

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_318_23

Assessment of knowledge and attitude of cervical cancer among the youths in the Rayalaseema region of Andhra Pradesh – India

Thanmaya Divya K, Vijay R. Chidrawar^{1*}, Pradeep Kumar Bhupalam, Shruti Shiromwar², Ahmed M. Aljameeli³, G. Vyshnavi⁴, I. Sai Reddama, Vishali Boreddy

Department of Pharmacology, Raghavendra Institute of Pharmaceutical Education and Research, Andhra Pradesh, India,
¹School of Pharmacy and Technology Management, SVKM's Narsee Monjee Institute of Management Studies (NMIMS), Deemed-to-University, Jadcharla, Hyderabad, Telangana, India,
²Department of Clinical Pharmacy, Universiti Sains Malaysia (USM), Malaysia,
³Department of Pharmacy Practice, College of Pharmacy, University of Hafer Al-Batin 31991, Kingdom of Saudi Arabia,
⁴Department of Pharmacy Practice, Raghavendra Institute of Pharmaceutical Education and Research, Andhra Pradesh, India

Address for correspondence:

Dr. Vijay R. Chidrawar, School of Pharmacy and Technology Management, SVKM's NMIMS, Green Industrial Park, Polepally, Jadcharla, Hyderabad - 509 301, Telangana, India.
 Phone: +91-7038429925.
 E-mail: vijay_pharmacology@yahoo.com

Received: 05-03-2023
 Accepted: 30-08-2023
 Published: 26-02-2024

Abstract:

BACKGROUND: India suffers a quarter of the global burden of cervical cancer (CC) but is controllable by taking some precautions. The major issue is the low amount of participation among women in screening and vaccination for disease. The objective of the research is to evaluate knowledge, attitude, and practice (KAP) regarding CC among college going students residing in the Rayalaseema region of Andhra Pradesh—India.

MATERIAL AND METHODS: A cross-sectional study was conducted on a total of 380 subjects whose ages ranged from 15 to 25 and older. The questionnaires were circulated through google forms. The socio-demographic variables and KAP levels are represented by descriptive statistics. The Chi-square test is used to determine the relationship between sociodemographic factors and KAP levels.

RESULTS: Among 380 subjects, 172 (54.7%) are aware of CC, 71% have poor knowledge, and 20% have good knowledge about CC. More than three-fourths of women 374 (98.4%) are not having regular practice towards CC.

CONCLUSION: The awareness about CC is very low in the population, so prevention of CC relies on routine screening, proper vaccination, and treatment. Awareness programs and promoting knowledge about cervical health in social media are required.

Keywords:

Cervical cancer, college students, human papilloma virus, pap smear test, Rayalaseema

Introduction

Over the past 30 years, there has been an increase in the percentage of young women with cervical cancer (CC), which ranges from 10% to 40%.^[1] According to the National Institute of Cancer Prevention, in India for every eight minutes, one woman dies due to CC.^[2] The primary cause of CC is believed to be the human papillomavirus (HPV).^[3,4] Pelvic pain or pain during sexual activity, bloody or

watery vaginal discharge, bleeding between periods, chronic back pain, bleeding after sexual activity, unexplained weight loss, and severe swelling in one or both legs are symptoms of CC.^[5] The well-known risk factors for CC include HPV, low socioeconomic position, smoking, getting married before turning 18, being young when the first coitus occurred, having several sexual partners, and having multiple children. These elements increase the chance of developing CC.^[6] CC is now understood

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Divya KT, Chidrawar VR, Bhupalam PK, Shiromwar S, Aljameeli AM, Vyshnavi G, *et al.* Assessment of knowledge and attitude of cervical cancer among the youths in the Rayalaseema region of Andhra Pradesh – India. J Edu Health Promot 2024;13:73.

to be predominantly caused by HPV; the most frequently associated HPV types with invasive CC are 16, 18, 31, 33, and 45. The majority of studies demonstrate that having more stable relationships and initiating sex earlier in life enhance the likelihood of acquiring CC.^[7,8]

