



Assessment of Knowledge on Cervical Cancer among Women with a View to Develop Information Booklet

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Abstract

Introduction Cervical cancer manifests in the cervix cells, the lower part of the uterus connecting to the vagina. Similar to other cancers, the exact cause of cervical cancer remains uncertain and idiopathic. However, it is established that the human papilloma virus plays a significant role in initiating cellular changes in the cervix. In India, the lack of cancer awareness and screening facilities results in many women presenting at an advanced and deadly stage of the disease, negatively impacting their prognosis and clinical outcomes.

Methods A total of 255 women aged between 18 and 45 years, who were either patients or accompanying bystanders at a tertiary care hospital, were selected using purposive sampling technique.

Statistical Analysis Descriptive statistics were used to represent the sociodemographic characteristics levels. Association of sociodemographic variables levels is determined using chi-squared test.

Results The mean age of the participants was 31.83 ± 6.83 years, majority (162 [63.5%]) were living in a rural area, most (175 [68.6%]) of the participants were married, majority (254 [99.6%]) of the subjects were not having any family history of cervical cancer, most (202 [79.2%]) of the participants were having a single sexual partner, majority (108 [42.4%]) were not having any information on cervical cancer, most (134 [52.5%]) of the participants were unaware of cervical cancer screening, 39 (15.3%) were aware but delaying, 26 (10.2%) were aware, 17 (6.7%) were aware but not decided to do, 16 (6.3%) were aware but undecided, and 21 (8.2%) were in “others” category.

Conclusion Although women are having good knowledge and positive attitude toward cervical cancer screening and prevention, still there is a gap to transform it into practice. There is a need for more educational programs to connect identified knowledge slits and uplift regular practice of cervical cancer screening.

Keywords

- ▶ cervical cancer
- ▶ HPV
- ▶ knowledge
- ▶ practice
- ▶ prevention

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Introduction

Cervical cancer originates in the cells of the cervix, the lower part of the uterus connecting to the vagina.^{1,2} It begins when cervix cells undergo DNA mutations, leading to abnormal growth and the formation of tumors.³ Mutated cells multiply rapidly and fail to die, accumulating to create the tumor, which can invade nearby structures through vascular and lymphatic systems. Metastasis may occur, initiating tumor formation in other organs.⁴ While the exact cause of cervical cancer remains uncertain, the human papilloma virus (HPV) is known to play a significant role in initiating cellular changes in the cervix.⁵ However, not everyone with HPV develops cervical cancer, as certain environmental and lifestyle factors trigger cellular changes. The two major types of cervical cancer are squamous cell carcinoma, affecting the outer cervix cells and being quite common, and adenocarcinoma, which impacts the glandular cells lining the cervical canal.⁶ Multiple risk factors contribute to cervical cancer development, including multiple sexual partners, early sexual activity, sexually transmitted infections like human immunodeficiency virus, a weak immune system, and smoking.⁷

In the early stages, cervical cancer is typically asymptomatic, but in advanced stages, symptoms become evident, reducing chances of survival. These symptoms include vaginal bleeding between periods or after intercourse and during menopause, heavy vaginal discharges with a foul odor, and intense pelvic pain or pain during intercourse. Screening for cervical cancer is commonly done through Pap tests and HPV DNA tests.⁸ The Pap test involves scraping cervix cells for laboratory investigation, while the HPV DNA test helps identify the type of HPV infection present. Other methods used for diagnosis include punch biopsy, endocervical curettage, electrical wire loop, cone biopsy, and imaging studies like X-ray, computed tomography, and magnetic resonance imaging.⁹ Prevention strategies encompass HPV vaccination, regular pap smears, practicing safe sex, and quitting smoking. The treatment options for cervical cancer include surgeries like radical trachelectomy and radical hysterectomy, radiation therapy, chemotherapy, and immunotherapy. Although cervical cancer is highly preventable with advancements in the medical field, the mortality rate emphasizes a lack of information and awareness about cervical cancer and its screening. This study emphasizes the importance of educating the general population and addressing factors influencing delays in cervical cancer screening.¹⁰

Methods

The research approach for this study is the quantitative research approach, which involves a detailed method of data collection, analysis, and interpretation of study findings. The chosen research design for this study is the cross-sectional design, providing a comprehensive plan stating the study objectives and strategies for their implementation. The variables under study include the research variable

