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Original Article

Obstetrics and Gynaecology Section

Cervical Cancer Screening Behind Bars: A Woman's Right

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ABSTRACT

Introduction: Cervical cancer is the fourth most common cancer in women across the globe. Women prisoners are a vulnerable population, so timely provision of screening programs is of utmost importance in this population.

Aim: To screen female prisoners for cervical cancer using visual inspection with acetic acid method.

Materials and Methods: This was a cross-sectional study conducted on women inmates in one of the largest prisons of North India. A total of 181 women prisoners aged 18 and older were interviewed using a questionnaire. After an informed consent, women were screened using Visual Inspection with Acetic acid (VIA).

Results: Majority of the women (74.03%) were between 21 to 40 years. Ninety-one women (50.2%) were illiterate. Majority of the women (123) had between one and three pregnancies. Majority (43) used condoms as a birth control method. Thirty-eight women (20.9%) had multiple partners. Among 181 women who were screened for cervical cancer, 22.6% were VIA positive.

Conclusion: Women prisoners are at a high risk of cervical cancer because of increased prevalence of risk factors in them. Screening and intervention programs must be in place to ensure organisation of health services within the prison environment so that screening, diagnosis and treatment for cervical carcinoma can be provided at early stages with improved prognosis.

Keywords: Female prisoners, High risk factors, Visual inspection with acetic acid

INTRODUCTION

Cervical cancer is the fourth most common cancer affecting women globally with an estimated 570,000 new cases in 2018, representing 6.6% of all female cancers [1]. A large fraction of these cases are prevalent in Low and Middle Income Countries (LMICs) [2,3].

Worldwide, there are more than 714,000 women who are imprisoned and according to Indian statistics, there are 17,834 female prisoners in jails across India [4,5]. Female prisoners are more vulnerable to developing cervical intraepithelial neoplasia and cervical cancer than the women in general population. Studies have shown high rates of cellular abnormality on cytology in this group. This is so because of their social profile, behavioural patterns and poor access to health services [6,7]. A meta-analysis including 21 studies on prevalence of dysplasia among incarcerated women also concluded a higher prevalence of cervical dysplasia in this group [8].

Given the high prevalence of risk factors in this population, screening for cervical cancer becomes particularly important in them, though only a handful of studies on cervical cancer screening have included women prisoners. Surprisingly, to the best of our knowledge, there is no study on cervical cancer screening in India that included female prisoners. With this background, it was aimed to screen women prison inmates for cervical cancer.

MATERIALS AND METHODS

This was a cross-sectional study conducted on women inmates in one of the largest prison of Delhi (Tihar Jail), India; the largest complex of prisons in South Asia. The study was done over 1 week in December 2017 after approval from Superintendent of the concerned prison. The study was conducted following all the tenets of Helsinki guidelines and participant anonymity was maintained during the data recordings.

One hundred and eighty-one women prisoners aged 18 and above were interviewed. It was a general screening camp which spread over five days and only willing participants were enrolled.

The interview questionnaire had a set of 14 questions including the socio-demographic profile, relevant sexual, obstetric and personal history which was considered high risk for development of cervical cancer. The questions were read out to each prisoner and her answers were recorded by a member of the screening team, maintaining the anonymity of the woman.

After an informed consent and a thorough explanation of the procedure, each women was screened using VIA. In this procedure, 5% acetic acid was applied to the cervix and appearance of any white lesion was noted after one minute. Presence of aceto-whitening was considered VIA positive and screen positive women were then referred for further evaluation. VIA was done by the same team member on all five days, to maintain consistency of the results.

STATISTICAL ANALYSIS

Descriptive statistics was used to calculate the percentages. Data was entered in Microsoft Excel.

RESULTS

Majority of the women (74.03%) were between 21 to 40 years. Half the study group (50.2%) was illiterate and only 13 women (7.1%) had done their graduation. Total 54.5% women got married early even before the age of 18 years. Majority of the women were multiparous with 32 women having four to six pregnancies.

