



Knowledge, Attitude and Practice of Cervical Cancer among women residing in an Urban area of Y.S.R. Kadapa: A Community-based Cross-sectional study

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ABSTRACT

Cervical cancer is a leading cause of morbidity and mortality among women in India. Despite the availability of effective screening methods and HPV vaccination, their utilisation remains low due to inadequate awareness and socio-cultural barriers. This study aimed to assess the Knowledge, Attitude and Practices (KAP) regarding cervical cancer among women in an urban area of Y.S.R. Kadapa, Andhra Pradesh

Material and Methods:

A community-based cross-sectional study was conducted from November to December 2023 among 424 women aged 25–60 years using multi-stage random sampling. Data was collected using a pre-tested semi-structured questionnaire by the face-to-face interview technique. Statistical analysis was performed using Epi Info, and associations were tested using the Chi-square test/Fisher's exact test ($p < 0.05$).

Results:

The majority (89.6%) of participants had poor knowledge, while only 1.9% had good knowledge regarding cervical cancer. However, 63.4% showed a positive attitude towards prevention. Screening practices were extremely low, with only 0.7% ever screened and none vaccinated against HPV. The major barriers identified were lack of awareness (43.2%) and perceived lack of need (30.6%). Only 27.6% expressed willingness for future screening. Significant associations were observed between knowledge and selected socio-demographic factors.

Conclusion:

There exists a substantial gap between knowledge and preventive practices. Improving awareness through targeted health education, addressing misconceptions, and enhancing accessibility to screening and vaccination services are crucial for effective cervical cancer prevention.

Key-words: Cervical cancer, Knowledge Attitude Practice, Screening, HPV vaccination, Urban women

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INTRODUCTION

Cervical cancer is one of the frequently diagnosed cancers in the world. It is one of the five leading cancers in India and also second most common cancer next to breast cancer in women¹. According to the National Cancer Registry Programme of Indian Council of Medical Research (ICMR), the number of cervical cancer cases reported in 2021 is 44,300. The age standardized incidence rate and mortality rate for 2020 are 18.0 and 11.4 per 1,00,000 women per year respectively, while the corresponding global rates are 13.3 and 7.3 per 1,00,000 women population per year² while that of the world are 13.3 and 7.3 respectively. Human Papilloma Virus (HPV) is the most common cause of cervical cancer. Screening methods like Pap smear, visual inspection with 5% acetic acid (VIA) and **Visual Inspection with Lugol's Iodine (VILI)** can be used to identify cervical cancer at an early stage³. Most cancers can be managed successfully when detected in their early stages; however, a major challenge is that patients often delay seeking medical care until symptoms worsen, particularly for conditions involving the genital or secondary sexual organs, such as cervical cancer. Among all cancers, cervical cancer has one of the best prognoses when identified early through effective screening, making treatment outcomes highly favorable⁴.

Despite the availability of screening methods, they are not properly utilised in almost every state of India, probably due to lack of awareness, misconceptions and lack of national vaccination government health programmes on either screening or vaccination or both^{3,5-7}. According to NFHS-V data, the proportion of women ever screened for cervical cancer in India, Andhra Pradesh and Y.S.R. Kadapa is 1.2%, 4.7% and 13.4% respectively⁸.

Even the utilisation of HPV vaccines is poor in India due to higher cost of vaccines and fear of adverse effects⁹. In India, free cervical cancer vaccines for schoolgirls aged 9-14 years were declared in December 2022 by the government¹⁰, which could be a stepping stone

to achieve elimination of cervical cancer by 2030 through the 90-70-90 target, a global strategy by World Health Organization¹¹. Every year, the month of January is celebrated as Cervical Cancer awareness month and the three key messages of 2023 are "Get informed (Knowledge)-Get screened (practice)-Get vaccinated (Practice)"¹². With this background, the present study was undertaken to assess the knowledge, attitude and practices about cervical cancer among women and also to know any barriers (like lack of awareness, misconceptions, stigma, insufficient understanding, cultural and social factors and financial barriers) and their willingness for cervical cancer screening. Various factors associated with the level of knowledge, the attitude of women towards screening and utilisation of the preventive methods were also assessed in this study. This study not only helps in identifying the gaps but also suggests the appropriate interventions that could be made.

OBJECTIVES:

1. To assess the knowledge, attitude and practice regarding cervical cancer among women residing in an urban area of Y.S.R Kadapa.
2. To determine various socio-demographic factors associated with prevalent knowledge, attitude and practice regarding cervical cancer.
3. To enumerate the barriers regarding cervical cancer screening tests among women who have never been screened for cervical cancer.
4. To assess their willingness to undergo cervical cancer screening.

MATERIAL AND METHODS:

This community-based cross-sectional study was conducted from 2nd November 2023 to 31st December 2023 in the urban field practice area of the Department of Community Medicine, Nagarajupeta, YSR Kadapa. The study population included women aged 25-60 years residing in Nagarajupeta. Women who had been living in the area for at least one month and were willing to participate were

included in the study. Those already diagnosed with cervical cancer, with a history of hysterectomy, or who self-reported being under psychiatric care were excluded.