“knowledge of cervical cancer” and the baseline variable, which consists of demographic information (age, education, religion, monthly income, diet, area of living, marital status) and clinical data (personal habits, family history of cervical cancer, age at menarche, age at marriage, number of pregnancies, number of sexual partners, information on cervical cancer, cervical cancer screening status, and willingness for screening). The study is conducted in tertiary care hospital, Mangalore. The research population consists of women between 18 and 45 years who visited the tertiary care hospital as patients or patient bystanders. The sample size is 255 women in the age group of 18 to 45 years, selected using the purposive sampling technique. The inclusion criteria for sampling are women aged 18 to 45 years who are patients or patient bystanders from the hospital’s outpatient and inpatient departments. The exclusion criteria include women with diagnosed cases of reproductive cancer and those unwilling to participate. The sample size (N) was calculated based on the mean and standard deviation (SD) of a previous study,¹¹ resulting in a sample size of 255 after considering a 10% anticipated dropout rate. The data collection instruments consist of three tools: Baseline Proforma, Structured Knowledge Questionnaire, and Rating Scale on Factors Influencing Cervical Cancer Screening. The tools were planned based on the study objectives, reviewed through literature, and consulted with experts. Translation of the tool was done into Kannada and Malayalam languages. Content validity was ensured by submitting the tools to nine experts from relevant departments, and their suggestions were considered for improvement. Reliability was checked using Cronbach’s alpha, resulting in a value of 0.721 for the knowledge questionnaire and 0.845 for the rating scale, indicating the tools’ reliability. A pilot study was conducted on 25 women to enhance the study methodology and feasibility, which helped in finalizing the main study. The data collection process involved obtaining ethical clearance, permissions, and informed consent from the participants. Data were collected from 255 women using the validated tools through face-to-face interviews. The data were analyzed using both descriptive and inferential statistics to achieve the study objectives. Frequencies, percentages, and associations between variables were examined. Ethical clearance was obtained, and assurance of confidentiality was given to participants regarding their responses.

Statistical Analysis

The data collected from all study participants were analyzed using Epi-Info 7 for Dos version 3.5.1 software provided by the Centers for Disease Control and Prevention in Clifton Road, Atlanta, United States. Descriptive statistics, including mean, SD, frequency, and proportion, were utilized to present the sociodemographic characteristics of the study population. The association between sociodemographic variables was determined using the chi-squared test, and a significance level of p -value less than 0.05 was considered as statistically significant.

Results

The data analysis involved systematically arranging and tabulating data obtained from 255 women in the reproductive age group (18–45 years) to explore their knowledge on cervical cancer. The participants' knowledge was assessed using a knowledge questionnaire, and factors influencing cervical cancer were evaluated using a rating scale. The data were analyzed using descriptive and inferential statistics based on the formulated objectives and hypotheses.

The data revealed that the mean age of the participants was 31.83 ± 6.83 years, with an average age of menarche at 13.28 ± 1.35 years. On average, the participants got married at 22.88 ± 2.16 years.

The majority of participants (30.2%) had a preuniversity education, and 63.5% of them lived in rural areas. Only a small percentage engaged in personal habits like alcohol consumption (0.8%), smoking (1.2%), and pan chewing (0%). Family history of cervical cancer was observed in only one participant. Furthermore, 40.8% of the women conceived twice, and the majority (79.2%) had only one sexual partner. About 42.4% of the women had no information about cervical cancer, and those who did (30.6%) received information primarily from the media. Notably, 52.5% of the women were unaware of cervical cancer screening.

The mean knowledge score on cervical cancer among women was 8.53 ± 3.84 , with scores ranging from 2 to 22. The researcher used the median value of 8 to categorize the level of knowledge into adequate and inadequate levels. Accordingly, 54.9% of the participants had adequate knowledge, while the remaining 45.1% demonstrated inadequate knowledge. Categorization of the level of knowledge on cervical cancer among women revealed that the mean knowledge on cervical cancer among women was 8.53 ± 3.84 with a minimum of 2 and a maximum of 22.

Based on the participants' responses, the major influencing factors for cervical cancer screening were the belief that screening is necessary only when symptoms are present (82%), concerns about exposure of private areas (62.4%), and the perception that the screening test is embarrassing (60.4%). On the other hand, the least influential factors were time constraints (47.15%) and insurance coverage for the test (49.4%). However, all listed factors influenced more than 50% of the participants to consider taking the cervical cancer screening test.

