

Original Research Article

AWARENESS AND ATTITUDES TOWARD CERVICAL CANCER SCREENING AMONG WOMEN IN A RURAL FIELD PRACTICE AREA OF A TERTIARY LEVEL TEACHING INSTITUTION, ANDHRA PRADESH

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ABSTRACT

Background: Cervical cancer remains one of the most common cancers among women worldwide and is largely preventable through early screening and Human Papillomavirus (HPV) vaccination. Despite the availability of effective screening methods, awareness regarding cervical cancer screening remains low, particularly in rural areas. This study aimed to assess awareness and attitudes toward cervical cancer screening among rural women and identify socio-demographic factors associated with knowledge regarding cervical cancer screening.

Materials and Methods: A community-based cross-sectional study was conducted among 320 women aged 21–65 years residing in the rural field practice area of Guntur Medical College, Andhra Pradesh, from July to September 2025. Data were collected through face-to-face interviews using a pretested semi-structured questionnaire. Data were analysed using SPSS version 30. Descriptive statistics and Chi-square test were applied, with $p < 0.05$ considered statistically significant.

Results: A total of 320 women participated, 41.56% had heard of cervical cancer, while 14.06% were aware of HPV vaccination. Awareness regarding cervical cancer screening was observed among 35.34% of women who had heard of cervical cancer, and out of all the participants, only 4.06% had previously undergone screening. Lack of awareness and perceived absence of risk due to lack of symptoms were the major barriers to screening. Educational status showed a statistically significant association with knowledge regarding cervical cancer screening ($p < 0.001$).

Conclusion: Awareness regarding cervical cancer, HPV vaccination, and screening methods was low among rural women. Strengthening health education and improving community-level awareness help enhance participation in cervical cancer prevention and early detection activities among rural women.

Keywords: Cervical cancer screening, Awareness, HPV Vaccination, PAP Smear.

INTRODUCTION

Cervical cancer remains a major public health concern and continues to be one of the most preventable yet deadly cancers affecting women worldwide. According to the World Health Organization (WHO), cervical cancer was the fourth

most common cancer among women globally in 2024, accounting for an estimated 660,000 new cases and approximately 350,000 deaths.^[1] Nearly 90% of these deaths occur in low- and middle-income countries, where organized screening programs, vaccination coverage, and access to timely treatment remain inadequate.² Despite

substantial advances in prevention and early detection, cervical cancer continues to disproportionately affect women in resource-limited settings.

Persistent infection with high-risk Human papillomavirus (HPV) is recognized as the principal cause of cervical cancer and is implicated in nearly 95% of cases.^[1] The disease develops gradually through precancerous lesions, allowing a valuable window of opportunity for detection and treatment before progression to invasive cancer. Effective preventive strategies such as HPV vaccination, regular cervical screening through Pap smear, Visual Inspection with Acetic Acid (VIA), and HPV DNA testing have significantly reduced incidence and mortality in countries with strong public health systems.^[2,3] Consequently, WHO launched the global strategy for elimination of cervical cancer as a public health problem, targeting 90% HPV vaccination coverage, 70% screening coverage, and 90% treatment access by 2030.^[4]

India bears a substantial share of the global cervical cancer burden. Recent estimates indicate that cervical cancer remains the second most common cancer among Indian women, with approximately 123,907 new cases and 77,348 deaths annually.^[5] The lifetime cumulative risk of cervical cancer among Indian women is estimated to be around 1 in 75.6. Alarmingly, national screening coverage remains extremely low, with recent reports suggesting that only around 1–2% of eligible women have ever undergone cervical cancer screening.^[6,7] This low uptake contributes to late-stage diagnosis, increased treatment costs, and higher mortality.

The burden is especially pronounced in rural areas, where women often encounter multiple barriers such as poor awareness, limited access to healthcare facilities, sociocultural stigma, low literacy levels, financial dependence, and misconceptions related to reproductive health. Many women seek medical attention only after symptoms develop, despite cervical cancer being largely asymptomatic during its early and more treatable stages. Recent Indian studies have consistently shown that inadequate knowledge regarding symptoms, risk factors, screening methods, and HPV vaccination remains one of the strongest determinants of poor utilization of preventive services.^[8,9]

In Andhra Pradesh, available evidence also suggests inadequate awareness regarding cervical cancer prevention. A study conducted among women in Visakhapatnam reported that only 41.4% of participants were aware of cervical cancer, while merely 10% had knowledge of screening methods, with awareness levels being lower among rural women than urban women.^[10] These findings indicate that substantial gaps in awareness and preventive practices continue to exist within the state, particularly among women residing in rural communities.