Due to its lengthy pre-invasive stage, CC is a disease that is preventable. If robust screening is used, early detection and adequate treatment may be achievable.^[9] Pap smear test helps us to detect the early changes in the cervical epithelium (Invasive stage). It is also used in screening test for precancerous cervical intraepithelial neoplasia. The detection rate of the pap test for identifying high-grade squamous intraepithelial lesions (HSIL) is 70.80%.^[10] Creating awareness among the people about the symptoms, risk factors, and early measures like taking screening test regularly and getting vaccination against HPV helps in preventing the CC. People with low socio-economic status and those who are poor are needed to be motivated to visit the hospital for a cancer screening. Thus, creating a proper awareness program and educating the people about the screening test and preventive measures for CC are required. The purpose of the present research is to understand the knowledge, attitude, and practice of CC among college-attending students including boys and girls.

Materials and Methods

Study design and setting

This is a college-based cross-sectional study design. It is conducted through online google form which is conducted in various degree colleges across the Anantapur district, Andhra Pradesh, India. Anantapur district is the biggest district with respect to the land size and population in the Rayalaseema region of Andhra Pradesh, India. The study was conducted from August to September 2022.

Study sample and sample size calculation

The study targeted the female population of age ranges from 15 to 25 years. The minimum recommended sample size was 380 subjects calculated using the Raosoft® sample size calculator. This was decided by using the single population proportion formula with the assumption of 95% confidence interval, 5% margin of error, and 50% response distribution.

Study tools and data collection process

Analyzing many research studies that have taken place in India from the past decade, the self-administered, structured, and closed-ended questionnaire was designed.^[11] Four sections of questionnaires are created to gather data on the socio-demographic features of the study population, KAP towards CC and screening. The survey questionnaire was created using Google

forms. The socio-demographic questionnaires include age, marital status, education field and level, religion, smoking, and family history of cancer status.

The 16-point scale is used to analyze the knowledge of CC. A total of 11 knowledge-related multiple-choice questions are asked and for each right response received one point, and each incorrect response received zero point. Thus, scores range from 0 to 16. Subjects who are aware of CC are given 1 point. Two points for any two correct responses among given options for symptoms, risk factors, causes, preventive measures, and treatment for CC. One point for any one option answered correctly among given for screening tests, frequency of screening, who should undergo screening, knowledge about HPV transmission, and preventive measures for HPV infections. Furthermore, the knowledge points were evaluated by bloom's cutoff points where knowledge levels are classified as good knowledge was outlined as 80%-100% correct responses comprising a score of 13-16; moderate knowledge as 60% to 79% correct responses with a score of 10-12; and poor knowledge as 60% correct responses with a score of 9 or <9.^[12]

Attitude was evaluated by using Likert's scale. Eight statements about CC risk factors and screening were put on a Likert scale, with responses ranging from strongly agree to strongly disagree (Strongly agree = 5, agree = 4, neither agree nor disagree = 3, disagree = 2, and strongly disagree = 1). Scores of 20 or higher indicate a positive attitude toward CC screening, whereas scores of 20 or lower indicate a negative attitude.^[13] Practice was assessed by frequency of screening towards CC. The screening of subjects within the last three years is regarded as regular practice, screening more than past three years is regarded as irregular practice, and those who never screened are regarded as no practice.

Statistical analysis was performed using SPSS software version 27. The socio-demographic variables and KAP of the study population were represented using descriptive statistics like frequency and proportion. By using the Chi-square test, the relationship between socio-demographic factors and KAP levels is evaluated. $P < 0.05$ was considered statistically significant.

