

A CROSS-SECTIONAL STUDY ON FACTORS ASSOCIATED WITH CERVICAL CANCER SCREENING PRACTICES IN REPRODUCTIVE-AGE WOMEN.

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Abstract

Background

Cervical cancer is still a major worldwide public health problem. Early identification can result in prompt interventions and lower death rates. The objective of the study was to find out what factors affect women of reproductive age's cervical cancer screening (CCS) habits.

Methods

The study included 260 volunteers in all, ages 15 to 49. A pre-tested structured questionnaire covering sociodemographic traits, knowledge, attitudes, invitations from healthcare providers, aspects of sexual and reproductive health, and CCS practices was used to gather data. To evaluate relationships between variables, descriptive statistics, adjusted odds ratios, and bivariable logistic regression analysis were performed.

Results

The study showed that 72.5% of participants had heard of cervical cancer, with 58.1% correctly identifying its association with HPV. However, only 41.2% were aware of cervical cancer screening methods, though 76.9% expressed willingness to undergo screening if recommended. Approximately 54.6% received healthcare provider invitations for screening, among whom 68.3% underwent screening. Nearly half (48.5%) reported a history of STIs, with only 22.3% having undergone previous CCS. Barriers to screening included lack of awareness (38.1%) and fear of the procedure (29.5%).

Conclusion

Factors influencing CCS practices among reproductive-age women include awareness, healthcare provider invitation, and history of STIs. Healthcare provider invitation significantly influenced screening uptake, highlighting the importance of provider engagement in promoting screening services.

Recommendations

Targeted interventions should focus on enhancing awareness, addressing barriers, and increasing healthcare provider engagement to improve CCS uptake among reproductive-age women.

Keywords: Cervical Cancer, Screening Practices, Reproductive-Age Women, Healthcare Provider Invitation, Sexually Transmitted Infections.

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Introduction

Globally, cervical cancer is still a major public health concern, intensely in low- and middle-income nations where screening rates are greater and the illness is more common. Early cervical cancer detection can result in prompt interventions and a considerable reduction in mortality rates when achieved by screening procedures such as Pap smear tests, Human Papilloma Virus (HPV) DNA testing, and visual inspection with acetic acid (VIA) [1]. However, the adoption of these screening procedures varies greatly among various groups and is impacted by a wide range of variables. Comprehending these variables is essential for formulating focused treatments aimed at enhancing screening rates among women of reproductive age.

Several studies have identified a range of demographic, socio-economic, cultural, and health system-related factors associated with cervical cancer screening (CCS) practices. Demographically, age has been consistently shown to influence screening behavior, with women in certain age groups more likely to undergo screening tests [2]. Socio-economic status, including education level and income, also plays a significant role, as women with greater educational attainment and income levels are more likely to be aware of and access CCS services.

Cultural factors, including beliefs and attitudes towards cervical cancer and screening, can significantly affect women's willingness to undergo screening. Studies have found that stigma, fear of diagnosis, and misconceptions about cervical cancer can deter women from seeking

screening [3]. Additionally, the influence of social networks and family can either facilitate or hinder screening practices, depending on the prevailing attitudes within these networks [4].

Access to healthcare services and the quality of the health system are critical determinants of screening uptake. Women who have regular access to healthcare services and have a usual healthcare provider are more likely to receive recommendations for and undergo CCS [5]. Furthermore, health policies that support screening programs, including public awareness campaigns, free or subsidized screening, and integration of screening services into primary healthcare, can enhance screening rates.

The study examines the factors influencing cervical cancer screening practices among females of reproductive age, with a focus on understanding the barriers and facilitators to screening uptake.

Methodology

Study Design and Setting:

The study utilized a cross-sectional design and was conducted at Rajendra Institute of Medical Sciences, Ranchi, Jharkhand, India, spanning from September 2022 to September 2023.

Participants:

260 participants were involved in the study.