However, district-level community-based data from several regions of Andhra Pradesh, including Guntur, remain scarce. Understanding the level of awareness, prevailing attitudes, and barriers toward cervical cancer screening among rural women is necessary for designing targeted interventions, improving screening uptake, and strengthening primary healthcare services. In view of the preventable nature of cervical cancer and the limited regional evidence, the present study was undertaken to assess awareness and attitudes toward cervical cancer screening among women aged 21–65 years residing in the rural field practice area of Guntur Medical College, Andhra Pradesh, and to identify socio-demographic factors associated with awareness levels.

Objectives:

1. To estimate the level of awareness among rural women with regard to cervical cancer screening in a rural field practice area of Guntur Medical College, Guntur.
2. To determine the association between socio-demographic factors and level of knowledge on cervical cancer screening among rural women.

MATERIALS AND METHODS

Study Design: A Cross-sectional study.

Study Setting: The rural field practice area of the Department of Community Medicine, in Guntur Medical College, Guntur.

Study Period: The study was conducted for a period of 3 months from July to September 2025.

Inclusion criteria

1. Women belonging to 21–65 years age group
2. Residing in the Rural Field Practice of a tertiary care institute for > 6 months

Exclusion criteria

1. Women who have already undergone hysterectomy
2. Already known case of cervical cancer
3. Severely ill patients
4. Those who can't communicate with the interviewer due to
 - Language barrier (not knowing any of 3 languages – Hindi, English, Telugu)
 - Complete deafness
 - Speech difficulties

Sample size

$$n = \frac{Z^2 \times p \times q}{l^2}$$

Where n is the minimum sample size required,

z = 1.96

p is the Expected Prevalence expressed in percentage (%)

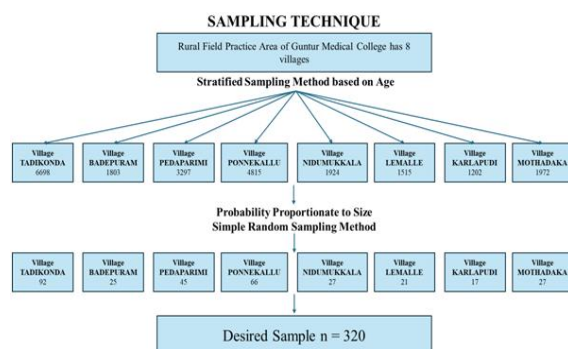
q is 100–p expressed in percentage (%)

l is the Absolute error expressed in percentage (%)

Based on a study on awareness of cervical cancer screening in rural and urban areas conducted in Haryana, the prevalence rate of cervical cancer screening awareness in rural women is 75%.¹¹ By

taking 'p' as 75%, 'q' as 25% (100-p) and 'l' as 5%. The value of the minimum sample size required(n) is 288. By adding a non-responsive rate of 10%, the sample size would be 317 and was rounded to 320.

Sampling Technique: Multistage sampling.



A multistage sampling technique was used for selection of study participants. The rural field practice area of Guntur Medical College consists of eight villages. The sample size was allocated to each village using probability proportionate to size (PPS) method based on the eligible female population in each village. Within each village, participants were selected by simple random sampling until the required sample size was achieved.

Method of data collection: A Semi-structured questionnaire was prepared, with information related to socio-demographic factors, about cervical cancer

screening, Pap smear and HPV vaccination. Informed consent was taken from study subjects, and only those who gave their consent were asked the questionnaire by face-to-face interview. Before collecting data, a pilot study was also conducted to test the feasibility and validity of the questionnaire prepared.

Ethical considerations: Ethical approval was obtained from the Institutional Ethics Committee (IEC) before conducting the study, after taking permission from the head of the institution and the department. Informed consent was also taken from the study participants after briefly explaining the purpose of the study. Confidentiality, voluntary participation and the right to withdraw at any time were assured.

Data analysis: Data were entered in MS EXCEL 2024 and analysed using SPSS version 30. Descriptive stats were expressed as frequencies and percentages. Knowledge scores were calculated based on responses to 15 questions and categorised as poor (0-5), moderate (6-10) and good.^[11-15]

For analytical purpose, knowledge levels were dichotomised into poor and moderate/good categories. Associations between sociodemographic variables and knowledge levels was assessed using Chi square test. p-value less than 0.05 was considered statistically significant. Attitude towards screening was assessed only among participants who were aware of screening.

