

**KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) ON CERVICAL CANCER
SCREENING AND RELATED CHALLENGES: A PRIMARY STUDY USING A
SEMI STRUCTURED QUESTIONNAIRE (CROSS-SECTIONAL COMPARATIVE
KAP STUDY)**

Dissertation Submitted to



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Master of Business Administration (MBA)

in

Hospital and Health Management

by

Arnab Basak

Under the Supervision and Guidance of

Dr. (Col) Mahender Kumar

2025

Completion Certification

CERTIFICATE

This is to certify that **Arnab Basak** in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur has successfully completed his internship at IIHMR University, Jaipur during March 10 – April 20, 2025, and thereafter joined IQVIA from 21st April 2025 to 31 May 2025.

Place: Jaipur

Date: 12.06.2025

A handwritten signature in blue ink, appearing to read 'Dr. Mahender Kumar', written over a horizontal line.

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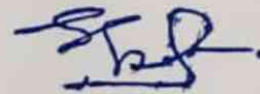
CERTIFICATE

This is to certify that dissertation titled Knowledge, Attitude and Practice (KAP) on Cervical Cancer Screening and Related Challenges: A Primary Study Using a Semi-Structured Questionnaire (Cross-sectional comparative KAP Study) is a record of the research work undertaken by Arnab Basak in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.



Dr. (Col) Mahender Kumar
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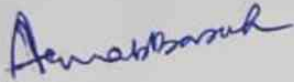


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DECLARATION BY STUDENT

I hereby declare that this dissertation titled **Knowledge, Attitude and Practice (KAP) on Cervical Cancer Screening and Related Challenges: A Primary Study Using a Semi-Structured Questionnaire (Cross-sectional comparative KAP Study)** is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.



(Signature)

Name of Student **ARNAB BASAK**

Date **12/06/2025** .

Abstract

Background:

Cervical cancer remains a significant public health challenge, particularly in low- and middle-income countries like India. Despite the preventability and curability of the disease through timely screening and vaccination, uptake remains suboptimal. This study aimed to assess the Knowledge, Attitude, and Practice (KAP) levels among women regarding cervical cancer and its screening, and to explore socio-demographic correlates and predictors of screening behavior.

Objectives:

The primary objective was to assess and analyze KAP levels among Indian women regarding cervical cancer. Secondary objectives included examining associations between socio-demographic variables and KAP scores, testing internal consistency of attitude parameters, exploring the knowledge-attitude correlation, predicting screening behavior using KAP scores, and offering recommendations to enhance awareness and screening uptake.

Methodology:

A cross-sectional study was conducted using a semi-structured, self-administered online questionnaire via Google Forms. A total of 163 valid responses from women aged 18 and above were collected using a convenience snowball sampling method. The questionnaire consisted of socio-demographic items, knowledge-based nominal questions, attitude statements on a five-point Likert scale, and a binary practice question. Data were analyzed using SPSS. Statistical methods included descriptive statistics, reliability analysis (Cronbach's alpha), Chi-square tests (including Fisher's Exact and Monte Carlo methods), binary and multivariable logistic regression, and correlation analysis.

Results:

While 92.6% of respondents had heard of cervical cancer, detailed knowledge about risk factors and screening eligibility was inconsistent. Only 9.2% had ever undergone cervical cancer screening. Attitude scores were generally positive, and reliability analysis of attitude items (after removing one reverse-worded item) showed strong internal consistency (Cronbach's $\alpha = 0.794$). Knowledge and attitude scores had a statistically significant moderate positive correlation ($p =$

0.295, $p < 0.001$). However, neither knowledge nor attitude scores significantly predicted screening behavior in logistic regression models. Several socio-demographic variables, such as age, marital status, literacy level, and occupation, showed statistically significant associations with knowledge variables (Chi-square with Monte Carlo/FET methods). Among attitude variables, only literacy level and residence type had significant associations. Screening uptake was significantly associated with age and marital status.

Conclusions:

Despite relatively high awareness and favorable attitudes, the practice of screening was remarkably low, pointing to disparity between knowledge, perception, and behavior. Cultural factors such as embarrassment, lack of perceived need, and limited access to services may explain the gap. Educational status and urban residence influenced KAP outcomes but did not ensure screening behavior. This underscores the need for multi-pronged strategies that go beyond awareness to address structural, psychological, and socio-cultural barriers.

Keywords:

Cervical cancer, Knowledge-Attitude-Practice (KAP), Screening uptake, Women's health, Public health in India

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- Arnab Basak

Table of Contents

Chapter No.	Content	Page No.
	Abstract	
	Acknowledgement	
	List of Figures	
	List of Tables	
	Abbreviations	
Chapter 1	Introduction	
1.1	Global Burden of Cervical Cancer	1
1.2	Role of Screening and Prevention	1
1.3	Knowledge, Attitude, and Practice (KAP) Studies in Public Health	1
1.4	Situation in India: Current Statistics and Challenges	2
1.5	Socio-Cultural and Infrastructural Barriers	2
1.6	Screening Techniques and Risk Factors	2
1.7	Rationale for the Study	3
1.8	Objectives of the Study	3
1.9	Significance of the Study	3
Chapter 2	Review of Literature	4
Chapter 3	Methodology	
3.1	Key Research Questions	21
3.2	Study design	21
3.3	Study Setting	21
3.4	Study Population	22
3.5	Study Duration	22
3.6	Sample Size and Sampling Technique	22
3.7	Data Collection Procedures	23
3.8	Study Instruments	23
3.9	Operational Definitions	23
3.10	Statistical Analysis	24
3.11	Ethical Considerations	24
Chapter 4	Results	
4.1	Describing the Socio-Demographic Characteristics of the Study Participants	25
4.2	Describing the Knowledge variables of the Study Participants	26
4.3	Describing the Attitude variables of the Study Participants	29
4.4	Describing the Practice variable of the Study Participants	31
4.5	Visual representation of the Knowledge, Attitude and Practice variables of the Study Participants	31
4.6	Internal consistency of Attitude variables (Reliability analysis)	35
4.7	Chi-square tests for association	36
4.8	Binary Logistic regression (knowledge and attitude score predicting screening behavior)	41

4.9	Relationship between knowledge & attitude scores (Correlation Analysis)	42
Chapter 5	Discussion	
5.1	Overview	44
5.2	Key Findings and Comparison with Literature	
5.2.1	Knowledge and Literacy	44
5.2.2	Attitude and Age or Literacy	44
5.2.3	Knowledge-Attitude Correlation	44
5.2.4	Socio-demographic Influence on Practice	45
5.3	Interpretation of Non-significant Findings	45
5.4	Strengths of the Study	46
5.5	Limitations	46
Chapter 6	Conclusion	
6.1	Conclusion	47
6.2	Implications for Public Health Practice	47
6.3	Recommendations	
6.3.1	Strengthen Targeted Health Education Programs	47
6.3.2	Integrate Cervical Cancer Education into School/College Curricula	48
6.3.3	Leverage Health Workers and Mass Media for Information Dissemination	48
6.3.4	Address Social and Psychological Barriers to Screening	49
6.3.5	Increase Accessibility and Reduce Cost Barriers	49
6.3.6	Focus on Underserved/Disadvantageous Demographics	49
6.3.7	Integrate Cervical Screening into Existing Health Services	50
6.3.8	Policy-Level Interventions	50
6.4	Suggestions for Future Research	51
	References	52
	Study Tool (Questionnaire)	
	Plagiarism Report	
	AI Report	

List of Figures

S. No.	Title of Figure	Page No.
1.	Figure 4.1: Risk factors for cervical cancer about which the respondents have knowledge (Knowledge variable)	28
2.	Figure 4.2: Symptoms of cervical cancer about which the respondents have knowledge (Knowledge variable)	28
3.	Figure 4.3: Pie-charts of Knowledge variables (except multiple select questions and optional questions) responses (extracted from Google Forms)	31-32
4.	Figure 4.4: Pie-chart of attitude variables (Likert scale) responses (extracted from Google Forms)	32-34
5.	Figure 4.5: Pie-chart of Practice variable responses (extracted from Google Forms)	34
6.	Figure 4.6: Scatterplot showing the relationship between knowledge and attitude scores	43

List of Tables

S.No.	Title of Table	Page No.
1.	Table 4.1: Socio-Demographic Characteristics of the Study Participants (n = 163)	25-26
2.	Table 4.2: Knowledge variables of the Study Participants (n = 163)	26-27
3.	Table 4.3: Attitude variables of the Study Participants (n = 163)	29-30
4.	Table 4.4: Practice variable of the Study Participants (n = 163)	31
5.	Table 4.5: Summary of Reliability analysis of Attitude variables (6 items)	35
6.	Table 4.6: Summary of Reliability analysis of Attitude variables (5 items)	35
7.	Table 4.7: Chi-square summary table between Socio-demographic variables and Knowledge variables	36-37
8.	Table 4.8: Chi-square summary table between Socio-demographic variables and Attitude variables	38-40
9.	Table 4.9: Chi-square summary table between Socio-demographic variables and Practice variables	40
10.	Table 4.10: Summary of Binary Logistic Regression using the Knowledge score to predict screening behavior	41
11.	Table 4.11: Summary of Binary Logistic Regression using the Attitude score to predict screening behavior	42
12.	Table 4.12: Spearman's Correlation Output (Knowledge and Attitude scores)	42

Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
CHW	Community Health Worker
CI	Confidence Interval
FET	Fisher's Exact Test
FGD	Focus Group Discussion
HIV	Human Immunodeficiency Virus
HPV	Human Papillomavirus
IEC	Information, Education, and Communication
KAP	Knowledge, Attitude, and Practice
MC	Monte Carlo (method)
MBA	Master of Business Administration
NFHS	National Family Health Survey
NGO	Non-Governmental Organization
SPSS	Statistical Package for the Social Sciences
STIs	Sexually Transmitted Infections
VIA	Visual Inspection with Acetic Acid
VILI	Visual Inspection with Lugol's Iodine
WHO	World Health Organization

Chapter 1: Introduction

1.1 Global Burden of Cervical Cancer

Cervical cancer, a major public health issue in the world, is regarded as the fourth leading cause of death related to cancer among women (Bray F et al., 2018). There occurs numerous deaths due to cervical cancer, whereby the developing countries share the larger burden of 85% deaths (Atun R et al., 2015). The incidence rate of cervical cancer is as high as 90% in sub-Saharan Africa (Brisson M et al., 2020).

Women who die due to cervical cancer belong to low or middle-income countries majorly (nine out of ten women) (Arbyn M et al., 2019). Inequality and economic disparity being widened globally, cervical cancer incidence rates have been decreasing in high-income countries along with striding towards eliminating the disease (Simms KT et al., 2019).

