



## Original Research Article

## Awareness of cervical cancer and pap smear screening among women of reproductive age group at a tertiary care hospital in Goa

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## ABSTRACT

**Introduction:** Cervical cancer is a fatal disease once it reaches in invasive stage however among all female genital tract malignancies; it is the only preventable cancer if detected in premalignant stages. Pap smear is an effective tool for mass screening and detects cervical lesions early for effective treatment.

**Objective:** The present study was conducted to assess the level of awareness regarding cervical cancer and PAP Smear Screening among women admitted in the Obstetrics and Gynaecology (OBG) wards of Goa Medical College.

**Materials and Methods:** A prospective study was conducted at a tertiary care hospital in Goa for a period of 3 months (December 2018 – February 2019). 426 women admitted in OBG wards in Goa Medical College were interviewed using a structured questionnaire.

**Results:** Among the 426 women interviewed, 246 women (57.7 %) had heard about cervical cancer. However, only 30 (7%) had good level of awareness of cervical cancer, 102 (23.9%) had fair, level of awareness, while 294 (69.1%) had poor level of awareness about the disease. Only 15.5% of women were aware about the warning signs and symptoms of cervical cancer while 19.7% had good level of awareness about the risk factors of cervical cancer. A small proportion of women interviewed (11.3%) had good level of awareness regarding prevention and screening of cervical cancer. Majority of women i.e. 288 (67.6%) had never heard about Pap smear. Out of the 138 women who were aware of Pap smear, only 54 (39.1%) had undergone Pap smear testing. Majority 63.4% women were of the opinion that cervical cancer can be treated; while 5.6% thought that there is no treatment available for the disease.

**Conclusion:** Inadequate knowledge regarding cervical cancer and Pap smear screening is an important barrier in reducing the prevalence of cervical cancer in India and hence we need to strengthen our health care system by creating public awareness and education regarding cervical cancer.

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### 1. Introduction

Cervical cancer ranks second most frequently diagnosed cancer in women in low income countries after breast cancer. As per Globocan 2018 figures, with an estimated 569,800 new cases and 311,365 deaths secondary to cervical cancer in 2018 worldwide, this disease is the fourth most commonly diagnosed cancer and the fourth leading cause of cancer deaths among women.<sup>1</sup> In India, cervical cancer ranks as the 2nd leading cause of female cancer with

approximately 96,922 new cervical cancer cases being diagnosed annually, especially in the reproductive age group. 60,078 cervical cancer deaths are reported in India making it the 2<sup>nd</sup> most common cause of cancer deaths among women.<sup>2</sup>

Human Papilloma Virus is one of the most common sexually transmitted infections worldwide among both men and women and is found to be the most common cause of cervical intraepithelial neoplasia (CIN) and cervical cancer in females.<sup>3</sup> Onset of sexual activity at an early age, unprotected sexual intercourse, multiple sexual partners or a partner with multiple sexual partners, intercourse with

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uncircumcised men are predispose to an increased risk of acquiring HPV infection.<sup>3</sup> Smoking, immune-compromised state (HIV), long term use of oral contraceptive pills (OCPs), multiparity, first childbirth age < 20 years of age, presence of other untreated vaginal infections, poor genital hygiene and low socioeconomic status are some of the other risk factors associated with cervical cancer.<sup>4</sup>

Cervical cancer is one of the most easily preventable cancers among all the female genital tract malignancies. It can be prevented by screening asymptomatic women for precancerous lesions (CIN) and treating these lesions before they progress to invasive malignancy.<sup>5</sup> The natural history of progression from mild cervical dysplasia to invasive carcinoma cervix is approximately 10-20 years, which makes cervical cancer an easily preventable disease and provides a rationale for its screening.<sup>5</sup> It has been demonstrated in several studies that, if a woman was screened for cervical cancer even once in her lifetime between the ages of 30-40 years, her risk of cervical cancer would be reduced by 25-36%.<sup>6</sup> In developed countries the incidence of cervical cancer has reduced significantly in the past few decades due to intensive screening programmes and early diagnosis and treatment of the disease.<sup>7</sup> In developing countries however due to lack of effective screening programmes which aim at diagnosis and treatment of precancerous lesions, there has been no decline in the incidence and mortality of cervical cancer.<sup>7</sup>