The results revealed a significant association between the level of knowledge and selected demographic variables, such as the area of living ($p=0.02$), number of pregnancies ($p=0.04$), number of sexual partners ($p=0.08$), and previous history of screening ($p=0.02$). Therefore, the research hypothesis was accepted for these variables at a 5% level of significance.

Likewise, there was a significant association between the level of knowledge and factors influencing cervical cancer screening, including beliefs such as screening being required only when symptoms are present ($p=0.023$), screening being necessary only for sexually active females ($p=0.033$), partners not allowing the screening test

($p=0.05$), the belief that one screening is enough for a lifetime diagnosis ($p=0.014$), and the perception that certain HPV types can clear up on their own ($p=0.018$). Thus, the research hypothesis was accepted for these factors at a 5% level of significance (► **Tables 1 and 2**).

Discussion

In this research study, important findings are presented drawing upon previous work conducted by other researchers. The results are discussed in relation to the stated hypothesis and objectives.

Demographic characteristics summary: The participants' mean age was 31.83 ± 6.83 years, with an average menarche age of 13.28 ± 1.35 years and an average marriage age of 22.88 ± 2.16 years. The majority of participants had preuniversity education (30.2%) and identified as Hindu (62%). About 63% of participants resided in rural areas, and 68.6% were married. Only a small percentage engaged in habits like alcohol consumption (0.8%) and smoking (1.2%). Most women (40.8%) had conceived twice, with 79.2% having only one sexual partner. Only a few participants (0.8%) had information about cervical cancer, mostly obtained from the media (30.6%). Additionally, 42.7% of participants were uncertain about their willingness to undergo cervical cancer screening, and only one person had a family history of cervical cancer. Similar findings were reported in studies conducted on community health workers, where the majority were from rural areas (54.8%) and had education up to 12th class and above (59%). Another study in a South Indian hospital showed a similar trend, with participants' mean age being 34.8 ± 6.7 years, and most of them belonging to rural areas (77.9%).^{12,13} Regarding knowledge on cervical cancer among women, the current study revealed that the majority (54.9%) of participants had adequate knowledge about cervical cancer, while 45.1% had a very poor level of knowledge. The mean knowledge score was 8.53 ± 3.84 out of a maximum possible score of 22. Contrary to these findings, a study on tribal women reported that 75% of participants had inadequate knowledge about cervical cancer. Similarly, a study in Haryana found that the majority of women had poor knowledge of cervical cancer (55%) and its screening (75%).^{14,15}

Factors related to screening of cervical cancer: Several factors were found to influence the decision to undergo cervical cancer screening. The most influencing factors were "the screening required only if symptoms present" (82%), "exposure of private area" (62.4%), and "test is embarrassing" (60.4%). Conversely, the least influencing factors were time (47.1%) and insurance coverage for the test (49.4%). Despite these variations, over 50% of participants were influenced by each listed factor to undergo screening. Similar findings were reported in a study in Kenya, where fear of abnormal screening results (22.1%) and lack of financial support (11.4%) were the most common barriers to cervical cancer screening.^{16,17} Another study in China showed that anxious feelings of diagnosis (47.6%) and lack of awareness of screening benefits (13.4%) were significant factors influencing cervical cancer screening.¹⁸

Table 1 Item-wise analysis of factors related to cervical screening ($n = 255$)