RESULTS

Table 1: Socio-demographic characteristic of study participants (n=320)

Variables		Frequency (n)	Percentage (%)
Age groups (in years)	21-30	71	22.19
	31-40	107	33.44
	41-50	79	24.69
	>50	63	19.69
Education	No formal education	81	25.31
	Primary school (class 1-5)	51	15.94
	Middle school (class 6-8)s	37	11.56
	High school (class 9-10)	77	24.06
	Intermediate	25	7.81
	Graduate & above	49	15.31
Occupation of the women	Home maker	209	65.31
	Employed	111	34.69
Socio-economic class (BG prasad scale 2025)	Class I	241	75.31
	Class II	64	20.00
	Class III	15	4.69
	Class IV	0	0.00
	Class V	0	0.00
Type of family	Nuclear	226	70.62
	Three generation	58	18.13
	Joint	36	11.25
Marital status	Married	268	83.75
	Widowed / divorced	43	13.44
	Single	9	2.81
No. Of living children	≤2	264	82.50
	>2	56	17.50

A total of 320 women aged 21–65 years participated in the study. The largest proportion belonged to the 31–40 years' age group (33.44%), followed by 41–50 years (24.69%), 21–30 years (22.19%), and >50

years (19.69%). Regarding educational status, 25.31% had no formal education, while 24.06% had completed high school and 15.31% were graduates or above. Most participants were homemakers

(65.31%), married (83.75%), and had 2 living children (82.50%). A majority belonged to Class I socioeconomic status (75.31%) and lived in nuclear families (70.63%).

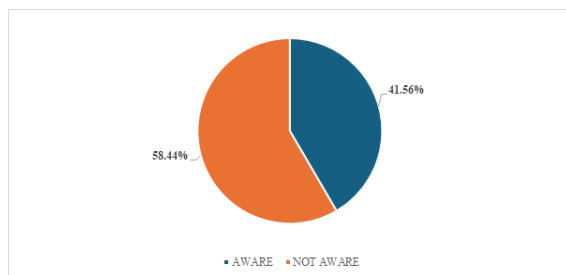


Figure 1: Distribution of awareness regarding cervical cancer (n=320)

[Figure 1] illustrates the level of awareness regarding cervical cancer among the women in the study. Only 133 (41.56%) of the women reported having heard of cervical cancer. Among those who were aware of cervical cancer, Fig. 2 shows the different sources of their information. The most common source of information was family and friends (44.36%), followed by television (or) Radio (28.57%), social media (27.82%) and healthcare workers (25.56%).

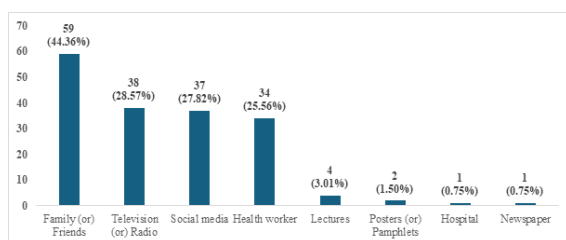


Figure 2: Distribution of information sources for cervical cancer awareness (n=133)

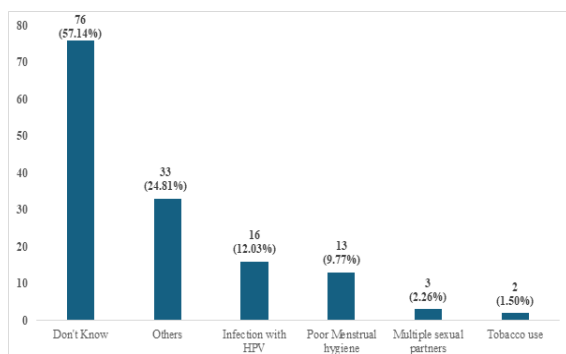


Figure 3: distribution of perceived causes of cervical cancer among women (n=133)

[Figure 3] illustrates the level of knowledge regarding the causes of cervical cancer among the study population. Knowledge regarding causes and symptoms of cervical cancer was inadequate. Nearly 57.14% of participants could not identify any cause, and 24.81% reported incorrect causes. Only 25.56% correctly identified recognized risk factors such as HPV infection, poor menstrual hygiene, tobacco use, or multiple sexual partners. Specifically, only

12.04% identified HPV as the principal causative factor.