India, being a developing country, has been facing the burden of cervical cancer. Moreover, women living with HIV have cervical cancer as the most frequently occurring cancer and it's commonly referred to as an AIDS-defining illness (WHO, 2013).

1.2 Role of Screening and Prevention

The reduction in incidence rates in high-income countries is majorly attributed to the prevalence and availability of screening programs in several countries, similar to the UK (Bray F et al., 2018). The identification of the clear cause of cervical cancer, that is the HPV (Human Papillomavirus), boosted the establishment and implementation of overall control and prevention for cervical cancer (Zhang S, et al., 2020). This included screening as a strategy. In November 2020, WHO steered the global strategy to eliminate cervical cancer by its prevention and control strategies (WHO, 2020).

1.3 Knowledge, Attitude, and Practice (KAP) Studies in Public Health

KAP (Knowledge, Attitude, and Practice) studies are basically surveys taken up with participants aligning with the topic of interest. In public health, KAP studies are undertaken to conduct

health-related investigations, which help provide valuable information for implementing public health interventions (Andrade C, et al., 2020). Information is generally acquired with the help of a questionnaire which can be structured or semi-structured (Andrade C, et al., 2020).

1.4 Situation in India: Current Statistics and Challenges

A majority of cervical cancer cases were reported from Asia and the least from North America, 58.2% and 2.5% respectively (Singh M, et al., 2019). The Indian HPV information center states that more than 96,000 women are diagnosed with cervical cancer annually, of whom over 60,000 die (Singh M et al., 2022). The lowest mortality level is recorded in Jammu and Kashmir, while Tamil Nadu has the highest. Jharkhand and Gujarat recorded the highest decline in mortality due to cervical cancer from 1990 to 2019 (Singh M et al., 2022).

1.5 Socio-Cultural and Infrastructural Barriers

According to the NFHS-5 data, screening for cancer among adults (aged 30–49 years) showed alarming results: only 2.2% of urban and 1.7% of rural women had undergone screening for cervical cancer (NFHS-5, 2019–21). This reveals significant gaps in awareness that influence attitudes and practices related to screening. India's socio-cultural barriers, discriminatory practices, and patriarchal norms further limit women's access and willingness to undergo screening. Infrastructural and economic challenges also limit accessibility.

Despite efforts to decrease the burden of cervical cancer in India, women's knowledge, attitudes, and screening practices remain limited (Taneja N, et al., 2021).

1.6 Screening Techniques and Risk Factors

Cervical cancer screening techniques such as visual inspection with Lugol's iodine, acetic acid, and magnavisualizer are recommended for resource-limited settings. Pap smear, HPV-DNA testing, and cervical cytology are other methods that have facilitated incidence reduction (Srivastava, Anand Narain et al., 2018).

Besides HPV, risk factors include early sexual debut, multiple partners, high parity, smoking, and low socio-economic status (Ghebre RG et al., 2017). Symptoms include bleeding after intercourse, bleeding between periods, postmenopausal bleeding, foul-smelling discharge, and pelvic pain (National Cancer Institute, 2022).

1.7 Rationale for the Study

There is limited literature on the KAP of Indian women regarding cervical cancer screening. This study addresses this gap by analyzing KAP through a validated semi-structured tool and performing advanced statistical analysis to identify challenges of screening uptake.

1.8 Objectives of the Study

Primary Objective:

- To assess and analyze the KAP (Knowledge, Attitude, and Practice) levels of the participants related to cervical cancer screening.

Secondary Objectives:

- To check the association between socio-demographic variables and the KAP variables.
- To evaluate the internal consistency of attitude variables.
- To check the correlation between the knowledge and attitude of the participants.
- To examine whether the knowledge and attitude of participants predict screening behavior.
- To provide recommendations to improve awareness, attitude, and screening uptake based on the findings.

1.9 Significance of the Study

The findings of this study can inform targeted educational and awareness campaigns and improve cervical cancer screening outreach, especially in under-screened populations. Public health planners and policymakers will likely benefit from this study.

Chapter 2 - Review of Literature

S.No.	Title of Study	Authors (Year)	Study Location and Sample Size	Study Type	Salient Features (Key Findings)
1.	“Cervical cancer screening in rural India: Status & current concepts” (Srivastava AN et al., 2018)	Srivastava AN, Misra JS, Srivastava S, Das BC, Gupta S (2018)	“Study Location: India (with emphasis on rural settings). Sample Size: Not applicable (secondary data from various studies).” (Srivastava AN et al., 2018)	“Review article (Narrative Review). Evaluates the challenges and strategies in implementing cervical cancer screening in rural India, comparing different screening modalities, and proposing realistic, resource-sensitive solutions.” (Srivastava	“Low Screening Uptake in Rural India: Despite national guidelines, screening coverage remains critically low, particularly in rural areas. Major barriers include illiteracy, lack of awareness, poor access to healthcare, and socio-cultural factors. Awareness and Education: Studies cited in the review emphasize that younger and more educated women had better awareness about cervical cancer. Exposure to family planning, media, and prior gynecological issues were positively associated with awareness. Single Lifetime Screening Suggested: The review recommends a single lifetime screening for high-risk women (e.g., older age, high

				AN et al., 2018)	parity, symptomatic cases), especially in low-resource settings, as a feasible and cost-effective strategy. Alternative Screening Methods: Visual methods are suggested for mass rural screening due to their cost-effectiveness, simplicity, and feasibility compared to cytology.” (Srivastava AN et al., 2018)
2.	“Knowledge, attitude, and practice about cervical cancer and its screening among community healthcare workers of Varanasi district, Uttar Pradesh, India” (Khanna D et al., 2019)	Khanna D, Khargekar N, Budukh A (2019)	“Study Location: Varanasi District, Uttar Pradesh, India Sample Size: 290 community health workers (mostly ASHA workers).”	“Community-based cross-sectional descriptive study. Semi-structured, prevalidated questionnaire assessing sociodemographics, knowledge, attitude, and practice toward	High Awareness but Poor Practice: Although 91.56% of the women had heard of cervical cancer, 83.6% had never been screened by Pap smear. This highlights a gap between knowledge and screening practice. Positive Attitudes but Limited Action: A majority (62.6%) agreed that cervical screening is harmless and 77.9% were willing to undergo free screening, yet only 16.3% had actually been screened, reflecting

			(Khanna D et al., 2019)	cervical cancer and its screening.” (Khanna D et al., 2019)	positive intentions not converting to action. Low Awareness of HPV Vaccine: Only 35.5% of people knew about the HPV vaccine, and 5% been vaccinated. Despite this, 84.2% were willing to vaccinate their daughters, suggesting potential for improvement through targeted education. Key Barriers to Screening: The primary reasons were “no signs or symptoms” (57.3%) and lack of awareness, pointing to misconceptions that screening is only necessary when symptomatic. (Khanna D et al., 2019)
3.	“Cervical cancer: a hospital based KAP study among women aged 18 years and above in Northern	Gupta RK, Singh P, Langer B, Kumari R, Sharma P, Gupta R (2019)	“Study Location: Conducted at the OPD of Gynaecology and Obstetrics Department,	“Cross-sectional hospital-based study.” (Gupta RK et al., 2019)	High Awareness but Poor Practice: Although 91.56% of the women had heard of cervical cancer and 83.15% believed it was preventable and curable, 83.6% had never been screened by Pap smear.

	India” (Gupta RK et al., 2019)		Government Medical College, Jammu, Jammu and Kashmir, India. Sample Size: Initially approached 415 women. Final sample included 380 women aged 18 years and above who had heard of cervical cancer.” (Gupta RK et al., 2019)		Positive Attitudes but Limited Action: A majority (62.6%) agreed that cervical screening is harmless and 77.9% were willing to undergo free screening, yet only 16.3% had actually been screened, reflecting positive intentions not converting to action. Low Awareness of HPV Vaccine: Only 35.5% of participants knew about the HPV vaccine, and merely 5% had been vaccinated. Despite this, 84.2% were willing to vaccinate their daughters, suggesting potential for improvement through targeted education. Key Barriers to Screening: The primary reasons for not undergoing screening were “no signs or symptoms” (57.3%) and lack of awareness, pointing to misconceptions that screening is only necessary when symptomatic.
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					(Gupta RK et al., 2019)
4.	“Exploring the Barriers to Cervical Cancer Screening through the Lens of Implementers and Beneficiaries of the National Screening Program: A Multi-Contextual Study” (Dsouza JP et al., 2020)	Dsouza JP, Van Broucke S, Pattanshetty S, Dhoore W (2020)	“Study Location: Conducted across three Indian states — Himachal Pradesh, Meghalaya, and Karnataka. Sample size: Included beneficiaries (women aged 30–59) and key informants (health staff and program managers) across 6 FGDs and 12 interviews with women, and multiple key informant interviews with health	“Qualitative, exploratory, cross-sectional study using focus group discussions (FGDs) and in-depth interviews.” (Dsouza JP et al., 2020)	Low Awareness and Knowledge Deficit: The study found that most women lacked basic knowledge about cervical cancer, its risk factors, and the importance of screening. Many participants were not aware of the symptoms or the need for screening in the absence of symptoms, which significantly impacted their likelihood of participation. Emotional and Cultural Barriers: Fear of diagnosis, embarrassment, stigma, and anxiety related to the screening procedure were cited as major deterrents. Many women expressed discomfort in discussing reproductive health and were influenced by cultural notions of modesty and shame. Lack of Family and Spousal Support: A notable interpersonal barrier was the lack of support from husbands

			system staff (including 3 state and 11 district program managers, gynecologists, and health workers).” (Dsouza JP et al., 2020)		or family elders. Women often avoided screening due to fear of mistrust, character judgment, or lack of permission from family members. Systemic and Accessibility Issues: Organizational challenges such as poor accessibility to services, long waiting times in government hospitals, lack of proactive screening efforts by health workers, and minimal health education outreach were also identified as key hindrances. (Dsouza JP et al., 2020)
5.	“Spatial evaluation of prevalence, pattern and predictors of cervical cancer screening in India” (Puranik A et al., 2020)	Puranik A, Shreenidhi SM, Rai SN (2020)	“Study Location: The study was conducted across all 36 states and Union Territories of India, covering 639 districts (data	“Secondary data analysis and spatial epidemiological ecological study, using tools like spatial regression models and	Spatial Disparities in Screening: The study identified significant geographic disparities in cervical cancer screening across India. Poor screening coverage was observed in many districts, particularly in North-Central and North-Eastern regions Influence of Social Determinants: Cervical

