Original Article

Pap Smear in Antenatal Women : An esteemed Opportunity for Screening and Awareness

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ABSTRACT

Background: Cervical and breast cancers are the leading malignancies in females in India, early detection through regular screening plays a vital role in its prevention and management. The incidence of abnormal cervical cytologic findings during pregnancy is 0.72 to 1.67%.Pap smear testing is simple, cost effective and is safe in pregnancy. In low resource countries like ours, this may be the only opportunity when the woman comes to a health centre. Objective of the study is to determine the prevalence of abnormal cervical smears and genital infections among pregnant women and is to determine the awareness of pap smear as a cervical cancer screening test in pregnant women

Methods: A prospective study was conducted among 100 women attending the outpatient unit of the Department of Obstetrics and Gynaecology for antenatal check-ups. Conventional pap smear was used in this study. The cytological results were reported as per the Bethesda classification system 2014. Descriptive statistics were used to analyse the data, including frequencies and percentages.

Results: In this study, among 100 antenatal women mean age was 23.70 years. Mean age at marriage was 19.72years.58% were multigravida and 42% were primigravida Among the 100 Pap smear reports, 72% were NILM, 22% nonspecific inflammatory changes, 5% bacterial vaginosis and 1% ASCUS. The findings revealed a lack of awareness among the study participants, with 73% reported no awareness of cervical cancer. Similarly, 82% of women were unaware of screening methods for cervical cancer. Furthermore, only 2% of the participants had undergone previous screening. These results highlight the significant gap in knowledge and the low prevalence of screening among the study population.

Conclusion: The antenatal period should be utilized as a valuable opportunity to screen them for cancer cervix. The study underscores the need to improve awareness and knowledge about cervical cancer and screening among women. Enhancing awareness can contribute to early detection, timely interventions, and improved outcomes for women.

Key Words: *cervical cancer, screening, PAP Smear, awareness, knowledge, prevalence*

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INTRODUCTION

Cervical and breast cancers are the leading malignancies in females in India. Cancer cervix is the second most common cancer in the age group 15-45 years. The incidence in India is 20.2 per 1,000,000 populations. Annually 1, 22,844 cases of cancer cervix are reported, and 67,477 women die of cancer cervix[1]. In the last few decades there is a decreasing trend in the incidence of cancer cervix and its mortality in many developed countries due to regular cervical cancer screening program.

In the developing countries, in addition to the prevalence of risk factors like low socio-economy, high parity, early marriage, lack of awareness about cancer cervix and screening programs also contribute to the high incidence and mortality due to cancer cervix[2].

Cervical cancer is caused by persistent infection with human papillomavirus (HPV)[3]. Despite the availability of HPV vaccines, cervical cancer remains a significant health concern, particularly in low and middle-income countries where access to vaccines and regular screening is limited[4].

According to ACOG recommendation, cervical cancer screening should be done every 3 years from the age of 21 years to 65 years[5]. Antenatal care provides a unique opportunity to engage women in cervical cancer screening, as these women are already interfacing with the healthcare system[6]. Pregnant women who may not otherwise seek medical care, for reasons such as economic constraints or lack of perceived need, might therefore be reached during this

period. The integration of cervical cancer screening into antenatal care could significantly increase screening rates and subsequent treatment of pre-cancerous lesions[7].

The Papanicolaou (Pap) smear has been an essential tool in the fight against cervical cancer[8]. It can detect precancerous changes in the cervix, thereby allowing early intervention and treatment. While a pregnancy itself does not increase the risk of cervical cancer, the physiological changes during pregnancy can make the interpretation of Pap smear results more challenging. This fact has led to controversy over the timing and frequency of screening during pregnancy[9].

In addition, Pap smear also gives information about genital infections such as bacteria, fungus, virus etc. This provides an opportunity to detect asymptomatic genital infections and there by treat it, which otherwise could have an adverse effect on ongoing pregnancy outcomes.

Studies report that 10-70% of dysplasia cases diagnosed during pregnancy regress and sometimes even disappear postpartum while persistence of cervical neoplasia is reported in 25-47% of cases and progression in 3-30% of cases[10]. Thus it is important to offer appropriate advice to women diagnosed with cervical dysplasia in the antenatal period. The Pap smear should best be performed at the first prenatal visit regardless of the duration of pregnancy to establish the presence or absence of cervical or vaginal infection, cervical dysplasia or frank malignancy (rare). All these represent a risk to the fetus and the mother[11]. This initial smear will establish a baseline diagnosis and can be followed up accurately throughout pregnancy or following delivery and the puerperium by repeated examinations or biopsy as deemed necessary.