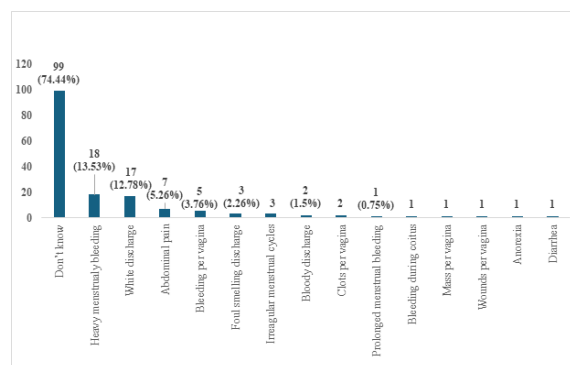


Figure 4: distribution of symptoms of cervical cancer reported by women (n=133)

[Figure 4] shows the knowledge of symptoms of cervical cancer among study participants. Awareness of symptoms was similarly poor; majority 74.44% were not aware of symptoms. Heavy menstrual bleeding (13.53%), white vaginal discharge (12.78%), and abdominal pain (5.26%) were the most frequently reported symptoms. A smaller proportion of participants identified other symptoms such as bleeding per vagina, foul-smelling discharge, irregular menstrual cycles, passage of clots per vagina, prolonged menstrual bleeding, bleeding during coitus, mass per vagina, genital lesions, anorexia, and diarrhoea.

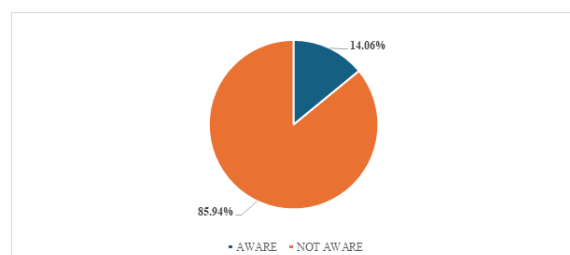


Figure 5: proportion of women not aware of the human papillomavirus (HPV) vaccination (n=320)

[Figure 5] shows awareness of Human papillomavirus vaccination among the study participants. Of the 320 women, 14.06% were aware of HPV vaccination.

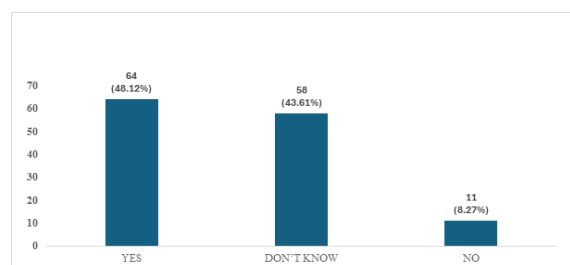


Figure 6: distribution of women's perception regarding preventability of cervical cancer (n=133)

[Figure 6] illustrates participants' perceptions regarding the preventability of cervical cancer who

were aware. Of the 133 women, 58 (43.61%) were uncertain whether cervical cancer is preventable. In contrast, 64 participants (48.13%) believed that it can be prevented, while 11 (8.27%) believed that it is not preventable.

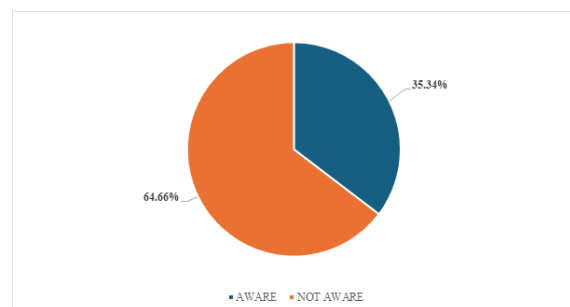


Figure 7: distribution of women based on awareness of cervical cancer screening (n=133)

[Figure 7] shows that among the 133 women who had heard of cervical cancer, only 35.34% (47 women) had heard of cervical cancer screening.

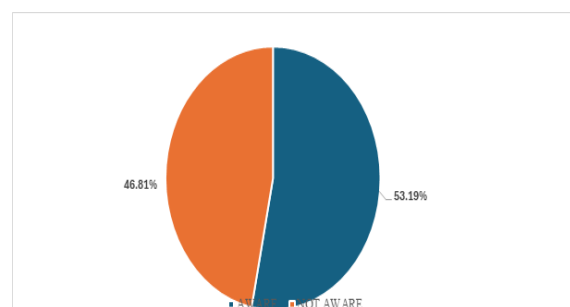


Figure 8: distribution of women based on awareness on pap smear (n=47)

[Figure 8] shows that out of 47 women who were aware of cervical cancer screening, 25 (53.19%) women were aware of Pap Smear test.

