ORIGINAL ARTICLE

Screening for Cervical Cancer in Female Housekeeping Staff by Pap Smear: Our Experience from A Tertiary Care Centre in A Rural Region of Karnataka, India

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ABSTRACT

Introduction: Cancer of cervix uteri is the second most common cancer amongst women in India. It consists of a long preinvasive stage making it a potentially preventable disease. Our intent is to set stage for early cancer detection by screening our hospital housing keeping females. **Methodology:** A cross sectional study was conducted from May to October 2022 in the departments of pathology and OBG at a rurally located tertiary care hospital affiliated to a teaching Medical Institute. Primary objective was to screen for cervical cancer in female housekeeping staff by determining the cervical cytology findings in Pap smears as per the 2014 Bethesda Classification of cervical cytology (2014). Secondary objective was to assess awareness about Pap smear testing. **Results:** Out of the eighty female housekeeping staff forty four were included in the study.A questionnaire was given to assess awareness followed by Pap smear test. Inflammatory smears (47.7%) were most common followed by Bacterial vaginosis (15.9%).and Trichomonas Vaginalis infestation (9.1%).One case of ASCU-S was detected which was followed up with a cervical biopsy to rule out malignancy. Though 65.5% had heard about cervical cancer, 84.1% were not acquainted with pap smears. **Conclusion:** Screening by Pap smear helped in detecting potentially pre-cancerous lesions and infections enabling timely treatment. Lack of awareness has limited the utilization of Pap smear especially in the rural areas even in women working inside healthcare premises reflects the need for creating awareness and encouraging robust participation in screening programmes.

KEY WORDS: Cancer, Cervix, Cytology, Pap Smear, Screening.

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Introduction

Globally 604,127 new cases of cervical cancer are diagnosed every year and 341,831 of women die from this disease[1]. Cancer of cervix uteri is the second most common cancer amongst women in India, breast cancer being the first[2]. A recent report based on 28 population-based cancer survey registries, the proportion of new cervical cancers to total women cancer varies from 5.5% to 26.5%[3].

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Mortality due to cervical cancer is also an indicator of health inequalities, as more than 86% of all deaths due to cervical cancer are occurring in developing countries, low- and middle-income countries[4]. While cancer incidence has been declining in developed countries, developing countries like ours are yet to reach significant reduction in overall cancer incidence and mortality[5,6].

The present study focuses on Pap smear - an effective and relatively inexpensive test which can be used both as a diagnostic tool or a screening test. Cervical cancer consists of a long preinvasive stage making it a potentially preventable disease by early detection and screening[7,8]. In India, the proportion of women undergoing pap smear screening is only 2.6% -5% as compared to 68%-84% in developed countries[9].

Karnataka is yet to gain momentum when it comes to Pap smear screening of women across the state[10]. Our Medical Institute being located in a rural geographic region is an employment provider to many, with women being employed in various posts. The intent of this study is to set the stage for early cancer detection by first creating awareness and screening our hospital housing keeping females, who in spite of working in healthcare facilities do not routinely undergo screening due to ignorance, hesitation and associated stigma.

Methodology

This was a cross sectional study conducted from July to October 2022 in the departments of Pathology and OBG of a rurally located tertiary care hospital affiliated to a teaching Medical Institute. Primary objective was to screen for cervical cancer in housekeeping females by determining the cervical cytology findings in Pap smears as per the 2014 Bethesda Classification of cervical cytology (2014). Secondary objective was to assess awareness about Pap smear testing in the study population. Calculated sample size was forty two. Inclusion criteria: Women from 21 to 65 years of age. Exclusion criteria: Women not willing to participate in the study. Known / treated cases of cancer cervix, post hysterectomy females and women below 21 years and above 65 years. Of the eighty female housekeeping staff working in the hospital twelve were excluded based on the criteria. Consent was obtained from forty-four who were included in the study.

After recording demographic details, a validated questionnaire was given to the participants to answer. A small induction session on educating women about cervical cancer and the need for pap smear was conducted by showing posters and print outs. This was followed by taking Pap smears after obtaining consent in the presence of a female nurse and an Obstetrician. Per speculum findings were noted and two smears were taken one each from ectocervix and endovcervix using Ayer's spatula. Smears were fixed using spray fixative and sent to the laboratory. Staining was done using standard protocol for conventional pap staining.