			for Lakshadweep was not available). Sample Size: This was an ecological study using aggregate data from the National Family Health Survey (NFHS-4) conducted in 2015–2016.” (Puranik A et al., 2020)	GIS mapping to analyze district-wise prevalence and predictors of cervical cancer screening.” (Puranik A et al., 2020)	cancer screening uptake was negatively associated with - Poor wealth index; Lack of awareness about STIs; Non-use of modern contraception; Rural residence (though rural screening was better than expected in some areas). Need for Tailored Interventions: The study emphasized the importance of customized awareness programs and region-specific interventions, based on socio-economic and cultural factors. Role of Awareness & Education: Awareness about STIs and reproductive health emerged as a key predictor of screening uptake, suggesting that educational interventions focused on sexual health could substantially improve participation in screening programs. (Puranik A et al., 2020)
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6.	“Knowledge, Attitude, and Practice on Cervical Cancer and Screening Among Women in India: A Review” (Taneja N et al., 2021)	Taneja N, Chawla B, Awasthi AA, Shrivastav KD, Jaggi VK, Janardhanan R (2021)	“Study Location: Multiple states across India, including Delhi, Noida, Punjab, Kerala, Bengal, Lucknow, and Tamil Nadu Sample Size: 7688 women (from 19 included studies).” (Taneja N et al., 2021)	“Review of cross-sectional studies.” (Taneja N et al., 2021)	Low Knowledge and Screening Uptake: Although approximately 40.2% had heard of cervical cancer, knowledge of screening methods like Pap smear was only 20.31%, and screening practice was as low as 13.22%. Positive Attitude but Poor Practice: Despite a relatively favorable attitude toward screening in 43.64% of women, actual participation in screening remained very low. Significant Socio-demographic Associations: The review noted that age, education, and per capita income significantly influenced knowledge, attitude, and practice related to cervical cancer. Need for Targeted Health Literacy Programs: The review emphasized that health system capacity and
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					community education efforts are insufficient. (Taneja N et al., 2021)
7.	“Knowledge, Attitude and Practices Towards Cervical Cancer and its Screening Among Women from Tribal Population: a Community-Based Study from Southern India” (Ghosh S et al., 2021)	Ghosh S, Mallya SD, Shetty RS, Pattanshetty SM, Pandey D, Kabekkodu SP, Satyamoorthy K, Kamath VG (2021)	“Study Location: Udupi district, Karnataka, Southern India Sample Size: 1,140 married women from three tribal communities (Koraga, Malekudiya, and Marathi Naika).” (Ghosh S et al., 2021)	“Community-based cross-sectional study.” (Ghosh S et al., 2021)	Poor Knowledge Despite High Awareness: Although 82.9% of tribal women had heard of cervical cancer, over 75% had inadequate knowledge about the disease, its risk factors, and prevention. Favorable Attitude but No Screening Practice: Despite having a positive attitude towards screening, none of them had ever undergone cervical cancer screening. Socio-Demographic Predictors of Knowledge: Significant associations were observed between knowledge scores and factors like age, marital status, literacy, socio-economic status, and tribal group ($p < 0.05$). Reliance on Informal Sources of Information: The majority received information

					from relatives/friends (97.1%), followed by mass media and very few from healthcare providers. (Ghosh S et al., 2021)
8.	“Cervical Cancer: Formulation and Implementation of Govt of India Guidelines for Screening and Management” (Mehrotra R et al., 2022)	Mehrotra R, Yadav K (2022)	“Study Location: The article covers India as a whole, with particular reference to national cervical cancer screening programs and guidelines. Sample Size: Being a review, it does not involve a primary sample size, but it analyzes data and policy	“Narrative review article.” (Mehrotra R et al., 2022)	Low Screening Coverage Despite Guidelines: Even though cervical cancer screening guidelines were established by the Indian government, the actual implementation remains limited. National Family Health Survey (NFHS-5) data shows screening coverage is as low as 3.1% nationally, with urban–rural disparities Awareness and Attitude as Barriers: The paper identifies lack of knowledge, embarrassment, and stigma as major deterrents for women undergoing screening. Emphasis on VIA as a Cost-Effective Tool: Visual Inspection with (VIA) every 5 years was highlighted as the most cost-effective method

			implementations across various regions in India.” (Mehrotra R et al., 2022)		in Indian settings for screening. Importance of Community-Level Interventions and CHWs: The review strongly recommends training (CHWs) to raise awareness and carry out cervical cancer screening. (Mehrotra R et al., 2022)
9.	“Challenges in Cervical Cancer Prevention: Real-World Scenario in India” (Kaur S et al., 2023)	Kaur S, Sharma LM, Mishra V, et al. (2023)	“Study Location: Nationwide (India) — the study was conducted across various regions using an online survey distributed to healthcare professionals involved in cervical cancer care.	“Descriptive cross-sectional survey-based study using a structured questionnaire focused on real-world challenges in cervical cancer prevention from the perspective of	Awareness and Screening Gaps: Although 75% of healthcare providers reported a decline in cervical cancer incidence, only less than 30% of women are currently screened in India , far below the WHO 2030 target. Increased awareness was cited as a major reason for decline in incidence, particularly in urban areas. Barriers to Screening: From the <i>doctor's perspective</i> : The biggest challenge was a lack of clarity among healthcare providers on who to screen and how (51.6%). From the

			Sample Size: 316 eligible and complete responses were analyzed.” (Kaur S et al., 2023)	healthcare professionals.” (Kaur S et al., 2023)	<i>patient's perspective:</i> A large proportion of women avoid screening due to being asymptomatic (43.3%), embarrassment (20.6%), and fear of cancer diagnosis (10.4%). Preference for VIA and Need for Training: VIA was found to be the most cost-effective screening method in low-resource settings, yet most clinicians do not use it routinely. Around 25% expressed the need for training, showing a gap between awareness and practice even among providers. HPV Vaccination Support: Over 93% of respondents supported HPV vaccination inclusion in the national immunization schedule, and 96.8% were willing to recommend it if it became available at ₹250 per dose. (Kaur S et al., 2023)
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10.	“Knowledge, attitude and practices towards cervical cancer and its screening among Women from tribal population of Anuppur district” (Bharti Gupta et al., 2023)	Bharti Gupta, Sridevi Parikipandla (2023)	“Study Location: Anuppur District, Madhya Pradesh, India Sample Size: 384 community women and 225 healthcare providers” (Bharti Gupta et al., 2023)	“Community-based cross-sectional study using structured questionnaires conducted between in rural (Pushp-rajgarh) and urban (Jaithari) blocks.” (Bharti Gupta et al., 2023)	Poor Awareness and Knowledge: Only 22.1% had any awareness of the disease, and over 93% had never heard of screening methods like Pap smears or HPV DNA tests. Negative Attitudes and Misconceptions: The majority of women showed neutral or negative attitudes towards cervical cancer screening. Cultural beliefs, embarrassment, and lack of perceived necessity were significant barriers to acceptance of screening. Low Screening Uptake and High Barriers: About 84.1% of participants had never undergone any cervical cancer screening. Main reasons included lack of knowledge about where to get screened (75.8%) and unavailability of services (77.6%). Healthcare Providers' Deficient Knowledge: Even among healthcare providers, there was a lack of knowledge
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					about cervical cancer, HPV infection, screening techniques, and the availability of vaccines. None of the healthcare workers had heard of HPV vaccination, and no diagnostic/treatment facilities were available at local centers. (Bharti Gupta et al., 2023)
11.	“Cervical Cancer Prevention Among Rural Women in Gujarat, India: A Mixed Methods Study on Risk Factors and KAP (Knowledge, Attitude and Practice)” (Gandhi R et al., 2024)	Gandhi R, Patel A, Patel M, et al. (2024)	“Study Location: The study was conducted in rural areas of Gujarat, India. Sample size: The research involved a total sample of 430 participant-400 women aged above 18 years were included in	“This was a community-based mixed-methods study. Quantitative cross-sectional survey to assess knowledge, attitudes, and practices (KAP). A qualitative component using semi-structured	Extremely Low Awareness and Screening Practice: Only 27% of rural women had heard of cervical cancer. Only 9% had undergone any cervical cancer screening. HPV vaccination coverage was 0%. Socio-demographic Predictors of Poor Knowledge and Practice: Illiteracy, early marriage, early pregnancy, high parity, and low socioeconomic status were significantly associated with poor knowledge and lower screening uptake. These associations were confirmed

			the quantitative survey. 30 participants were selected for in-depth qualitative interviews to explore sociocultural factors.” (Gandhi R et al., 2024)	interviews to gain deeper insights into cultural and personal barriers to cervical cancer screening and prevention.” (Gandhi R et al., 2024)	via multivariate logistic regression. Attitude-Behavior Gap: Despite 64% having a positive attitude towards screening, actual screening rates were minimal. This reflects disconnect between knowledge/attitudes and actual practice. Deeply Rooted Cultural and Gender Norms as Barriers: Qualitative findings revealed fear, stigma, gender dominance, embarrassment, and lack of spousal support as major barriers. (Gandhi R et al., 2024)
12.	“Cervical cancer awareness, knowledge, behavioural patterns, and practice of screening and vaccination in females of hilly regions	Yadav P, Gaurav A, Ravi AK, Khoiwal K, Bahadur A, Bora L, et al. (2024)	“Study Location: AIIMS Rishikesh, Uttarakhand, India (hilly region). Sample Size: 195 eligible women,	“Prospective, hospital-based observational study” (Yadav P et al., 2024)	Extremely Poor Knowledge Despite Awareness: While 87% of participants had heard of cervical cancer, nearly everyone had poor knowledge regarding symptoms, risk factors, screening, and vaccination. Only 0.5% had good knowledge, revealing a significant gap between

	of North India – A hospital-based observational study” (Yadav P et al., 2024)		recruited through OPD and outreach camps” (Yadav P et al., 2024)		awareness and actual understanding. High Attitude Scores, Poor Practice: A favorable attitude was seen in 87% of participants, yet only 1 out of 195 women had ever been screened, and none were vaccinated. Strong Correlation Between Education and KAP: The study found a statistically significant positive correlation between education level and KAP. Barriers Due to Geography and Access: One of the major hindrances was the lack of access to healthcare services in difficult terrains like hilly areas. The authors highlight the need for primary care–led outreach and education programs. (Yadav P et al., 2024)
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Chapter 3 - Methodology

This chapter outlines the research design, procedures, instruments, and analysis strategies employed in the study. It also addresses the ethical considerations that guided the conduct of the research.

3.1 Key Research Questions

Research Questions

1. What is the level of knowledge, attitude, and practice (KAP) regarding cervical cancer and its screening among women in the study population?
2. How are socio-demographic characteristics associated with women's knowledge, attitude, and practice regarding cervical cancer screening?
3. Are the Likert-scale items used to assess attitude toward cervical cancer screening internally consistent?
4. Is there a relationship between women's knowledge and their attitude towards cervical cancer screening?
5. Do knowledge and attitude scores predict whether a woman has ever been screened for cervical cancer?
6. What actionable insights can be derived from KAP patterns to guide awareness programs and improve cervical cancer screening uptake?