Sample size: The sample size for the present study is calculated at 95% CI with 5% absolute precision using the proportion of knowledge of cervical cancer (49.1%) from Reichheld et al study¹³ and adding a non-response rate of 10% as follows, $n = Z^2 PQ / L^2 = (1.96)^2 \times 49.1 \times 50.9 / (5)^2 = 384 + 38.4 = 422.4 =$ rounded off to 424 for operational convenience

Sampling technique: Multi-stage random sampling (Two-stage)

As per the official records at Urban Health and Training Centre at Nagarajupeta under the department of Community Medicine, Government Medical College, Y.S.R. Kadapa, a total of 5,445 households are present within 8 wards/sachivalayams.

Stage 1: Out of 8 wards, 4 wards were randomly selected using the lottery method.

Stage 2: From each ward, 106 households with eligible women were randomly chosen using Computer-generated random numbers. Thus, a total of 424 women were included in the present study.

Study tools: Data was collected using a validated, pre-designed, pre-tested, semi-structured questionnaire containing the following components,

a) The socio-demographic profile of women includes age, educational level, occupation, income, socio-economic status based on the updated BG Prasad classification from 2023²³, marital status, age at marriage, duration of marriage, age at first pregnancy, number of children, contraceptive usage, family history of cancer.

b) Knowledge of women about cervical cancer: Questionnaire from Reichheld et al study¹³ was taken. The questions were modified and adapted to South Indian settings. It is a 15-point scale that consists of questions regarding cervical cancer symptoms, signs, risk factors, prevention, screening, treatment and HPV vaccination. For responses, a score of '0'

is given for incorrect answers, while a score of '1-2' is given for correct answers, depending on the type of question. Study subjects were categorised based on their correct responses; a total score of ' ≥ 10 ' was considered 'good' knowledge, a score of '6-9' implied 'moderate' knowledge and a score of '<6' points meant 'poor' knowledge.

c) Attitude of women about cervical cancer: Questionnaire from Heena et al study¹⁴ is modified and adapted to this study. It consists of 7 statements on a 5-point Likert scale and the study subjects were asked to choose one of the options. The response options are strongly agree (5), agree (4), neither agree nor disagree (3), disagree (2) or strongly disagree (1). The range will be 7 to 35. The median score was calculated and those who scored above the median were considered as having a positive attitude and those who scored below the median as having a negative attitude towards cervical cancer.

d) Practices of women about cervical cancer: A structured questionnaire was used to assess the practices of women related to cervical cancer. It included items on history of screening (ever screened, frequency, type of screening method, and place of screening), HPV vaccination status (including type of vaccine, number of doses, date, and health facility), and factors influencing vaccine uptake. Additionally, for women who had never undergone screening, reasons for non-participation and willingness to undergo future screening were assessed. The detailed questionnaire is provided in the annexures.

e) Women who never screened for cervical cancer: Reasons for not getting screened (barriers) and also their willingness for screening at present was assessed.

Data collection: The selected houses were visited with the help of field staff and the study subjects were interviewed face-to-face in their houses. Prior to the actual data collection, the study subjects were briefed about the purpose and nature of the study; written informed consent was obtained. Questions were asked in

their local language.

Statistical analysis: Data was entered in MS Excel spreadsheet and analysed using Epi Info software version 7.2.2.6. Descriptive analysis of all variables using frequency and percentage distribution were done. Chi-square test or Fisher's exact test with odds ratio was applied to find out an association between knowledge, attitude, practice and other variables. ($p < 0.05$ is considered statistically significant).

Ethical consideration: It was duly followed for the present study. Approval was obtained from ICMR before initiation of the study. Permission was also secured from the Medical Officer at the Urban Health and Training Centre, Nagarajupeta. Ethical clearance was obtained from the Institutional Ethics Committee of Government Medical College, Kadapa. During the house-to-house survey, all participants were informed about the purpose and nature of the study, assured of confidentiality, and

written informed consent was obtained before their participation.

RESULTS:

Majority of the women belong to the age group of 25-44 years (**62.9%**), were home-makers (73.8%). Most of them were graduates (41.3%), followed by 29.5% studied intermediate/diploma. Most of them belong to Middle (**58.3%**) Socio-economic class followed by Upper class (**26.2%**). About 96.2% were currently married, 92.3% got married at ≥ 18 years and 41.3% had more than 20 years of marital life. 92.2% had their first pregnancy at ≥ 20 years of age. Most of the women had 1-2 children (65.3%) followed by more than two children (34.2%). About 80.2% were currently using contraceptives. Only 0.70% had family history of cervical cancer and 4.50% had family history of cancer other than cervical cancer (**Table: 1**)