Our study's objectives were to offer cervical cancer screening for pregnant women, determine the prevalence of abnormal Pap smear in this population, and guide them for further management based on the results obtained. Additionally, we aimed to identify reproductive tract infections and other associated changes in pregnant women.

Through this investigation, we hope to underscore the importance of integrating regular cervical cancer screenings, specifically Pap smears, into antenatal care. Furthermore, we seek to contribute to the understanding of cervical cytology in pregnant women, providing valuable insights for the management and treatment of this population[12].

The accuracy of pap smear in pregnancy is almost similar to that of non-pregnant women. Pap smear in pregnancy is useful to screen more number of women in reproductive age group. As of now only a few studies have been conducted in assessing the prevalence of abnormal pap smear during antenatal period and so the present study was undertaken in detecting the abnormal pap smear among the antenatal women.

Aims and Objectives
The central aim of this study was to integrate cervical cancer screening into routine antenatal check-ups and ascertain the prevalence of abnormal Pap smear in pregnant women attending outpatient services at the Department of OBG VIMS Ballari between April and September 2022.

The specific objectives were as follows:
1. To provide cervical cancer screening for pregnant women with gestational age between 12 and 36 weeks.
2. To determine the prevalence of abnormal Pap smear results in this group and provide guidance for further management based on these results.
3. To identify any reproductive tract infections or other associated changes during pregnancy.

MATERIALS AND METHODS
Study Design and Sample
This prospective cross-sectional study involved 100 pregnant women, between 12 to 36 weeks of gestation, attending the OPD for regular antenatal check-ups at the Department of OBG VIMS Ballari from April 2022 to September 2022.

Sample Size
Sample Size was calculated using the formula:

$$\frac{Z\alpha^2 \quad P(1-P)}{d^2}$$

$Z\alpha^2$ = Std normal variate 1.96
P = proportion of labour induction success
d = Absolute error

Prevalence of abnormal pap smear of 6% reported inthestudy.Considering6% prevalence of abnormal pap smearwith5%margin of error sample needed to conduct this studyis87cases.100 cases were selected.

Inclusion and Exclusion Criteria

Inclusion criteria included pregnant women aged between 12 and 36 weeks willing to participate in the study. Exclusion criteria included- the presence of vaginal bleeding, sexual intercourse within the previous 48 hours usage of any vaginal medication in the previous 48 hours, a Pap smear done within the last three years showing normal results.

Data Collection and Analysis

Data were collected using a proforma tailored to meet the study's objectives. The purpose of the study was explained to the participants, and informed consent was obtained. A routine antenatal history was taken, which included her awareness regarding Pap smear, cervical cancer and whether earlier screening done. Risk factors for cervical cancer including family history, early age at marriage and multiple partners were asked. Examination was done including BMI, blood pressure, systemic examination. Pap smears were collected by the conventional method. The woman was placed in a dorsal position. After exposing the cervix using a Cusco's speculum, the ectocervix was first sampled using an Ayres spatula. The Ayers spatula was placed at the cervical os such that the longer end went inside the cervical canal and the shorter end rested on the ectocervix. The spatula was then rotated by 360° maintaining contact on the ectocervix. The spatula (both sides) was then smeared on the slide and fixed immediately using a fixative. The endocervix was then sampled using a cytobrush and smeared on a slide and fixed similarly. Along with required history, the smear is sent to the Pathology laboratory. Routine antenatal care was provided to all women participating in the study. The cytological abnormalities were reported as per modified Bethesda classification (2014).

All data were recorded in MS Excel. Statistical analyses were conducted.

Outcome Measures

The primary outcome measure was the ability to screen pregnant women for cervical cancer and encourage them into routine screening subsequently. The secondary outcomes were determining the prevalence of abnormal Pap smear in pregnant women, guiding further management based on the results, and identifying reproductive tract infections and other associated changes in pregnancy.

RESULTS

Table 1: Parity Distribution among the Study Population

		Frequency	Percent
PARITY	MULTIGRAVIDA	58	58
	PRIMIGRAVIDA	42	42
MULTIGRAVIDA	G2	29	29
	G3	21	21
	G4	5	5
	G5	3	3

This table presents the distribution of parity among the study population of pregnant women.
From the total sample, 58% were multiparous, 42% were primiparous

Table 2: Socio-Economic Status (SES) in the Study Population

		Frequency	Percent
SES(CLASS)	2	12	12
	3	65	65
	4	23	23

This table provides an overview of the socio-economic status (SES) among the study participants.