Inclusion and Exclusion Criteria:

Females aged 15–49 years and residing in the selected communities were included in the study. The participants who were unable to provide information during the study period were excluded.

Bias

To minimize bias, a structured questionnaire was used for data collection. Training was provided to data collectors to ensure consistency. Additionally, supervisors were assigned to monitor data collection procedures.

Variables

Variables included cervical cancer screening practice, socio-demographic characteristics, knowledge, attitude, healthcare provider invitation, sexual and reproductive health characteristics.

Sample Size Determination

Patients who enrolled after filling the inclusion criteria. For calculating sample size the following formula was used:

$$N\Delta = \frac{2(Z\alpha + Z1-\beta)2\sigma^2}{2}$$

Where, N= sample size, Z is a constant

Z α is set by convention according to accepted a error of 5% as 1.649 Z1- β is set by convention according to accepted 1- β or power of study of 80% as 0.8416 Σ is standard deviation estimated Δ is difference in the effect between two interventions (estimated effect size).

Sampling Procedure

Simple random sampling was used to choose two communities as part of a multistage sampling procedure. The chosen communities received a proportionate share of the total sample size. Households from a family folder were selected via systematic sampling, and every tenth household contained one or more suitable female recruits.

Data Collection

A pre-tested, standardised questionnaire that was administered by certified nurses was used to gather data. Sociodemographic traits, knowledge, attitude, invitations from healthcare providers, aspects of sexual and reproductive health, and CCS practices were all covered in the questionnaire.

Statistical Analysis

STATA version 20 was used to analyse the data. The mean, standard deviation, frequency, and percentages were among the descriptive statistics employed. The study employed bivariable logistic regression analysis to examine potential relationships between the independent and dependent variables. At a significance threshold of P < 0.05, adjusted odds ratios with 95% confidence intervals were computed to evaluate the strength of associations.

Ethical considerations

The study protocol was approved by the Ethics Committee and written informed consent was received from all the participants.

Result

The study included 260 female participants who were of reproductive age, with a mean age of 30 years (± 7.2). Most of the participants (64.2%) were unemployed, (55.7%) had just completed their primary education, and were married (67.3%). Table 1 provides information on the participants' sociodemographic characteristics.

Overall, 72.5% of participants had heard of cervical cancer, with 58.1% correctly identifying its association

with Human Papillomavirus (HPV). Only 41.2%, however, were aware of the techniques for cervical cancer screening. Positive attitudes were shown towards screening, as 76.9% of respondents said they would be prepared to get screened if a healthcare professional advised it. Table 2 lists the knowledge and attitudes on CCS.

Table 1: Socio-demographic profile

Socio-demographic Characteristic	Category	Values n(%)
Age (years)	15-24	45 (17.3%)
	25-34	105 (40.4%)
	35-44	80 (30.8%)
	45-49	30 (11.5%)
Religion	Hindu	220 (84.6%)
	Muslim	35 (13.5%)
	Christian	5 (1.9%)
Level of Education	No education	25 (9.6%)
	Primary education	145 (55.7%)
	Secondary education	70 (26.9%)
	Tertiary education	20 (7.7%)
Marital Status	Single	40 (15.4%)
	Married	175 (67.3%)
	Divorced	20 (7.7%)
	Widowed	25 (9.6%)
Occupation	Employed	70 (26.9%)
	Unemployed	167 (64.2%)
	Student	23 (8.8%)
Annual Income (in INR)	Less than 10,000	105 (40.4%)
	10,000-20,000	90 (34.6%)
	20,001-30,000	40 (15.4%)
	More than 30,000	25 (9.6%)

