

A Quasi-experimental Research Project Designed to Evaluate the Impact of a Structured Educational Program on the Awareness of Cervical Cancer Prevention Among Adolescent Girls Attending Specific Schools in Moga, Punjab

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Abstract

A quasi-experimental research study aims to evaluate the efficacy of a structured educational program in enhancing the understanding of cervical cancer prevention among adolescent girls in specific schools located in Moga, Punjab. The knowledge score of adolescent girls in experimental group regarding prevention of cervical cancer was average (20%) and below average (80%), before imparting the structured teaching programme knowledge of adolescent girls were good (70%) and average (30%). The experimental group exhibited a noteworthy increase in their mean post-test knowledge score (22.73) compared to their mean pre-test knowledge score (14.20), indicating a significant improvement. In contrast, there was no substantial change in the mean pre-test knowledge score (13.60) and the post-test knowledge score (13.79) of the control group following the structured teaching program. The difference in mean knowledge scores between the pre-test and post-test within the experimental group was found to be statistically significant with a significance level of $p > 0.01$. As a result, the research hypothesis (H1) was validated, and the null hypothesis (H0) was disproved.

Keywords: Quasi-experimental research, adolescent girls, cervical cancer, the structured teaching program, hypothesis

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INTRODUCTION

Adolescence is a unique phase in life, typically marked by good health. It commences with the onset of normal physiological puberty and concludes when an individual's adult identity and behaviour are recognized. Adolescence represents a transitional period encompassing both physical and psychological development, generally spanning the years between puberty and legal adulthood, which typically falls within the age range of 11 to 18 years. However, it is crucial to note that this phase is characterized by heightened vulnerability, as the holistic growth and development, as well as the physical, reproductive, and psychological changes, expose adolescents to various health risks. Addressing reproductive health concerns in adolescent girls is also imperative. Ensuring proper and timely management of any health issues,

maintaining good hygiene practices, and implementing preventive measures such as vaccinations are essential components of adolescent healthcare. Inadequate menstrual hygiene practices and early sexual activity can result in reproductive tract infections with lasting health complications.

Cervical cancer is a distinct form of cancer that begins in the cells of the cervix, which is the lower segment of the uterus that links to the vagina. The majority of cervical cancer cases are linked to various strains of the sexually transmitted infection known as human papillomavirus (HPV). Normally, a woman's immune system guards against the harmful effects of HPV. Nonetheless, among a limited group of women, the virus may endure for a prolonged duration, playing a role in the formation of irregular cervical cells that can ultimately progress into cancer. Consistent screening tests and immunization against HPV infection can lower the likelihood of cervical cancer development [1–3].

NEED FOR THE STUDY

The well-being of adolescents holds significant importance when evaluating the overall quality of life for women of reproductive age. Key health-related metrics such as maternal and infant mortality rates, life expectancy, fertility rates, as well as the nutritional and reproductive health of women, are intricately linked to the health of adolescents. Furthermore, it is crucial to recognize that the health of adolescents plays a vital role in shaping the health of future generations, with its impact extending across generations.

As per the 2018 report from the American Cancer Society [4], it was projected that around 4,170 women in the United States would succumb to cervical cancer. It is worth mentioning that diagnoses of cervical pre-cancers are much more frequent than instances of invasive cervical cancer. Historically, cervical cancer was previously one of the primary factors behind cancer-related fatalities among women in the United States. This form of cancer tends to manifest during middle age and is most commonly identified in women aged 35 to 44 years, with rare instances of diagnosis in women younger than 20 years. It is important to emphasize that many older women may not be aware that the risk of developing cervical cancer still exists as they grow older. In 2018, over 15% of cervical cancer cases were detected in women aged 65 years and older. In that particular year, there were roughly 13,240 fresh diagnoses of invasive cervical cancer, which led to approximately 4,170 fatalities attributed to cervical cancer. It is important to point out that the detection of cervical pre-cancers surpasses the number of instances of invasive cervical cancer.

