

Knowledge, attitudes, practices, and sociocultural factors influencing cervical cancer screening and vaccination among women in rural communities of Gujarat: A mixed-methods study

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ABSTRACT

Background: Cervical cancer is a leading cause of cancer mortality among women in India. Screening can help in early detection and improve outcomes. However, uptake remains low, especially in rural areas. Understanding multidimensional factors influencing screening in local contexts is essential to promote equitable access. This study examined knowledge, attitudes, practices, and sociocultural factors associated with cervical cancer screening and vaccination in rural India. **Methods:** A mixed methods study was conducted among 400 women aged 18–60 years in rural Maharashtra. Quantitative data were collected on knowledge, attitudes, and screening practices by using a structured questionnaire. Qualitative data were gathered through in-depth interviews with 30 participants on perspectives influencing screening. Quantitative data were analyzed using descriptive statistics and logistic regression. Thematic analysis was done for qualitative data. The integration provided complementary insights. **Results:** Quantitative results showed poor knowledge (17% had good knowledge) and positive attitudes (64%) but low screening uptake (9%). Qualitative findings revealed limited awareness, stigma around gynecological exams, gender inequities, fear, fatalism, and low prioritization of self-care as screening barriers. **Conclusion:** Multifaceted strategies addressing knowledge gaps, gender roles, stigma, and access are required to improve cervical cancer screening in marginalized rural communities. Mixed methods provide comprehensive evidence for designing context-specific interventions.

Keywords: Attitudes, cervical cancer screening, India, knowledge, mixed methods, practices, rural women

Introduction

Cervical cancer is a major public health problem worldwide, especially in low- and middle-income countries.^[1] It is the fourth most common cancer among women globally, with an estimated 604,000 new cases and 342,000 deaths in 2020.^[2] In India, cervical

cancer is the second most frequent cancer among women, with an estimated 123,000 new cases and 77,000 deaths in 2020.^[3] It is the leading cause of cancer mortality among women aged 15–49 years in India.^[4]

Screening programs aimed at early detection of precancerous cervical lesions and their treatment can effectively reduce disease burden.^[3] The World Health Organization (WHO) recommends screening for cervical cancer among women aged 30–49 years at least once in their lifetime using simple,

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affordable tests such as visual inspection with acetic acid (VIA) or HPV DNA test.^[5] However, screening coverage remains very low in India, with only 22% of women screened for cervical cancer nationally.^[6]

Lack of awareness about cervical cancer, poor knowledge regarding its prevention, sociocultural barriers, limited access to screening services, and inadequate health infrastructure and manpower have been identified as critical impediments to cervical cancer prevention and control in India.^[7,8] Qualitative studies have highlighted the influence of cultural beliefs, gender norms, spousal disapproval, and reluctance to undergo gynecological exams as factors deterring screening among women.^[9,10]

Understanding the interplay of knowledge, attitudes, practices, and sociocultural factors related to cervical cancer prevention is crucial for planning effective interventions. Mixed methods studies combining quantitative instruments with qualitative in-depth inquiry can provide valuable insights into complex health behaviors. However, there is limited evidence from mixed methods studies on cervical cancer screening in rural, low-literacy communities in India. This study aimed to examine the knowledge and perceptions regarding cervical cancer and screening among women in rural Central India by using a convergent parallel mixed methods design. The quantitative component was used to assess the knowledge, attitudes, and practices related to cervical cancer screening and their sociodemographic determinants. The qualitative component was used to explore sociocultural factors influencing screening behaviors by using in-depth interviews. Integrated analysis of quantitative and qualitative data provided a nuanced and comprehensive understanding of multifaceted issues that shape cervical cancer prevention in marginalized rural settings. Evidence generated can inform targeted community-based interventions to promote screening in an equitable and culturally sensitive manner.

Methodology

It was a community-based cross-sectional mixed method study conducted over the rural families of Gujarat from January 2023 to June 2023. The sample size was calculated using the single proportion formula ($P = 15\%$) from the reference study,^[11] $3.84 * 15 * 85 / 16 = 306$, after taking 20% of the non-responsive rate, the final sample size was 400.