Results

A total of 380 women responded to questionnaires. The majority of 37.1% ($n = 141$) of the survey participants were between the age of 19-22 years, 22.6% ($n = 86$) between the age of 16-18, 25.3% ($n = 96$) between the age of 23-25, and the remaining 15.0% ($n = 57$) were above 25 years. Majority of the women are unmarried (354; 93.2%). The education field of these participants includes engineering (87; 22.9%), medical (16; 4.2%),

pharmacy (139; 36.6%), agriculture (28; 7.4%), nursing (1;0.1%) secondary education (80; 21.1%), and others (29; 7.6%). Most of them are graduates. (266;70%) has never smoked (374;98.4%) and has no family history of cancer (313;82.4%) as shown in Table 1.

Among 380 participants, (172; 54.7%) had heard about CC from friends (134; 35.2%), social media (132; 34.7%), awareness programs (73;19.2%), health professionals (72; 18.9%), and relatives (43;11.3%). Concerning knowledge on symptoms of CC resulted as pain in lower abdomen (80; 21.1%), post-coital bleeding (58;15.3%), post-menopausal bleeding (65;17.1%), urine urgency (42;11.1%), vaginal discharge (90;23.7%), foul smell discharge (127;33.4%), and menstrual bleeding (93;24.5%). Knowledge on causes of CC was sex (189;49.7%), virus (120;31.6%), old age (32;8.4%), family history (58;15.3%), and more children (28;7.4%). Knowledge on risk factors includes generalized infections (88;23.2%), HPV infections (108;27.1%), genetics (47;12.4%), history of STD'S (81;21.3%), multiple of sexual partners (110;28.9%), intercourse at early age (85;22.4%), not maintenance of personal hygiene (126;33.2%), and early of marriage (61;16.1%). The most well-known CC prevention strategies for women include avoiding multiple sexual partners (113;29.7%), avoiding early sexual intercourse (85;22.4%) and vaccination against HPV (92;24.2%). Knowledge on treatment

options for CC includes drug therapy (55;14.5%), radiotherapy (58;15.3%) and surgery (104;27.4%). Participants who are aware about screening tests for CC involves pap smear (113;29.7%), VILI (37;9.7%), and VIA (27;7.1%). Knowledge about persons who should undergo screening include women age of 25 years above (51;13.4%) and women having multiple sexual partners (53;13.9%). Knowledge about HPV transmission (116;30.5%) and preventive measures for HPV transmission are listed in Table 2.

Among all respondents, 95 (25.0%) were strongly agreed, 135 (35.5%) agreed, and 81 (21.3%) neither agreed nor disagreed that late stage of diagnosis of CC is due to lack of awareness about screening and preventive methods is the prime reason. Majority of the respondents 293 (77.1%) has never done any cytological examination of cervix and only 6 (1.78%) are screened for CC within past 3 years shown in Table 3. Among all respondents 77 (20.3%) have good knowledge, 32 (8.4%) have moderate knowledge, and 271 (71.3%) have poor knowledge. Majority of the respondents have positive attitude towards CC 326 (85.8%) as shown in Table 4. Statistically significant association of good knowledge, positive attitude, and regular practice socio-demographic was observed as shown in Table 5.

Discussion

The best thing about this cancer is that it may be treated and prevented in its early stages. Thus, educating the people about causes and preventive measures in the early age is helpful in preventing the disease. Majority of the people heard about CC through friends followed by media in the current study, and these findings are similar to those published by Abdullahi *et al.*^[14] and Narayana *et al.*^[15] In this study, we reported that lack of knowledge and no regular practice towards CC. Women aged 25 above have shown good knowledge and positive attitude in relation to other age groups with $P < 0.001$. Women in education field like engineering and pharmacy, and education level like post graduates have shown positive attitude with $P = 0.004$ and $P = 0.006$, respectively. In the present study, we have compared the knowledge of CC between paramedical students (nursing, pharmacy), medical, and other courses of the study. In one study which is conducted on medical students concluded that most of the population are aware about the CC but lacking the knowledge on risk factors and prevention of CC.^[16] Furthermore, in another study which is conducted on female dental students concluded that even health professionals are lacking awareness about CC, HPV, and its screening.^[17]