According to the World Health Organization's 2018 data [5], cervical cancer ranks as the 4th most commonly diagnosed cancer in women, with an estimated 570,000 new cases reported in 2018, accounting for about 6.6% of all female cancer cases. Around 90% of cervical cancer-related deaths occurred in low- and middle-income countries. A substantial reduction in the global mortality rate associated with cervical cancer could be achieved through a comprehensive strategy encompassing prevention, early detection, effective screening, and treatment programs. Notably, there are currently vaccines available that provide protection against prevalent cancer-causing strains of the human papillomavirus, significantly lowering the risk of cervical cancer.

STATEMENT OF THE PROBLEM

A quasi-experimental research project aimed at evaluating the impact of a structured educational program on adolescent girls' awareness of cervical cancer prevention in specific schools located in Moga, Punjab.

PURPOSE OF THE STUDY

The principal aim of this study was to assess and improve the comprehension of cervical cancer prevention among teenage girls.

OBJECTIVES OF THE STUDY

1. To evaluate the level of pre-test knowledge about cervical cancer prevention in adolescent girls.
2. To evaluate the level of post-test knowledge about cervical cancer prevention in adolescent girls.
3. To compare the pre-test and post-test knowledge about cervical cancer prevention in adolescent girls.
4. To investigate the correlation between knowledge and various demographic factors, including age, educational level, maternal and paternal education, religion, family structure, monthly household income, dietary habits, sources of information, and family history of cervical cancer.

HYPOTHESIS

H₁ in the experimental group, the average post-test knowledge score of adolescent girls was notably greater compared to the average pre-test knowledge score.

Rationale

The average post-test knowledge score of adolescent girls, following a structured teaching program on cervical cancer prevention, showed a significant increase compared to the average pre-test knowledge score. This difference was observed based on the structured questionnaire, with a significance level of $p < 0.05$.

Delimitations

The study was limited to adolescent girls:

1. Who were willing to participate?
2. Who were present during data collection?
3. Who were able to understand English, Punjabi?

OPERATIONAL DEFINITIONS

- *Assess*: It refers to the process used to identify the level of knowledge among adolescent girls regarding cervical cancer prevention.
- *Effectiveness*: This statement pertains to the degree to which adolescents acquired knowledge about cervical cancer prevention following the structured teaching program.
- *Structured teaching programme*: It refers to package of structured information consisting of objectives, teaching strategies and visual aids designed to provide information regarding prevention of cervical cancer.
- *Knowledge*: This refers to the factual information that adolescent girls possess about cervical cancer and how to prevent it.
- *Prevention*: This refers to the act of preventing something from occurring or coming into existence.
- *Cervical cancer*: It refers to abnormal proliferation of cells in the cervix.
- *Adolescent girls*: It refers to girls belonging to 11 to 18 years of age to attain puberty.
- *School*: It refers to institution or place where adolescent girls are getting education under the direction of teachers.

CONCEPTUAL FRAMEWORK

According to study, the individual is seen as an adaptive system that operates cohesively through the interplay of its components. This system comprises input, throughput (including processes and effectors), output, and feedback.

Inputs refer to stimuli originating from the external environment, and these stimuli can be classified into three categories: (1) focal, (2) contextual, and (3) residual. It is important to note that each of these categories can encompass stimuli from both internal and external origins.

Focal stimuli are the specific elements within a challenging situation or events that directly face the person, requiring their attention and urging them to seek relief. In the context of this study, cervical cancer serves as the focal stimulus [6–8].