Item	Agree	Uncertain	Disagree
	Frequency (%)	Frequency (%)	Frequency (%)
The test is required only when symptoms are present	209 (82)	22 (8.6)	24 (9.4)
The screening test is expensive	148 (58)	76 (29.8)	31 (12.2)
The private part should be exposed	159 (62.4)	61 (23.9)	35 (13.7)
Test is embarrassing	154 (60.4)	61 (23.9)	35 (13.7)
Test is uncomfortable	128 (50.2)	79 (31)	48 (18.2)
The test result may come positive	137 (53.7)	64 (25.1)	54 (21.2)
Sexually active females only need to do test	122 (47.8)	65 (25.5)	68 (26.7)
Partner does not allow for test	133 (52.2)	64 (25.1)	58 (22.7)
The screening test can be delayed	139 (54.5)	62 (24.3)	54 (21.2)
Only need to do if a doctor advised	139 (54.5)	52 (20.4)	64 (25.1)
No time to go for testing	120 (47.1)	63 (24.7)	72 (28.2)
One screening test is enough for a lifetime	150 (58.8)	118 (46.3)	57 (22.4)
Religious beliefs do not allow	136 (53.3)	61 (23.9)	58 (22.7)
Difficult to locate screening area	137 (53.7)	63 (24.7)	55 (21.6)
Unavailability of facility	144 (56.5)	57 (22.4)	54 (21.2)
Lack of knowledge	129 (50.6)	75 (29.4)	51 (20)
Inadequate health education	148 (58)	64 (25.1)	43 (16.9)
Pap smear test is painful	142 (55.7)	72 (28.2)	41 (16.1)
The test is not covered by insurance	126 (49.4)	81 (31.8)	48 (18.8)
HPV vaccinated person does not need test	136 (53.3)	66 (25.9)	53 (20.8)
Pap smear is used to clean up the womb	136 (53.3)	63 (24.7)	56 (22)
HPV can clear up their own	133 (52.2)	64 (25.1)	58 (22.7)
Difficulty to schedule test appointment	140 (54.9)	72 (28.2)	43 (16.9)

Abbreviation: HPV, human papilloma virus.

Table 2 Association between level of knowledge and selected demographic variables ($n = 255$)

Demographic variable	Frequency (%)	Chi-square/Fisher's exact test	p-Value
Age, in years			
<21	14 (5.4)	1.44	0.7
21–30	101 (39.60)		
31–40	113 (44.31)		
>40	27 (10.58)		
Educational status			
No formal education	11 (4.3)	9.304	0.054
Primary school	50 (19.6)		
Secondary school	47 (18.4)		
Preuniversity education	77 (30.2)		
Graduation and above	70 (27.5)		
Religion			
Hindu	158 (62)	0.396	0.990
Muslim	41 (16.1)		
Christian	54 (21.2)		
Any other	2 (0.8)		

Table 2 (Continued)

Demographic variable	Frequency (%)	Chi-square/Fisher's exact test	p-Value
Monthly income, in rupees			
<5,000	41 (16.1)	2.231	0.52
5,001–10,000	103 (40.4)		
10,001–15,000	101 (39.6)		
>15,000	9 (3.5)		
Area of living			
Urban	93 (36.5)	6.436	0.02**
Rural	162 (63.5)		
Alcoholism			
No	253 (99.2)	0.020	0.889
Yes	2 (0.8)		
Smoking			
No	252 (98.8)	0.170	0.680
Yes	3 (1.2)		
Pan chewing			
No	255 (100)	–	–
Family history of cervical cancer			
No	254 (99.6)	3.064	0.353
Yes	1 (0.4)		
No. of pregnancies			
0	57 (22.4)	10.649	0.04**
1	65 (25.5)		
2	104 (40.8)		
3	23 (9)		
4	5 (2)		
5	1 (0.4)		
No. of sexual partners			
0	50 (19.6)	6.23	0.087
1	202 (79.2)		
3	3 (1.2)		
Information on cervical cancer			
No information	108 (42.4)	3.066	0.523
Healthcare personnel	43 (16.9)		
Friends/relatives	21 (8.2)		
Media	78 (30.6)		
Others	5 (2)		
History of cervical cancer screening			
Yes	26 (10.2)	13.839	0.017
Unaware	134 (52.5)		
Aware but delaying	39 (15.3)		
Aware, undecided	16 (6.3)		
Aware, decided not to do	17 (6.7)		
Others	21 (8.2)		

(Continued)

Table 2 (Continued)

Demographic variable	Frequency (%)	Chi-square/Fisher's exact test	p-Value
Willingness			
Yes	94 (36.9)	3.088	0.369
Unsure	109 (42.7)		
No	48 (18.8)		

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Association between level of knowledge and demographic variables: This study found significant associations between knowledge levels and demographic variables such as area of living, number of pregnancies, number of sexual partners, and previous history of screening. In contrast, a study in Malaysia reported significant associations between knowledge levels and age, marital status, and monthly income.¹⁹

Association between level of knowledge and factors influencing cervical cancer screening: The study revealed significant associations between knowledge levels and factors influencing cervical cancer screening. Factors such as the belief that the test is required only if symptoms are present, the misconception that only sexually active females need screening, partner disapproval, the belief that one screening is enough for a lifetime, and the belief that HPV types can clear on their own were all associated with knowledge levels.