However, even if effective screening programs are designed in the country, the success of these programs will highly depend on the awareness, knowledge and attitude of the women who receive them. Hence the present study was undertaken to assess the level of awareness regarding cervical cancer among women admitted in the Obstetrics and Gynaecology (OBG) wards of Goa Medical College and their awareness and opinions on PAP Smear Screening.

## 2. Materials and Methods

Our hospital-based cross-sectional study was conducted in the Department of Obstetrics and Gynaecology (OBG), Goa Medical College (GMC), Bambolim, Goa, between December 2018 to February 2019. Institutional Ethics Committee approval was obtained prior to the commencement of the study. The study participants included all women between 20-50 years of age admitted in all the OBG wards (Ward 126, 127, 128, 129 and 130) of Goa Medical College during the study period. Informed consent was obtained from all the study participants.

The following exclusion criteria were considered:

1. Women diagnosed with any malignancy or premalignant conditions and being treated for the same.
2. Women admitted in labour rooms and eclampsia rooms.

3. Women admitted with serious illness requiring intensive care.
4. Women with psychiatric illness.
5. Women who declined consent.

426 women admitted in all the OBG wards fulfilling the inclusion criteria were interviewed with a structured questionnaire (Appendix 1) after obtaining their consent and their sociodemographic characteristics were recorded. After completion of the interview, the study participants were given health education regarding cervical cancer using pictorial diagrams by the researchers. At the end of the study, all the completed questionnaires were assessed and the responses of the participants were scored. The responses of the study participants were scored as 1 point for a correct response, 0 for no response (don't know), and - 1 point for an incorrect response. These scores were added up and percentages of total obtainable points were calculated. A score of  $\geq 70\%$  was considered as good level of awareness, 50-69% considered as fair level of awareness and a score of < 50% was considered as poor level of awareness about cervical cancer. The data was analyzed using SPSS (version 20.0). Associations between the socio-demographic characteristics and awareness of cervical cancer, risk factors, symptoms, treatment and prognosis were studied. Their awareness and opinions regarding screening of cervical cancer with Pap smear testing were noted. A p value of < 0.05 was considered as statistically significant.

## 3. Results

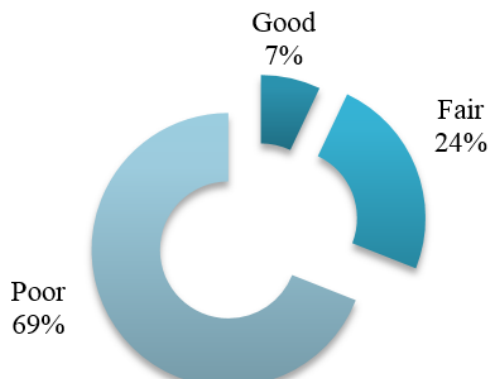
A total of 426 women between 20-50 years of age who were indoor patients in OBG wards at Goa Medical College (GMC) were included in the present study.

Most of the study participants were aged < 40 years (84.5%); the mean age being 36 years. 76% of the study participants were Hindus, while 14.1% were Muslims and 9.9% were Christians. Majority of the study participants (90.1%) were married. A significant number of women interviewed had at least secondary education (81.6%). 29.5% of the study participants had higher secondary education and 26.8% were graduates. 80.3% of the women interviewed were homemakers, 11.3% women were skilled workers, 1.4% semi-skilled, 5.6% were unskilled workers and only 1.4% were professionals. 78.9% of the study participants were above socioeconomic class III, 18.3% belonged to class IV and 2.8% were class V. Among the women interviewed, 40.8% were from urban areas while 59.2% were from rural areas.