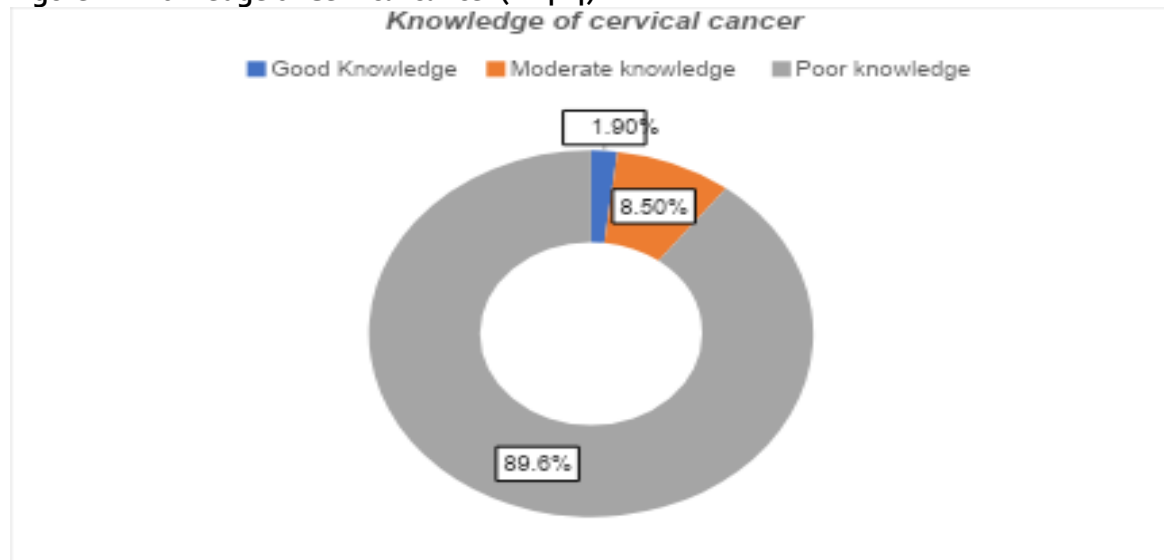
Table 1: Socio-demographic profile of women:

S.No.	Variable	No. (%)
1	Age group (in years) (n=424)	
	25-34	146 (62.9)
	35-44	121 (28.5)
	45-54	97 (22.9)
	≥ 55	60 (14.2)
2	Education (n=424)	
	Illiterate	16 (3.76)
	Primary school certificate	24 (5.65)
	Middle school certificate	25 (5.89)
	High school certificate	58 (13.7)
	Intermediate or diploma	125 (29.5)
	Graduate	175 (41.3)
	Profession or honours	1 (0.20)
3	Occupation (n=424)	
	Home-makers	313 (73.8)
	Others	111 (26.2)
4	Updated Modified BG Prasad Socio-Economic Status scale - 2023 (n=424)	
	Upper class	111 (26.2)
	Upper middle class	142 (58.3)
	Lower middle class	105 (24.8)
	Upper lower class	59 (13.9)
	Lower class	07 (1.70)
5	Marital Status (n=424)	
	Currently Married	408 (96.2)
	Unmarried	09 (2.10)

	Widow	04 (0.90)
	Divorced	03 (0.70)
6	Age at Marriage (n=415)	
	<18 years	32 (7.70)
	≥18 years	383 (92.3)
7	Duration of Marriage (n=415)	
	< 10 years	115 (27.1)
	10-20 years	134 (31.6)
	>20 years	175 (41.3)
8	Age at first pregnancy (n=383)	
	<20 years	30 (7.80)
	≥20 years	353 (92.2)
9	No. of Children (n=383)	
	0	02 (0.50)
	1-2	250 (65.3)
	>2	131 (34.2)
10	Contraceptive use (n=424)	
	Yes	84 (19.8)
	No	340 (80.2)
11	Family History of Cervical Cancer (n=424)	
	Yes	03 (0.70)
	No	421 (99.3)
12	Family History of Cancer other than cervical cancer (n=424)	
	Yes	19 (4.50)
	No	405 (95.5)

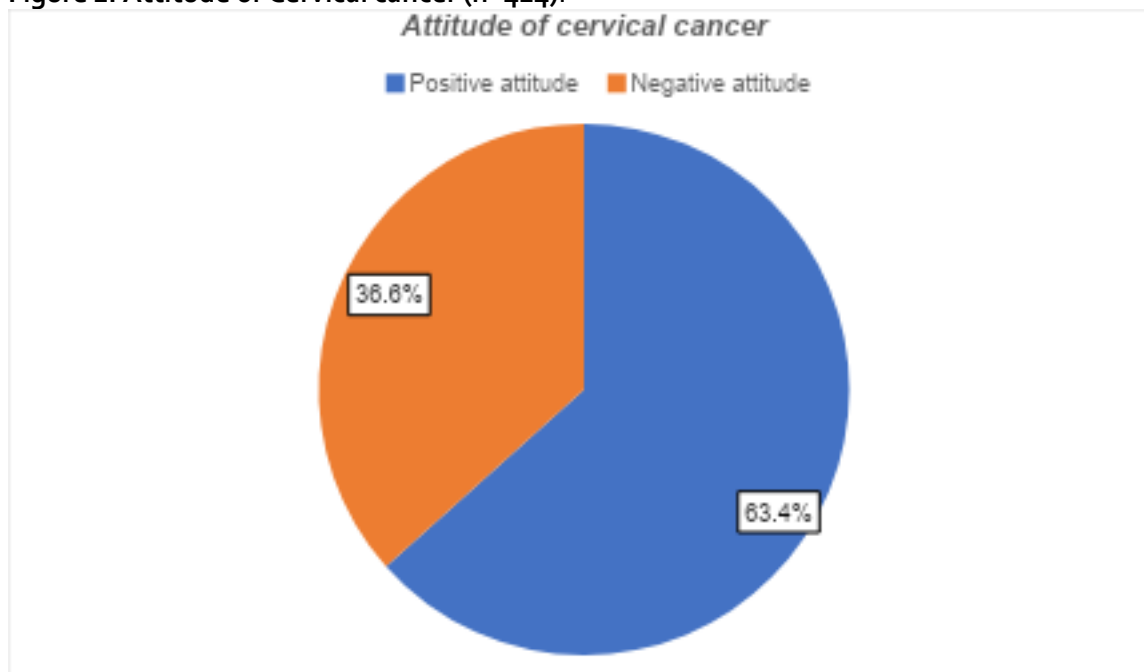
89.6% had poor knowledge of cervical cancer followed by moderate knowledge (8.50%). (**Figure: 1**)