[Figure 9] shows that out of 320 women only 13 (4.06%) had ever undergone cervical cancer screening.

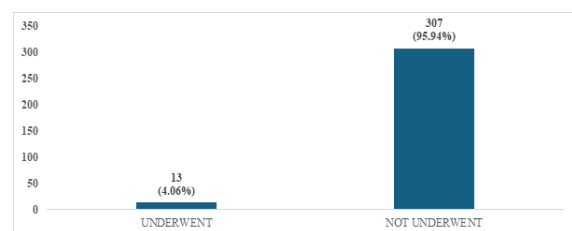


Figure 9: distribution of women based on cervical cancer screening status (n=320)

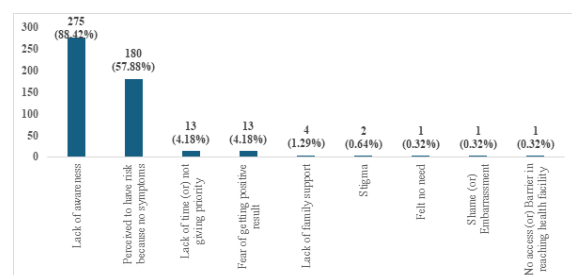


Figure 10: distribution of reasons for not utilizing cervical cancer screening services (n=307)

From the above figure the most common reason for not undergoing screening was lack of awareness (88.42%), followed by perception of not being at risk due to absence of symptoms (57.88%). Other barriers included lack of time, fear of diagnosis, fear of pain, lack of family support and stigma.

Table 2: Distribution of study participants according to knowledge score regarding cervical cancer (n = 320).

Knowledge score category	Score range	Frequency (n)	Percentage (%)
Poor Knowledge	0–5	283	88.44
Moderate Knowledge	6–10	26	8.1
Good Knowledge	11–15	11	3.5
Total	0–15	320	100.00

The mean knowledge score of the participants regarding cervical cancer was 3.19 ± 2.26 out of a maximum possible score of 15, indicating overall low to moderate knowledge levels. More than half of the women (88.44%) had poor knowledge, while 5.94% had moderate knowledge and only 3.44%

demonstrated good knowledge regarding cervical cancer, its risk factors, screening, and prevention. Attitude toward cervical cancer screening was assessed among the 47 women who were aware of cervical cancer screening.

Table 3: Attitude towards cervical cancer screening among women aware of screening (n = 47).

Attitude Statement	Agree n (%)	Neutral n (%)	Disagree n (%)
Screening is important even if I feel healthy	35 (74.5)	1 (2.1)	11 (23.4)
I am afraid to undergo cervical cancer screening	12 (25.5)	2 (4.3)	33 (70.2)
I feel shy/embarrassed to undergo screening	6 (12.8)	4 (8.5)	37 (78.7)
Screening is needed only when symptoms are present	25 (53.3)	1 (2.1)	21 (44.7)
I am willing to undergo cervical cancer screening if advised by a healthcare provider	41 (87.2)	1 (2.1)	5 (10.6)
I feel I am not at risk of cervical cancer	15 (31.9)	9 (19.1)	23 (48.9)
Cervical cancer screening can save lives	44 (93.6)	3 (6.4)	0 (0.0)

Attitudes toward screening were generally favourable among 47 participants with the majority

agreeing that screening is important even when healthy (74.5%), expressing willingness to undergo

screening if advised (87.2%), and believing that screening can save lives (93.6%). Most women also disagreed with statements related to fear (70.2%) and embarrassment (78.7%) toward screening. However, some participants held less favourable

perceptions, with 53.3% agreeing that screening is necessary only when symptoms are present and 31.9% perceiving themselves as not at risk for cervical cancer.