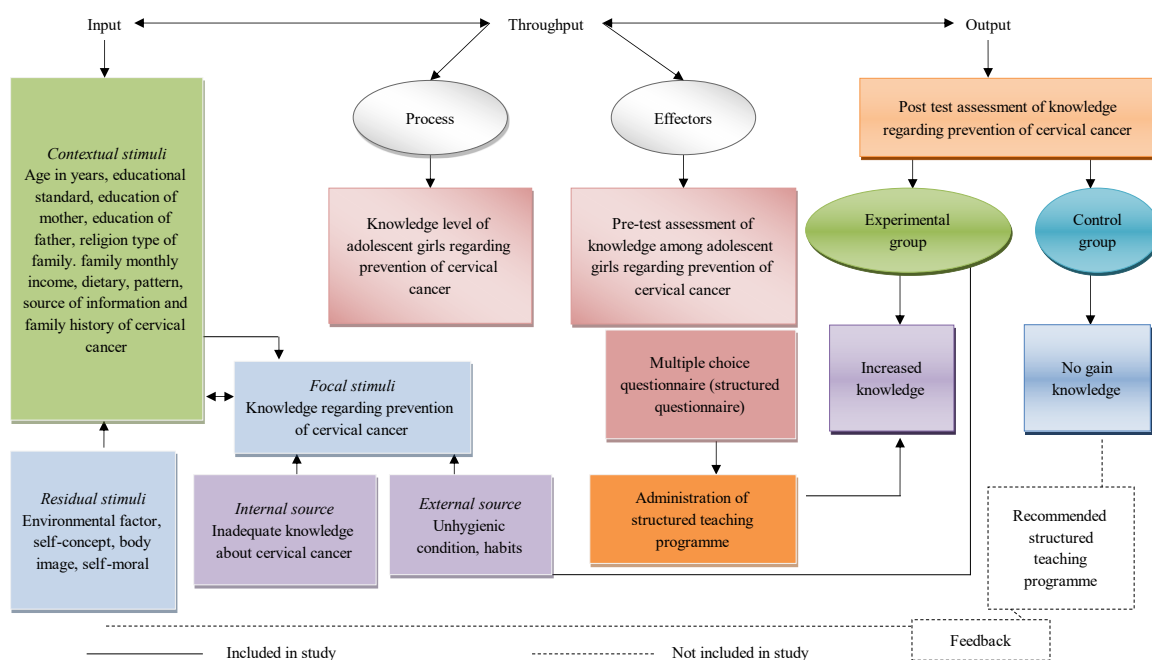


Figure 1. Modified conceptual framework based on Roy’s Adaption model (1984) Callista Roy.

Contextual stimuli encompass all the additional stimuli within the situation or around the event that enhance the impact of the focal stimuli in the study or affect all the independent variables. For example, age in year, educational standard, education of mother, education of father, type of family, family monthly income, religion, dietary pattern, source of information, family history of cervical cancer (Figure 1).

The residual stimuli are those general, vague, ambiguous factors that may be affecting a person, but their influence cannot be immediately ascertained. After residual stimuli are validated, they become either focal or contextual stimuli (e.g. interest, environment self-concept self-moral body image trait). More important is to understand which stimuli are influencing the situation and what individual factors determine, how a person perceives and response to the influencing stimuli [9].

The throughput includes process and efforts of the teachers. This mode consists of manipulation, which the investigator provides in the term of structured teaching programme regarding the prevention of cervical cancer among adolescent girls belonging to experimental group. The adolescent girls in the control group did not participate in any structured educational program concerning cervical cancer prevention. Through the process of gaining knowledge change in the cognition of adolescent girls takes place by throughput process, the output mode leads to high knowledge regarding the prevention of cervical cancer among adolescent girls belonging to experimental group. Output refers to both the adaptive and maladaptive reactions exhibited by adolescent girls.

Feedback is information regarding the responses that is conveyed as input in the system. According to Roy’s adaptation model, the goal of the nursing is to increase the knowledge regarding the prevention of cervical cancer in adolescent girls for various stimuli from the environment.

Summary

This study encompasses the study's introduction, rationale, problem statement, study objectives, study purpose, hypotheses, limitations, operational definitions of specific terms, and the conceptual framework.

REVIEW OF LITERATURE

A review of the literature is characterized by its extensive, thorough, systematic, and critical examination of scholarly publications, unpublished printed or audiovisual materials, and personal communications.

