | 4 | 10.00 | 3 | 7.50 |
| | B. FAMILY AND FRIENDS | 5 | 12.50 | 2 | 5.00 |
| | C. HEALTH CARE PERSONNEL | 19 | 47.50 | 21 | 52.50 |
| | D. OTHERS | 12 | 30.00 | 14 | 35.00 |
| 7 | PREVIOUS KNOWLEDGE OF HPV VACCINE | | | | |
| | A. SOCIAL MEDIA | 2 | 5.00 | 4 | 10.00 |
| | B. FAMILY AND FRIENDS | 5 | 12.50 | 3 | 7.50 |
| | C. HEALTH CARE PERSONNEL | 20 | 50.00 | 17 | 42.50 |
| | D. OTHERS | 13 | 32.50 | 16 | 40.00 |

Section-B: Analysis and interpretation of the pre-test and post-test level of knowledge among adolescent girls



BARGRAPH SHOWS THE PRE-TEST AND POST-TEST LEVEL OF KNOWLEDGE AMONG ADOLESCENT GIRLS.

Section C: Analysis and interpretation about the effectiveness of educational intervention regarding knowledge of cervical cancer and HPV vaccination among adolescent girls



BARGRAPH SHOWS THE MEAN OF THE PRE-TEST AND POST-TEST

Section-D: Analysis and interpretation of the association between pre-test level of knowledge with their selected socio-demographic variables among adolescent girls.

EXPERIMENTAL GROUP

TABLE, Association of pre-test level of knowledge regarding cervical cancer and HPV vaccination with socio-demographic variables in experimental group.

| Socio-demographic | | Level of Knowledge | | | Total | Chi-square value | Df | P-value | S/NS |
|---------------------------------------|--------------------------|--------------------|----|---|-------|------------------|----|---------|------|
| | | 1 | 2 | 3 | | | | | |
| Age (years) | A. 12-14 | 0 | 0 | - | 0 | 0.44 | 1 | 0.507 | NS |
| | B. 15-17 | 2 | 24 | - | 26 | | | | |
| | C. 18-20 | 2 | 12 | - | 14 | | | | |
| Total | | 4 | 36 | - | 40 | | | | |
| Education | A. Secondary | 1 | 6 | - | 7 | 0.173 | 1 | 0.677 | NS |
| | B. Higher secondary | 3 | 30 | - | 33 | | | | |
| Total | | 4 | 36 | - | 40 | | | | |
| Religion | A. Hindu | 2 | 29 | - | 31 | 9.688 | 3 | 0.022 | S |
| | B. Christian | 0 | 1 | - | 1 | | | | |
| | C. Muslim | 1 | 6 | - | 7 | | | | |
| | D. Others | 1 | 0 | - | 1 | | | | |
| Total | | 4 | 36 | - | 40 | | | | |
| Area of residence | A. Urban | 4 | 12 | - | 16 | 6.667 | 2 | 0.036 | S |
| | B. Semi urban | 0 | 4 | - | 4 | | | | |
| | C. Rural | 0 | 20 | - | 20 | | | | |
| Total | | 4 | 36 | - | 40 | | | | |
| Type of family | A. Joint | 4 | 20 | - | 24 | 2.963 | 1 | 0.085 | NS |
| | B. Nuclear | 0 | 16 | - | 16 | | | | |
| Total | | 4 | 36 | - | 40 | | | | |
| Previous knowledge of cervical cancer | A. Social media | 1 | 3 | - | 4 | 6.667 | 3 | 0.083 | NS |
| | B. Family and friends | 0 | 5 | - | 5 | | | | |
| | C. Health care personnel | 0 | 19 | - | 19 | | | | |
| | D. Others | 3 | 9 | - | 12 | | | | |
| Total | | 4 | 36 | - | 40 | | | | |
| Previous knowledge of HPV vaccine | A. Social media | 0 | 2 | - | 2 | 3.803b | 3 | 0.283 | NS |
| | B. Family and friends | 0 | 5 | - | 5 | | | | |
| | C. Health care personnel | 1 | 19 | - | 20 | | | | |
| | D. Others | 3 | 10 | - | 13 | | | | |
| Total | | 4 | 36 | - | 40 | | | | |

Table, shows that there is significant association of level of knowledge in experimental group regarding cervical cancer and HPV vaccination with religion and area of residence and no significant association of knowledge with age, education, type of family, previous knowledge regarding cervical cancer and previous knowledge regarding HPV vaccination.

CONTROL GROUP

TABLE, Association of pre-test level of knowledge regarding cervical cancer and HPV vaccination with socio-demographic variables in control group.

| | Level of Knowledge | Total | | Df | P-value | |
|--|--------------------|-------|--|----|---------|--|
|--|--------------------|-------|--|----|---------|--|

| Socio-demographic variables | | 1 | 2 | 3 | | Chi-square value | | | S/NS |
|---------------------------------------|--------------------------|---|----|---|----|------------------|---|-------|------|
| Age (years) | A. 12-14 | 1 | 0 | - | 1 | 8.152 | 2 | .017 | S |
| | B. 15-17 | 3 | 30 | - | 33 | | | | |
| | C. 18-20 | 2 | 4 | - | 6 | | | | |
| Total | | 6 | 34 | - | 40 | | | | |
| Education | A. Secondary | 2 | 7 | - | 9 | 0.475 | 1 | 0.391 | NS |
| | B. Higher secondary | 4 | 27 | - | 31 | | | | |
| Total | | 6 | 34 | - | 40 | | | | |
| Religion | A. Hindu | 6 | 27 | - | 33 | 1.497 | 2 | 0.473 | NS |
| | B. Christian | 0 | 4 | - | 4 | | | | |
| | C. Muslim | 0 | 3 | - | 3 | | | | |
| Total | | 6 | 34 | - | 40 | | | | |
| Area of residence | A. Urban | 3 | 13 | - | 16 | 1.765 | 2 | 0.414 | NS |
| | B. Semi urban | 2 | 6 | - | 8 | | | | |
| | C. Rural | 1 | 15 | - | 16 | | | | |
| Total | | 6 | 34 | - | 40 | | | | |
| Type of family | A. Joint | 3 | 25 | - | 28 | 1.345 | 1 | 0.246 | NS |
| | B. Nuclear | 3 | 9 | - | 12 | | | | |
| Total | | 6 | 34 | - | 40 | | | | |
| Previous knowledge of cervical cancer | A. Social media | 1 | 2 | - | 3 | 2.092 | 3 | 0.554 | NS |
| | B. Family and friends | 0 | 2 | - | 2 | | | | |
| | C. Health care personnel | 4 | 17 | - | 21 | | | | |
| | D. Others | 1 | 13 | - | 14 | | | | |
| Total | | 6 | 34 | - | 40 | | | | |
| Previous knowledge of HPV vaccine | A. Social media | 2 | 2 | - | 4 | 13.087 | 3 | 0.004 | S |
| | B. Family and friends | 2 | 1 | - | 3 | | | | |
| | C. Health care personnel | 2 | 15 | - | 17 | | | | |
| | D. Others | 0 | 16 | - | 16 | | | | |
| Total | | 6 | 34 | - | 40 | | | | |

Table, shows that there is significant association of knowledge in control group regarding cervical cancer and HPV vaccination with age and previous knowledge regarding HPV vaccination and no significant association with , education, religion, area of residence, type of family, previous knowledge of cervical cancer.

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