Contraceptive pill was used by 7 women, 43 stated that they had used condoms and 11 had opted for Intrauterine Contraceptive Device (IUCD) as a birth control method. Thirty-eight women (20.9%) gave history of having multiple partners and majority of the women (72; 39.7%) had symptoms of excessive whitish vaginal discharge [Table/Fig-1,2].

A total of 41 (22.6%) women reported some or the other form of addictions in the past. No inmate gave family history of cervical cancer, though three inmates had family history of breast carcinoma. Among 181 women who were screened for cervical cancer, 22.6% were VIA positive.

Demographic profile			
Age	**Number (N=181)**	**Age at marriage**	**Number (N=176)**
21-30 years	67 (37%)	10-18 years	96 (54.5%)
31-40 years	67 (37%)	19-25 years	48 (27.2%)
41-50 years	32 (17.6%)	>25 years	32 (18.1%)
51-60 years	15 (8.2%)		
Marital status	**Number (N=181)**	**Educational status**	**Number (N=181)**
Married	142 (78.%4)	Illiterate	91 (50.2%)
Divorced/Separated	7 (3.8%)	<10th std	50 (27.6%)
Widow	27 (14.9%)	Up to 12th	27 (14.9%)
Unmarried, sexually active	5 (2.76%)	Graduate	10 (5.5%)
Parity	**Number (N=181)**	Postgraduate	3 (1.6%)
Para 0	26 (14.3%)		
Para1	32 (17.6%)	**Addictions**	**Number (N=181)**
Para 2	50 (27.6%)	Alcohol	15 (8.2%)
Para 3	41 (22.6%)	Smoking	10 (5.5%)
≥Para4	32 (17.6%)	Tobacco chewing	16 (8.8%)
		No addictions	140 (77.3%)
Contraceptive used	**Number (N=181)**	**No. of sexual partners**	**Number (N=181)**
Barrier	43 (23.7%)	Single	143 (79%)
IUCD	11 (6.07%)	Multiple	38 (20.9%)
OCP	07 (3.8%)	**Family history of cancers**	**Number (N=181)**
Sterilisation	01 (0.5%)	Breast cancer	03 (1.6%)
None	119 (65.7%)	Cervical cancer	nil
		Other cancers	nil

[Table/Fig-1]: Demographic profile of women inmates.
IUCD: Intrauterine contraceptive device; OCP: Oral contraceptives

Symptoms	N (%)
Complaints	**Number**
Vaginal discharge	72 (39.7%)
Irregular periods	48 (26.5%)
Postcoital bleeding/pain	25 (13.8%)
Pain abdomen	10 (5.5%)
Combination of symptoms	26 (14.3%)
Duration of symptoms	
<1 month	20 (11%)
1-2 months	25 (13.8)
2-3 months	12 (6.6%)
3-4 months	16 (8.8%)
4-5 months	11 (6.0%)
5-6 months	15 (8.2%)
>6 months	82 (45.3%)

[Table/Fig-2]: Gynecological complaints of inmates.

DISCUSSION

In the year 2018, 96922 new cases of cervical cancer and 60,078 cancer deaths were reported in India [9]. Such a high incidence of cervical cancer is attributable to diminished awareness and lack of systematic and universal screening protocols in the country [10-12] Women prisoners not only have higher risk factors for the development of cervical pre-cancers, but also have fewer opportunities for screening. Risk factors included the prison conditions themselves, like overcrowding and associated violence, their social profile including low educational level, low socioeconomic status, multiplicity of sexual partners, smoking, and poor access to health services [13].

In this study, more than half the women had sexual debut before 19 years of age. This early initiation of sexual activity is a well-established risk factor for development of cervical cancer. Early sexual activity exposes the immature cervix to Sexually Transmitted Infections (STD) including Human Papilloma Virus (HPV), the persistence of which is carcinogenic. This is comparable to a study by da Silva ERP et al., in Brazil in which 66.1% of the female prisoners interviewed, had started sexual activity between 10-15 years of age [6].