Among the 426 women interviewed, only 30 women (7%) had good level of awareness regarding cervical cancer, whereas 102 women (24%) had fair level of awareness regarding cervical cancer. Majority of the study participants, i.e. 294 women (69%) had poor level

of awareness regarding cervical cancer (as depicted in Figure 1). A large number of women interviewed, i.e. 180 women (42.3%) had never heard of cervical cancer.

### Awareness regarding cervical cancer



**Fig. 1:** Distribution of women as per their level of awareness on cervical cancer

A similar cross-sectional study done by Jansirani Siddharthar et al in a tertiary care hospital in Puducherry, South India also showed poor level of awareness on cervical cancer, wherein 55.5% of the study population had never heard of cervical cancer.<sup>8</sup> Two other studies also showed poor level of awareness of cervical cancer among women.<sup>9,10</sup> However another two studies done in different parts of India showed that majority of the women interviewed had heard of cervical cancer, unlike our study.<sup>11,12</sup> This difference probably was observed because the above mentioned studies were conducted in mainstream States like Delhi and Andhra-Pradesh, unlike Goa.

As seen in Table 1, a significant association was observed between the level of awareness regarding cervical cancer and some definite socio-demographic characteristics of the interviewed women. A higher level of awareness of cervical cancer was found amongst women with increasing age, higher level of education, skilled occupation and higher socioeconomic status ( $p$  value = 0.0000). Similarly other studies showed a significant association between good level of awareness of cervical cancer and higher level of education, occupation and socioeconomic status.<sup>8,11</sup> Women from urban areas were more aware of cervical cancer than those belonging to rural areas ( $p$  value = 0.0000). G. Narayana et al observed that women with increasing age, higher level of education, occupation, socioeconomic status and belonging to urban areas had better awareness of cervical cancer.<sup>12</sup>

The present study showed that there was no significant association between factors like marital status, religion and the level of awareness regarding cervical cancer which was also observed in other comparable studies.<sup>8,11,12</sup>

A significant association of above socio-demographic characteristics with awareness of cervical cancer may possibly be due to easy accessibility to mass media and accessibility to tertiary care centres in urban areas and to those belonging to a higher socioeconomic status. Despite most of the study participants being educated and having a higher socioeconomic status, the study results showed poor level of awareness of cervical cancer among 69 % of our study population. This is indicative of lack of health education and awareness/ screening programmes for cervical cancer in Goa.

More than half of the women i.e. 246 women (57.7%) interviewed had poor level of awareness about symptoms of cervical cancer, while 15.5% of women had good level of awareness. As depicted in Table 2, the commonest symptoms identified by the study participants were abnormal vaginal bleeding (64.8%), post-menopausal bleeding (62%), heavy menstrual flow (60.6%), weight loss (53.5%) and vaginal discharge (50.7%). A study conducted by Jansirani Siddharthar et al in Puducherry also showed poor level of awareness regarding symptoms of cervical cancer (69%), while only 8% of study population had good level of awareness.<sup>8</sup> Similar observations were made in other studies across the country.<sup>9,10,12–14</sup>

Table 3 shows the commonest risk factors of cervical cancer identified by the study participants being weakened immune system (66.2%), having many sexual partners (57.7%) and initiation of sexual intercourse at a young age (43.7%). 84 out of 426 (19.7%) women interviewed had good level of awareness about the risk factors for cervical cancer, whereas most of the women i.e. 282 (66.2%) had poor level of awareness about the risk factors of the disease. Majority of the women i.e. 240 (56.3%) women correctly identified that women in the age group of 35–69yrs are high risk for developing cervical cancer. One third of the respondents (33.8%) were of the opinion that women above 70 years of age are at risk of developing cervical cancer.