Table 4: Association between Socio-demographic factors and Knowledge of cervical cancer among study participants (n=320)

(n = 326)

Category	Poor n = 283 (88.44%)	Moderate / good n = 37 (11.56%)	Test used	Test value	df	p value
AGE GROUP (YEARS)						
21–30	59 (84.3)	11 (15.7)	Chi-square	7.008	4	0.135
31–40	91 (85.0)	16 (15.0)				
41–50	71 (89.9)	8 (10.1)				
>50	61 (96.8)	2 (3.2)				
EDUCATIONAL QUALIFICATION						
No formal education	81(100.0)	0 (0.0)	Chi-square	56.92	5	<0.001*
Primary school	48 (94.1)	3 (5.9)				
Middle school	36 (97.3)	1 (2.7)				
High school	66 (85.7)	11 (14.3)				
Intermediate	23 (92.0)	2 (8.0)				
Graduate & above	29 (59.2)	20 (40.8)				
OCCUPATION OF WOMEN						
Home maker	92 (83.6)	18 (16.4)	Chi-square	3.779	1	0.052
Employed	191(91.0)	19 (9.0)				
SOCIO-ECONOMIC STATUS						
Class I	223(87.1)	33 (12.9)	Chi-square	2.956	2	0.228
Class II	45 (91.8)	4 (8.2)				
Class III	15(100.0)	0 (0.0)				
TYPE OF FAMILY						
Nuclear	200(88.5)	26 (11.5)	Fisher's Exact	—	—	1
Joint	30 (88.2)	4 (11.8)				
Three generation	51 (87.9)	7 (12.1)				
MARITAL STATUS						
Married	242(87.4)	35 (12.6)	Fisher's Exact	—	—	0.197
Widowed/Divorced	41 (95.3)	2 (4.7)				
NUMBER OF LIVING CHILDREN						
≤2	230(87.1)	34 (12.9)	Chi-square	2.556	1	0.11
>2	53 (94.6)	3 (5.4)				
FAMILY HISTORY OF CANCER						
No	251(89.3)	30 (10.7)	Fisher's Exact	—	—	0.185
Yes	32 (82.1)	7 (17.9)				

[Table 4] shows the association between socio-demographic factors and knowledge regarding cervical cancer among the study participants. A statistically significant association was observed only with educational qualification ($\chi^2=56.917$, $p<0.001$), with good knowledge seen among women with higher education levels. Nearly 40.8% of graduates and above had moderate/good knowledge compared to none among women with no formal education. No significant association was found with age, occupation, socio-economic status, type of family, marital status, number of living children, family history of cancer.

DISCUSSION

The present community-based cross-sectional study was conducted to assess awareness, attitudes, and practices regarding cervical cancer screening among women aged 21–65 years residing in the rural field practice area of Guntur Medical College. The findings revealed poor awareness regarding cervical cancer and its preventive measures, inadequate knowledge of risk factors, and extremely low

utilization of screening services despite generally favourable attitudes among women who were aware of screening.

Only 41.56% of participants had heard of cervical cancer, indicating inadequate awareness among rural women. Similar levels of awareness have been reported by Kadian et al., who observed awareness among 45% of women in Haryana.^[13] In contrast, Acharya et al. reported substantially lower awareness levels among women residing in urban and rural slums of eastern India, whereas Ghosh et al. documented higher awareness among rural women in southern India.^[12,14] These variations may be attributed to differences in literacy levels, socioeconomic conditions, exposure to health information, and the effectiveness of local healthcare outreach activities. Nevertheless, the findings of the present study highlight that awareness regarding cervical cancer remains inadequate among women residing in rural settings. Knowledge regarding the causation and prevention of cervical cancer was also unsatisfactory. More than half of the participants could not identify any cause of cervical cancer, and only 12.04% correctly

recognized Human papillomavirus (HPV) infection as the principal etiological factor. Awareness regarding HPV vaccination was observed in merely 14.06% of women. Similar findings have been reported by Sain et al., who observed low levels of awareness regarding HPV infection and vaccination among Indian women.^[15] Likewise, Kadian et al. reported poor awareness regarding HPV-related prevention.^[13] The low level of awareness observed in the present study may reflect inadequate dissemination of reproductive health information, limited community-level health education activities, and poor visibility of HPV vaccination programmes in rural areas.

Awareness regarding cervical cancer screening was also low. Among women who had heard of cervical cancer, only 35.34% were aware of screening, and among those aware, just over half had heard of the Pap smear test. Furthermore, only 4.06% of all participants had ever undergone cervical cancer screening. Similar poor screening uptake was reported by Kona et al., who documented screening utilization among only 3% of rural women.^[16] Although Govindaraj et al. reported higher awareness regarding Pap smear testing, the proportion of women who had actually undergone screening remained low.^[17] These findings indicate that awareness alone may not necessarily translate into utilization of preventive services. The extremely low screening uptake observed in the present study is also consistent with findings from NFHS-5, which reported poor coverage of cervical cancer screening among eligible women in India.^[7] Such findings emphasize the need for strengthening organized screening services and improving access to preventive healthcare at the primary care level.