Pregnancy and cervical cancer also have an association, since the changes in levels of oestrogen and progesterone are known to be responsible for the development of cervical dysplasia. Increased levels of oestrogen exposes the vulnerable transformation zone to the acidic milieu of vagina, thereby leading to metaplasia or dysplasia of the cervical epithelium. Also, suppression of the immune system during pregnancy contributes to HPV replication and persistence [14,15]. A total of 70% women in this study had between 1 to 3 pregnancies and seven women even had more than seven pregnancies. The results are comparable to the study in Brazil in which 80.6% of imprisoned women had one or more pregnancy [16]. da Silva ERP et al., reported between 1 to 3 pregnancies in 52% of his study inmates and 33% had more than three pregnancies [6].

Low educational level is a social risk factor for cervical cancer. Illiterate women have a low level of health education and awareness; thus, influencing their behaviour towards preventive health practices. Only two women in the study group had cytology screening done in the past. This is in contrast to results of other studies done on female prisoners that found screening rates to be as high as 70-80% [17]. This can be explained by the high number of illiterate and less informed women in the index study group and also because of lack of systematic screening protocols in our country where screening is still opportunistic [18,19].

Tobacco use is known to be associated with increased risk of developing cervical cancer. It is postulated that metabolites of nicotine causes reduction in Langerhans cells, thus making the epithelium more susceptible to damage. Also, smoking is associated with increased risk of persistence HPV infection which is responsible for development of cervical cancer [20-22]. A pooled analysis of 13 HPV prevalence surveys done across 11 countries and concluded the risk of being HPV positive was directly linked to number of cigarettes smoked per day [23]. Tobacco use is found to be more frequent in prison population than in the general population and rates of tobacco use between 40-65% have been reported in various studies [6,24]. A lower rate of tobacco use (19.8%) in the study group was probably due to a decrease trend of tobacco use seen among women in general in our country. According to GATS (2009-2010), 14% of all Indians smoke tobacco, though the ratio of women smokers is very less compared to men (3% versus 14%, respectively) [25].

According to Goel S et al., though smoking use among Indian women has doubled from 1.4% to 2.9% during the period 2005 to 2010, but it is still very low [26]. Kathirvel S et al., found tobacco use among 29.4% of women in the study group included from North India. Of these, 19.8% smoked bidi and 2.7% smoked hookah. They concluded that tobacco usage was high among Hindu, unemployed women with no formal education [27]. Though 40% of the screened women had complaints of discharge per vaginum and 13.8 % experienced post coital bleeding and pain, both of which signify infection, only two women had cytology done in the past. It has been documented that women inmates had more severe abnormalities on Pap smear at a younger age than women in the general population [6,13,28]. Proca DM et al., found high grade lesions in 1.3% of cervical smears from the inmate population as compared to 0.6% in the general population ($p<0.01$) [29].

Total 20.9% women in the study population had history of multiple sexual partners, a known risk factor for cervical cancer carcinogenesis. Multiple partners increase the risk of acquiring STD including HPV infection. A study conducted by Liu ZC et al., suggested that having multiple sexual partners, with or without HPV infection, is a potential risk factor of cervical cancer [30]. VIA was deployed for screening women in the study because it is simple, inexpensive and effective with a sensitivity and specificity of 50-88.6% and 66.7-89.7%, respectively [31-33]. Total 22.6% of the women inmates were VIA positive. The rates of VIA positivity in the

general population are cited between 7-17% in various studies [34-38]. Such a high rate of screen positive in the study is attributable to the high-risk behaviour of the women inmates. It highlights the importance of screening for cervical cancer in the female prisoners.

Limitation(s)

One cannot rely totally on the information provided by the participants because of recall bias and social desirability bias. Screen positive inmates were referred for further evaluation, the results of which were not evaluated and cross-examined against VIA.

CONCLUSION(S)

Female prisoners are at higher risk for developing cervical cancer because of the increased prevalence of risk factors among them. The number of screen positive women in our study group was also high with 22.6% being VIA positive. Strategies to conduct opportunistic cervical cancer screening and risk reduction education in this high risk group are extremely important. VIA as a screening modality in prisons is a good option as it is simple, easy to learn, cheap test which does not require any special infrastructure or human resource and it's results are available immediately.

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