Similarly, a study done by Jansirani Siddharthar et al. showed that only 10.8% of the study population had good level of awareness regarding the risk factors for cervical cancer; with the commonest risk factor being identified as long term use of OCPs (16.3%).<sup>8</sup> Bathija GV also showed similar results of low level of awareness of women about the risk factors of cervical cancer and the commonest risk factor being identified as smoking (63%).<sup>9</sup>

Thus a poor level of awareness among women regarding the symptoms and risk factors of cervical cancer was observed in the present study and similar other studies. Despite an existent National Cancer Prevention Programme, which aims at pro motion of cancer awareness there has been probably a lag in the implementation of awareness programs in our country as a result of which women in different States of India are still unaware of cervical cancer; its symptoms and risk factors.

**Table 1:** Association between the level of awareness on cervical cancer and socio-demographic characteristics

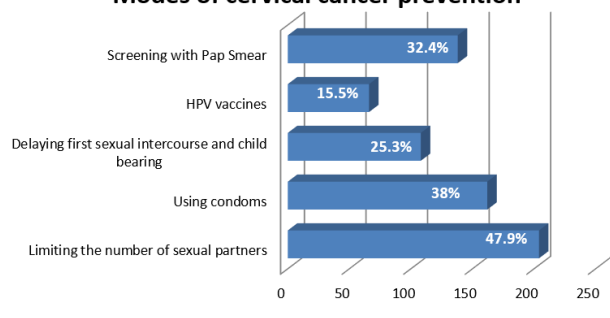
Variables	Level of awareness regarding cervical cancer (n= 426)			p value
	Good level of awareness No. (%)	Fair level of awareness No. (%)	Poor level of awareness No. (%)	
1. Age (years)				
a. < 25	3 (3.1)	20 (20.8)	73 (76)	0.0000
b. 25-39	9 (3.4)	64 (24.2)	191 (72.3)	
c. > 40	18 (27.2)	18 (27.2)	30 (45.5)	
2. Marital Status				0.1016
a. Married	25 (6.5)	97 (25.3)	262 (68.2)	
b. Single	2 (8.3)	4 (16.7)	18 (75)	
c. Widow	3 (25)	1 (8.3)	8 (66.7)	
d. Separated	0	0	6 (100)	
3. Level of Education				0.0000
a. None	0	2 (4.8)	42 (95.2)	
b. Primary	0	16 (44.4)	20 (55.6)	
c. Secondary	6 (5.6)	36 (33.3)	66 (61.1)	
d. Tertiary	24 (10)	48 (20)	168 (70)	
4. Occupation				0.0000
a. None	1 (0.3)	33(9.6)	308 (90.1)	
b. Unskilled	0	2 (8.3)	22 (91.7)	
c. Semiskilled	0	2 (33.3)	4 (66.7)	
d. Skilled	12 (25)	26 (54.2)	10 (20.8)	
e. Professional	4 (66.7)	2 (33.3)	0	
5. Religion				0.1994
a. Hindu	18 (5.6)	82 (25.3)	224(69.1)	
b. Christian	6 (10)	8 (19.1)	28 (66.7)	
c. Muslim		12 (20)	42 (70)	
6. Level of development				0.0000
a. Urban	23 (13.2)	90 (51.7)	61(35.1)	
b. Rural	7 (2.8)	12 (4.8)	233 (92.4)	
7. Socioeconomic status				0.0000
a. I	14 (10.6)	46 (34.8)	72 (54.5)	
b. II	12 (14.3)	31 (36.9)	41 (48.8)	
c. III	4 (3.3)	21 (17.5)	95 (79.2)	
d. IV	0	4 (5.2)	74 (94.8)	
e. V	0	0	12 (100)	

**Table 2:** Distribution of symptoms of cervical cancer identified by the study participants

Symptoms	Frequency (No.)	Percentage (%)
a) Abnormal vaginal bleeding	276	64.8
b) Back pain	168	39.4
c) Vaginal discharge	216	50.7
d) Heavy menstrual flow	258	60.6
e) Postmenopausal bleeding	264	62
f) Post-coital bleeding	144	33.8
g) Pelvic pain	204	47.9
h) Blood in stools	108	25.3
i) Weight loss	228	53.5