Cytological findings were reported as per the Bethesda system for reporting cervical cytology (2014). Data was entered in Microsoft Excel 2016. Statistical analysis was done using IBM SPSS Statistics for Windows 9/10, Version 26.0, (IBM Corp Armank, NY). Results were calculated as mean ± standard deviation. Chi square/Fischer's tests were used to assess and associate any significant correlation between age, religion, marital status and education with screening of cervical cancer. Approval was obtained for the study from the Institutional Scientific Committee and Institutional Ethics Committee Ref Letter – CDSIMER/MR/0022/IEC/2022.

Results

A total of 44 housekeeping staff were enrolled for the study. Age of participants ranged from 26 years to 64 years. Majority of them were in their 3rd decade of life with mean age being 38.6 years. Only 9% of the participants had an educational qualification of degree and above, with more than 52% having studied up to secondary education level. Most of the surveyed participants belonged to lower middle-class (45%) and middle class (34%) of socio-economic background as per revised BG Prasad Classification for socioeconomic status. Only one was unmarried while 97% were married and sexually active. Average age of getting married was 16.5 years, with minimum age at 13 years and maximum at 24 years. 73% were multiparous with maximum of four childbirths. Age of attaining menarche was between 12-13 years in 61% of women. Average age of getting married was between 15 to 19 years.

On per speculum examination, the following findings were noted (Figure 1). Among the abnormal findings, white discharge was noted in 17 cases, cervical hypertrophy in 6 cases, erosion in 10 cases, firm cervix and bleeding on touch in 4 cases each with normal finding in 3 cases. (Figure 2) Categorization of Pap smear cytology was as follows (Figure 3 a-c

&Figure 4 a-c)

For one case reported as ASC-US (Atypical Cells of Undetermined Significance), a follow up colposcopic guided cervical biopsy was taken which was reported as chronic cervicitis without dysplasia. Cases with reactive cellular changes were asked to come for a repeat pap smear after treating infection. Cases with infective etiology were treated accordingly.

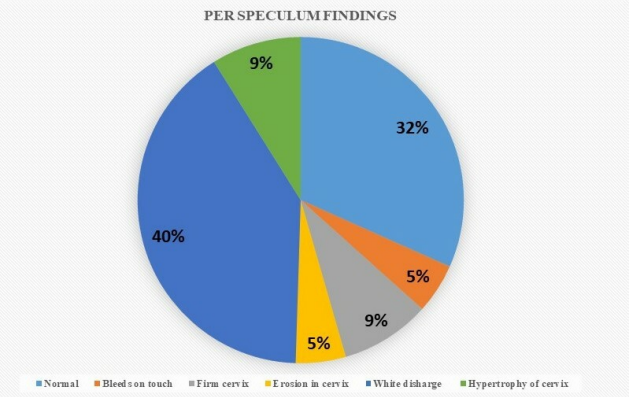

Figure 1: Per speculum findings before taking pap smear

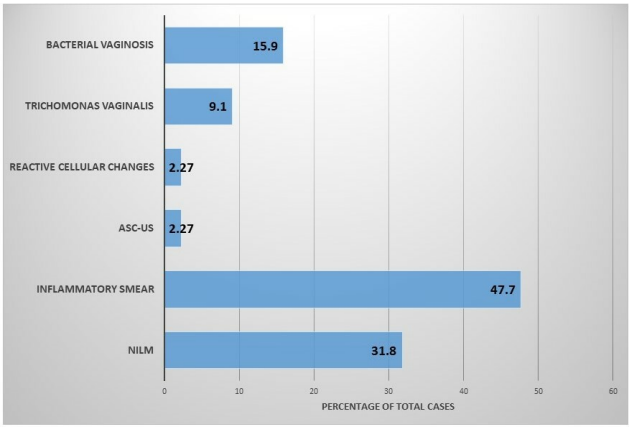

Figure 2: Categorization of papsmear cytology as per Bethesda System of Reporting of Cervical Cytology (2014)

Awareness Survey – Questionnaire

On analysis of the questionnaire 65.9% of participants had heard of cervical cancer before however, only 34.1% of participants stated that they knew the associated risk factors. A mere 11.4% of the participants were acquainted with symptoms of cervical cancer. Majority of participants (84.1%) included in the study, had never heard about pap smears (Table 1).