A simple random sampling technique was used to select the participants. Eligibility criteria include inclusion criteria: women aged >18 years from rural residential areas (residents of the area for >1 year) and those who gave consent were included. Exclusion criteria were participants who did not give consent.

In the qualitative arm, an exploratory qualitative study using in-depth interviews was conducted. Purposive sampling was used to identify information-rich cases for in-depth interviews. Thirty in-depth interviews were conducted with eligible women.

Tool development

A structured questionnaire was developed to assess knowledge, attitudes, and practices related to cervical cancer screening based on an extensive review of similar studies. The questionnaire contained closed-ended questions on sociodemographics, knowledge (risk factors, symptoms, prevention), attitudes toward screening, and self-reported screening behavior. It was translated to the local language and back-translated to English to ensure accuracy.

For the qualitative component, a semi-structured interview guide was prepared to explore perspectives and experiences regarding cervical cancer and screening. The guide included open-ended questions and probes on awareness, beliefs, barriers, and motivators for screening. It was translated using the same process. Both tools were pretested on 10% of the required sample and revised accordingly.

Data collection

Quantitative data were collected through face-to-face interviews using the structured questionnaire. Written informed consent was obtained prior. Participants were explained the study's purpose and assured of confidentiality. Interviews were conducted in a private setting by trained female researchers conversant in the local language. Responses were recorded on paper and later entered electronically.

Qualitative data were collected through in-depth interviews at participants' homes by trained female researchers. Oral informed consent was obtained, and interviews were audio recorded with permission. Data collection continued until thematic saturation was achieved. Field notes were maintained to document non-verbal cues and contextual observations.

Study variables

The primary outcome variables were:

Knowledge about cervical cancer and screening (good/poor)

Attitudes toward cervical cancer screening (positive/negative)

Cervical cancer screening practice (screened/not screened)

The explanatory variables were sociodemographic characteristics such as age, education level, marital status, and occupation.

Operational definitions

Knowledge was categorized as good or poor based on a scoring system. Participants who scored $\geq 60\%$ in the knowledge section were considered to have good knowledge.

Attitudes were categorized as positive or negative. Scores $\geq 60\%$ in the attitude questions were categorized as positive attitudes.

Practice was determined based on whether the participant had undergone cervical cancer screening (Pap smear/HPV testing/VIA) ever. Those who reported undergoing screening were categorized as "screened," while the rest were categorized as "not screened."

Ethical statement

The study protocol was reviewed and approved by the Institutional Ethics Committee of Shri MP Shah Medical College (Ref. No.: 09/01/2023). Permission was also obtained from community leaders before data collection. Written informed consent was obtained from all quantitative study participants before data collection. For qualitative interviews, oral informed consent was obtained due to lower literacy levels, and this process was approved by the ethics committee.

Data handling and analysis

Quantitative data analysis

Quantitative data were entered in EpiData software and analyzed using SPSS version 21. Descriptive statistics such as frequencies and percentages were calculated for sociodemographic variables and knowledge, attitudes, and practices regarding cervical cancer screening.

Bivariate analysis using a Chi-square test was conducted to assess factors associated with knowledge. Variables with $P < 0.2$ in bivariate analysis were entered into a multivariate logistic regression model to identify independent predictors of knowledge. Adjusted odds ratios (AOR) with 95% confidence intervals were calculated. P value < 0.05 was considered statistically significant.

Qualitative data analysis

Audio recordings of in-depth interviews were transcribed verbatim and translated into English. Transcripts were read repeatedly to identify codes and develop an initial codebook. Coding was done manually as well as using NVivo 12 software. Related codes were grouped into categories, which were further coalesced into major themes and subthemes.

Thematic analysis was done following a combined inductive and deductive approach. An iterative process was followed to identify emerging themes directly from the data (inductive) as well as explore themes identified a priori from literature review and study objectives (deductive). Coding was done both manually as well as using NVivo 12 software by two researchers independently to enhance credibility. The codebook was reviewed and refined through discussions to resolve discrepancies and reach consensus. Comparisons were made across transcripts to ensure consistency of findings. Peer debriefing was done with the research team to scrutinize the analysis process and interpretation of findings. Representative quotes were extracted to illustrate themes. Thick descriptions of context and participant narratives were provided to allow transferability of findings.