This study has mainly focused on the women age between 15 and 25 years as this is the phase of the age where the

Table 1: Sociodemographic data of study participants (n=380)

Characteristic	Categories	Frequency (%)
Age (years)	16-18	86 (22.6)
	19-22	141 (37.1)
	23-25	96 (25.3)
	25 above	57 (15.0)
Marital status	Married	26 (6.8)
	Unmarried	354 (93.2)
Education field	Engineering	87 (22.9)
	Medical	16 (4.2)
	Pharmacy	139 (36.6)
	Agriculture	28 (7.4)
	Nursing	1 (0.3)
	Secondary education	80 (21.1)
	Others	29 (7.6)
Education level	Undergraduate	89 (23.4)
	Graduate	266 (70.0)
	Post-graduation and above	25 (6.6)
Religion	Christian	18 (4.7)
	Muslim	57 (15.0)
	Hindu	305 (80.3)
Smoking	Never smoked	374 (98.4)
	Used to smoke	2 (0.5)
	Currently smoke	4 (1.1)
Family history of cancer	Yes	50 (13.2)
	No	313 (82.4)
	Don't know	17 (4.5)

Table 2: Knowledge about cervical cancer and its screening among respondents (n=380)

Variable	Frequency (%)	Variable	Frequency (%)
Aware of CC		Knowledge about treatment	
Yes	172 (54.7)	Drug therapy	55 (14.5)
No	208 (45.3)	Radiotherapy	58 (15.3)
Knowledge about cause of CC		Surgery	104 (27.4)
Sex	189 (49.7)	Do not know	200 (52.6)
Virus	120 (31.6)	Knowledge about Screening tests	
Old age	32 (8.4)	VILI	37 (9.7)
Family history	58 (15.3)	VIA	27 (7.1)
More children	28 (7.4)	Do not know	81 (21.3)
Don't know	153 (40.3)	Knowledge about persons who undergo screening	
Knowledge about symptoms of CC		Elderly women	9 (2.4)
Pain in lower abdomen	80 (21.1)	Women age of 25 yrs and above	51 (13.4)
Post coital bleeding	58 (15.3)	Women having multiple sexual partners	53 (13.9)
Post-menopausal bleeding	65 (17.1)	Do not know	233 (61.3)
Urine urgency	42 (11.1)	Knowledge about screening frequency	
Vaginal discharge	90 (23.7)	Once every year	28 (7.4)
Foul smell discharge	127 (33.4)	Once every 3 yrs	62 (16.3)
Intermenstrual bleeding	93 (24.5)	Once every 5 yrs	18 (4.7)
Do not know	163 (42.9)	Do not know	205 (53.9)
Knowledge about Risk factors		Knowledge about HPV transmission	
Generalized Infections	88 (23.2)	Sexually Intercourse	116 (30.5)
HPV Infections	108 (27.1)	Knowledge about HPV transmission prevention	
Genetics	47 (12.4)	Condom use	105 (27.6)
Tobacco and smoking	36 (9.5)	Vaccination	90 (23.7)
History of STD's	81 (21.3)	Oral contraceptives	38 (10.0)
Multiparity	21 (5.5)	Pap test	78 (20.5)
Multiple of sexual partners	110 (28.9)	Late start of sexual activity	61 (16.1)
Intercourse at early age	85 (22.4)	Late start of sexual activity	83 (21.8)
Not maintenance of personal hygiene	126 (33.2)		
Early of marriage	61 (16.1)		
Do not know	165 (43.4)		
Knowledge about preventive measures			
Avoid multiple sexual partners	113 (29.7)		
Avoid early sexual intercourse	85 (22.4)		
Vaccination against HPV	92 (24.2)		
Quit smoking	30 (7.9)		
Avoid birth at young age	36 (9.5)		
Avoid usage of oral contraceptives	56 (14.7)		
Do not know	181 (47.6)		