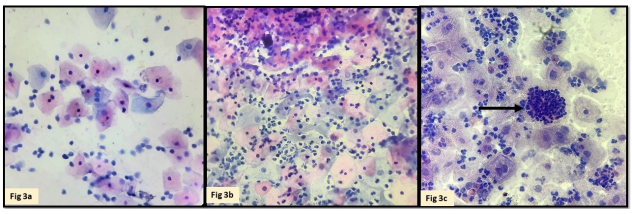

Figure 3: a: Photomicrograph showing normal Pap smear. Pap stain x 400. 3b: Photomicrograph showing inflammatory smear. Pap stain x 100. 3c: Photomicrograph showing aggregates of neutrophils (pus balls) (black arrow) Pap stain x 400

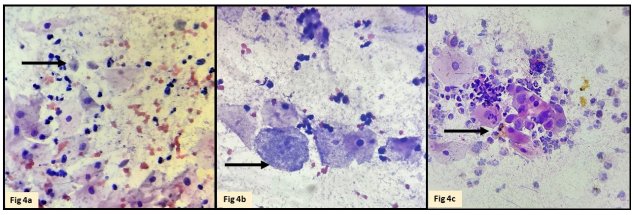

Figure 4: a: Photomicrographshowing Trichomonas Vaginalis. (black arrow) Pap stain x 400. b: 'Clue'cells suggestive of bacterial vaginosis .(black arrow) Pap stain x 400. c: Photomicrograph showing group of ASCUS cells.(black arrow) Pap stain x 400

Only 2 out of the 44 participants in the study were aware about the availability of Pap smear testing facility being available at our hospital. There was statistically significant association between Pap smear findings and Age group among the study subjects with Fischer's exact test value of 7.816 with p-value 0.029.

There was no statistically significant association between PAP smear findings and religion, educational status, marital status, socio-economic status, parity, age at menarche and questions related to awareness about cervical cancer.

Discussion

Cervical cancer is next only to breast cancer as the most prevalent cancer in India[2]. Cervical cancer is yet to be included among the top ten health priorities in India. This may be one of the contributory causes for lack of screening[10]. Being a potentially amenable cancer to screening, pro-active initiatives that are already implemented must be scaled up for early detection and awareness of cervical cancer, especially among the rural population.

Table 1: Responses to questionnaire by study participants

Question (N =44)	Response	Frequency	Percent
Heard about cervical cancer?	Yes	29	65.9%
	No	15	34.1%
Awareness regarding risk factors associated with cervical cancer?	Yes	15	34.1%
	No	29	65.9%
Awareness about symptoms associated with cervical cancer?	Yes	5	11.4%
	No	39	88.6%
Heard about Pap Smear?	Yes	7	15.9%
	No	37	84.1%
Awareness of pap smear test availability in our hospital?	Yes	2	4.5%
	No	42	95.5%

Table 2: Comparative Analysis of key findings fromother Indian studies with present study

Results	Verma et al [5]	Mishra et al [4]	Sachan et al [3]	Kulkarni et al [10]	Present Study
NILM *	56%	52.5%	48.8%	11.4%	31.8%
Inflammatory	32.5%	36%	42.7%	59.6%	47.7%
ASC-US †	1.0%	3.5%	2.9%	-	2.27%
ASCH ‡	-	0.5%	-	-	-
LSIL §	5.5%	4.0%	5.1%	-	-
Squamous Cell Carcinoma	-	-	-	-	-
Trichomonas vaginalis	-	-	-	1.9%	9.1%
Candida	-	-	-	0.4%	-
Bacterial vaginosis	-	-	-	2.3%	15.9%
Squamous metaplasia	-	-	-	34.9%	-

*NILM- Negative for intraepithelial lesion/ malignancy †ASC-US – Atypical Squamous Cell of Undetermined Significance ‡ASC-H – Atypical Squamous Cells Cannot Exclude High grade squamous intraepithelial lesion §LSIL – Low Grade Squamous Intraepithelial lesion

Cervix is amenable to screening by a number of methods like visual inspection with acetic acid (VIA), magnified VIA (VIAM) visual inspection with Lugol's iodine (VILI), and HPV DNA testing and pap smear cytology. Papanicolaou (Pap) smear screening continues to remain one of the most reliable methods to diagnose early symptoms and prevent aggravated form of cervical cancer. This cancer is preceded by a pre-malignant stage and it takes 10-15 years to progress to a malignant lesion providing a window of opportunity for early detection.