**Table 3:** Distribution of risk factors of cervical cancer identified by the study participants

Risk factors	Frequency (No.)	Percentage (%)
a) Infection with a virus (HPV)	66	15.5
b) Smoking	180	42.3
c) Having a weakened immune system (eg.HIV)	282	66.2
d) Long term use of oral contraceptive pills (OCPs)	114	26.8
e) Star ting to have sexual intercourse early (before 17 years of age)	186	43.7
f) Having many sexual partners	246	57.7
g) Having many children	42	9.9
h) Having a sexual partner with many previous partners	180	42.3

**Modes of cervical cancer prevention****Fig. 2:** Distribution of modes of prevention of cervical cancer identified by the study participants

A large number of women interviewed i.e. 276 women (64.8%) correctly believed that cervical cancer is preventable, which was also found in similar studies in different parts of India.<sup>10,12</sup> Among these women, only 48 women (11.3%) had good level of awareness about prevention and screening of cervical cancer, while 138 women (32.4%) had fair level of awareness and 240 women (56.3%) had poor level of awareness of cervical cancer. As seen in Figure 2, limiting the number of sexual partners (47.9%), use of condoms (38%) and screening with Pap smear (32.4%) were the commonest mode of prevention of cervical cancer identified by the respondents. Similarly, in the study done by Narayana G the commonest preventive measure identified by the study respondents was limiting the number of sexual partners (37.7%).<sup>12</sup>

Out of the 138 women (32.4%) that were aware of Pap smear screening, only 54 women (39.1%) had undergone screening with Pap smear, whereas 84 women (60.9%) had never undergone Pap smear screening. Among these 54 women, only 3 women had been undergoing Pap smear screening periodically, while 42 of these women had their Pap smear testing done once and 9 women had been tested twice in their lifetime. Most of the women (39 women) had undergone Pap smear testing in Government Hospital, 7 women in private hospital and only 8 women had attended the Pap smear screening medical camps organised by the

Government. Majority of the women that were aware of Pap smear testing i.e. 96 (69.6%) women had listed medical professionals (health workers and Doctors) as their source of information regarding screening of cervical cancer with Pap smear, while 30 (21.7%) women heard about it from mass media and 12 (8.7%) from family and friends.

That almost half of the study participants (i.e. 216 women) believed that screening with Pap smear is useful, however 24.9% (106) women found Pap smear testing to be inaccessible and 18.3% (78) women were embarrassed of undergoing Pap smear testing. Thus it is the need of the hour to implement effective cervical cancer screening programmes and create awareness regarding Pap smear screening.

Majority of the women interviewed i.e. 204 (47.9%) were of the opinion that Pap smear screening should be done only after menopause, while 150 women (35.2%) reported that Pap smear screening should begin after 30 years of age. 206 women (48.4%) thought that Pap smear screening should begin 10 years after initiation of sexual intercourse, whereas 138 (32.4%) women were aware that Pap smear screening should begin within 3 years of initiation of sexual intercourse. Most of the respondents i.e. 172 women interviewed, had a false notion that Pap smear testing should be done only in women that are symptomatic, whereas 30% of the respondents believed that screening with Pap smear should be done every 3 years. Out of the 426 women interviewed, only 56 women had heard about Health Camps for screening of cervical cancer by Pap smear organised by the Government and only 8 out of these 56 women attended the camp and underwent Pap smear testing. This shows that it is extremely important to improve awareness regarding prevention and screening of cervical cancer and motivate women to participate in such health care initiatives.