extra hygiene conditions are required. A simple thing to prevent the CC is by having regular screening by pap test and vaccinating by HPV. By educating the people about the disease in every field will be helpful for prevention. Taking personal hygiene seriously is a simplest way to avoid unnecessary illnesses. Neglecting to practice good hygiene is a major contributor for development of CC as stated in a study.^[18] Specifically, during menstruation bathing regularly, using cleaned clothes and changing tampons or pads habitually are necessary. Regular visits to gynecologists will also ensure that of any early detection of CC, breast cancer, vaginal infections, and others. In one of the research work, it stated that it is important to include men in HPV education and prevention efforts.^[12]

HPV vaccination is needed for all age groups of women for preventing the CC. However, but despite of these recommendations, the HPV vaccination rate is declining as stated by Perkins *et al.* (2013).^[19] In this study, only few people are willing to take pap test (179;47%) and mentioned that reasons for not having HPV vaccine are due to lack of knowledge about HPV (298; 78%), no risk as not exposed (76; 20%) and high cost (6;1.5%). Based on the results, the current study suggests that there is no improvement in HPV awareness in developing countries like India even though the HPV vaccine is accessible. People will be more likely to use disease prevention techniques if they have a thorough awareness of the disease and its effects.

Table 3: Attitude and practice about cervical cancer and its screening among respondents (n=380)

Variables	Frequency (%)
For every 8 minutes a women die due to cervical cancer	
Strongly Disagree	162 (42.6)
Disagree	138 (36.3)
Neither agree nor disagree	8 (2.1)
Agree	4 (1.1)
Strongly Agree	68 (17.9)
CC is not transmitted from one person to another	
Strongly Disagree	41 (10.8)
Disagree	159 (41.8)
Neither agree nor disagree	24 (6.3)
Agree	132 (34.7)
Strongly Agree	24 (6.3)
Late stage of diagnosis of disease is due to lack of awareness about screening and preventive methods is the prime reason	
Strongly Disagree	16 (4.2)
Disagree	53 (13.9)
Neither agree nor disagree	81 (21.3)
Agree	135 (35.5)
Strongly Agree	95 (25.0)
Misconception about female cancers and gynaecological diseases, socioeconomic limitations are the obstacles for screening of cervical cancer	
Strongly Disagree	9 (2.4)
Disagree	66 (17.4)
Neither agree nor disagree	62 (6.3)
Agree	150 (39.5)
Strongly Agree	93 (24.5)
HPV vaccination can prevent cervical cancer	
Strongly Disagree	9 (2.4)
Disagree	70 (18.4)
Neither agree nor disagree	150 (39.5)
Agree	136 (35.8)
Strongly Agree	15 (3.9)
Screening rate increases if the screening for CC is not expensive and cause no harm	
Strongly Disagree	37 (9.7)
Disagree	152 (40.0)
Neither agree nor disagree	84 (22.1)
Agree	49 (12.9)
Strongly Agree	58 (15.3)
Is it important to consult a doctor in case of bleeding between periods	
Strongly Disagree	72 (18.9)
Disagree	92 (24.2)
Neither agree nor disagree	69 (18.2)
Agree	86 (22.6)
Strongly Agree	61 (16.1)
In your opinion screening is harmless procedure for the client	
Strongly Disagree	36 (9.5)
Disagree	115 (30.3)
Neither agree nor disagree	94 (24.7)

Contd...

Table 3: Contd...