The socio-economic status (SES) of participants according to modified BG Prasad classification. It was found that 12% of the participants belonged to class 2, 65% to class 3, and 23% to class 4.

Table3: Education Levels in the Study Population

EDUCATION			
	Graduate	10	10
	High School	39	39
	Higher Secondary	5	5
	Illiterate	5	5
	Middle School	26	26
	Post Graduate	3	3
	Primary	12	12
	Total	100	100

This table provides an overview of the Education level among the study participants.

The participants' education levels were classified into seven categories: Illiterate, Primary, Middle School, High School, Higher Secondary, Graduate, and Post Graduate. It was found that 5% were illiterate, 12% completed primary education, 26% completed middle school, 39% completed high school, 5% completed higher secondary education, 10% of the participants were graduates,3% were post graduates. These findings reveal the diverse educational background of the study participants.

Table 4: Demographic and Clinical Characteristics of the Study Participants.

Statistics		Age(years)	Age At Marriage(years)	Gest Age(wks)
N	Valid	100	100	100
Mean		23.70	19.72	22.91
Median		24.00	19.00	23.00
Std. Deviation		3.208	1.891	5.879
Range		14	8	21
Minimum		18	18	13
Maximum		32	26	34

This table provides the statistical analysis of age, age at marriage, and gestational age (gest age) among the study participants.

The average age of the participants was 23.70 years, with a standard deviation of 3.208 years,The youngest participant was 18 years old, and the oldest was 32 years old, giving a range of 14 years.

The participants' average age at marriage was 19.72 years, with a standard deviation of 1.891 years,. The youngest age at marriage was 18 years, and the oldest was 26 years, indicating a range of 8 years.

The average gestational age was 22.91 weeks, with a standard deviation of 5.879 weeks. This data shows a wider variation in gestational ages among the participants. The minimum gestational age recorded was 13 weeks, and the maximum was 34 weeks, giving a range of 21 weeks.

Table 5: Clinical Symptoms and Pap Smear Results of the Study Participants

		Frequency	Percent
Vaginal Itching	No	81	81
	yes	19	19
Gross Appearance	erosion	13	13
	healthy	87	87
Pap Smear	ASCUS	1	1
	BV	5	5
	Inflammatory	22	22
	NILM	72	72
	Total	100	100

The data shows that the majority of participants (81%) did not experience vaginal itching, while 19% reported experiencing this symptom. In terms of the gross appearance of the vagina, 87% of the women werehealthy, whereas 13% showed signs of erosion.

Looking at the Pap Smear results, it was found that the majority of the participants (72%) had Negative for Intraepithelial Lesion or Malignancy (NILM), indicating a normal result. Furthermore, 22% of the women had Inflammatory changes, 5% had Bacterial Vaginosis (BV), and 1% had Atypical Squamous Cells of Undetermined Significance (ASCUS).

Table 6: Participants' Awareness about Cervical Cancer and Previous Screening History

		Frequency	Percent
Awareness about CA	No	73	73
	yes	27	27
Awareness about screening	No	82	82

	yes	18	18
Previous screening	No	98	98
	yes	2	2

In terms of awareness about cervical cancer, a large majority of participants (73%) reported that they were not aware of the disease, while 27% indicated they were knowledgeable about it.

A similar pattern was observed when women were asked about their awareness of cervical cancer screening methods, with 82% of participants reporting that they were not aware of these methods, and only 18% indicating that they were aware.

Furthermore, the data shows that almost all the women (98%) had not undergone any form of cervical cancer screening before, while a very small fraction (2%) reported that they had previously been screened. This emphasizes the critical need for awareness and education programs to promote early detection and prevention of cervical cancer.

DISCUSSION

Women in this study were between 18-32years of age. Mean age being 23.7yrs . This is similar to the study conducted by Radha Bai Prabhu et al in India and Norwegian studies[13,14].

58% were multiparous, 42% were primiparous. The socio-economic status (SES) of participants according to modified BG Prasad classification. It was found that 12% of the participants belonged to class 2, 65% to class 3, and 23% to class 4.

Majority of the participants (72%) had Negative for Intraepithelial Lesion or Malignancy (NILM), indicating a normal result. Furthermore, 22% of the women had Inflammatory changes, 5% had Bacterial Vaginosis (BV), and 1% had Atypical Squamous Cells of Undetermined Significance (ASCUS) and it was in par with the previous studies conducted by Manikkam B where she found abnormal Pap test in 1% of pregnant women studied and in which 0.5% of the smear showed abnormality and diagnosed as ASCUS which is similar to present study[10].Comparably Vural et al found ASCUS in 1.55% of the pregnant women screened. This indicates an increasing rate of abnormal cervical cytology, which will lead to an increase in incidence of invasive cancer without an adequate screening programme[15].