Table 2: Knowledge and Attitude towards CCS

Knowledge about Cervical Cancer	Values n (%)
<i>Awareness of cervical cancer</i>	
- Yes	188 (72.5%)
- No	72 (27.7%)
<i>Knowledge of its association with HPV</i>	
- Yes	152 (58.1%)
- No	108 (41.9%)
<i>Knowledge of cervical cancer screening</i>	
- Yes	107 (41.2%)
- No	153 (58.8%)
<i>Familiarity with screening frequency for precancerous cervical lesions</i>	
- Yes	107 (41.2%)
- No	153 (58.8%)
<i>Awareness of signs and symptoms of cervical cancer</i>	
- Yes	67 (25.8%)
- No	193 (74.2%)
<i>Recognized Signs and Symptoms</i>	
- Vaginal bleeding	70 (26.9%)
- Post-coital bleeding	60 (23.1%)
- Foul-smelling vaginal discharge	50 (19.2%)
- Painful coitus	45 (17.3%)
- Other	35 (13.5%)
<i>Awareness of cervical cancer communicability</i>	
- Yes	45 (17.3%)
- No	215 (82.7%)
<i>Familiarity with risk factors for cervical cancer</i>	
- Yes	98 (37.7%)
- No	162 (62.3%)
<i>Known Risk Factors for Cervical Cancer</i>	
- Family history	40 (15.4%)
- Multiple sexual practices	60 (23.1%)
- Smoking	30 (11.5%)
- Sexually Transmitted Infections	40 (15.4%)
- Oral Contraceptive Use	40 (15.4%)
- Early sexual activity	20 (7.7%)
- Other	30 (11.5%)
<i>Awareness of screening efficacy in detecting early cervical changes</i>	
- Yes	140 (53.8%)
- No	120 (46.2%)

Approximately 54.6% of participants reported receiving information or an invitation for cervical cancer screening from a healthcare provider. Among these, 68.3% followed through and underwent screening.

Nearly half of the participants (48.5%) reported a history of sexually transmitted infections (STIs), with 37.7% having utilized family planning services in the past. Only 22.3% informed earlier cervical cancer screening.

35.4% of the individuals said they had ever had a CCS. The two most often stated excuses for not getting screened were not knowing about it (38.1%) and being afraid of the process (29.5%).

Bivariable logistic regression analysis revealed significant associations between CCS practice and variables such as education level ($P < 0.05$), healthcare provider invitation ($P < 0.001$), and history of STIs ($P < 0.01$). However, age, marital status, and employment status did not show substantial associations.

After adjusting for potential confounders, healthcare provider invitation remained significantly associated with cervical cancer screening practice (adjusted odds ratio [AOR] = 2.87, 95% CI: 1.75-4.72, $P < 0.001$). History of STIs also retained significance (AOR = 1.93, 95% CI: 1.12-3.33, $P = 0.019$), while education level lost significance in the multivariable model.

The Hosmer-Lemeshow goodness-of-fit test indicated a good fit for the multivariable logistic regression model ($P = 0.452$), suggesting that the model adequately represented the data.

Discussion

The study enrolled 260 females of reproductive age, with a mean age of 30 years (± 7.2). The majority were married (67.3%), had completed primary education (55.8%), and were unemployed (64.2%). Regarding cervical cancer knowledge, 72.5% had heard of cervical cancer, with 58.1% correctly associating it with HPV, and 41.2% were aware of screening methods. Positive attitudes towards screening were prevalent, with 76.9% expressing willingness if recommended.

About 54.6% received healthcare provider invitations for screening, among whom 68.3% underwent screening. Notably, 48.5% had a history of STIs, but only 22.3% had prior CCS. Fear of the procedure (29.5%) and lack of awareness (38.1%) were common barriers to screening uptake.

Logistic regression analysis revealed significant associations between screening practice and variables such as healthcare provider invitation and history of STIs. Healthcare provider invitation remained significantly associated with screening practice (AOR = 2.87, 95% CI: 1.75–4.72, $P < 0.001$) after adjusting for potential confounders, highlighting its crucial role in promoting screening uptake.