Figure 1: Knowledge of Cervical cancer (n=424):



Majority of them had positive attitude towards cervical cancer (63.4%). (Figure: 2)

Figure 2: Attitude of Cervical cancer (n=424):



Only 0.7% ever got screened for cervical cancer, of which 66.7% were screened once. All of them underwent Pap Smear at Private health facility.

None of the women were vaccinated against HPV. (Table: 2)

Table 2: Practice of Cervical cancer:

S.No.	Practice of cervical cancer	No. (%)
1	Screened for cervical cancer (n=424)	
	Yes	03 (0.70)
	No	421 (99.3)
2	No. of times screened for cervical cancer (n=3)	
	Once	02 (66.7)
	Twice	01 (33.3)
3	Type of Screening method (n=3)	
	Pap Smear	03 (100.0)
4	Screened at health facility (n=3)	
	Private	03 (100.0)
5	Vaccinated for HPV (n=424)	
	No	424 (100.0)

The commonest barrier found was lack of awareness/never heard of cervical cancer screening (43.2%), followed by unwillingness/they don't see the need for

cervical cancer screening (30.6%) among women who have never been screened for cervical cancer. (Table: 3)

Table 3: Barriers for undergoing screening tests among women who never screened for cervical cancer (n=421)

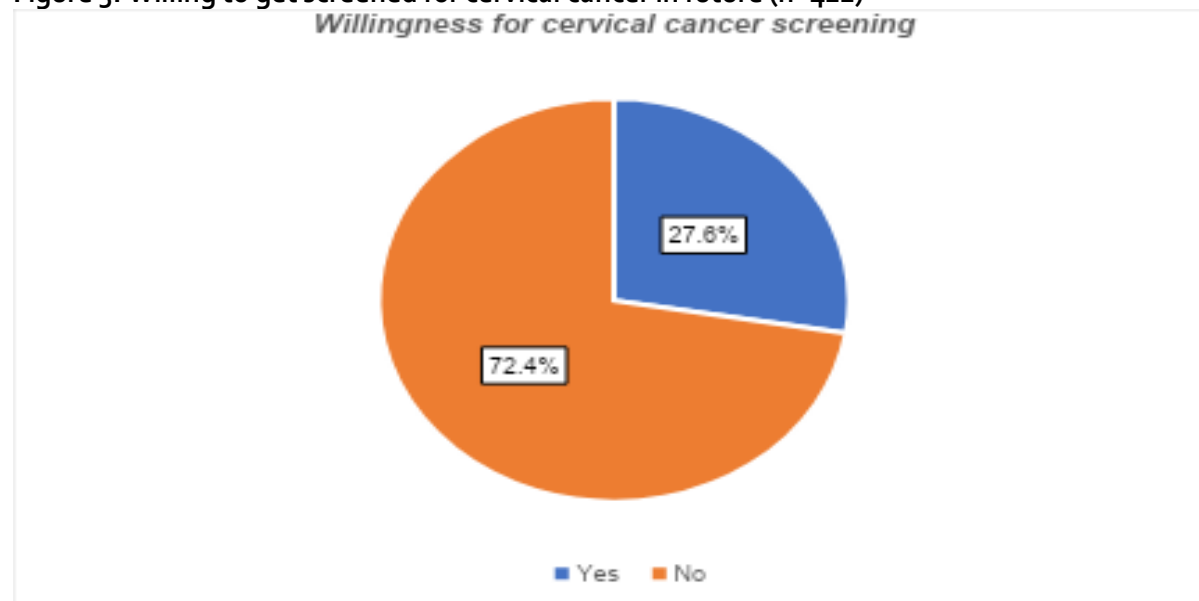
S.No.	Barriers*	No. (%)
1	Lack of awareness/never heard	182 (43.2)
2	Asymptomatic/ I am healthy	53 (12.6)
3	Stigma/Misconception	31 (7.36)
4	Lack of family approval/My family would not agree	24 (5.70)
5	I do not see the need/ unwilling	129 (30.6)
6	I haven't decided	29 (6.89)

*Multiple responses

Among women who were never screened for cervical cancer, only 27.6% were willing for

screening in future. (Figure: 3)

Figure 3: Willing to get screened for cervical cancer in future (n=421)



Good and moderate knowledge was found to be higher in ≤ 40 years of age, literates, other than home-makers, who belong to upper and middle socio-economic class, currently married, with ≥ 18 years age at marriage, with ≤ 20 years of marriage, with ≥ 20 years age at first

pregnancy, with ≥ 2 children, without contraceptive use, who don't have family history of cervical cancer and any other cancers. Women with family history of cervical cancer had significantly higher odds of good and moderate knowledge {OR:10.3(7.68-13.78)}.