3.2 Study design

A **primary cross-sectional study** was conducted using a **semi-structured, self-administered questionnaire** to collect data quantitatively.

3.3 Study Setting

The data was collected through **Google Forms** distributed via various online platforms such as WhatsApp, email, and social media. This allowed wide geographical coverage and access to participants during the study period.

3.4 Study Population

Inclusion Criteria

- Female participants aged 18 years and above.
- Those who provided informed consent to participate.

Exclusion Criteria

- Individuals previously diagnosed with cervical cancer.

3.5 Study Duration

The data collection and analysis were conducted over a period of **one month**.

3.6 Sample Size and Sampling Technique

Sample Size Calculation

The minimum required sample size was calculated using the formula:

$$n = [z^2 * p (1-p)] / E^2,$$

Where:

$z=1.96$ (z-score for 95% confidence level)

$p=0.22$ (based on a previous study estimating 21.9% cervical cancer screening rate)

$E=0.05$ (margin of error)

$$n = [1.96^2 * 0.22 (1-0.22)] / 0.05^2 \approx 264$$

Considering a **non-response rate of 56%**, the adjusted sample size was calculated as:

$$n_{\text{adjusted}} = 264 / 1 - 0.56 = 600$$

Sampling Technique

A **convenience snowball sampling technique** was employed. Participants were initially contacted through known networks and were encouraged to forward the survey link to other eligible individuals.

3.7 Data Collection Procedures

- The data was collected using an online **semi-structured questionnaire** divided into four sections:
 - Socio-demographic information
 - Knowledge about cervical cancer
 - Attitude towards screening (using Likert-scale items)
 - Practice-related questions (e.g., whether screened or not)
- Participation was **anonymous and voluntary**, with no identifying personal information collected.
- All responses were downloaded and stored securely for analysis.

3.8 Study Instruments

The questionnaire was adapted from validated tools used in previously published KAP studies related to cervical cancer. The attitude section employed a **five-point Likert scale** ranging from "Strongly agree" to "Strongly disagree." The knowledge and practice items were structured in nominal or multiple-choice formats.

3.9 Operational Definitions

- **Knowledge Score:** Calculated based on correct responses to nominal knowledge questions.
- **Attitude Score:** Summed score of Likert-scale responses, after reverse coding where necessary.
- **Practice:** A binary outcome indicating whether the participant had ever been screened for cervical cancer.

3.10 Statistical Analysis

Data analysis was conducted using **IBM SPSS**. The following statistical procedures were applied:

- **Descriptive Statistics:** Frequencies and graphical representation (wherever required) for the variables.
- **Reliability Analysis:** Cronbach's alpha for internal consistency of attitude items.
- **Chi-square Tests:** To assess associations between categorical variables (e.g., socio-demographic vs knowledge/attitude/practice).
- **Binary Logistic Regression:** To predict screening behavior using knowledge and attitude scores.
- **Correlation Analysis:** Spearman correlation between knowledge and attitude scores.

3.11 Ethical Considerations

- **Informed Consent:** A consent statement was included on the first page of the questionnaire.
- **Voluntary Participation:** Participants were informed that they could withdraw at any point without any consequences.
- **Anonymity and Confidentiality:** No personal identifiers were collected, and data was stored securely.
- **Data Use:** Responses were used solely for academic research purposes.

Chapter 4 – Results

This chapter presents the key findings of the study based on the data collected through the semi-structured questionnaire. The results are organized under appropriate headings using tables, graphs, and statistical tests to interpret the Knowledge, Attitude, and Practice (KAP) of cervical cancer among the respondents.

4.1 Describing the Socio-Demographic Characteristics of the Study Participants

The frequency table is made which has six socio-demographic variables. The percentage distribution for each category of the variables are listed below in the table.

Table 4.1: Socio-Demographic Characteristics of the Study Participants (n = 163)

Variables and categories		No. of respondents	Respondent %
Age Category	<20	12	7.4%
	20-29	130	79.8%
	30-39	4	2.5%
	40-49	5	3.1%
	>50	12	7.4%
Residence type	Rural	8	4.9%
	Urban	155	95.1%
Occupation	Homemaker	6	3.7%
	Student	95	58.3%
	Employed	55	33.7%
	Own Business	3	1.8%
	Others	4	2.5%
Literacy level	Illiterate	0	0.0%
	Primary	0	0.0%
	Secondary	2	1.2%
	Higher Secondary	11	6.7%

	Graduate and above	150	92.0%
Marital Status	Unmarried	137	84.0%
	Married	26	16.0%
	Widowed	0	0.0%
Family Type	Joint	42	25.8%
	Nuclear	121	74.2%

A descriptive analysis was done and percentage was calculated for each socio-demographic variable for 163 female respondents' data. It is evident from the table that majority (80%) of the respondents were of the age group of 20-29 and respondents to a large extent resided in urban areas (95%).

Female student respondents were greater in number (58%), as compared to the employed females (34%). Overwhelming majority of the respondents had a literacy level of graduation (92%), followed by higher secondary (7%). Many of the respondents were unmarried (84%), except a few who were married (16%). Regarding the type of family which the respondents belonged, nearly one-fourth of the respondents (26%) belonged to joint family, while the remaining (74%) belonged to nuclear family.

4.2 Describing the Knowledge variables of the Study Participants

The frequency table is made which has five knowledge related variables. The percentage distribution for each category of the variables are listed below in the table.

Table 4.2: Knowledge variables of the Study Participants (n = 163)

Variables and categories		No. of respondents	Respondent %
Ever heard of cervical cancer?	Yes	151	92.6%
	No	12	7.4%
Source of information (if you have heard)	Health workers	66	43.7%
	Family and relatives	0	0.0%

	TV and media	62	41.1%
	Others	23	15.2%
Can cervical cancer be prevented?	Yes	126	77.3%
	No	3	1.8%
	Don't know	34	20.9%
Who can undergo cervical cancer screening?	All females irrespective of age and marital status	107	65.6%
	All married females age above 30 years	20	12.3%
	All married females of any age	15	9.2%
	Only females above 50 years of age	0	0.0%
	Only those women who have any problem	1	0.6%
	Don't know	20	12.3%
Is cervical cancer curable if detected early?	Yes	129	79.1%
	No	5	3.1%
	Don't know	29	17.8%

The analysis showed the knowledge characteristics regarding cervical of the respondents. It was evident from the data that more than 92% of the respondents have heard of cervical cancer, and majorly the source of information was from health workers (44%) and TV and media (41%).

More than three-fourth (77%) of the respondents believed that cervical cancer could be prevented, while many (21%) neither believed nor denied that it could be prevented. A fair number of respondents (66%) had the knowledge that all females irrespective of age and marital status can undergo cervical cancer screening. Nearly 80% of the respondents believed that cervical cancer is curable if detected early.

What are the risk factors for cervical cancer you know about? (Multiple options can be selected)

[Copy chart](#)

163 responses

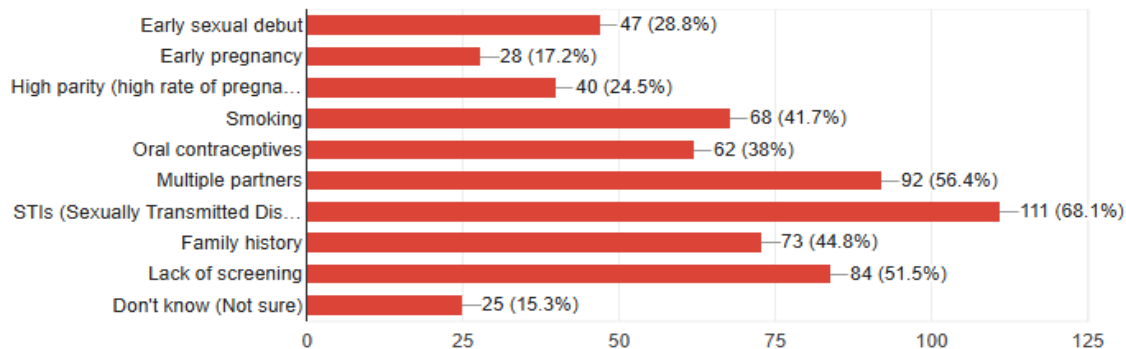


Figure 4.1: Risk factors for cervical cancer about which the respondents have knowledge (Knowledge variable)

The figure gives a visual representation regarding the knowledge related to the risk factors of the respondent. Being a multiple selection question, respondents selected multiple factors which they were aware of. Majority of them had the knowledge of STIs being a risk factor (69%), which was followed by knowledge of multiple partners as a risk factor (56%) and also the potential risk related to lack of screening (52%).

What are the symptoms of cervical cancer you know about? (Multiple options can be selected)

[Copy chart](#)

163 responses

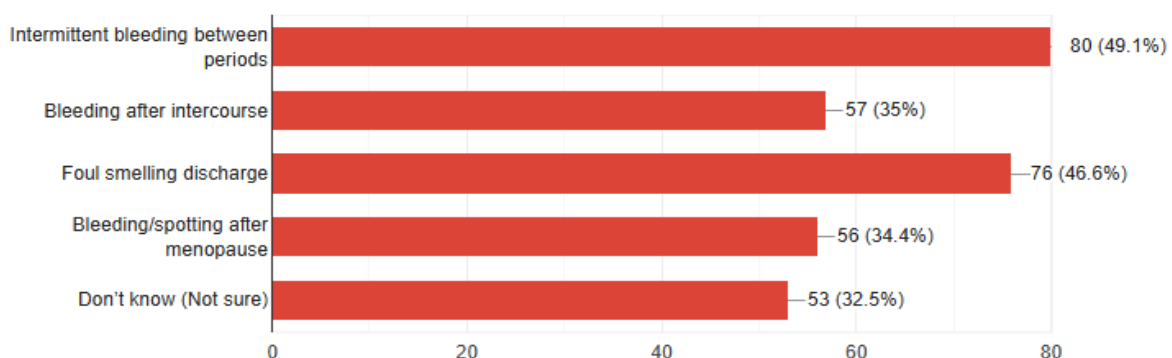


Figure 4.2: Symptoms of cervical cancer about which the respondents have knowledge (Knowledge variable)

This was also a multiple selection question. Nearly half of the respondents knew about intermittent bleeding between periods to be a symptom (49%), which was followed by awareness about foul smelling discharge to be a symptom (47%).

4.3 Describing the Attitude variables of the Study Participants

The frequency table is made which has six attitude related variables which are in Likert scale (ordinal variables). The percentage distribution for each category of the variables are listed below in the table.