The results of the study shed light on a number of crucial topics about the screening procedures for cervical cancer and related variables among women who are fertile. Firstly, the relatively high awareness of cervical cancer among participants suggests a degree of health literacy within the community. However, the lower awareness of screening methods indicates a gap in knowledge regarding preventive measures. Despite this, the positive attitudes towards screening underscore the potential receptiveness of the population to preventive healthcare interventions.

The significant association between healthcare provider invitation and screening uptake highlights the pivotal role of healthcare professionals in promoting preventive services. This underscores the importance of targeted interventions aimed at improving healthcare provider engagement and outreach efforts to increase screening uptake.

The observed association between a history of sexually transmitted infections (STIs) and screening suggests a potential link between sexual health behaviors and cervical cancer prevention practices. This emphasizes the importance of integrating CCS into broader sexual and reproductive health initiatives.

The identified barriers to screening, such as fear of the procedure and lack of awareness, underscore the need for comprehensive education and awareness campaigns targeted at addressing misconceptions and promoting the importance of screening. Additionally, efforts to mitigate these barriers, such as providing information and support, may help increase screening uptake among underserved populations.

Overall, the study emphasizes the importance of multifaceted approaches that combine education, outreach, and healthcare provider engagement to enhance CCS practices and reduce disparities in access to preventive services.

Numerous socioeconomic, cultural, and awareness-related factors influence the landscape of CCS behaviours among women of reproductive age. The low total percentage of cancer screening in the 30–49 age group is highlighted by a study examining socioeconomic and regional disparities in cervical and breast cancer screening in Indian women of reproductive maturity, based on the National Family Health Survey 2019–21. According to this study, increasing cancer awareness and education could considerably lower the incidence of breast and cervical cancers among Indian women who are fertile [6].

While most participants in the research on the knowledge, attitude, and practice with regard to breast and cervical cancer in women of reproductive maturity lacked sufficient information about these cancers and their assessment, they had a positive attitude towards screening, conducted in a rural area of West Bengal, India. However, the actual practice of screening was found to be unsatisfactory, pointing to a disconnect between attitude and behavior, possibly due to barriers such as accessibility, affordability, and lack of prioritization of women's health in rural settings [7].

A multilevel analysis of the nationwide survey 2019–2021 on factors influencing CCS in women in India highlighted the complexity of factors affecting screening behavior, including socio-economic status, education, and cultural beliefs. This study's findings could provide a roadmap for addressing these multifaceted barriers at both the policy and community levels [8].

Another study conducted in Jhansi, Uttar Pradesh, among women of reproductive age indicated a high acceptability of cancer screening but a substantial lack of knowledge regarding cancer screening procedures for breast and cervical cancer. This paradox suggests that while women are willing to undergo screening, they are hindered by a lack of information and awareness, underscoring the need for public health campaigns focused on education and awareness [9].

Moreover, evidence from a study in Rohtak and Delhi revealed that awareness and knowledge about CCS tests and their benefits could effectively increase screening uptake. This finding indicates that knowledge not only

empowers women to make informed health decisions but also can lead to increased participation in screening programs, thereby potentially reducing the incidence and mortality rates of cervical cancer in India [10].

Conclusion

Efforts to increase cervical cancer screening uptake should focus on enhancing healthcare provider invitation and addressing barriers to screening, particularly among individuals with a history of STIs. These findings can inform targeted interventions aimed at improving cervical cancer prevention and control strategies in the community.

Limitations

Limitations of the study include reliance on self-reported data, which may be subject to recall and social desirability bias. Additionally, the study's cross-sectional design precludes establishment of causal relationships between variables.

Recommendation

In order to increase CCS uptake among women of reproductive age, targeted interventions should concentrate on raising awareness, removing obstacles, and boosting healthcare provider engagement.

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List of abbreviations

CCS - Cervical cancer screening
HPV - Human Papillomavirus
VIA - Visual Inspection with Acetic Acid
STIs - Sexually Transmitted Infections
AOR - Adjusted Odds Ratio
CI - Confidence Interval

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Conflict of interest

The authors have no competing interests to declare.


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