

KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING CERVICAL CANCER PREVENTION AMONG REPRODUCTIVE WOMEN IN RURAL BENGALURU

Dr. Shravya Alva^{1*}, Dr. Prakash², Dr. Mithun S Acharya³

^{1*}Assistant Professor, Department of Community Medicine, Adichunchanagiri Institute of Medical Sciences, B.G. Nagara - 571448, Nagamangala Taluk, Mandya District, Karnataka, India | Email: drshravyaalva@gmail.com

²Assistant Professor, Department of General Medicine, ESIC Medical College and Hospital, Kalaburagi, Karnataka, India

³Associate Professor, Department of Psychiatry, Srinivas Institute of Medical Sciences and Research Centre, Mangalore, Karnataka, India

***Corresponding Author:** Dr. Shravya Alva, Assistant Professor, Department of Community Medicine, Adichunchanagiri Institute of Medical Sciences, B.G. Nagara - 571448, Nagamangala Taluk, Mandya District, Karnataka, India | Email: drshravyaalva@gmail.com

ABSTRACT

Background: Cervical cancer is largely preventable through early detection and treatment of precursor lesions, yet uptake of screening and preventive services remains poor in rural India. Understanding the knowledge, attitude, and practice (KAP) gaps that sustain this low uptake is essential for designing effective community health education programs. **Objective:** To assess the knowledge, attitude, and practice regarding prevention of cervical cancer among women of reproductive age group (15–49 years) in the rural area of Bengaluru.

Methods: A community-based cross-sectional study was conducted among 500 women by house-to-house survey by using a pre-tested questionnaire by interview method and analyzed using descriptive statistics and Associations with socio-demographic factors were analyzed using chi-square test in SPSS v22.0.

Results: Only 42 women (8.4%) had heard of cervical cancer and adequate knowledge and Positive attitude were observed in 9 (21.4%) and 10 (23.8%) respectively. Educational status was significantly associated with both knowledge ($p=0.02$) and attitude ($p=0.002$). All 42 women practiced good genital hygiene, but none had ever undergone Pap smear screening or HPV vaccination.

Conclusion: Awareness regarding cervical cancer prevention was very poor so health education programs are urgently needed in similar rural areas to improve screening uptake and preventive practices.

Keywords: Cervical cancer, knowledge, attitude, practice, rural health

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INTRODUCTION

Cervical cancer is the fourth most frequent cancer among women worldwide. In 2022, an estimated 660,000 women were diagnosed with cancer cervix globally and caused deaths of about 350,000 women. ⁽¹⁾ In India, it remains the most frequently diagnosed cancer among women aged 15–44 years, despite being among the most preventable cancers through HPV vaccination, early detection by Pap smear or

visual inspection, and timely treatment of precursor lesions. ⁽²⁾

The largest reduction in cervical cancer incidence and mortality can be achieved by increasing screening coverage among women who are currently unscreened or screened only infrequently. ⁽³⁾ For decades, the Papanicolaou (Pap) smear has been the gold-standard screening method; however, in developing countries, this service is concentrated in urban private or government referral hospitals, while women most in need of screening those in rural areas

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face barriers related to transport, infrastructure, and trained personnel.⁽⁴⁾ Reported barriers to screening uptake globally include lack of awareness of risk factors and symptoms, misconceptions and stigma around gynecological disease, and the absence of organized national screening guidelines.⁽⁵⁾

Awareness and accurate knowledge are necessary preconditions for women to seek preventive services, while attitude shapes the willingness to act on that knowledge, and practice reflects actual uptake of screening, vaccination, and protective behaviors.⁽⁶⁾ Yet studies from various parts of India have reported highly variable levels of awareness, ranging from very low to over 65%, suggesting that knowledge, attitude, and practice (KAP) regarding cervical cancer prevention are strongly context-dependent and likely shaped by local educational and socio-economic conditions.⁽⁷⁾

Limited data exist on KAP regarding cervical cancer prevention specifically among rural women of reproductive age in Karnataka. Since organized screening and health education efforts depend on first understanding existing gaps in community knowledge, attitude, and practice, this study was undertaken to assess KAP regarding prevention of cervical cancer among women of reproductive age in the rural field practice area of tertiary care teaching institution in Bengaluru and to examine its association with socio-demographic characteristics.

MATERIALS AND METHODS

This community-based, cross-sectional study was conducted in rural field practice area of tertiary care teaching institution in Bengaluru, Karnataka, over 18 months (January 2017 to June 2018).

Study population and sample size: All women of reproductive age group (15–49 years) residing in the field practice area were eligible; those unwilling to participate or unavailable were excluded. The sample size of 500 was estimated based on the prevalence of risk factors reported in a prior rural study,⁽⁸⁾ using the formula $n = 4pq/L^2$ ($p=37\%$, allowable error 15% of p), yielding a minimum requirement of 302, which was inflated for 20 % non-response rate and rounded off to 500.