Variables	Frequency (%)
Agree	109 (28.7)
Strongly Agree	26 (6.8)
Practice	n (%)
Cytological examination of cervix	
Never done any cytological examination	293 (77.1)
Cytological examination of cervix more than past 3 yrs	18 (4.7)
Cytological examination of cervix within past 3 yrs	69 (18.2)
Screened for cervical cancer	
Never screened before for cc	374 (98.42)
Screened for cc within past 3 yrs	6 (1.57)

Table 4: Adequacy of knowledge, attitude, and practice regarding cervical cancer and its screening among respondents (n=380)

Variable	Frequency
Knowledge	
Good knowledge	77 (20.3)
Moderate knowledge	32 (8.4)
Poor knowledge	271 (71.3)
Attitude	
Positive attitude	326 (85.8)
Negative attitude	54 (14.2)
Practice	
Regular practice	6 (1.57)
No practice	374 (98.4)

The limitations of this study include that we focused on only female responses excluding the male population. Because of the small sample size, the results from this study could not be generalized to the larger Indian women population. Further studies are needed to design that are needed to know more about the CC KAP levels across India. Furthermore, more awareness programs on CC and HPV vaccine should be recommended. The KAP of CC from these age respondents is needed to design an awareness program about CC and HPV. In the current study, the respondents have poor knowledge of CC (71.3%). Having awareness about HPV and CC at an early age will help us to accomplish the mission of the National Cancer Control Program. The general public can immediately spot the early symptoms of the disease and take necessary precautions if they are aware about CC.

Conclusion

Based on the conducted study, the majority of the subjects have poor knowledge about CC. Educating the adolescents in their early age about the sexuality and its related diseases (STDs) will impact their decision making and how to interact with the world around them. To reduce the mortality rate of CC, special attention must be paid to improving the knowledge on CC risk factors and its prevention in young adolescents.

Table 5: Association of sociodemographic characteristics with good knowledge, positive attitude, and regular practice toward cervical cancer and its screening (n=380)

Variable	Total (n=380)	Good knowledge		Positive attitude		Regular practice	
		n (%)	χ^2 (P)	n (%);III	χ^2 (P)	n (%)	χ^2 (P)
Age (yrs)							
15-18	86	17 (19.8)	23.57 (<.001)	62 (72.1)	39.44 (<.001)	0	16.79 (<0.001)
19-22	142	34 (24.1)		112 (79.4)		0	
23-25	96	7 (7.3)		95 (99.0)		6 (100)	
25 above	56	19 (33.3)		57 (100)		0	
Marital status							
Married	26	6 (23.1)	0.144 (0.931)	26 (100)	8.2 (0.004)	1 (16.7)	0.68 (0.409)
Unmarried	354	71 (20.1)		300 (84.7)		5 (83.3)	
Education field							
Engineering	125	21 (24.1)	12.42 (0.412)	78 (89.7)	12.9 (0.045)	1 (16.7)	7.69 (0.261)
Medical	12	2 (12.5)		14 (87.5)		0	
Pharmacy	148	33 (23.7)		123 (88.5)		5 (36.3)	
Agriculture	31	3 (10.7)		23 (82.1)		0	
Nursing	1	0 (0)		1 (100)		0	
Paramedical	5	14 (17.5)		59 (73.8)		0	
Others	58	4 (13.8)		28 (96.6)		0	
Education level							
Under graduate	38	15 (16.9)	3.621 (0.460)	30 (81.3)	10.09 (0.006)	0	4.36 (0.113)
Graduate	316	55 (20.8)		270 (85.4)		6 (100)	
Postgraduate & above	26	7 (26.9)		26 (100.0)		0	
Religion							
Christian	19	3 (16.7)	5.83 (0.212)	14 (77.8)	4.02 (0.134)	0	0.58 (0.745)
Muslim	58	15 (26.3)		46 (79.3)		1 (16.7)	
Hindu	303	59 (19.4)		266 (87.5)		5 (83.3)	
Smoking							
Never smoked	374	74 (19.8)	4.85 (0.302)	321 (85.8)	0.93 (0.626)	6 (100)	0.19 (0.908)
Used to smoke	2	1 (50.0)		2 (100)		0	
Currently smoke	4	2 (50.0)		3 (75.0)		0	
Family history of cancer							
Yes	50	9 (18.0)	0.53 (0.970)	44 (88.0)	0.37 (0.830)	0	2.38 (0.309)
No	313	65 (20.8)		268 (85.6)		6 (100)	
Don't know	17	3 (17.6)		14 (82.4)		0	