Similar findings were reported in studies conducted in Southern Ghana, Tanzania, and China, showing significant associations between knowledge and various factors influencing cervical cancer screening. This article presents the major findings of the research study, comparing and contrasting them with previous literature. The results indicate the need for educational programs to enhance cervical cancer screening rates, especially in light of the existing barriers.

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Conflict of Interest

None declared.

References

- Kashyap N, Krishnan N, Kaur S, Ghai S. Risk factors of cervical cancer: a case-control study. *Asia Pac J Oncol Nurs* 2019;6(03): 308–314
- Mustafa WA, Halim A, Ab Rahman KS. A narrative review: classification of pap smear cell image for cervical cancer diagnosis. *Oncologie* 2020;22(02):
- Sleeman JP, Nazarenko I, Thiele W. Do all roads lead to Rome? Routes to metastasis development. *Int J Cancer* 2011;128(11): 2511–2526
- Langley RR, Fidler IJ. Tumor cell-organ microenvironment interactions in the pathogenesis of cancer metastasis. *Endocr Rev* 2007;28(03):297–321
- Motoyama S, Ladines-Llave CA, Luis Villanueva S, Maruo T. The role of human papilloma virus in the molecular biology of cervical carcinogenesis. *Kobe J Med Sci* 2004;50(1-2):9–19
- Talia KL, McCluggage WG. The developing spectrum of gastric-type cervical glandular lesions. *Pathology* 2018;50(02):122–133
- Page-Shafer K, Delorenze GN, Satariano WA, Winkelstein W Jr. Comorbidity and survival in HIV-infected men in the San Francisco Men's Health Survey. *Ann Epidemiol* 1996;6(05):420–430
- Schiffman M, Herrero R, Hildesheim A, et al. HPV DNA testing in cervical cancer screening: results from women in a high-risk province of Costa Rica. *JAMA* 2000;283(01):87–93
- Chen PH, Yang TH, Chen SY. Application of posterior endoscopic cervical foraminotomy for recurrent radiculopathy after anterior cervical discectomy and fusion surgery. *J Minim Invasive Spine Surg Tech* 2023;8(Suppl 1):S56–S61
- Lau J, Shrestha P, Shaina Ng J, Jianlin Wong G, Legido-Quigley H, Tan KK. Qualitative factors influencing breast and cervical cancer screening in women: a scoping review. *Prev Med Rep* 2022; 27:101816
- Kasahun AE, Sendekie AK, Mekonnen GA, Sema FD, Kemal LK, Abebe RB. Impact of personal, cultural and religious beliefs on medication adherence among patients with chronic diseases at university hospital in Northwest Ethiopia. *Patient Prefer Adherence* 2022;16:1787–1803
- Paul A, Verma RK. Does living arrangement affect work status, morbidity, and treatment seeking of the elderly population? A study of South Indian states. *SAGE Open* 2016;6(03):2158244016659528
- Volpe U, Amin H, Ayinde OO, et al. Pathways to care for people with dementia: an international multicentre study. *Int J Geriatr Psychiatry* 2020;35(02):163–173
- Ghosh S, Pattanshetty SM, Mallya SD, et al. Cervical cytology and associated factors among tribal women of Karnataka, India. *PLoS One* 2021;16(03):e0248963
- Aly Ibrahim A, Ahmed Attia A, Fatthy Mohammed A. Self-care practices regarding prevention of reproductive tract infection among female adolescent. *Egypt J Health Care*. 2022;13(02):137–157
- Were E, Nyaberi Z, Buziba N. Perceptions of risk and barriers to cervical cancer screening at Moi Teaching and Referral Hospital (MTRH), Eldoret, Kenya. *Afr Health Sci* 2011;11(01):58–64
- Wolf RC, Cheng AS, Kapesa L. The epidemiology of HIV and prevention needs among men who have sex with men in Africa. *African Journal of Reproduction and Gynaecological Endoscopy* 2013;16(4, suppl 3)
- Jia Y, Li S, Yang R, et al. Knowledge about cervical cancer and barriers of screening program among women in Wufeng County, a high-incidence region of cervical cancer in China. *PLoS One* 2013; 8(07):e67005
- Parsa P, Kandiah M, Mohd Zulkefli NA, Rahman HA. Knowledge and behavior regarding breast cancer screening among female teachers in Selangor, Malaysia. *Asian Pac J Cancer Prev* 2008;9 (02):221–227