Sampling method: Simple random sampling method was used. Out of 25 villages in the field practice area, one village was randomly selected, and a house-to-house survey was conducted from a randomly chosen starting household from the selected village, with

adjoining villages surveyed as needed to cover the sample size of 500.

Study tool: Data was collected using a pre-tested, semi-structured questionnaire by interview method after a pilot study among 60 women in a non-study village was done to assess the feasibility of study. Participants were first asked whether they had ever heard of cervical cancer. Those who answered affirmatively were further assessed on:

- **Knowledge:** 11 questions with dichotomous (correct/incorrect) responses covering risk factors and preventive measures; each correct response scored 1, giving a maximum score of 11. A score $>50\%$ (≥ 6 correct) was classified as adequate knowledge.
- **Attitude:** 7 questions on a 3-point Likert scale (agree/neither agree nor disagree/disagree) regarding prevention of cervical cancer. A score $>50\%$ was classified as positive attitude.
- **Practice:** 6 questions covering genital hygiene during menstruation, treatment-seeking for sexually transmitted infections, prolonged oral contraceptive use, HPV vaccination, and Pap smear screening history. A score $>50\%$ was classified as positive practice.

Ethical considerations: Institutional ethics committee approval was obtained and written informed consent was taken from all participants before interview.

Statistical analysis: Data was entered in Microsoft Excel 2013 and analyzed using SPSS version 22.0. Descriptive statistics (frequencies and percentages) summarized KAP responses, and the chi-square test was used to determine the associations between knowledge/attitude and age, educational status, and socio-economic status, with $p<0.05$ considered statistically significant.

RESULTS

Among 500 women interviewed, only 42 (8.4%) had ever heard of cervical cancer; the remaining 458 (91.6%) had no prior awareness of the disease. All subsequent knowledge, attitude, and practice findings were reported among this subgroup of 42 women who were aware about cervical cancer.

Knowledge regarding prevention of cervical cancer

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Among the 42 women aware of cervical cancer, news media was the leading source of information (76.2%), followed by neighbors/colleagues (7.1%) and doctors and health workers (2.4% each) (Table 1). None of the women correctly identified early sexual intercourse as a risk factor, and all 42 (100%) did not know that avoiding prolonged oral contraceptive use, avoiding repeated abortions, undergoing Pap smear screening from age 21 years, or HPV vaccination could help prevent cervical cancer. Some partial awareness of behavioral risk factors was present: 57.1% correctly associated cervical cancer with having multiple sexual partners, 69.0% with having a partner with a sexually transmitted infection, and 81.0% with poor genital hygiene; however, knowledge of reproductive risk factors (early pregnancy, multiparity) was considerably weaker, with most respondents answering “don’t know.” Overall, only 9 of 42 women (21.4%, or 1.8% of the total study population) demonstrated adequate knowledge (score >50%).

Table 1: Knowledge Regarding Prevention Of Cervical Cancer Among Aware Respondents (N=42)

Knowledge item	Number	Percentage
Source of awareness: News	32	76.2
Source of awareness:	3	7.1
Source of awareness:	4	9.6
Source of awareness:	2	4.8
Correctly identified risk	24	57.1
Correctly identified risk	29	69.0
Correctly identified risk	34	81.0
Correctly identified risk	10	23.8
Correctly identified risk	6	14.3
Knew Pap smear screening	0	0.0
Knew HPV vaccination prevents cervical cancer	0	0.0
Overall adequate	9	21.4

Percentages for source of awareness based on multiple responses; n=42 throughout

Attitude regarding prevention of cervical cancer

All 42 women (100%) agreed that keeping genital organs clean prevents cervical cancer (Table 2). A

large majority (90.5%) agreed that early detection and treatment of sexually transmitted infections reduces cervical cancer risk. However, attitude towards screening and vaccination were notably weak: only 14.3% agreed that early screening reduces risk, and a substantial minority (35.7%) disagreed that HPV vaccination is protective rather than risk-increasing, with the remainder undecided. Overall, only 10 of 42 women (23.8%) had a positive composite attitude score; population-wide, this represents only 2.0% of all 500 women surveyed.

Table 2: Attitude Regarding Prevention Of Cervical Cancer Among Aware Respondents (N=42)

Statement	Agree, n (%)	Neither agree	Disagree, n (%)
Keeping genital organs clean prevents cervical cancer	42 (100.0)	–	–
Early detection/treatment of STIs reduces risk	38 (90.5)	4 (9.5)	–
Two or more children with short birth interval reduces risk	–	37 (88.1)	5 (11.9)
Prolonged OCP use (>5 yrs) increases risk	5 (11.9)	37 (88.1)	–
Early screening reduces risk	6 (14.3)	36 (85.7)	–
HPV vaccine increases risk (disagreement = correct)	–	27 (64.3)	15 (35.7)
Repeated abortions decrease risk (disagreement = correct)	–	36 (85.7)	6 (14.3)
Overall positive attitude (score >50%)	10 (23.8)*	–	–

**Composite score across all 7 items; not a simple row total. n=42 throughout*

Practice regarding prevention of cervical cancer

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All 42 women practiced good genital hygiene during menstruation. However, none had ever undergone screening (Pap smear) or HPV vaccination, none had sought early detection or treatment for sexually transmitted infections specifically in relation to cervical cancer prevention, and none had used oral contraceptive pills continuously for more than 5 years. Thus, while hygiene-related practice was universal, preventive health-seeking practice-screening and vaccination uptake in particular was entirely absent in this population.