Data integration

Joint displays in the form of tables and narratives were used to integrate the quantitative and qualitative findings. Qualitative themes were used to contextualize and expand on the quantitative results. Triangulation compared convergence, dissonance, and connections between quantitative and

qualitative findings. Areas of divergence were further explored. Integrated results provided a nuanced understanding of the multiple factors influencing cervical cancer screening in the study population.

Results

A total of 400 women participated in the study. The sociodemographic characteristics are presented in Table 1. The majority of women were ≤ 25 years old (250, 63%), married (336, 84%), Hindu (310, 78%), illiterate (244, 61%), housewives (356, 89%), and from lower socioeconomic status (212, 53%).

Knowledge, attitudes, and practices related to cervical cancer screening are shown in Table 2. Only (108, 27%) of women had heard of cervical cancer, mostly from health workers (72, 67%). Knowledge about cervical cancer was poor overall (332, 83%). Less than half agreed that cervical cancer screening and vaccination can prevent cancer (164, 41%). One-third (128, 32%) were willing for screening, while half (204, 51%) were willing for vaccination. A positive attitude was observed among (254, 64%), while only (36, 9%) had undergone HPV screening.

Table 3 shows the factors associated with good knowledge of cervical cancer, in bivariate analysis. In bivariate analysis, age > 25 years (COR: 2.5, 95% CI: 1.1–7.7, $P = 0.01$), age at marriage ≥ 20 years (COR: 2.8, 95% CI: 1.06–7.7, $P = 0.03$), being married (COR: 12, 95% CI: 2.38–5.7, $P < 0.001$), having secondary education (COR: 4.4, 95% CI: 1.14–14, $P = 0.02$), and higher education (COR: 13.5, 95% CI: 3.8–8.8, $P < 0.001$) were associated with good knowledge. In multivariate analysis, age > 25 years (AOR: 2.68, 95% CI: 1.2–7.4, $P = 0.01$), age at marriage ≥ 20 years (AOR: 3.5, 95% CI: 1.3–8.94, $P = 0.01$), being married (AOR: 15, 95% CI: 2.87–8.4, $P < 0.001$), secondary education (AOR: 4.9, 95% CI: 1.6–14, $P = 0.003$), and higher education (AOR: 14.5, 95% CI: 4.1–51, $P < 0.001$) remained significantly associated.

Table 1: Sociodemographic characteristics of the study participants (n=400)

Variables	Category	Frequency	Percentage
Age (in years)	≤ 25	250	63
	> 25	150	37
Age at marriage (in years) (n=336)	< 20	200	60
	≥ 20	136	40
Marital status	Married	336	84
	Unmarried	64	16
Religion	Hindu	310	78
	Muslim	90	22
Educational status	Illiterate	244	61
	SSC	122	31
	HSC	34	8
Occupation	Housewife	356	89
	Working	44	11
Socioeconomic Status	Upper	188	47
	Lower	212	53

Table 2: Knowledge, attitude, and practice of cervical cancer screening and vaccination of the study participants (n=400)

Variables	Category	Frequency	Percentage
Ever heard of cervical cancer	Yes	108	27
	No	292	73
Source of the information (n=108)	Heard from a health worker	72	67
	Heard from family & relatives	28	26
	Heard from TV & media	8	7
Knowledge	Good	68	17
	poor	332	83
Cervical cancer is the leading cause of death in women in India	Agree	88	22
	Neither agree nor disagree	264	66
Any woman can acquire cervical cancer	Disagree	48	12
	Agree	116	29
Screening & vaccination can prevent cervical cancer	Neither agree nor disagree	196	49
	Disagree	88	22
	Agree	164	41
Willingness	For Vaccination	196	49
	For screening	40	10
Attitude	Positive	164	41
	Negative	196	49
Practice	The number of participants screened for HPV	40	10
		36	9