Lack of awareness was identified as the most common barrier to screening, followed by the perception that screening was unnecessary in the absence of symptoms. Fear of diagnosis, lack of time, inadequate family support, and stigma were additional barriers reported by participants. Similar observations were reported by Aswathy et al., where women commonly believed that screening was required only when symptoms were present and cited fear, financial constraints, and lack of interest as reasons for non-participation.^[18] Since cervical cancer is largely asymptomatic during its early stages, such misconceptions may contribute to delayed diagnosis and poorer outcomes. These findings underscore the importance of targeted health education interventions aimed at correcting misconceptions and promoting preventive health-seeking behaviour.

Attitudes towards cervical cancer screening were generally favourable among women who were aware of screening. A majority believed that screening could save lives and expressed willingness to undergo screening if advised by a healthcare provider. Most participants also disagreed with statements related to fear and embarrassment associated with the screening

procedure. However, misconceptions persisted, with more than half of the women believing that screening is required only when symptoms are present, and nearly one-third perceiving themselves to be at low risk of cervical cancer. Similar barriers and misconceptions have been documented in previous Indian studies.^[18] It is noteworthy that attitude assessment in the present study was limited to women who were aware of cervical cancer screening. Therefore, favourable attitudes observed among this subgroup may not necessarily represent the attitudes of the entire study population. The findings suggest that positive attitudes alone may not result in increased screening uptake unless accompanied by adequate knowledge and availability of accessible screening services.

With regard to factors associated with knowledge, the present study found a statistically significant association only with educational status. Women with higher educational attainment demonstrated better knowledge regarding cervical cancer compared with women without formal education. Similar findings have been reported by Lal et al., who observed significantly greater awareness regarding cervical cancer screening among women with higher levels of education.^[19] Education likely improves health literacy, access to health information, and understanding of preventive healthcare practices, thereby facilitating acceptance and utilization of screening services. These findings suggest that women with lower educational attainment should be prioritized during awareness and behavioural change interventions.

Overall, the present study highlights substantial gaps in awareness, knowledge, and utilization of cervical cancer preventive services among rural women. Although the uptake of screening was extremely low, the favourable attitudes observed among women aware of screening indicate that acceptance of preventive services may improve if adequate information and accessible services are made available. Strengthening community-based health education through ASHA workers and ANMs, integrating cervical cancer counselling into existing reproductive and maternal health services, promoting HPV vaccination, and expanding accessible screening facilities at the primary healthcare level are essential for improving early detection and achieving the World Health Organization's goal of cervical cancer elimination as a public health problem.^[4]

Strengths of the study:

1. Community-based study conducted among rural women, an under-researched high-risk population.
2. Included women from the recommended screening age group (21–65 years).
3. Assessed awareness, attitudes, practices, and knowledge comprehensively.

Limitations of the study:

1. Cross-sectional design limits causal inference.

2. Self-reported responses may be affected by recall and social desirability bias.
3. Conducted in a single rural field practice area, limiting generalizability.
4. Qualitative exploration of beliefs and cultural barriers was not undertaken.

CONCLUSION

The present study revealed low levels of awareness and poor knowledge regarding cervical cancer, its risk factors, HPV vaccination, and screening methods among rural women. Uptake of cervical cancer screening was extremely low, although attitudes toward screening were generally favourable. Educational status was the only socio-demographic factor significantly associated with knowledge levels.

These findings emphasize the urgent need for targeted health education, promotion of HPV vaccination, and improved access to cervical cancer screening services through primary healthcare systems. Early detection through regular screening and increased community awareness are crucial for reducing morbidity and mortality due to cervical cancer among rural women.

Recommendations:

1. Conduct regular community-based awareness campaigns on cervical cancer, HPV vaccination, and screening through ASHA workers and ANMs.
2. Integrate cervical cancer education into maternal and reproductive health services at sub-centres and PHCs.
3. Organize periodic screening camps using VIA/Pap smear in rural areas.
4. Promote HPV vaccination among eligible adolescent girls through school and community programs.
5. Develop culturally appropriate IEC materials in Telugu to address myths and misconceptions.

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