Table 4.3: Attitude variables of the Study Participants (n = 163)

Variables and categories		No. of respondents	Respondent %
Cervical cancer is one of the most important cancer in females of India.	Strongly agree	87	53.4%
	Agree	63	38.7%
	Nether agree nor disagree	12	7.4%
	Disagree	1	0.6%
	Strongly disagree	0	0.0%
Any adult women including you can develop cervical cancer.	Strongly agree	57	35.0%
	Agree	85	52.1%
	Nether agree nor disagree	19	11.7%
	Disagree	2	1.2%
	Strongly disagree	0	0.0%
All married women age 30–65 years should undergo screening.	Strongly agree	86	52.8%
	Agree	64	39.3%
	Neither agree nor disagree	12	7.4%
	Disagree	1	0.6%
	Strongly disagree	0	0.0%

Screening can help in early detection and better treatment.	Strongly agree	109	66.9%
	Agree	49	30.1%
	Neither agree nor disagree	5	3.1%
	Disagree	0	0.0%
	Strongly disagree	0	0.0%
If screening is free and will cause no harm, then you will undergo screening.	Strongly agree	96	58.9%
	Agree	58	35.6%
	Neither agree nor disagree	8	4.9%
	Disagree	1	0.6%
	Strongly disagree	0	0.0%
It is embarrassing to undergo screening procedure?	Strongly agree	5	3.1%
	Agree	22	13.5%
	Neither agree nor disagree	37	22.7%
	Disagree	67	41.1%
	Strongly disagree	32	19.6%

The analysis showed the attitude characteristics regarding cervical of the respondents. It was evident from the data that more than half (53%) of the participants strongly agreed with the fact that cervical cancer is one of the important cancer in females in India. Nearly 35% participants strongly agreed that any adult women including them could develop cervical cancer and more than 50% simply agreed to it.

More than 90% of the participants agreed to the fact that all married women age 30–65 years should undergo screening. It was more than 95% of participants who felt screening can help in early detection and better treatment and also they would undergo screening if they were being screened free and assured of no harm.

Participants had mixed opinion about embarrassment to undergo screening procedure. Nearly 35% felt that it was embarrassing, while nearly three-fifth of the participants disagreed with it and felt there wasn't any embarrassment.

4.4 Describing the Practice variable of the Study Participants

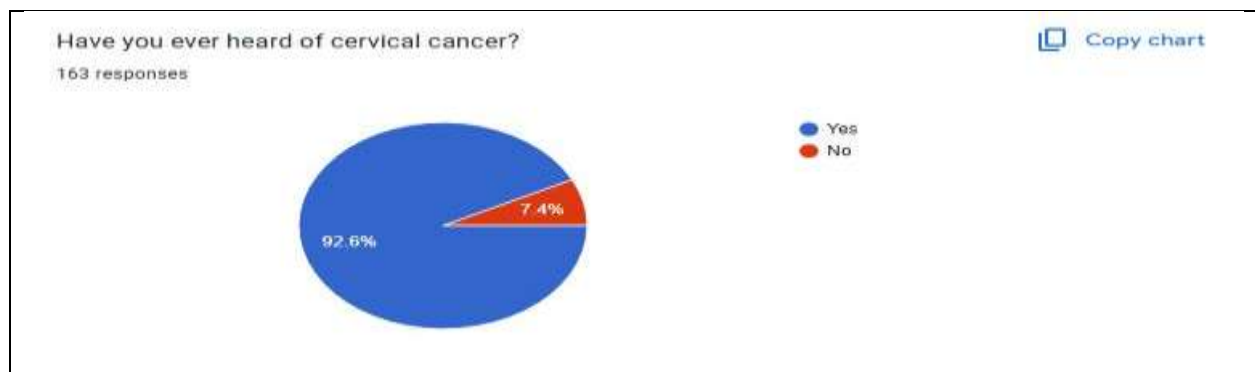
The frequency table is made which has a single practice related variable. The percentage distribution for each category of the variables are listed below in the table.

Table 4.4: Practice variable of the Study Participants (n = 163)

Variables and categories		No. of respondents	Respondent %
D1_Ever been screened for cervical cancer	Yes	15	9.2%
	No	148	90.8%

The analysis showed that less than 10% of the participants had undergone screening for cervical cancer.

4.5 Visual representation of the Knowledge, Attitude and Practice variables of the Study Participants



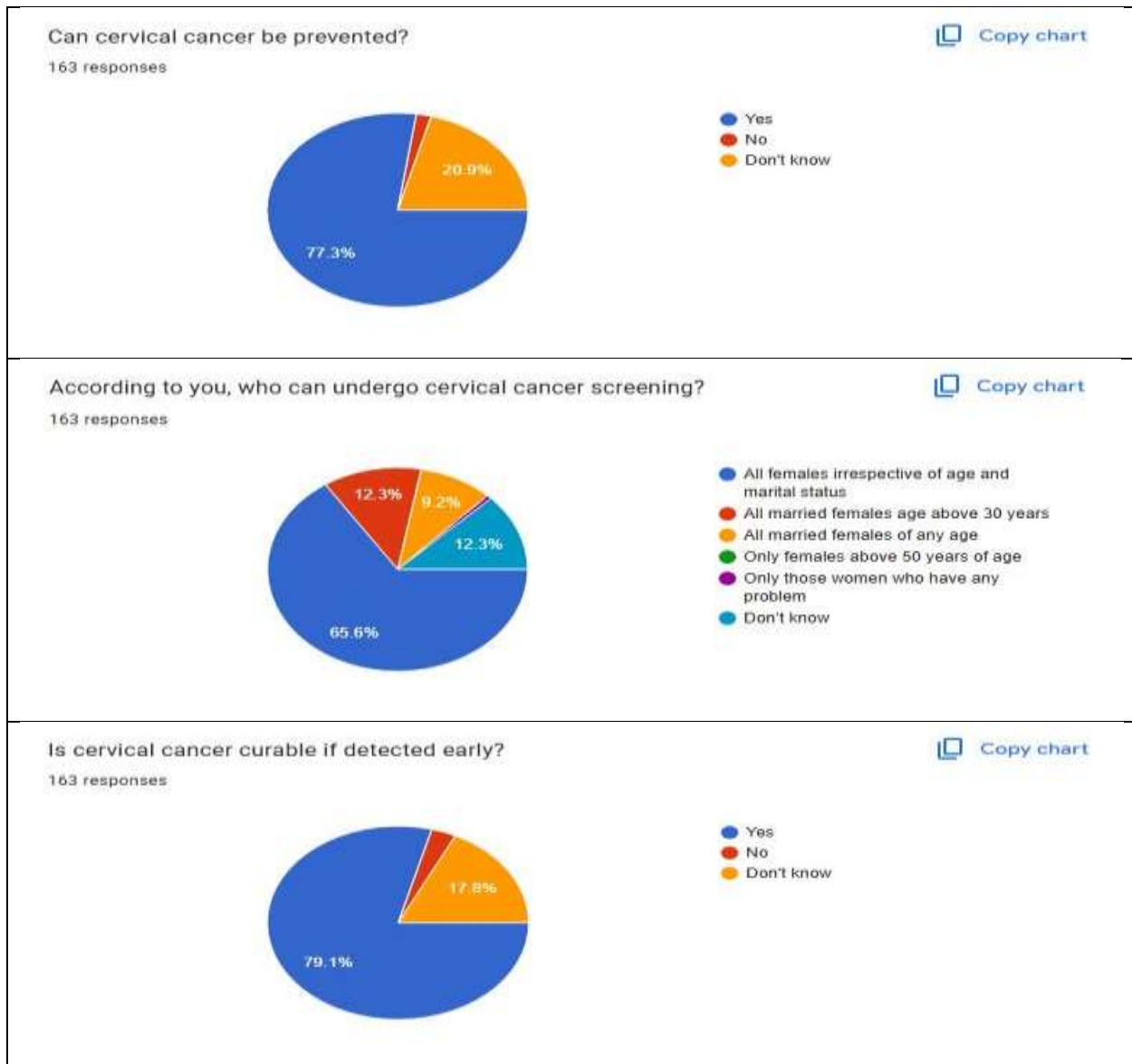
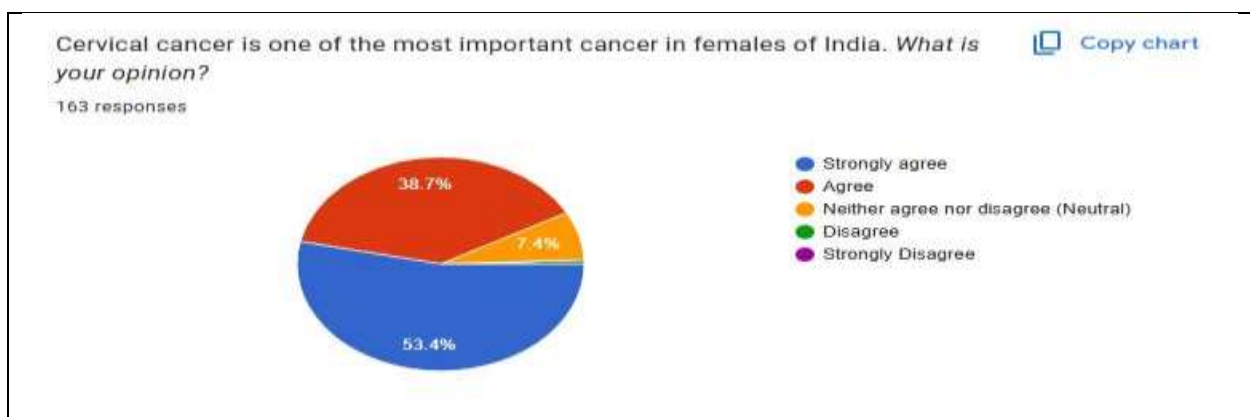


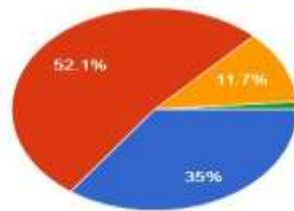
Figure 4.3: Pie-charts of Knowledge variables (except multiple select questions and optional questions) responses (extracted from Google Forms)



Any adult women including you can develop cervical cancer. *What is your opinion?*

[Copy chart](#)

163 responses

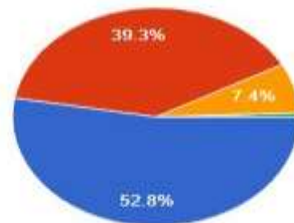


● Strongly agree
● Agree
● Neither agree nor disagree (Neutral)
● Disagree
● Strongly Disagree

All married women age 30–65 years should undergo screening. *What is your opinion?*

[Copy chart](#)