Statistically significant associations were found only with Occupation, marital status, family

history of cervical cancer and other cancers (p<0.05). (Table: 4)

Table 4: Socio-demographic factors associated with Knowledge of Cervical cancer

Variable name	Knowledge, n (%)		χ^2 value	p-value	OR (95% CI)
	Good	Poor			
Age (n=424)					
≤40 years	28 (63.6)	206 (54.2)	1.42	0.23	1.48 (0.77-2.82)
>40 years	16 (36.4)	174 (45.8)			
Education (n=424)			0.31	0.58	0.57 (0.07-4.39)
Illiterate	01 (2.30)	15 (3.90)			
Literate	43 (97.7)	365 (96.1)			
Occupation (n=424)			17.3	< 0.00001	0.27 (0.14-0.52)
Home-makers	21 (47.7)	292 (76.8)			
Others	23 (52.3)	88 (23.2)			
Socio-Economic Status (n=424)					
Upper & Middle class	39 (88.6)	319 (83.9)	0.66	0.42	1.49 (0.57-3.94)
Lower class	5 (11.4)	61 (16.1)			
Marital Status (n=424)					0.23 (0.08-0.70)
Currently Married	39 (88.6)	369 (97.1)	7.79	0.005	
Unmarried/Widow/Divorced	05 (11.4)	11 (2.90)			
Age at Marriage (n=415)					
<18 years	01 (2.50)	31 (8.30)	1.69	0.19	0.28 (0.04-2.14)
≥18 years	39 (97.5)	344 (91.7)			
Duration of Marriage (n=415)					
≤20 years	24 (60.0)	216 (57.6)	0.08	0.77	1.10 (0.57-2.15)
>20 years	16 (40.0)	159 (42.4)			
Age at first pregnancy (n=383)				0.28	0.35 (0.05-2.62)
<20 years	1 (3.0)	29 (8.30)	1.15		
≥20 years	32 (97.0)	321 (91.7)			
No. of Children (n=383)			1.04	0.31	0.60 (0.22-1.61)
<2	5 (15.2)	80 (22.9)			
≥2	28 (84.8)	270 (77.1)			
Contraceptive use (n=424)					
Yes	09 (20.5)	75 (19.7)	0.01	0.91	1.05 (0.48-2.27)
No	35 (79.5)	305 (80.3)			
Family History of Cervical Cancer (n=424)					
Yes	03 (6.80)	0 (0.0)	26.1	< 0.00001	10.3 (7.68-13.78)
No	41 (93.2)	380 (100.0)			
Family History of Cancer other than cervical cancer (n=424)					
Yes	05 (11.4)	14 (3.70)	5.43	0.02	3.35 (1.15-9.80)
No	39 (88.6)	366 (96.3)			

Positive attitude was found to be more in women of ≤ 40 years age, in home-makers, who belong to upper and middle socio-economic classes, who are currently married, whose age at marriage was ≥ 18 years, women with ≤ 20 years of marital life, with age at first pregnancy of ≥ 20 years, with ≥ 2 children, with no contraceptive usage, with no family history of other cancers. All the women with family history of cervical cancer had negative attitude

and most of the women with no family history of other cancers had positive attitude. Women with no family history of cervical cancer had significantly higher odds of positive attitude towards cervical cancer {OR:2.33 (2.08-2.60)}. Statistically significant associations of attitude of cervical cancer are found only with occupation, years of marriage, contraceptive use and family history of cervical cancer ($p < 0.05$). (Table: 5)

Table 5: Socio-demographic factors associated with Attitude of Cervical cancer

Variable name	Attitude, n (%)		χ^2 value	p-value	OR (95% CI)
	Positive	Negative			
Age (n=424)					
≤ 40 years	124 (51.7)	110 (59.8)	2.77	0.10	0.72 (0.49-1.06)
> 40 years	116 (48.3)	74 (40.2)			
Education (n=424)			0.99	0.32	1.72 (0.59-5.04)
Illiterate	11 (4.60)	5 (2.70)	6.95	0.008	1.79 (1.16-2.77)
Literate	229 (95.4)	179 (97.3)			
Occupation (n=424)					
Home-makers	189 (78.8)	124 (67.4)	2.32	0.13	0.65 (0.38-1.13)
Others	51 (21.3)	60 (32.6)			
Socio-Economic Status (n=424)			0.29	0.59	1.32 (0.48-3.58)
Upper & Middle class	197 (82.1)	161 (87.5)	0.005	0.94	0.97 (0.47-2.01)
Lower class	43 (17.9)	23 (12.5)			
Marital Status (n=424)					
Currently Married	232 (96.7)	176 (95.7)	5.31	0.02	0.63 (0.42-0.93)
Unmarried/Widow/Divorced	08 (3.30)	08 (4.30)			
Age at Marriage (n=415)			0.64	0.42	1.37 (0.63-2.96)
< 18 years	18 (7.60)	14 (7.80)	0.95	0.33	0.79 (0.48-1.27)
≥ 18 years	218 (92.4)	165 (92.2)			
Duration of Marriage (n=415)					
≤ 20 years	125 (53.0)	115 (64.2)	12.8	<0.00001	0.42 (0.25-0.68)
> 20 years	111 (47.0)	64 (35.8)			
Age at first pregnancy (n=383)					
< 20 years	19 (8.80)	11 (6.60)	3.94	0.047	2.33 (2.08-2.60)
≥ 20 years	197 (91.2)	156 (93.4)			
No. of Children (n=383)					
< 2	44 (20.4)	41 (24.6)	3.94	0.047	2.33 (2.08-2.60)
≥ 2	172 (79.6)	126 (75.4)			
Contraceptive use (n=424)					
Yes	33 (13.8)	51 (27.7)	3.94	0.047	2.33 (2.08-2.60)
No	207 (86.3)	133 (72.3)			
Family History of Cervical Cancer (n=424)					
Yes	0 (0.0)	3 (1.60)	3.94	0.047	2.33 (2.08-2.60)
No	240 (100.0)	181 (98.4)			