In their 2018 study, Frumovitz *et al.*, investigated cervical cancer, which ranks as the third most frequently diagnosed gynaecologic cancer and is a leading cause of death among gynaecologic cancers in the United States [10]. Cervical cancer exhibits relatively lower incidence and mortality rates when compared to uterine corpus and ovarian cancer, along with many other forms of cancer. These rankings align with global estimates found in other developed countries. Regrettably, in regions where access to cervical cancer screening and prevention programs is lacking, cervical cancer continues to be the second most common cancer, affecting 17.8 out of 100,000 women, and remains a leading cause of cancer-related deaths, impacting 9.8 out of 100,000 women. The presence of human papillomavirus is instrumental in the development of cervical neoplasia and is detectable in 99.7% of cervical cancer cases. In their 2017 study, Tesfahun *et al.* discussed the extent of the issue of non-communicable diseases in our society, pointing out that the full scope of this problem is only partially represented by statistics related to mortality and morbidity [11]. Cancer, in particular, has evolved significantly as a disease. At the beginning of the 20th century, it ranked as the sixth leading cause of death in industrialized nations, but today it stands as the second most common cause of death globally. A significant number of young adolescent girls in India, particularly those residing in rural regions, face challenges in accessing education. Approximately 13% of girls aged 10 to 14 years have never had the opportunity to attend school, and more than 30% have received fewer than 5 years of education. Cervical cancer stands as the second most common cancer among women, typically progressing slowly. Human papillomavirus, a prevalent sexually transmitted virus, plays a crucial role in its development. Thankfully, a vaccine is now available for preventing cervical cancer. It is advised that women initiate annual pelvic examinations, which include pap smears, when they become sexually active or by the age of 20 years for those who are not sexually active. Human papillomavirus vaccination is advised for girls aged 12 to 17 years, with two vaccine options available [11–14].

Frumovitz *et al.* (2017) [10] conducted a study on invasive cervical cancer, Epidemiology, risk factors, clinical manifestations, and diagnosis. Global incidence and mortality rates depend upon the presence of screening programs for cervical pre-cancer and cancer and of human papillomavirus vaccination, which are most likely to be available in developed countries. As a result of these measures, there has been a significant reduction of 75% in the occurrence and death rates related to cervical cancer in developed nations during the last five decades. The decrease in incidence was substantial, at 4.1%, across all categories. Among publications, 11.3% centred on cervical cancer in HIV-infected women, and 17.1% addressed aspects related to the feasibility of cervical cancer control initiatives [15–18].

ANALYSIS AND INTERPRETATION

Section 1: Sample Characteristics

Table 1 shows the percentage distribution of sample characteristics which include age in year, educational standards, education of mother, education of father, religion, type of family, family monthly income, dietary pattern, source of information and family history of cervical cancer.

Section 2

Objective

1. To assess the pre-test knowledge of adolescent regarding the prevention cervical cancer.
2. To assess the post-test knowledge regarding prevention of cervical cancer among adolescent girls (Table 2 and Figure 1).
3. To assess the difference in knowledge levels among adolescents before and after an educational program on cervical cancer prevention.

Table 3 shows the comparison of mean pre-test and post-test knowledge score of adolescent girls regarding prevention of cervical cancer in experimental and control group.

DISCUSSION AND CONCLUSION

This study presents the results and discoveries from the current study, which is a quasi-experimental investigation into the impact of a structured teaching program on adolescent girls' knowledge of cervical cancer prevention in selected schools in Moga, Punjab.

Table 1. Percentage distribution of sample characteristics (N=60).