A study conducted by AytenDinc on Turkish women had revealed ASC-US was detected in 0.9% of pregnant cases and 3.5% of non-pregnant cases, and LGSIL was detected in 1.2% of non-pregnant cases[16]. Another study done by Khaengkhor*et al* on 143 pregnant women had identified 10 abnormal PAP smear test results; four cases had ASCUS, five cases had LSIL, and one case had HSIL and almost a similar type of results was also shown in the study done by Fan et al on 11,506 pregnant women[17].

The findings of this study also shed light on the awareness of cervical cancer and screening among the study participants. The results indicate a lack of knowledge and awareness regarding cervical cancer, screening methods, and previous screening history. These findings align with previous studies that have highlighted the low levels of awareness and knowledge about cervical cancer and its prevention measures among women in various settings [18,19].

In this study, a substantial proportion of participants (73%) reported no awareness of cervical cancer, indicating a significant gap in knowledge. Other studies have reported similar findings, with low awareness levels about cervical cancer observed among women in different countries [20,21].

Furthermore, the majority of participants (82%) were not aware of screening methods for cervical cancer. This finding is consistent with previous studies that have identified a lack of knowledge about the importance and availability of cervical cancer screening [1].The consequences of this lack of awareness are significant, as regular screening plays a vital role in the early detection of precancerous lesions and the prevention of cervical cancer. Efforts should be made to improve awareness and education about cervical cancer screening programs and their benefits, targeting not only the general population but also healthcare providers who can play a crucial role in promoting screening practices [22].

The study also revealed that a very small percentage of participants (2%) had undergone previous screening for cervical cancer. This finding reflects the need for enhanced efforts to promote regular screening among women. Previous research has identified various barriers to screening uptake, including lack of awareness, fear, cost, and cultural beliefs[23,24]. Addressing these barriers and implementing targeted interventions to increase screening rates are essential for reducing the burden of cervical cancer.

Although pregnancy does not significantly alter the rates of false-negative results in general, several common physiologic changes associated with pregnancy can cause difficulties in interpretation of a Papanicolaou smear. Examples of these effects include the increasing levels of estrogen and progesterone which lead to hyperplasia of the cervical

glands that creates mucus plug. This endocervical mucus becomes thick and tenacious in pregnancy coupled with an increase in vaginal secretions overall, visibility of the cervix may be hampered[25]. Conducted studies prove that cervical cytology conducted during pregnancy is as reliable as those conducted when the individual is not pregnant.A Norwegian study showed that Pap smear screening during pregnancy increases the coverage of the cervical cancer screening programme[14].

It is important to note the limitations of this study. The findings are based on a specific population and may not be generalizable to other settings. Additionally, the study relied on self-reported data, which can be subject to recall bias. Future research should explore these aspects in larger, diverse populations to obtain a more comprehensive understanding of awareness and screening practices. A robust screening system is thus the need of the hour.

CONCLUSION

Obstetricians should make a robust effort to educate, counsel and screen pregnant women regarding Pap smear. Pregnancy is the period during which a woman definitely seeks medical care and antenatal clinics provide opportunities for screening. In a country like India where definitive screening programmes are not available, as well as the awareness and uptake of available services by the target population is poor, screening in pregnancy is worthwhile and is aviable option to reduce the burden of cervical carcinoma.

This study highlights the concerning lack of awareness and knowledge about cervical cancer and screening among the study participants. The findings reveal a significant gap in understanding, with a majority of women reporting no awareness of cervical cancer and screening methods. Moreover, the low prevalence of previous screening further underscores the need for improved education and awareness campaigns.

Public health campaigns and targeted interventions should be implemented to improve knowledge, address barriers to screening, and encourage women to undergo regular cervical cancer screening. This requires collaboration between healthcare providers, policymakers, and community stakeholders to develop comprehensive strategies that target both the general population and healthcare professionals.

By enhancing awareness and knowledge about cervical cancer and screening, we can empower women to take proactive steps towards their own health and contribute to the reduction of the burden of cervical cancer. Early detection through regular screening can lead to timely interventions and improved outcomes for women worldwide.

It is essential for future research to explore the effectiveness of educational interventions and the impact of increased awareness on screening uptake. Longitudinal studies and interventions tailored to specific populations and cultural contexts are needed to assess the long-term impact on screening behaviours and cervical cancer outcomes.

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