163 responses

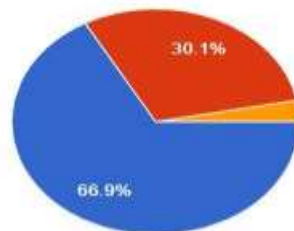


● Strongly agree
● Agree
● Neither agree nor disagree (Neutral)
● Disagree
● Strongly Disagree

Screening can help in early detection and better treatment. *What is your opinion?*

[Copy chart](#)

163 responses

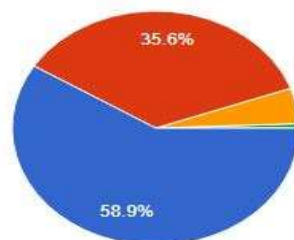


● Strongly agree
● Agree
● Neither agree nor disagree (Neutral)
● Disagree
● Strongly Disagree

If screening is free and will cause no harm, then you will undergo screening. *What is your opinion?*

[Copy chart](#)

163 responses



● Strongly agree
● Agree
● Neither agree nor disagree (Neutral)
● Disagree
● Strongly Disagree

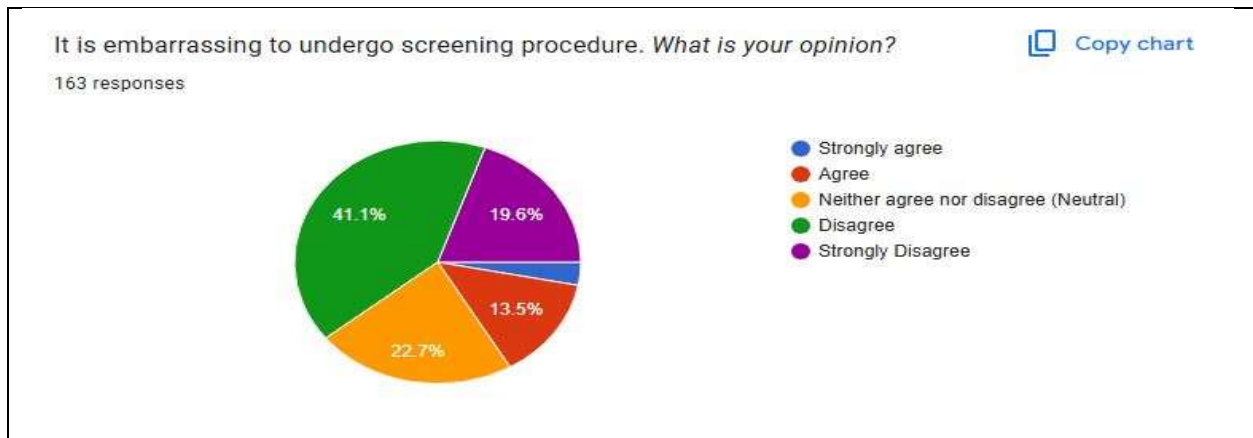


Figure 4.4: Pie-chart of attitude variables (Likert scale) responses (extracted from Google Forms)

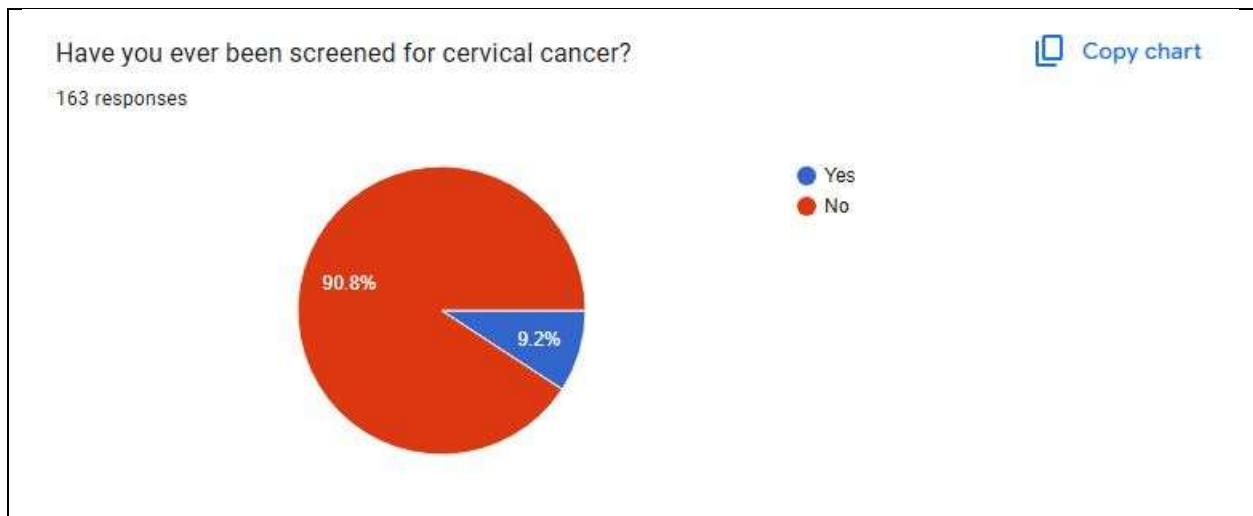


Figure 4.5: Pie-chart of Practice variable responses (extracted from Google Forms)

4.6 Internal consistency of Attitude variables (Reliability analysis)

It was done to check the internal consistency of Attitude variables (6 questions of Likert scale) and Cronbach's alpha value was obtained.

Table 4.5: Summary of Reliability analysis of Attitude variables (6 items)

Measure	Value
Cronbach's Alpha (Raw)	0.56
Cronbach's Alpha (Standardized)	0.67
Items	6
Alpha if (It is embarrassing to undergo screening procedure?) deleted	0.79
Range of Inter-Item Correlations	-0.19 to 0.63

Most items have moderate item-total correlations (around 0.45–0.53), except one variable (It is embarrassing to undergo screening procedure?), which had a negative corrected item-total correlation of -0.160. It is not consistent with the rest of the items and is lowering the reliability of the scale.

The six-item attitude scale demonstrated a Cronbach's alpha of **0.56**, indicating low internal consistency. When standardized items were used, the alpha increased to **0.67**, which is slightly below the acceptable threshold of 0.70. Inter-item correlations ranged from **-0.19 to 0.63**.

Table 4.6: Summary of Reliability analysis of Attitude variables (5 items)

Measure	Value
Number of Items	5
Cronbach's Alpha	0.794
Standardized Alpha	0.800
Inter-Item Correlation Range	0.31 – 0.63
Corrected Item-Total Correlation Range	0.495 – 0.675

The scale demonstrated **good internal consistency**, with a **Cronbach's alpha of 0.794**. Inter-item correlations ranged from **0.31 to 0.63**, indicating a moderate and consistent relationship among the items. Corrected item-total correlations ranged from 0.50 to 0.68, and removal of any item would result in a lower alpha, suggesting that all five items contribute meaningfully to the scale.

4.7 Chi-square tests for association

(Note: Used **FET (Fisher's Exact Test)** to ensure statistical validity when expected frequencies were low, especially in 2x2 or smaller subgroup analyses. Also, used the **Monte Carlo method** when the table was too large for Fisher's exact and the chi-square assumptions weren't met. Additionally, **Cramér's V** helped you interpret the **magnitude** of the relationships found in chi-square tests (0 for no association and 1 for strong association).)

Table 4.7: Chi-square summary table between Socio-demographic variables and Knowledge variables

Knowledge Variable	Socio-demographic Variable	χ^2 (df)	p-value	Statistical Significance	Test Used	Phi / Cramer's V
Have you ever heard of cervical cancer?	A1. Age	33.37 (4)	0.000	Significant	MC	0.452
	A2. Residence Type	3.84 (1)	0.109	Not significant	FET	0.153
	A3. Occupation	19.44 (4)	0.012	Significant	MC	0.345
	A4. Literacy Level	26.15 (2)	0.006	Significant	MC	0.401
	A5. Marital Status	6.39 (1)	0.025	Significant	FET	0.198
	A6. Family Type	3.98 (1)	0.079	Not significant	FET	0.156
Can cervical cancer be prevented?	A1. Age	17.70 (8)	0.092	Not Significant	MC	0.233
	A2. Residence Type	5.48 (2)	0.135	Not significant	MC	0.183
	A3. Occupation	21.23 (8)	0.031	Significant	MC	.255

	A4. Literacy Level	7.94 (4)	0.098	Not significant	MC	0.156
	A5. Marital Status	1.19 (2)	0.601	Not significant	MC	0.085
	A6. Family Type	6.09 (2)	0.025	Significant	MC	0.193
According to you, who can undergo cervical cancer screening?	A1. Age	10.97 (16)	0.718	Not significant	MC	0.130
	A2. Residence Type	1.58 (4)	0.755	Not significant	MC	0.098
	A3. Occupation	19.95 (16)	0.221	Not significant	MC	0.175
	A4. Literacy Level	4.78 (8)	0.620	Not significant	MC	0.121
	A5. Marital Status	2.20 (4)	0.663	Not significant	MC	0.116
	A6. Family Type	8.13 (4)	0.092	Not significant	MC	0.223
Is cervical cancer curable if detected early?	A1. Age	11.25 (8)	0.227	Not significant	MC	.186
	A2. Residence Type	2.59 (2)	0.264	Not significant	MC	0.126
	A3. Occupation	18.86 (8)	0.049	Significant	MC	0.240
	A4. Literacy Level	9.75 (4)	0.172	Not significant	MC	0.173
	A5. Marital Status	1.45 (2)	0.534	Not significant	MC	0.094
	A6. Family Type	0.642 (2)	0.675	Not significant	MC	0.063

To observe the association between Socio-demographic and Knowledge variables, chi-square tests are performed. The results of the same suggests that **Age, Residence Type, Literacy Level** and **Marital Status** of the participants have **statistically significant association** with **ever hearing about cervical cancer**.

The **Family Type** (Joint/Nuclear) of the participants have **statistically significant association** with the knowledge about **whether cervical cancer is preventable**. Additionally the **occupation** of the participants has **statistically significant association** with knowledge regarding **curability of cervical cancer if detected early**.