Family History of Cancer other than cervical cancer (n=424)					
Yes	7 (2.90)	12 (6.50)	3.16	0.07	0.43 (0.17-1.12)
No	233 (97.1)	172 (93.5)			

Women aged >40 years, literate, homemakers, preventive measures for cervical cancer. However, no belonging to upper and middle socio-economic statistically significant association was observed classes, currently married, with longer duration of between socio-demographic factors and preventive marriage, having ≥ 2 children, and those using practices ($p > 0.05$). (Table: 6) contraceptives appeared more likely to practice

Table 6: Socio-demographic factors associated with the practice of women to prevent Cervical cancer

Variable name	Practice, n (%)		χ^2 value	p-value	OR (95% CI)	
	Yes	No				
Age (n=424)						
≤40 years	0 (0.0)	234 (55.6)	3.72	0.05	1.02	(0.10-1.03)
>40 years	3 (100.0)	187 (44.4)				
Education (n=424)			0.12	0.73	1.01	(0.99-1.02)
Illiterate	0 (0.0)	16 (3.80)				
Literate	3 (100.0)	405 (96.2)				
Occupation (n=424)			1.07	0.30	0.99	(0.98-1.00)
Home-makers	3 (100.0)	310 (73.6)				
Others	0 (0.0)	111 (26.4)				
Socio-Economic Status (n=424)						
Upper & Middle class	3 (100.0)	355 (84.3)	0.56	0.45	0.99	(0.98-1.00)
Lower class	0 (0.0)	66 (15.7)				
Marital Status (n=424)			0.12	0.73	0.99	(0.98-1.00)
Currently Married	3 (100.0)	405 (96.2)				
Unmarried/Widow/Divorced	0 (0.0)	16 (3.80)				
Age at Marriage (n=415)						
<18 years	0 (0.0)	32 (7.80)	0.25	0.61	1.01	(0.99-1.02)
≥18 years	3 (100.0)	380 (92.2)				
Duration of Marriage (n=415)						
≤20 years	0 (0.0)	240 (58.3)	4.14	0.05	1.02	(0.99-1.04)
>20 years	3 (100.0)	172 (41.7)				
Age at first pregnancy (n=383)			2.72	0.10	6.05	(0.53-68.7)
<20 years	1 (33.3)	29 (7.60)				
≥20 years	2 (66.7)	351 (92.4)				
No. of Children (n=383)			0.86	0.35	1.01	(0.99-1.02)
<2	0 (0.0)	85 (22.4)				
≥2	3 (100.0)	295 (77.6)				
Contraceptive use (n=424)						
Yes	2 (66.7)	82 (19.5)	4.17		8.27	(0.74-92.3)
No	1 (33.3)	339 (80.5)		0.06		
Family History of Cervical Cancer (n=424)				0.88		
Yes	0 (0.0)	3 (0.70)	0.02		1.01	(0.99-1.01)
No	3 (100.0)	418 (99.3)				
Family History of Cancer other than cervical cancer (n=424)						

Yes	0 (0.0)	19 (4.50)	0.14	0.71	1.01	(0.99-
No	3 (100.0)	402 (95.5)			1.02)	

DISCUSSION

The results of the present study have been discussed in comparison with previous studies as under,

1. Socio-demographic profile of the women:

In the current study, the majority of the women i.e. 146 (34.4%) women are in the age group of 25 to 34 years and the mean age was 40.7 ± 11.5 years. Similarly, in Ghosh et al²⁴, the mean age of the participants was 39.8 ± 10.1 years. In Asthana and Satyanarayana⁵ 42.1% of the participants belong to the age group of 30-39 years. Omoyeni and Tsoka-Gwegweni²² reported that 47.8% of the women were in the age group of 30 to 44 years. So, it was evident that the present study was consistent with the studies mentioned. In the present study most of the women were home-makers (73.8%). Similarly, Asthana and Satyanarayana⁵ reported 71.6% of the participants to be housewives. In contrast, around 48.5% of the women were reported to be unemployed in Garg et al¹⁵. However, in Reichheld et al study¹³ 62.1% of the participants were housewives. In the present study majority of the participants i.e. 33.5% belong to upper middle socio-economic class, Sakrawal et al¹⁷ reported that 48% belong to lower middle class.