Characteristics	Experimental		Control		df	χ^2
	n	%	n	%		
<i>Age (years)</i>						
11–12	9	30	9	30	2	0.00 ^{NS}
13–14	17	57	17	57		
15–16	4	13	4	13		
17–18	-	-	-	-		
<i>Educational standard</i>						
7 th	10	33	10	33	2	0.00 ^{NS}
8 th	15	50	15	50		
9 th	5	17	5	17		
<i>Education of mother</i>						
Illiterate	-	-	-	-	2	0.454 ^{NS}
Primary	-	-	-	-		
Secondary	3	10	4	13		
Senior secondary	8	27	6	20		
Graduate and above	19	63	20	67		
<i>Education of father</i>						
Illiterate	-	-	-	-	2	0.000 ^{NS}
Primary	-	-	-	-		
Secondary	2	7	2	7		
Senior secondary	17	56	17	56		
Graduate and above	11	37	11	37		
<i>Religion</i>						
Hindu	10	33	10	33	3	5.714 ^{NS}
Sikh	10	50	2	-		
Muslim	-	-	-	-		
Christian	5	17	-	-		
Others	-	-	-	-		
<i>Type of family</i>						
Joint	6	20	5	17	2	0.451 ^{NS}
Nuclear	19	63	18	60		
Extended	5	17	7	23		
<i>Family monthly income (Rs.)</i>						
≤5000	-	-	-	-	2	4.485 ^{NS}
5001–10000	3	10	-	-		
10001–15000	13	43	19	63		
≥1500	14	47	11	37		
<i>Dietary pattern</i>						
Vegetarin	22	73	22	73	2	.000 ^{NS}
Non vegetarian	8	27	8	27		
Eggetarian	-	-	-	-		
<i>Source of information</i>						
Peer group	-	-	-	-	2	13.122 ^{***}
Teachers	17	57	4	13		
Mass media	6	20	16	54		
Family	7	23	10	33		
Health professional	-	-	-	-		
<i>Family history of cervix cancer</i>						
Yes	-	-	-	-		
No	30	100	30	100		

Table 2. Frequency and percentage distribution of pre-test and post-test knowledge score of adolescent girls regarding prevention of cervical cancer in experimental and control group according to level of knowledge (N=60).

Level of knowledge score	Knowledge score							
	Experimental group				Control group			
	Pre-test		Post-test		Pre-test		Post-test	
	n	%	n	%	n	%	n	%
Good 76–100% (23–30)	-	-	21	70	-	-	-	-
Average 51–75% (16–22)	6	20	9	30	2	7	4	13
Below average 50% (>15)	24	80	-	-	28	93	26	87
Maximum score =30; Minimum score =0								

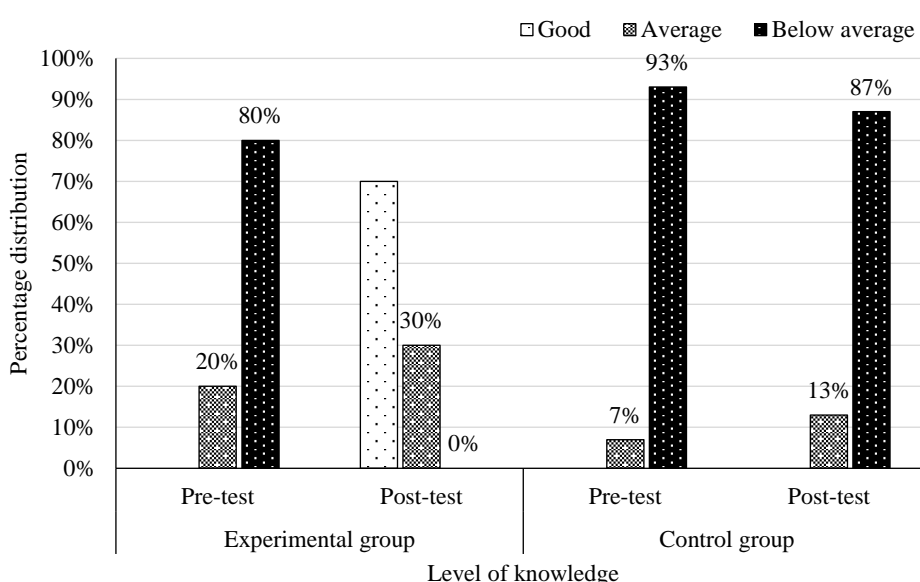


Figure 1. Percentage distribution of pre-test and post-test knowledge score regarding prevention of cervical cancer among adolescent girls in experimental and control group according to level of knowledge.

Table 3. Comparison of mean pre-test and post-test knowledge score of adolescent girls regarding prevention of cervical cancer in experimental and control group (N=60).