In our study, on examination 68.2% of the study population had an abnormality in cervix. In a study by Verma et al per speculum examination of cervix revealed 50.5% of women with normal looking cervix, 25% had cervical ectopy, 13% chronic cervicitis and 11.5% had ectropion of cervix[5]. Cytology was done in all the 200 women in the study with 56% of the smears reported as negative for intraepithelial lesions or malignancy. 32.5% were reported as inflammatory smears, 5.5% as LSIL and 2.5% as HSIL. Cytological diagnosis of precancerous lesions like LSIL & HSIL on pap smears has been correlated well with presence of p16 and Ki67 which are markers in predicting HPV infection (well established aetiology of cervical cancer) which can be further confirmed by HPV DNA testing[11]. A

comparative analysis of key findings from this study and results reported by survey of literature are summarized in the table below. Results from the present study are overall in line with others.

Of the 44 participants in the present study, 77.3% had abnormal cytology. Most of them belonged to the 31-40 age group. ASC-US accounted to 2.27% of the sample smears. The percentage of ASC-US in this study is comparable to 2.9%, 1% and 3.5% in other similar studies[3–5]. Recent guidelines recommend close monitoring, repeat cytology and testing for HPV in cases of ASCUS as this entity is associated with a potential to progress to neoplasia[12]. In the present study, 47.7 % of the smears were inflammatory in nature with non specific etiology. This value is significantly higher than 32.5% and 36% and 42% in studies done by Verma et al and Mishra et al and Sachan et al respectively[3–5]. However, there was a change in trend in a study done by Kulkarni et al in a tertiary care centre with 59.5% of the smears being inflammatory[10]. It is recommended that persistent inflammation should be appropriately treated otherwise, the chance of development of cervical intraepithelial lesion increases[13].The incidence of Bacterial vaginosis (15.9%) and Trichomonas Vaginalis (9.1%) was also much higher in the present study compared to 1.9% and 2.3% respectively in the study done by Kulkarni et al.[10]. This higher susceptibility to bacterial and fungal infections may be attributed to environmental factors as well as poor hygiene practices among this population, undermining need for creating awareness about hygiene practices. Microbial infections are known to be about 1.7 times more prevalent among women with difference between age at menarche and age at first sexual intercourse[14].Paul A Cohen et al have identified the following risk factors for cervical cancer -Early age of sexual debut, multiple sexual partners or a high-risk sexual partner, immunosuppression, history of sexually transmitted infection, history of HPV related vulvar or vaginal dysplasia[14]. Among the above, early age at marriage and unawareness about screening programmes were key factors in our study. In our study, 25.4% of women though eligible for screening did not want to get themselves screened affirming the need for repeated interactions. Lack of awareness about Pap smear and its importance could also be a reason why attendance and participation even in a hospital which is easily accessible to them is very low. Findings of the present study imply that creating awareness about and screening for cervical cancer should be adopted as an integral part of primary health-care setups in resource-poor countries where the same can be implemented through primary health-care workers, as it does not require a laboratory infrastructure. Though testing for HPV DNA is associated with higher sensitivity requirement of sophisticated laboratory infrastructure and high cost are challenges for it to be implementable[15].

Limitations of the study

The sample size was small as we had targeted only a specific stratum of housekeeping females working in our hospital to meet the project timelines.

Recommendations from the present study :

Scope of this project can be applied to a larger population with more detailed demographic factors included in the survey to draw significant statistical inferences as a study in future.

Findings of this study will be beneficial if the same model can be replicated in other hospitals and medical institutions across India by initiating screening and awareness programmes involving women working within healthcare premises and spreading out to the public.

Conclusion

Screening by Pap smear has set the stage for early detection of cervical cancer and also helped in identifying potentially pre- cancerous lesions and infections enabling timely treatment among housekeeping females at our Medical Institute. Lack of awareness has limited the utilization of Pap smear especially in the rural areas even in women working inside healthcare premises reflecting the need for creating cervical cancer awareness and encouraging robust participation in screening programmes which need to be organized from grass root levels of rural regions to cover a wider susceptible female population.

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