Large proportion of the women (96.2%) were currently married. In line with this study, Asthana and Satyanarayana⁵, 95.3% of the participants were reported to be married. However, Reichheld et al¹³ and Garg et al¹⁵ reported 77.6% and 50.2% of the women as married respectively. In the present study, majority of the women (92.3%) were married at ≥ 18 years. In Reichheld et al¹³ (66.9%) and Garg et al¹⁵ (47.2%) women were married at the age ≥ 18 years. In the present study, 41.3% of women had ≥ 20 years of marital life, 92.2% had their first pregnancy at ≥ 20 years. Majority of the women (65.3%) had one or two children which is consistent with Apsara et al¹⁸ in which 67.5% of the women had one or two children. In the current study only 0.7% participants had a

family history of cervical cancer and 4.5% had a family history of other cancers, whereas in Heena et al¹⁴, it was seen that 3.8% had family history of cervical cancer among first degree relatives and 3.2% in second degree relatives. Overall, the variations in comparison with other studies could be due to differences in geographical locations, age groups, socio-cultural practices etc.,

2. Knowledge, Attitude and Practice of the women regarding cervical cancer & its prevention:

Majority of participants (89.6%) had poor knowledge regarding cervical cancer, 8.50% with moderate knowledge and only 1.9% of the participants had good knowledge in the present study. In Asthana and Satyanarayana⁵ 72.3% of the participants were aware of cervical cancer. In Rashid et al⁹, 82.45% of the girls knew about cervical cancer. In Garg et al¹⁵, 40.1% of the women were reported to have good knowledge. The above studies suggest that the knowledge of the participants in the current study was very poor. However, Amatya et al¹⁶ and Ghosh et al²⁴ reported 32.3% knew about cervical cancer and 22.4% of the participants with adequate knowledge respectively. Studies may have focused on different aspects of knowledge about cervical cancer, such as risk factors, symptoms, screening practices, or treatment options. Variations in the specific focus of each study might have led to the differences in reported knowledge levels.

In Heena et al¹⁴, only 4% of the participants were reported to have a good level of knowledge regarding cervical cancer. In Apsara et al¹⁸, 81.9% of the participants had poor knowledge. In Reichheld et al¹³, 84.6% of the participants had poor knowledge and 5.1% reported to have good knowledge. The results were nearly similar to the present study probably due to the utilization of similar reference questionnaire.

In the present study 63.4% of participants had a

positive attitude and 36.6% participants were known to have a negative attitude. In contrast, 81.8% had a positive attitude towards cervical cancer screening in Omoyeni and Tsoka-Gwegweni²² and 99.9% of the participants had a favourable attitude in Ghosh et al²⁴. In Heena et al¹⁴, majority of participants showed disagreement for all the statements in attitude questionnaire; $>3/4^{\text{th}}$ of the participants disagreed with the statement "screening helps in prevention of carcinoma of the cervix", although 86.8% participants believed that Pap smear test is a useful test for detection of cervical cancer. The differences in the studies could be due to the effectiveness of health education and awareness programs in different regions and their socio-cultural beliefs as knowledge is the basis for attitude and practice. Alarming only 0.7% of the participants had ever been screened for cervical cancer in the present study. Among the participants who were screened (66.7%) i.e., 2 participants were screened only once and all of the 3 participants have been screened by the Pap test in a private facility. In line with the present study, Sakrawal et al¹⁷ (1.30%) and Apsara et al¹⁸ (0.06%) reported similar findings. In Reichheld et al¹³, 7.1% of the women reported to have been screened for cervical cancer. None of the participants (0.0%) were screened for cervical cancer in a study by Ghosh et al²⁴. However, in Heena et al¹⁴, it was 26.2% and in Omoyeni and Tsoka-Gwegweni²², it was 66.8%. From these findings, it can be concluded that the voluntary screening of cervical cancer in India, ranges mostly from 0-7%, whereas in other countries it was as high as 67% that can be attributed to the rural-urban differences, level of knowledge and various socio-cultural barriers that hinder/promote voluntary utilization of screening services by women.

None of the participants (0.0%) were vaccinated against HPV in the present study. However, in Rashid et al⁹, 7.16% of female participants were vaccinated against HPV, in Heena et al¹⁴ 22% of the participants were vaccinated against HPV and in Srivastava et al²¹ about 3.9% of the women were reported to

have been screened for cervical cancer. Similar to the findings of cervical cancer screening, it can be said that the HPV vaccination was poor ranging from 0-7% only in Indian studies. The differences in cervical cancer screening rates and HPV vaccination coverage across various studies can be attributed to several factors, level of knowledge, socio-economic barriers, disparities in access to health care services etc.

3. Socio-Demographic Factors associated with Knowledge, Attitude and Practice of Cervical Cancer:

In the present study, good and moderate knowledge was found to be higher in ≤ 40 years of age, literates, other than home-makers, who belong to upper and middle socio-economic class, currently married, with ≥ 18 years age at marriage, with ≤ 20 years of marriage, with ≥ 20 years age at first pregnancy, with ≥ 2 children, with no contraceptive use, who don't have family history of cervical cancer and any other cancers. Women with family history of cervical cancer had significantly higher odds of good and moderate knowledge {OR:10.3(7.68-13.78)}. Statistically significant associations were found only with Occupation, marital status, family history of cervical cancer and other cancers ($p < 0.05$).