Table 3: Association between sociodemographic characteristics and good knowledge of cervical cancer screening and vaccination

Variables	Category	COR (CI)	AOR (CI)
Age	≤25	1	1
	>25	2.5 (1.10–7.7)**	2.68 (1.20–7.4)*
Age at marriage	<20	1	1
	≥20	2.8 (1.06–7.7)*	3.5 (1.3–8.94)*
Marital status	Unmarried	1	1
	Married	12 (2.38–5.7)*	15 (2.87–8.4)**
Religion	Hindu	-	-
	Muslim	0.67 (0.2–1.8)	-
Educational status	Illiterate	1	1
	SSC	4.4 (1.14–14)*	4.9 (1.6–14)*
	HSC	13.5 (3.8–8.8)**	14.5 (4.1–51)**
Occupation	Housewife	2.3 (0.5–9.7)	-
	Working	-	-
Socio-Economic status	Upper	0.935 (0.38–2.2)	-
	Lower	-	-

*P<0.05 - significant, **P<0.001 - highly significant, COR - Crude Odds Ratio, AOR - Adjusted Odds Ratio, CI - Confidence Interval

Table 4 shows themes and subthemes on barriers to cervical cancer screening: a comprehensive overview of findings.

Discussion

This mixed methods study provided important insights into the knowledge, attitudes, practices, and sociocultural factors influencing cervical cancer screening in rural India.

The key quantitative findings were poor knowledge levels, with only 17% having good knowledge about cervical cancer, in line with other studies. An Indian study conducted in Haryana, India, found that the majority of women from rural areas had poor knowledge about cervical cancer (55%) and its screening (75%), HPV infection (87.5%), and HPV vaccine (95%) compared to urban areas.^[12] A study conducted in Malaysia found that the knowledge and attitude of secondary school students in rural areas toward HPV vaccination were low, with only 29.6% of the participants having good knowledge about HPV vaccination.^[13]

Despite poor knowledge, 64% had a positive attitude toward screening. However, uptake was very low, with only 9% reporting ever being screened. Structural barriers such as availability and cost may explain this gap between willingness and practice, as reported qualitatively. This can be compared with a review of studies conducted in India that found that women’s attitude toward cervical cancer screening was influenced by factors such as fear of pain, embarrassment, and lack of privacy.^[14] A study conducted in a tertiary-level teaching institution in rural India found that nursing staff had a positive attitude toward cervical cancer screening, with 87.5% of the participants agreeing that screening was necessary.^[15] A study conducted in Ethiopia found that the majority of female students had poor practice toward cervical cancer screening, with only 20.3% of the participants having ever been screened for cervical cancer.^[16] A study conducted in South India found that the practice of cervical cancer screening was low among women attending obstetrics and gynecology departments, with only 23.8% of the participants having ever been screened for cervical cancer.^[17]

In addition, the study found that there is an association between sociodemographic factors and knowledge of cervical cancer screening and vaccination. More age (>25 years), age at marriage (≥20 years), marital status (married), and educational status (HSC > SSC > illiterate) were associated with good knowledge in both bivariate and multivariate analyses. This finding is consistent with some of the previous studies, which have also reported an association between sociodemographic factors and knowledge, attitude, and practice toward cervical cancer screening and vaccination.^[18-21] The results suggest that there is a need for more awareness campaigns and educational programs to improve the knowledge and practice of cervical cancer screening and vaccination among rural families in Gujarat.

Our study revealed several sociocultural factors impacting screening through in-depth interviews. Lack of awareness, stigma around gynecological exams, gender power dynamics, fear of cancer, and misconceptions were major barriers described by women. Communication gap with providers, prioritizing family over self, and low confidence further deterred screening. Similar qualitative findings have been reported in studies from India and other Asian settings.^[22,23]

Table 4: Qualitative analysis of the participants (n=30)