Association of knowledge and attitude with socio-demographic factors

Adequate knowledge was not significantly associated with age group ($\chi^2=0.637$, $df=2$, $p=0.7$) or

socio-economic status ($\chi^2=1.73$, $df=4$, $p=0.7$), but was significantly associated with educational status ($\chi^2=9.56$, $df=4$, $p=0.02$) (Table 3), with adequate knowledge highest among women with primary schooling (9.5%) relative to other education strata. Similarly, positive attitude showed no significant association with age ($\chi^2=0.53$, $df=2$, $p=0.7$) or socio-economic status ($\chi^2=3.25$, $df=4$, $p=0.5$), but was significantly associated with educational status ($\chi^2=21.89$, $df=4$, $p=0.002$) (Table 3).

Table 3: Association Of Age, Education, And Socio-Economic Status With Knowledge And Attitude (N=42)

Variable	χ^2	p-value	p-value
Age group	0.637	0.7	0.7
Education	9.56	0.02*	0.002*
Socio-	1.73	0.7	0.5

*Statistically significant ($p<0.05$); χ^2 values for attitude given separately (age: 0.53; education: 21.89; SES: 3.25), df as reported in text

DISCUSSION

Only 8.4% of women in this rural Bengaluru population had ever heard of cervical cancer, a markedly lower awareness level than the 65% or higher awareness reported in hospital- and community-based studies by Ramaiah et al., Bansal et al., Raychaudhuri et al., Veerakumar et al., and Narayana et al.^(6,7,8,9,10) This disparity may reflect differences between hospital-attending populations, who may have greater health-system contact and motivation to seek information and a general rural community sample reached through house-to-house survey, as in the present study.

Among the few women aware of cervical cancer, knowledge of specific preventive measures was strikingly poor: none recognized Pap smear screening or HPV vaccination as preventive options, although a majority correctly linked the disease to behavioral risk factors such as multiple sexual partners (57.1%) and partner STI status (69.0%). This pattern-some awareness of behavioral risk but near-total ignorance of formal preventive services-suggests that informal sources such as news media (the leading source of awareness at 76.2%) convey general risk associations but rarely communicate actionable preventive steps, whereas the contribution of formal health system contact (doctors and health workers combined, 4.8%) remains minimal.

Attitude findings mirrored this gap: while all women agreed that genital hygiene helps prevent cervical cancer, only 14.3% had a positive attitude toward early screening, consistent with the broader pattern reported by Ramaiah et al., Bansal et al., and Krishnaveni et al., in which favorable attitudes toward hygiene and treatment of infections coexisted with weak endorsement of formal screening and vaccination.^(6,7,11) The practice data reinforce this picture: although hygiene practice was universal, not a single woman had ever undergone Pap smear screening or HPV vaccination, differing markedly from Bansal et al. and Ramaiah et al., who reported that 76.2% of women were willing to be screened and 9.5% had already undergone screening.^(7,10) This gap between hygiene-related practice (largely within personal control and requiring no health system contact) and screening/vaccination practice (requiring health system access) highlights service availability and health system engagement, rather than motivation alone, as a likely barrier in this setting.

The significant association between educational status and both knowledge ($p=0.02$) and attitude ($p=0.002$), in the absence of significant associations with age or socio-economic status, suggests that education exerts an independent effect on a woman's capacity to acquire and act on health information regarding cervical cancer, beyond what is explained by economic status alone. This is consistent with the broader public health literature linking female education to improved health literacy and preventive health-seeking behavior, and points to school- and community-based health education as a potentially high-yield entry point for improving cervical cancer prevention KAP in similar rural populations.

This study is strengthened by its community-based design and use of validated, structured KAP scoring instruments, but the very small number of women with prior awareness ($n=42$) limits the precision of subgroup associations, and findings are subject to the same cross-sectional and self-report limitations as the broader

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survey, including possible recall and social desirability bias.

CONCLUSION

Awareness regarding cervical cancer was critically low (8.4%) in this rural population, and even among the few aware women, knowledge, attitude, and practice regarding preventive services, particularly Pap smear screening and HPV vaccination were poor or entirely absent, despite favorable attitude and practices around genital hygiene. Educational status, rather than age or socio-economic status, was significantly associated with better knowledge and attitude. These findings highlight an urgent need for sustained, education-linked community health awareness programs that go beyond general risk communication to actively promote screening and vaccination uptake in rural India.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

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