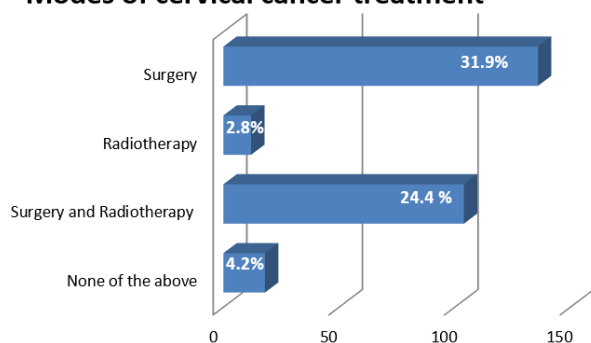
Similar poor awareness regarding screening of cervical cancer using Pap smear test was observed by Krishnaveni K, and only 17.8% of the women interviewed had undergone Pap smear screening. Majority of these women (30.4%) stated their reason for not undergoing a Pap smear being "Fear of the procedure" while 18.5% of these women had fear of bad result. Most of the women in this study (45.3%) believed that Pap smear screening has to be done

in women in the age group of 20 – 50 years , but only 22.6% of the study participants knew that it has to be repeated every 3 yearly. Majority of the study participants (42.8%) listed their source of information regarding cervical cancer screening as family and friends while only 21.7% women had obtained this information from medical professionals.<sup>10</sup>

HPV vaccination in girls 9 to 13 years of age combined with regular cytology screening in women over age 30 for precancerous lesions followed by adequate treatment are key measures to prevent the 5,30, 000 new cases of cervical cancer diagnosed every year.<sup>14</sup> Only 66 study participants (15.5%) were aware of HPV Vaccination, whereas 360 women had never heard about HPV vaccines. Similarly Krishnaveni K demonstrated that only 17.5% of the study participants were aware of HPV vaccination.<sup>10</sup> Among these 66 women 17 women were aware that HPV vaccination is to be administered to girls at 9-12 years of age, while 39 believed that it has to be given only after marriage and 10 women thought that the vaccine has to be given to women above 50 years of age.

Similarly other studies done by Jansirani Siddharthar et al.,<sup>8</sup> Bathija GV,<sup>9</sup> Patra S<sup>11</sup> and Sandhya Singh et al<sup>13</sup> demonstrated poor level of awareness regarding cervical cancer screening by Pap smear testing and HPV vaccination.

### Modes of cervical cancer treatment

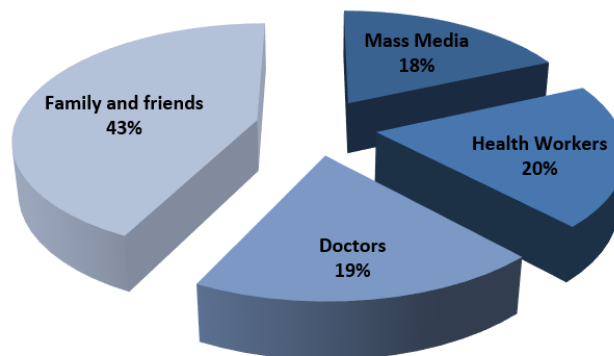


**Fig. 3:** Distribution of modes of treatment of cervical cancer identified by the study participants

In the present study, 270 out of 426 women interviewed (63.4%) believed that cervical cancer is treatable, while 24 (5.6%) believed that there is no treatment for cervical cancer and 132 (31%) did not know if cervical cancer was treatable. Among these women, only 150 (35.2%) had good level of awareness regarding treatment of cervical cancer, while most of them i.e. 180 women (42.3%) had poor level of awareness. Figure 3 shows distribution of the different treatment measures for cervical cancer identified by the study participants. Majority of the women (136) believed that surgery is treatment of cervical cancer, while only 12 women were aware of radiotherapy. 104 women opined that both surgery and radiotherapy are required to treat cervical cancer.

Similar study done by Patra S<sup>11</sup> in Delhi showed that only 39% of the women interviewed were aware that cervical cancer can be treated. Arunadevi et.al<sup>14</sup> found that 21% of the study population believed that cervical cancer should be treated according to the stage of the disease, 34% were of the opinion that radiotherapy is required to cure cervical cancer, whereas 26% were in favour of surgery and 19% for chemo therapy.