Table 4.8: Chi-square summary table between Socio-demographic variables and Attitude variables

Attitude Variable	Socio-demographic Variable	χ^2 (df)	p-value	Statistical Significance	Test Used	Phi / Cramer's V
C1. Cervical cancer is one of the most important cancers	A1. Age	26.07 (12)	0.067	Not significant	MC	0.231
	A2. Residence Type	1.03 (3)	0.497	Not significant	MC	0.080
	A3. Occupation	13.83 (12)	0.166	Not significant	MC	0.168
	A4. Literacy Level	16.35 (6)	0.037	Significant	MC	0.224
	A5. Marital Status	6.31 (3)	0.123	Not significant	MC	0.197
	A6. Family Type	4.46 (3)	0.209	Not significant	MC	0.165
C2. Any adult woman can develop cervical cancer	A1. Age	18.31 (12)	0.141	Not significant	MC	0.194
	A2. Residence Type	10.11 (3)	0.067	Not significant	MC	0.249
	A3. Occupation	17.31 (12)	0.202	Not significant	MC	0.188
	A4. Literacy Level	7.81 (6)	0.166	Not significant	MC	0.155
	A5. Marital Status	2.28 (3)	0.540	Not significant	MC	0.118
	A6. Family Type	3.66 (3)	0.258	Not significant	MC	0.150
	A1. Age	10.31 (12)	0.374	Not significant	MC	0.145

C3. All married women aged 30–65 should undergo screening	A2. Residence Type	4.06 (3)	0.178	Not significant	MC	0.158
	A3. Occupation	7.04 (12)	0.693	Not significant	MC	0.120
	A4. Literacy Level	3.86 (6)	0.491	Not significant	MC	0.109
	A5. Marital Status	1.74 (3)	0.571	Not significant	MC	0.103
	A6. Family Type	1.05 (3)	0.748	Not significant	MC	0.080
C4. Screening helps in early detection	A1. Age	6.43 (8)	0.546	Not significant	MC	0.140
	A2. Residence Type	2.95 (2)	0.258	Not significant	MC	0.135
	A3. Occupation	7.59 (8)	0.423	Not significant	MC	0.153
	A4. Literacy Level	5.31 (4)	0.172	Not significant	MC	0.128
	A5. Marital Status	1.17 (2)	0.644	Not significant	MC	0.085
	A6. Family Type	0.35 (2)	0.890	Not significant	MC	0.046
C5. Will undergo screening if free and causes no harm	A1. Age	10.93 (12)	0.331	Not significant	MC	0.150
	A2. Residence Type	9.10 (3)	0.049	Significant	MC	0.236
	A3. Occupation	10.82 (12)	0.337	Not significant	MC	0.149
	A4. Literacy Level	4.76 (6)	0.393	Not significant	MC	0.121
	A5. Marital Status	5.46 (3)	0.227	Not significant	MC	0.183
	A6. Family Type	0.89 (3)	0.890	Not significant	MC	0.074
	A1. Age	21.86 (16)	0.135	Not significant	MC	0.183

C6. Screening is embarrassing	A2. Residence Type	5.67 (4)	0.172	Not significant	MC	0.186
	A3. Occupation	18.53 (16)	0.325	Not significant	MC	0.169
	A4. Literacy Level	5.68 (8)	0.613	Not significant	MC	0.132
	A5. Marital Status	3.09 (4)	0.491	Not significant	MC	0.138
	A6. Family Type	1.17 (4)	0.883	Not significant	MC	0.085

To observe the association between Socio-demographic and Attitude variables, chi-square tests are performed. The results of the same suggests that **Literacy Level** of the participants have **statistically significant association** with the attitude to the fact that **cervical cancer is one of the most important cancers in India. Moreover, it was also observed that Residence Type** of the participants have statistical significant association with their attitude regarding to undergo screening if it is free and causing no harm.

Table 4.9: Chi-square summary table between Socio-demographic variables and Practice variables

Practice Variable	Socio-demographic Variable	χ^2 (df)	p-value	Statistical Significance	Test Used	Phi / Cramer's V
D1. Ever been screened for cervical cancer	A1. Age	41.05 (4)	0.000	Significant	MC	0.502
	A2. Residence Type	0.85 (1)	1.000	Not significant	FET	0.072
	A3. Occupation	6.54 (4)	0.123	Not significant	MC	0.200
	A4. Literacy Level	1.43 (2)	0.479	Not significant	MC	0.094
	A5. Marital Status	23.91 (1)	0.000	Significant	FET	0.383
	A6. Family Type	0.29 (1)	0.762	Not significant	FET	0.042

To observe the association between Socio-demographic and Practice variable, chi-square tests are performed. The results of the same suggests that **Age** and **Marital Status** of the participants have **statistically significant association** with their **cervical cancer screening practice**.

4.8: Binary Logistic regression (knowledge and attitude score predicting screening behavior)

Computed Total Knowledge Score by recoding the Knowledge variables and also computed Total Attitude Score by recoding the Attitude variables.

(Total Knowledge score was computed by assigning 1 point for each correct answer, 0 for incorrect or don't know responses. Entire knowledge section variables were considered except optional question).

(Total Attitude score was computed by assigning 1 point (least) to “strongly disagree” responses, all the way similarly to assigning 5 point (maximum) to “strongly agree” responses. All the other responses were given 2, 3 and 4 points in the order).

Used both the scores to predict screening behavior (Practice variable) of women (separately).

Table 4.10: Summary of Binary Logistic Regression using the Knowledge score to predict screening behavior

Output Area	Result	Statistical Significance
Omnibus Test	$\chi^2(1) = 0.218, p = 0.641$	Not statistically significant
Knowledge Score Coefficient	$B = -0.038, p = 0.642$	Not a significant predictor

Binary logistic regression showed that total knowledge score was **not a significant predictor** of whether women had ever been screened for cervical cancer, $\chi^2(1, N = 163) = 0.22, p = 0.641$ and knowledge score was not statistically significant ($p = 0.642$).

Table 4.11: Summary of Binary Logistic Regression using the Attitude score to predict screening behavior

Output Area	Result	Statistical Significance
Omnibus Test	$\chi^2(1) = 0.009, p = 0.924$	Not statistically significant
Attitude Score Coefficient	$B = -0.011, p = 0.924$	Not a significant predictor

Binary logistic regression showed that total attitude score was **not a significant predictor** of whether women had ever been screened for cervical cancer, $\chi^2(1, N = 163) = 0.01, p = 0.924$ and knowledge score was not statistically significant ($p = 0.642$).

4.9 Relationship between knowledge & attitude scores (Correlation Analysis)

A Spearman's rank-order correlation was conducted to assess the relationship between knowledge and attitude scores.

Table 4.12: Spearman's Correlation Output (Knowledge and Attitude scores)

Variables	Correlation Coefficient (ρ)	Sig. (2-tailed)	N
Knowledge & Attitude Scores	0.295	0.000	163

There is a **moderate, positive, and statistically significant** monotonic relationship between **Knowledge Score** and **Attitude Score**.

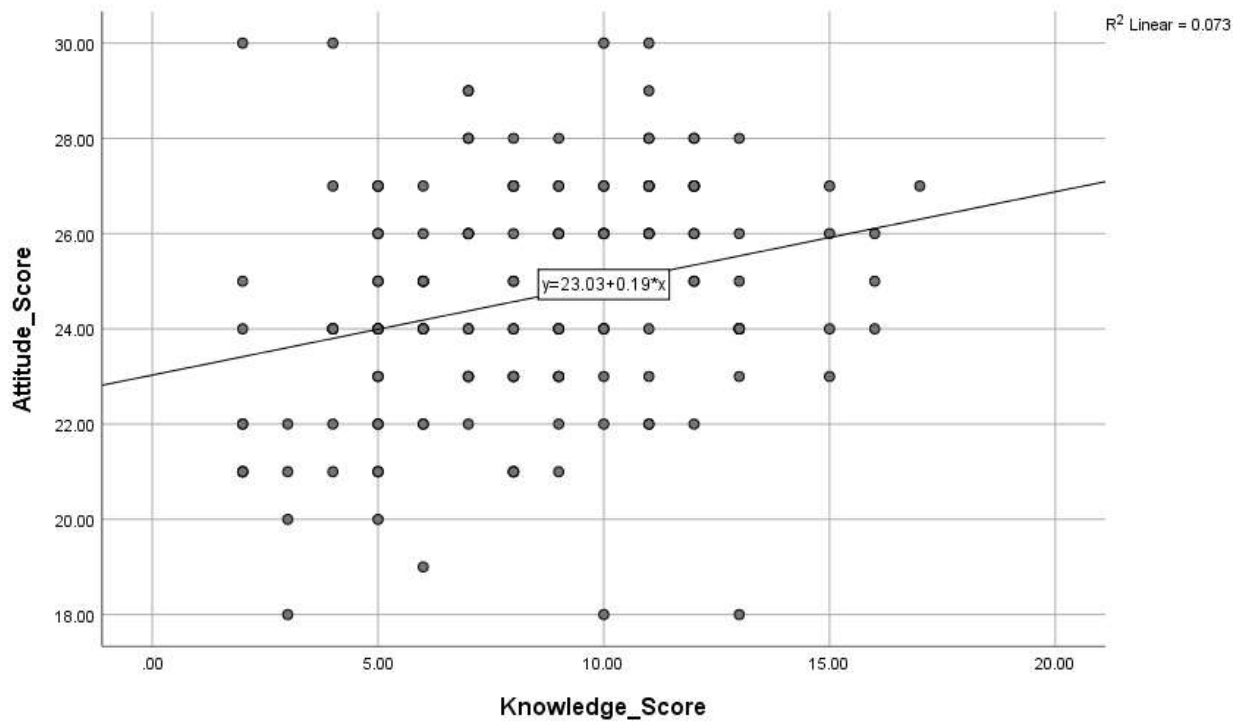


Figure 4.6: Scatterplot showing the relationship between knowledge and attitude scores

Scatterplot showing the relationship between knowledge and attitude scores among participants (N = 163). A weak but statistically significant positive linear relationship was observed with the regression line equation: $y = 23.03 + 0.19x$.

The scatterplot shows the relationship between Knowledge Score (x-axis) and Attitude Score (y-axis). Each dot represents one respondent.

The linear trend line ($y = 23.03 + 0.19x$) suggests that for every 1-point increase in knowledge, the attitude score increases by about 0.19 units. The $R^2 = 0.073$ indicates that about 7.3% of the variation in attitude is explained by knowledge — which is low, but meaningful.

Chapter 5: Discussion

5.1 Overview

This study aimed to explore the knowledge, attitude, and practice (KAP) regarding cervical cancer screening among Indian women through a cross-sectional survey. The findings provide valuable insights into how socio-demographic factors influence awareness and behaviors, and identify barriers that persist despite national initiatives and available screening services. This chapter interprets the study results in the light of existing literature, elaborates on implications, highlights the strengths and limitations, and suggests future directions.

5.2 Key Findings and Comparison with Literature

5.2.1 Knowledge and Literacy

The study found a significant relationship between **literacy level and knowledge scores** ($p = 0.021$), with participants having secondary education scoring much lower than those with higher secondary or graduate-level education. This aligns with studies by Taneja et al. (2021) and Ghosh et al. (2021), which demonstrated that education strongly correlates with awareness of cervical cancer and preventive practices.

5.2.2 Attitude and Age or Literacy

A statistically significant difference in **attitude scores across age groups** ($p = 0.010$) and **literacy levels** ($p = 0.037$) was observed. Younger and more educated women tended to show more favorable attitudes. This mirrors findings from Puranik et al. (2020), who reported that younger women were more receptive to awareness programs and screening when appropriately educated.