Theme	Subtheme	Participant Phrases
Theme 1: Low awareness and knowledge	Limited or no information about cervical cancer	“I don’t know anything about this cancer.” (P5, age 32) “I never heard the name cervical cancer before.” (P12, age 29)
	Misconceptions	“Cervical cancer is caused by a curse or by ghosts.” (P21, age 45) “Only women with bad character get this cancer.” (P17, age 39)
Theme 2: Social and cultural barriers	Screening perceived as invasive	“I feel shy to go for these procedures.” (P8, age 28)
	Stigma associated with screening	“People will think I have loose character if they see me going for this test.” (P15, age 33)
	Lack of family support	“My husband said no need to waste money on tests.” (P3, age 30)
Theme 3: Access barriers	Preference for male doctors	“I will not allow a male doctor to do this test. I want a lady doctor.” (P20, age 41)
	Long distances to screening services	“The hospital is very far. I can’t travel that long distance alone.” (P26, age 38)
	Financial constraints	“We don’t have money for these expensive tests.” (P18, age 36)
Theme 4: Fear and Fatalism	Lack of female health workers	“There are no lady doctors or nurses in our village hospital.” (P23, age 40)
	Cervical cancer is viewed as a “death sentence”	“If I have this cancer it is the end of my life.” (P13, age 35)
Theme 5: Communication gap	Avoidance due to fear	“I don’t want to get tested because I’m scared they will find cancer.” (P4, age 27)
	Language barriers	“The doctor was speaking in English which I did not understand.” (P11, age 31)
Theme 6: Gender roles	Lack of privacy during consultations	“The doctor was talking loudly in front of others.” (P9, age 29)
	Male dominance in health decisions	“My husband has to give permission first, then only I can go for the test.” (P6, age 25)
Theme 7: Prioritization	Focus on child and family health	“I’m too busy with housework and childcare to go for this test.” (P16, age 37)
	Lack of time due to household responsibilities	“When will I get time from my work at home?” (P19, age 40)
Theme 8: Lack of self-efficacy	Reliance on fate/God’s will about health issues	“If I am destined to get cancer, I will get it no matter what.” (P22, age 43)
	Avoidance due to feeling unequipped to handle screening or treatment	“I don’t know anything about these tests or cancer treatment. How can I manage all that?” (P24, age 39)
Theme 9: Lack of spousal communication	Hesitance to discuss reproductive health with husband	“I feel shy to talk about all this with my husband.” (P27, age 41)
	Lack of spousal discussion on cervical cancer screening	“My husband doesn’t talk to me about cancer or getting tested.” (P28, age 44)
Theme 10: Lack of cervical cancer education	Lack of counseling by health workers	“The nurses just tell me to go for Pap test but don’t explain anything.” (P29, age 38)
	Need for more community outreach and awareness programs	“There should be more camps and talks in our village to teach us about cervical cancer.” (P30, age 42)

Our mixed methods design allowed triangulation and complementarity between quantitative and qualitative data for a nuanced understanding. The qualitative findings aid the interpretation of the knowledge-practice gap found quantitatively. Integrating perspectives from both components provides a strong evidence base to inform context-specific, culturally-tailored interventions to improve screening in this population.

Limitations of this study include convenience sampling and self-reported data for the quantitative component. The small qualitative sample limits generalization. Further studies can explore the perspectives of health workers and family members. Assessing male involvement and support for women’s screening should be a priority.

Findings will guide the development of multi-component community-based interventions by using a socioecological

approach to improve cervical cancer screening uptake in this population:

1. Awareness campaigns using community multimedia channels (street plays, videos, radio) to increase knowledge and address myths and misconceptions related to cervical cancer and screening.
2. Gender-transformative programs involving men to challenge gender norms, promote shared decision-making, and increase spousal support for women’s screening.
3. Training of community health workers to provide culturally sensitive cervical cancer counseling and conduct home-based screening using self-sampling methods or visual inspection techniques.
4. Capacity building of primary healthcare providers in communication skills, building trust, and ensuring privacy during cervical cancer screening services.
5. Advocacy with stakeholders to strengthen health system capacity, ensure the availability of female health workers,

and increase access to decentralized, affordable screening facilities closer to rural communities.

6. Facilitated community group discussions to encourage women's prioritization of preventive health-seeking and enhance self-efficacy for cervical cancer screening.