### Sources of Information



**Fig. 4:** Sources of information about cervical cancer among study

As depicted in Figure 4, the commonest source of information regarding cervical cancer was family and friends (43%), while medical professionals constituted only 39% and 18% of the study participants obtained their information on cervical cancer from mass media. This was also noted in similar other studies.<sup>8,10,11</sup>

### 4. Conclusion

Despite cervical cancer being one of the leading causes of death among women in India, our present study shows poor awareness of our female population in Goa regarding the symptoms, risk factors, prevention and treatment of this preventable disease. Hence there is a need of the hour to formulate extensive awareness programmes, to educate our women regarding the early signs of the disease and promote Pap smear screening which can detect precancerous cervical lesions and also introduce HPV vaccination to prevent cervical cancer. Utilisation of mass media services, promotion of free Pap smear screening camps and increasing the availability of free HPV vaccination are some of the measures that can be implemented by our health care services to control cervical cancer in India.

### 5. Compliance with ethical standards

Rini Naik, Lorraine Noronha, Guruprasad Pednekar and Jagadish Cacodcar declare that they have no conflict of interest.

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008.

Informed consent was obtained from all patients for being included in the study.

## 6. Funding and sponsorship support

Nil.

## 7. Conflict of interest

None.

## References

- Global Cancer Statistics 2018: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA: Cancer J Clin.* 2018;68:394–424.
- ICO Information Centre on HPV and cancer. Human Papillomavirus and Related Diseases Report in India; 2019. ;.
- Burd, Eileen. Human Papillomavirus and Cervical Cancer. *Clin Microbiol Rev.* 2003;16:1–17.
- Ardahan M. Incidence, Risk Factors, Diagnostic Criteria and Prevention Methods in Cervical Cancer. *Recent Advances in Cervical Cancer* ; 2016,.
- ACCP. New evidence on the impact of cervical cancer screening and treatment using HPV DNA tests, visual inspection, or cytology. Cervical cancer prevention factsheet. July 2009. ;.
- S G, Gaffikin L, Goldhaber-Fiebert J, Gordillo-Tobar A, Levin C, et al. Cost effectiveness of cervical screening in five developing countries. *The New England. J Med.* 2005;353:2158–2168.
- Rengaswamy S. Effective screening programmes for cervical cancer in low- and middle-income developing countries. *Bulletin of the World Health Organization.* 2001;79(10):954–962.
- Siddharthar J. Knowledge and Awareness of Cervical Cancer and Its Prevention in Women Attending a Tertiary Care Hospital. *J Clin Diagn Res.* 2014;8(6):OC01–OC03.
- Bathija GV, Mallesh S, Gajula M. A study on awareness of cervical cancer among women of reproductive age group in urban slums of old Hubli. *Int J Community Med Public Health.* 2016;3:2579–2583.
- Krishnaveni K, Roy P, Sambathkumar R. Knowledge, attitude and practice related to cervical cancer and screening among women: community based cross - sectional study. *Int J Pharm Sci Res.* 2018;9(2):722–729.
- Patra S, Upadhyay M, Chhabra P. Awareness of cervical cancer and willingness to participate in screening Program: Public health policy implications. *J Can Res Ther.* 2017;13:318–323.
- Narayana G, Suchitra MJ, Sunanda G, Ramaiah JD, Kumar BP, Veerabhadrapa KV. Knowledge, attitude, and practice toward cervical cancer among women attending Obstetrics and Gynecology Department: A cross-sectional, hospital-based survey in South India. *Indian J Cancer.* 2017;54:481–487.
- Singh S, Narayan N, Sinha R, Sinha P, Sinha VP, Upadhye JJ. Awareness about cervical cancer risk factors and symptoms. *Int J Reprod Contracept Obstet Gynecol.* 2018;7:4987–4991.
- Arunadevi. Knowledge and awareness of cervical cancer among women in rural india. *Int J Cur Res Rev.* 2015;7(21):29–32.

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