Group	Knowledge score						df	't'
	Pre-test			Post-test				
	n	Mean	SD	n	Mean	SD		
Experimental	30	14.2	1.67	30	22.73	1.29	28	24.057**
Control	30	13.60	1.40	30	13.79	1.51	29	0.828 ^{NS}
	DF	't'	df	't'				
	58	1.507 ^{NS}	58	24.937**				
Maximum score =30; Minimum score =0								
Ns = Non-significant; ** Significant at p<0.01 level; *** Significant at p<0.001 level								

The purpose of this study is to analyse the study's findings in accordance with the research goals. The present study was conducted in the schools: National convent senior secondary school (experimental group) and spring field convent school (control group), Moga Punjab. Total samples were 60 adolescent girls (30 adolescent girls for experimental and 30 adolescent girls for control group). Convenient sampling

technique was used to collect the sample, before collecting data, investigator gave brief introduction of self, purpose of the study and instruction regarding filling of questionnaire and gain confidence.

Analysis of the pre-test and post-test knowledge score reveals the higher post-test mean knowledge score among the experimental group than that of the control group regarding prevention of cervical cancer. The difference between mean pre-test knowledge score and post-test knowledge significant at level $p < 0.01$ level and hence findings indicated that the structured teaching program regarding prevention of cervical cancer was effective to increasing the knowledge of adolescent girls in experimental group.

- In the present study, most of adolescent girls (57%) belong to age group 13–14 years in control and experimental group.
- In the present study, most of (50%) adolescent girls were studying in to 8th standard in experimental group.
- In the present study, 56% adolescent girls' fathers were senior secondary in experimental group.
- In the present study adolescent girls (100%) had no family history of cervical cancer in the experimental group.

1st objective: to evaluate the initial knowledge levels concerning cervical cancer prevention in adolescent girls. In the present study, pre-test knowledge score in experimental was (20%) average and (80%) below average knowledge, similar findings (75%) in which pre-test knowledge score of experimental group was below average knowledge score regarding prevention of cervical cancer.

2nd objective focused on appraising the post-test knowledge of cervical cancer prevention among adolescent girls in both the experimental and control groups. In the current study, it was found that 70% exhibited strong knowledge in the post-test within the experimental group. These findings are supported by researchers in which 80% adolescent girls had good knowledge in experimental group.

3rd objective was to compare the pre-test knowledge score of adolescent girls regarding prevention of cervical cancer. In this study, the initial average knowledge score for the experimental group was 14.20, while for the control group, it was 13.60. Following the study, the average knowledge score for the experimental group increased to 22.73, surpassing the average post-test knowledge score for the control group, which was 13.79. These findings supported participants in the similar findings of educational programme score significant in knowledge regarding prevention of cervical cancer.

4th objective of the study aimed to explore the relationship between pretest knowledge and post-test knowledge of adolescent girls regarding the prevention of cervical cancer, considering selected demographic variables. In the current study, a statistically significant effect of dietary patterns was observed, while other socio-demographic variables showed non-significance. These findings are consistent with previous studies where participants demonstrated similar non-significant knowledge regarding the prevention of cervical cancer.

REFERNECES

1. Jhingran A, Meyer LA. Malignant diseases of the cervix: Microinvasive and Invasive Carcinoma: Diagnosis and Management. *Comprehensive Gynecology*. Elsevier; 2021. (pp. 674 and 690.e3). [Online] Available from <https://doi.org/10.1016/B978-0-323-65399-2.00040-1>.
2. National cancer institute Division of Cancer Prevention and Control Centers for Disease Control and Prevention. (2018 Aug). Basic Information About Cervical Cancer. [Online]. Available from: https://www.cdc.gov/cancer/cervical/basic_info/index.htm
3. Bodajko Anna Grochowska, Anna Bednarek, Ewa Markut-Miotła, Danuta Zarzycka. Knowledge of cervical cancer prevention among teenagers. *Rev Res Cancer Treat*. 2017; 3(1): 22–30.
4. American cancer society. Statistics for Cervical Cancer. Available from <https://www.cancer.org/cancer/cervical-cancer/about/key-statistics>. 2018