5.2.3 Knowledge-Attitude Correlation

A moderate **positive correlation** ($p = 0.295$, $p < 0.001$) was found between knowledge and attitude scores, indicating that higher awareness is likely to foster more positive attitudes. This

supports the KAP model's foundational assumption that increased knowledge shapes perceptions, which ultimately influence behavior.

5.2.4 Socio-demographic Influence on Practice

Among all socio-demographic variables, **age and marital status were significantly associated with screening uptake**. Screening was far more prevalent among women aged >50 and those who were married. These findings are consistent with NFHS-5 (2019-21) reports and the work by Mehrotra et al. (2022), which observed higher screening among women perceived to be at greater reproductive health risk.

In contrast, **residence type, occupation, and literacy level did not significantly affect screening practices**, indicating that these factors alone may not influence behavior unless coupled with targeted interventions or exposure to services.

5.3 Interpretation of Non-significant Findings

Despite many participants having good knowledge and positive attitudes, the **actual practice (screening uptake) remained very low (9.2%)**. Binary logistic regression found that neither **knowledge** ($p = 0.642$) nor **attitude** ($p = 0.924$) significantly predicted screening behavior.

This suggests **disconnect between awareness and action**, possibly influenced by:

- Cultural stigma and embarrassment (as shown in attitude item analysis).
- Fear and misconceptions.
- Lack of proactive healthcare engagement unless symptoms arise.

These factors echo the findings of Dsouza et al. (2020) and Srivastava et al. (2018), who highlighted **social discomfort, lack of perceived need, and logistical barriers** as major obstacles.

5.4 Strengths of the Study

- The use of a **semi-structured KAP questionnaire** allowed in-depth capture of perceptions and behaviors.
- Inclusion of a **broad age range** and women from different occupational and educational backgrounds added diversity.
- Reliability analysis (Cronbach's $\alpha = 0.794$) confirmed good internal consistency of attitude items.

5.5 Limitations

- The sample was collected using **convenience snowball sampling**, limiting generalizability.
- The **online survey format** may have excluded digitally illiterate or low-income groups, underrepresenting rural or marginalized populations.
- **Self-reporting bias** could have influenced responses, especially regarding sensitive topics like reproductive health.
- **Very low practice prevalence** reduced the statistical power of some analyses (e.g., logistic regression).

Chapter 6 – Conclusion

6.1 Conclusion

This study highlights a paradox—**high awareness and positive attitude coexist with poor screening behavior**. While education and age influence knowledge and attitude, they alone do not convert into practice. Structural and psychosocial factors continue to be major barriers. For effective cervical cancer prevention, a **multi-pronged strategy** addressing knowledge, accessibility, stigma, and trust in healthcare systems is crucial.

6.2 Implications for Public Health Practice

- Merely increasing knowledge is **not sufficient**. Interventions should also address **emotional and cultural barriers**, such as embarrassment and fear.
- Efforts should be tailored for **older and married women**, while also focusing on **school and college-based awareness** for younger groups.
- **Incorporating counseling** in primary care settings could improve translation of positive attitude into action.

6.3 Recommendations

6.3.1 Strengthen Targeted Health Education Programs

Justification:

- Although 92.6% of participants had heard of cervical cancer, awareness of **screening eligibility** (e.g., who should undergo screening) was poor, with only 12.3% correctly identifying “All females irrespective of age and marital status” as eligible.
- Several Chi-square tests between demographic variables and knowledge items showed **statistical significance** ($p < .05$), indicating an uneven distribution of awareness.
- Similarly, understanding of **preventability** and **curability** was incomplete.

Recommendation:

Implement **targeted health awareness programs**, especially focusing on:

- Age-appropriate screening eligibility
- Preventability and curability of cervical cancer
- Regular dissemination through schools, colleges, workplaces, and community groups

6.3.2 Integrate Cervical Cancer Education into School/College Curricula**Justification:**

- The Chi-square associations showing **education level had a statistically significant relationship with key knowledge parameters ($p < .05$)**.

Recommendation:

Incorporate structured cervical cancer education and reproductive health modules in **higher secondary and college education** to institutionalize awareness from a young age.

6.3.3 Leverage Health Workers and Mass Media for Information Dissemination**Justification:**

- 43.7% cited health workers and 41.1% cited TV/media as their source of information.
- These are already trusted channels.

Recommendation:

Strengthen **IEC (Information, Education, Communication)** campaigns through:

- Community health workers (e.g., ASHAs, ANMs)
- Radio, TV, YouTube shorts, etc.
- Tailored content in local languages

6.3.4 Address Social and Psychological Barriers to Screening

Justification:

- The attitude item “It is embarrassing to undergo screening” had **negative correlation** with other attitude items and weakened overall reliability (Cronbach’s α improved from 0.56 to 0.79 after removing it).
- This indicates embarrassment as a distinct and **barrier-specific factor**.

Recommendation:

- Run **myth-busting sessions** to normalize screening
- Promote testimonials from women who’ve been screened
- Ensure **gender-sensitive service delivery**, e.g., female staff for screening

6.3.5 Increase Accessibility and Reduce Cost Barriers

Justification:

- 94.5% of women agreed or strongly agreed they would undergo screening **if it were free and harmless**.
- Yet, only **9.2% had ever been screened**.

Recommendation:

- Offer **free or subsidized cervical cancer screening** at primary health centers.
- Organize regular **screening camps** with mobile clinics in rural and semi-urban areas.

6.3.6 Focus on Underserved/Disadvantageous Demographics

Justification:

- Awareness and knowledge were significantly lower among:
 - Homemakers
 - Women aged 30–49

- Women with lower educational qualifications
- Rural residents
- These groups were also **less likely to be screened**.

Recommendation:

Design and implement **tailored outreach programs** targeting:

- Rural women and homemakers through self-help groups
- Adult women with low education via Anganwadi centers and NGOs

6.3.7 Integrate Cervical Screening into Existing Health Services

Justification:

- Logistic regression showed no significant predictive power of knowledge or attitude alone on screening behavior, possibly due to **limited opportunities** to get screened.

Recommendation:

Embed cervical cancer screening into:

- Maternal and child health programs
- Family planning and immunization visits

6.3.8 Policy-Level Interventions

Justification:

- The national screening uptake remains very low despite availability.
- Your study aligns with national data showing **gap between awareness and action**.

Recommendation:

Advocate for:

- Mandatory inclusion of cervical cancer screening in national health checkup packages
- Periodic monitoring and evaluation of KAP levels in districts or states

- Multi-pronged approach combining **education, accessibility, de-stigmatization, and policy action** is critical to improve uptake of cervical cancer screening.

6.4 Suggestions for Future Research

- A **larger sample with stratified random sampling** should be used for more generalizable findings.
- Future studies should include **qualitative components** (interviews/focus groups) to explore deeper socio-cultural dimensions.
- Evaluating the **effectiveness of targeted educational interventions** on changing screening behavior would be valuable.

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Questionnaire (for data collection)

Title of the study - Knowledge, Attitude and Practice (KAP) on Cervical Cancer Screening and Related Challenges: A Primary Study Using a Semi-Structured Questionnaire (Cross-sectional comparative KAP Study)

The questionnaire is divided into parts – Socio-demographic details of the participants, Knowledge of cervical cancer and its screening among the participants, Attitude of participants on cervical cancer screening, Practice of participants related to cervical cancer screening.

Part A: Socio-demographic details of the participants

Questions	Response Options
What is your age category?	1. <20; 2. 20-29; 3. 30-39; 4. 40-49; 5. >50
What is your residence type?	1. Rural 2. Urban
What is your occupation?	1. Homemaker; 2. Student; 3. Employed; 4. Own Business; 5. Others
What is your literacy level (educational qualification)?	1. Illiterate; 2. Primary; 3. Secondary; 4. Higher Secondary; 5. Graduate and above
What is your marital status?	1. Unmarried; 2. Married; 3. Widowed
What is your family type?	1. Joint; 2. Nuclear

Part B: Knowledge of cervical cancer and its screening among the participants

Questions	Response Options
Have you ever heard of cervical cancer?	1. Yes; 2. No

What was the source of information (if you have heard)?	1. Health workers; 2. Family and relatives; 3. TV and media; 4. Others
What are the risk factors for cervical cancer you know about? (Multiple options can be selected)	A. Early sexual debut, B. Early pregnancy, C. High parity (High rate of pregnancy), D. Smoking, E. Oral contraceptives, F. Multiple partners, G. STIs (Sexually Transmitted Infections), H. Family history, I. Lack of screening, J. Don't know (Not sure)
What are the symptoms of cervical cancer you know about? (Multiple options can be selected)	A. Intermittent bleeding between periods, B. Bleeding after intercourse, C. Foul smelling discharge, D. Bleeding/spotting after menopause, E. Don't know (Not sure)
Can cervical cancer be prevented?	1. Yes; 2. No; 3. Don't know
According to you, who can undergo cervical cancer screening?	1. All females irrespective of age and marital status, 2. All married females age above 30 years, 3. All married females of any age, 4. Only females above 50 years of age, 5. Only those women who have any problem, 6. Don't know
Is cervical cancer curable if detected early?	1. Yes; 2. No; 3. Don't know

Part C: Attitude of participants on cervical cancer screening

Questions	Response Options
Cervical cancer is one of the most important cancer in females of India. What is your opinion?	1. Strongly agree 2. Agree 3. Neither agree nor disagree 4. Disagree 5. Strongly disagree
Any adult women including you can develop cervical cancer. What is your opinion?	1. Strongly agree 2. Agree 3. Neither agree nor disagree 4. Disagree 5. Strongly disagree

All married women age 30–65 years should undergo screening. What is your opinion?	1. Strongly agree 2. Agree 3. Neither agree nor disagree 4. Disagree 5. Strongly disagree
Screening can help in early detection and better treatment. What is your opinion?	1. Strongly agree 2. Agree 3. Neither agree nor disagree 4. Disagree 5. Strongly disagree
If screening is free and will cause no harm, then you will undergo screening. What is your opinion?	1. Strongly agree 2. Agree 3. Neither agree nor disagree 4. Disagree 5. Strongly disagree
It is embarrassing to undergo screening procedure. What is your opinion?	1. Strongly agree 2. Agree 3. Neither agree nor disagree 4. Disagree 5. Strongly disagree

Part D: Practices of participants related to cervical cancer screening

Questions	Response Options
Have you ever been screened for cervical cancer?	1. Yes; 2. No
What is your frequency of screening? (Only those who have screened)	1. Once; 2. More than once; 3. Don't want to answer

References for questionnaire (questions were adopted from 5 studies) –

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