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Song B, Ding C, Chen W, Sun H, Zhang M, Chen W. Incidence and mortality of cervical cancer in China, 2013. *Chin J Cancer Res* 2017;29:471-6.
- Kaarthigeyan K. Cervical cancer in India and HPV vaccination. *Indian J Med Paediatr Oncol* 2012;33:7-12.
- zur Hausen H. Papillomaviruses in anogenital cancer as a model to understand the role of viruses in human cancers. *Cancer Res* 1989;49:4677-81.
- Schiffman M, Wentzensen N. Human papillomavirus infection and the multistage carcinogenesis of cervical cancer. *Cancer Epidemiol Biomarkers Prev* 2013;22:553-60.
- Cohen PA, Jhingran A, Oaknin A, Denny L. Cervical cancer. *Lancet* 2019;393:169-82.
- Natphopsuk S, Settheetham-Ishida W, Sinawat S, Pientong C, Yuenyao P, Ishida T. Risk factors for cervical cancer in northeastern Thailand: Detailed analyses of sexual and smoking behavior. *Asian Pac J Cancer Prev* 2012;13:5489-95.
- Paul SB, Tiwary BK, Choudhury AP. Studies on the epidemiology of cervical cancer in Southern Assam. *Assam Univ J Sci Technol* 2011;7:36-42.
- Plummer M, Peto J, Franceschi S; International Collaboration of Epidemiological Studies of Cervical Cancer. Time since first sexual intercourse and the risk of cervical cancer. *Int J Cancer* 2012;130:2638-44.
- Bal MS, Goyal R, Suri AK, Mohi MK. Detection of abnormal cervical cytology in Papanicolaou smears. *J Cytol* 2012;29:45-7.
- Ansari M, Mehdi G, Arif S, Ansari H, Khan T. Smear patterns and spectrum of premalignant and malignant cervical epithelial lesions in postmenopausal Indian women: A hospital-based study. *Diagn Cytopathol* 2012;40:976-83.
- Al-Naggar RA, Al-Naggar DH, Bobryshev YV, Chen R, Assabri A. Practice and barriers toward breast self-examination among young Malaysian women. *Asian Pac J Cancer Prev* 2011;12:1173-8.
- McPartland TS, Weaver BA, Lee S-K, Koutsky LA. Men's perceptions and knowledge of human papillomavirus (HPV) infection and cervical cancer. *J Am College Health* 2005;53:225-30.
- Leyva M, Byrd T, Tarwater P. Attitudes towards cervical cancer screening. *Calif J Health Promot* 2006;4:13-24.

14. Abdullahi A, Copping J, Kessel A, Luck M, Bonell C. Cervical screening: Perceptions and barriers to uptake among Somali women in Camden. *Public Health* 2009;123:680-5.
15. Narayana G, Suchitra MJ, Sunanda G, Ramaiah JD, Kumar BK, Veerabhadrapa K. 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.
16. Singh J, Baliga SS. Knowledge regarding cervical cancer and HPV vaccine among medical students: A cross-sectional study. *Clin Epidemiol Glob Health* 2021;9:289-92.
17. Doshi D, Reddy BS, Karunakar P, Deshpande K. HPV, cervical cancer and pap test related knowledge among a sample of female dental students in India. *Asian Pac J Cancer Prev* 2015;16:5415-20.
18. Wong L, Wong Y, Low W, Khoo E, Shuib R. Knowledge and awareness of cervical cancer and screening among Malaysian women who have never had a Pap smear: A qualitative study. *Singapore Med J* 2009;50:49-53.
19. Perkins RB, Anderson BL, Gorin SS, Schulkin JA. Challenges in cervical cancer prevention: A survey of US obstetrician-gynecologists. *Am J Prev Med* 2013;45:175-81.