In Reichheld et al¹³, women of age ≤ 41 years had good knowledge in similar to the present study. In Garg et al¹⁵, women who have had their primary education {aOR: 1.86 (1.12-3.10)} and widowed women had higher odds of having a good level of knowledge. According to a study by Apsara et al¹⁸, employed women and women with college education had good knowledge. Sakrawal et al¹⁷ mentions education as a factor associated with level of knowledge positively. In Ghosh et al²⁴, it was found that employed women had lesser knowledge compared to homemakers also factors like age < 31 years, lack of primary education, low socioeconomic status was related to low knowledge.

In Moodley et al¹⁹, married women/living with a partner had higher awareness of breast cancer risk factors and cervical cancer symptoms compared to women not living with a partner. In Srivastava et al²¹, it was found that women

over 30 years of age had 12.04 significantly higher odds of going for cervical cancer screening in reference to women aged 30 years and less {aOR:12.04(3.01-53.20)}. Women from households with a monthly income of >15000 had 2.98 significantly higher odds of going for cervical cancer screening in reference to women from households with an income of 5000 and less {aOR:2.98(1.12-9.09)}.

In the current study, positive attitude is found to be more in women of ≤ 40 years age, homemakers, belongs to upper and middle socio-economic class, currently married, age at marriage was ≥ 18 years, ≤ 20 years of marital life, age at first pregnancy of ≥ 20 years, ≥ 2 children, no contraceptive use, no family history of other cancers. All the women with family history of cervical cancer had negative attitude and most of the women with no family history of other cancers had positive attitude. Women with no family history of cervical cancer had significantly higher odds of positive attitude towards cervical cancer {OR:2.33 (2.08-2.60)}. Statistically significant associations of attitude of cervical cancer are found only with occupation, years of marriage, contraceptive use and family history of cervical cancer ($p < 0.05$).

Kulkarni et al²⁵, women aged 30–39 years (80.69%), literate women with school level or education up to Senior College (78.97% and 80.86%) {OR:1.323 ($P \leq 0.001$)} and {OR:1.402; ($P \leq 0.001$)} and with a family history of cancer (81.93%) had higher participation for screening. In Mukosha et al²⁶, mean attitude scores found to be more in 31-40 years, employed, tertiary education, married and employed women compared to other groups, however significant association seen only with employment status. In Chali et al²⁷ educational status, occupation, visiting health facilities, and parity were significantly associated with knowledge and attitude toward cervical cancer screening.

In the present study, women aged >40 years, literate, homemakers, belonging to upper and middle socio-economic classes, currently married, with longer duration of marriage, having ≥ 2 children, and those using

contraceptives appeared more likely to practice preventive measures for cervical cancer. However, no statistically significant association was observed between socio-demographic factors and preventive practices ($p > 0.05$).

As per Reichheld et al¹³, women who were married <18 years of age {($p=0.01$, OR=1.85 (1.14–2.99))} and women of a lower socio-economic status {($p=0.006$, OR=0.51 (0.32–0.83))} were more likely to be screened. However, there was no significant association between age, education, occupation, marital status, age of first childbirth and parity with screening. Saleem et al²⁰ revealed that lower rates of cervical cancer screening were linked to illiteracy.

In general, the differences in the findings of this study with other studies can be attributed to several factors like demographic features, socio-cultural factors, differences in methodology (especially sample size, selection criteria), geographical disparities, temporal changes.

4. Barriers for not getting screened and willingness to get screened for cervical cancer in future, among women who never screened for cervical cancer:

In the present study, the commonest barrier found was lack of awareness/never heard of cervical cancer screening (43.2%), followed by unwillingness/they don't see the need for cervical cancer screening (30.6%) among women who never screened for cervical cancer. In Chandrika et al³, Fear and "not having signs and symptoms" were the major reasons for unwillingness. Apsara et al¹⁸, 27.6% of the participants stated embarrassment as the reason for not getting screened.

In the present study 27.6% of the participants were willing to get screened. In Chandrika et al³, 32% of the women were willing to undergo screening for cervical cancer, while in Sakrawal et al¹⁷, around 63% of the participants were reported to be willing to get screened. In a study by Asthana and Satyanarayana⁵, as many as 96.1% of the women expressed willingness to visit a government health centre to undergo screening.



Several factors contribute to the differences in the reported barriers and willingness to undergo cervical cancer screening across studies like level of awareness, cultural beliefs, social norms, and perceptions about cervical cancer and its screening, women's perception of their risk of developing cervical cancer and the perceived benefits of screening can impact their willingness to undergo screening and access to screening and vaccination services.

CONCLUSION:

Keeping in view of poor knowledge, this study proposes that raising awareness about preventing cervical cancer should begin from schools and educational institutes. Health education campaigns ought to be more effective and engaging which can be achievable

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through leveraging mass media platforms such as television and social media. Addressing myths and stigma surrounding screening and vaccination could significantly contribute to prevention efforts. Crucially, educating men about cervical cancer prevention is paramount, given that many women in Indian households seek approval from their fathers or husbands. Correct knowledge is the basis of positive attitude that would lead to the right practices. Additionally, ensuring widespread accessibility to screening facilities and vaccines is essential, especially in all levels of government health care facilities. Tailored approaches that cater to specific communities should be devised and executed.

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