5. Who.int. (2019). Cancer. [Online] Available from: https://www.who.int/health-topics/cancer#tab=tab_1.
6. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global Cancer Statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin*. May 2021; 71(3): 209–249. DOI: 10.3322/caac.21660.
7. Vini Mahajan. Health Family and welfare department. Punjab Incidence of cervical cancer is second highest in Punjab after breast cancer. 1535676.3702 Available from: <https://health.economicstimes.indiatimes.com> 2016 October
8. Department Of Health and Family Welfare. Punjab State Report on Cancer Awareness & Symptom Based Early Detection. [Online]. Available from: pbhealth.gov.in/pbhealth.gov.in/cancer-awareness/Outcome.pdf. 2013
9. India State-Level Disease Burden Initiative Cancer Collaborators. The burden of cancers and their variations across the states of India: the Global Burden of Disease Study 1990–2016. *Lancet Oncol*. Oct 2018; 19(10): 1289–1306. DOI: 10.1016/S1470-2045(18)30447-9.
10. Zhang S, Xu H, Zhang L, Qiao Y. Cervical cancer: Epidemiology, risk factors and screening. *Chin J Cancer Res*. Dec 2020; 32(6): 720–728. DOI: 10.21147/j.issn.1000-9604.2020.06.05..
11. Hailemariam Tesfahun, Yohannes Bizunesh, Aschenaki Hiwot, Mamaye Engidawork, Orkaido Goye, Mihret Seta. Prevalence of Cervical Cancer and Associated Risk Factors among Women Attending Cervical Cancer Screening and Diagnosis Center at Yirgalem General Hospital, Southern Ethiopia. *J Cancer Sci Ther*. 2017; 9(11): 730–735. DOI: 10.4172/1948-5956.1000500.
12. Ghazi Sharkas, Kamal Arqoub, Yousef Khader, Omar Nimri, Wejdan Shroukh, Hala Jadallah, Tayseer Saheb. Trends in the Incidence of Cervical Cancer in Jordan, 2000–2013. *J Oncol*. 2017; 2017: 6827384. Available from: <https://doi.org/10.1155/2017./2017>.
13. Bobdey Saurabh, Jignasa Sathwara, Aanchal Jain, Ganesh Balasubramaniam. Burden of cervical cancer and role of screening in India. *Indian J Med Paediatr Oncol*. 2016 Oct–Dec; 37(4): 278–285. PMID: 5234166/-doi: 10.4103/09715851.195751 Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/>
14. Garg Alpana, Suri Vinita, Mili Thakur, Nijhawan Raje, Aggarwal Neelam, Aggarwal Ritu, Guleria Charu. Prevalence of Human Papillomavirus Infection in Young Primiparous Women During Postpartum Period: Study from a Tertiary Care Center in Northern India. *J Clin Diagn Res*. 2016 Oct; 10(10): QC06–QC09. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5121738/>.
15. Samira Zoa Assoumou, Mabika Barthelemy, Mbigunio Ndjoyi Angelique, Mouallif Mustapha, Khattabi Abdelkim, My Musthapa. Awareness and knowledge regarding of cervical cancer, Pap smear screening and human papillomavirus infection. *BMC Womens Health*. 2015; 15: 37. doi: 10.1186/S12905-015-0193-2. 2015
16. Jean Damascène Makuza, Sabin Nsanzimana, Marie Aimee Muhimpundu, Lydia Eleanor Pace, Joseph Ntaganira, David James Riedel. Prevalence and risk factors for cervical cancer and pre-cancerous lesions. *Pan Afr Med J*. 2015; 22: 26. doi: 10.11604.7116. <http://www.panafrican-med-journal.com/content/article/22/26/full/2015>
17. Kesic Vesna, Poljak Mario, Rogovskaya Svetlana. Cervical Cancer Burden and Prevention Activities in Europe. *Cancer Epidemiol Biomarkers Prev*. 2012 Sep; 21(9): 1423–33. DOI: 10.1158/1055-9965.EPI-12-0181
18. Oladepo O, Ricketts OL, *et al*. Knowledge and utilization of cervical cancer screening services among Nigerian student. *Int Q Community Health Educ*. 2008; 29(3): 293–304.