Implications for Policy, Practice, and Future Research

The findings from this mixed-methods study have several implications for policies and practices related to cervical cancer prevention in rural India, as well as highlighting important areas for future research.

Policy implications

1. Findings underscore the need for comprehensive cervical cancer control policies and programs tailored to rural and marginalized populations in line with the WHO cervical cancer elimination strategy.
2. Investing in improving cervical cancer literacy through community-based awareness campaigns and counseling by healthcare providers should be a priority area.
3. Policies promoting gender equity, women's empowerment, and engaging men in reproductive health issues are critical to address sociocultural barriers.
4. Strengthening the primary healthcare workforce and infrastructure to enable decentralized, affordable, and accessible cervical cancer screening services in rural areas is imperative.

Implications for practice

1. Community outreach using culturally appropriate channels such as multimedia and folk media is needed to raise awareness and address myths and misconceptions.
2. Capacity building of healthcare workers in communication skills, ensuring privacy/confidentiality, and delivering cervical cancer screening services in a respectful manner is essential.
3. Community health workers can be trained to conduct home-based self-sampling or visual screening to overcome access barriers.
4. Involving men, families, and community influencers through gender-transformative programs can enhance the acceptance and utilization of screening services.

Future research directions

1. Implementation research on contextually designed multicomponent interventions to improve cervical cancer screening uptake in rural settings.
2. Exploration of innovative strategies such as self-sampling, digital health, and mHealth applications to increase screening access and continuum of care.
3. Qualitative studies on understanding provider perspectives and health system factors influencing cervical cancer prevention services.
4. Impact evaluation of policies and programs aimed at

addressing social determinants such as gender inequities and sociocultural barriers.

In summary, multidimensional strategies addressing awareness, structural barriers, gender roles, stigma, and fatalism are needed to improve cervical cancer screening in marginalized rural communities in India. Male engagement, patient-provider communication, and decentralized screening options could potentially overcome the sociocultural barriers identified in this study.^[24,25] Findings will guide the development of targeted education campaigns and community-based screening models to promote early detection and reduce inequities.

Conclusion

The present study observed that the knowledge and practice of cervical cancer screening and vaccination among rural families in Gujarat is relatively low. However, the positive attitude toward cervical cancer screening and vaccination among the study participants is high. The results suggest that there is a need for more awareness campaigns and educational programs to improve the knowledge and practice of cervical cancer screening and vaccination among rural families.

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Conflicts of interest

There are no conflicts of interest.

References

1. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: Cancer J Clin* 2018;68:394-424.
2. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, *et al.* Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: Cancer J Clin* 2021;71:209-49.
3. WHO. Cervical Cancer Elimination Strategy: WHO Team; 2020. Available from: <https://www.who.int/docs/default-source/documents/cervical-cancer-elimination-draft-strategy.pdf>.
4. Dikshit R, Gupta PC, Ramasundarahettige C, Gajalakshmi V, Aleksandrowicz L, Badwe R, *et al.* Cancer mortality in India: A nationally representative survey. *Lancet* 2012;379:1807-16.
5. WHO. WHO Guidelines for Screening and Treatment of

- Precancerous Lesions for Cervical Cancer Prevention. World Health Organization; 2013.
6. MoHFW-IIPS. National Family Health Survey (NFHS-5), 2019-20. Mumbai: IIPS; 2021.
 7. Huchko MJ, Joseph R, Prusty RK, Dabash R. Knowledge about cervical cancer screening and perception of risk among women visiting outpatient departments in Teaching Hospitals of Uttarakhand. *J Family Med Prim Care* 2019;8:672.
 8. Goyal S, Kumar A, Singla S, Kaur T, Singh S, Sharma A, *et al.* Barriers for cervical cancer screening in rural India: An exploratory qualitative study of stakeholders' perceptions and recommendations. *Cancer Epidemiol* 2021;70:101894.
 9. Chabe M, Mishra A, Dasgupta R, Dobe M. 'So women don't discuss these things'-gender roles and cervical cancer screening behaviors among women in Odisha, India: A qualitative study. *BMC Public Health* 2022;22:1-12.
 10. Patil SB, Phalke DB, Kodliwadmath MV. Knowledge and attitude about carcinoma cervix among women attending tertiary care hospital. *Indian J Community Health* 2020;32:248-52.
 11. Tadesse A, Segni MT, Demissie HF. Knowledge, Attitude, and Practice (KAP) toward cervical cancer screening among Adama science and technology university female students, Ethiopia. *Int J Breast Cancer* 2022;2022:2490327.
 12. Kadian L, Gulshan G, Sharma S, Kumari I, Yadav C, Nanda S, *et al.* A Study on knowledge and awareness of cervical cancer among females of rural and urban areas of Haryana, North India. *J Cancer Educ* 2021;36:844-9.
 13. Shamaun S, Jaleel R, Gull Y, Shahid A, Iqbal M, Qazi TN. Knowledge and attitude of cervical cancer screening and vaccination in patients attending gynecology outpatient clinic at a tertiary care hospital in Pakistan. *South Asian J Cancer* 2023;12:17-22.
 14. Davies P, Aluloski I, Arifdjanova D, Brcanski J, Davidzenka A, Durdyeva A, *et al.* HPV vaccination and cervical cancer screening policies and practices in 18 countries, territories and entities across Eastern Europe and Central Asia. *Asian Pac J Cancer Prev* 2023;24:1781-8.
 15. Peterson CE, Silva A, Holt HK, Balanean A, Goban AH, Dykens JA. Barriers and facilitators to HPV vaccine uptake among US rural populations: A scoping review. *Cancer Causes Control* 2020;31:801-14.
 16. Ndejjo R, Mukama T, Musinguzi G, Halage AA, Ssempebwa JC, Musoke D. Women's intention to screen and willingness to vaccinate their daughters against cervical cancer - a cross-sectional study in eastern Uganda. *BMC Public Health* 2017;17:255.
 17. Narayana G, Suchitra MJ, Sunanda G, Ramaiah JD, Kumar BP, Veerabhadrapa KV. Knowledge, attitude, and practice toward cervical cancer among women attending Obstetrics and Gynecology Department: A cross-sectional, hospital-based survey in South India. *Indian J Cancer* 2017;54:481-7.
 18. Shekhar S, Sharma C, Thakur S, Raina N. Cervical cancer screening: Knowledge, attitude, and practices among nursing staff in a tertiary level teaching institution of rural India. *Asian Pac J Cancer Prev* 2013;14:3641-5.
 19. Khanna D, Khargekar N, Budukh A. Knowledge, attitude, and practice about cervical cancer and its screening among community healthcare workers of Varanasi District, Uttar Pradesh, India. *J Family Med Prim Care* 2019;8:1715-9.
 20. Shrestha J, Saha J, Chitalu CM. Knowledge, attitude, and uptake of cervical cancer screening among the women of Eastern Nepal. *Risk Manag Healthc Policy* 2020;13:1583.
 21. Woldetsadik AB, Amhare AF, Bitew ST, Pei L, Lei J, Han J. Socio-demographic characteristics and associated factors influencing cervical cancer screening among women attending in St. Paul's teaching and referral hospital, Ethiopia. *BMC Women's Health* 2020;20:70.
 22. Bansil P, Wittet S, Lim JL, Winkler JL. Barriers and motivators to cervical cancer screening uptake among women in low- and middle-income countries: A systematic review. *BMC Women's Health* 2022;22:1-27.
 23. Chabe M, Mishra A, Dasgupta R, Dobe M. 'So women don't discuss these things'-gender roles and cervical cancer screening behaviors among women in Odisha, India: A qualitative study. *BMC Public Health* 2022;22:1-12.
 24. Mishra P, Gupta S, Tiwari A. A narrative review on barriers to cervical cancer screening in India: Ground realities and the way forward. *Clin Epidemiol Glob Health* 2022;17:100992.
 25. Srivastava AN, Singh G, Misra JS, Srivastava S, Das V, Natu SM. Community-based screening methods for prevention of cervical cancer among rural women of Jhansi district, Uttar Pradesh, India. *PLoS One* 2022;17:e0269690.