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## Original Research Article

# Changing trends in genital cancer

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### ABSTRACT

**Background:** Globally, cancers in all forms are causing about 12% of all deaths. In developed countries cancer is the second leading cause of death accounting for 21% of mortality by other causes and in developing countries it ranks third, accounting for 9.5% of all deaths. The objective was to find the incidence of genital malignancy and any change in the trend at Pandit Jawahar Lal Nehru Memorial Medical College, Raipur, Chhattisgarh, India.

**Methods:** This was a cross-sectional, retrospective, observational study conducted in Dr. BRAM Hospital, Department of Obstetrics and Gynecology from 2000 to 2015. We analyzed data for demographic profile, type of the genital carcinoma and the stages in which they reported and observed any changing trends.

**Results:** Over 15 years the contribution of genital cancer remained almost stable at 2.78% in 2000 to 2.48% in 2015. 85% women belonged to rural residence, 75% were educated up to high school level and 76% women were from low socioeconomic status. Maximum prevalence of genital cancer is 65.90% falls in 45-60 years age group. Young age at first sexual activity, low education, parity >4 were found to be associated risk factors. Most significant changing trend was that the incidence of cancer cervix decreased by 11%. There was a shift from stage III to stage II at the time of reporting. The cancer endometrium emerged as new site for genital cancer with increased incidence.

**Conclusions:** Cervical cancers are the most common cause of mortality but it is a preventable disease. Its decreasing trend and shift to early stage diagnosis is a positive beginning.

**Keywords:** Cancer cervix, Cancer endometrium, Genital cancer, Risk factors

### INTRODUCTION

Globally, cancers in all forms are causing about 12% of all deaths. In developed countries cancer is the second leading cause of death accounting for 21% of mortality by other causes and in developing countries it ranks third, accounting for 9.5% of all deaths.<sup>1</sup>

According to the latest world cancer report from the world health organization (WHO), more women in India are being newly diagnosed with cancer annually. As against 4.77 lakhs men, 5.37 lakhs women were diagnosed with cancer in India in 2012.

In terms of cancer deaths, the mortality rate among men and women in India is almost the same. While 3.56 lakhs men died of cancer in 2012 in India, the corresponding number for women was 3.26 lakhs. One in every 10 Indians runs the risk of getting cancer before 75 years of age, while seven in every 100 runs the risk of dying from cancer before their 75<sup>th</sup> birthday.<sup>2</sup> The global community can expect an increase of incidence of about 1% each year, more in India. In 2030, incidence may increase to 20-26 million with around 13-17 million mortality. Cancer cases doubled globally between 1975 and 2000, will double again by 2020 and triple by 2030. The rapid increase in the

global cancer burden represents a real challenge for health systems worldwide.<sup>3</sup>

With the aim of finding the incidence of malignancy, any change in trend at our Institute this study was undertaken.

**METHODS**

This was a cross-sectional, retrospective, observational study conducted in Dr. BRAM Hospital in Department of Obstetrics and Gynecology.

We collected the data of all women who were diagnosed and treated for any malignancy and registered for the same from 2000 to 2015.

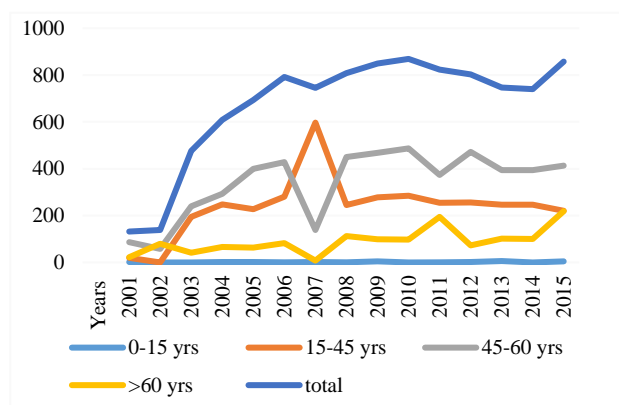
**Inclusion criteria**

All women with genital cancer were included. We analyzed for demographic profile, type of the carcinoma and the stages in which they reported and observed any changing trend over past 15 years.

**RESULTS**

On analysing the data we realized that over the span of 15 years the contribution of genital cancer remained almost stable 2.78% in 2000 to 2.48% in 2015 however number of women with genital cancer have been increased from 132 to 857 in our institute.

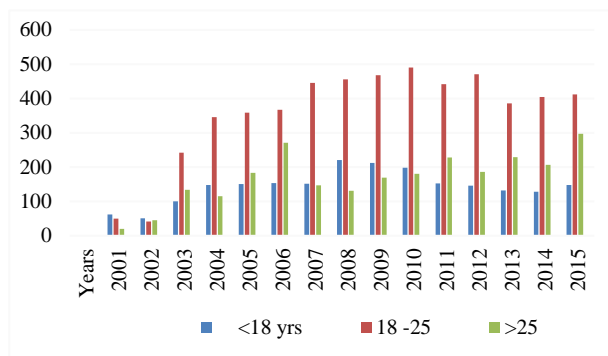
85% women were of rural residence, 75% were educated up to high school level and 76% women belong to low socioeconomic status.



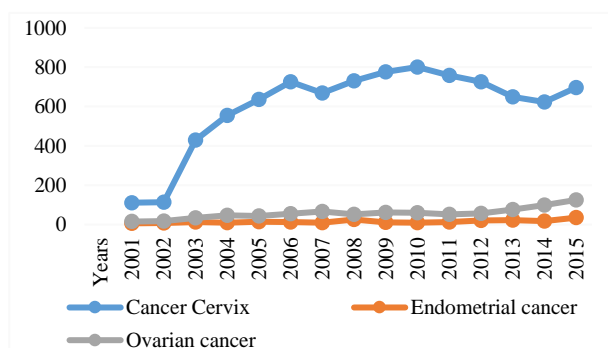
**Figure 1: Distribution of genital cancer according to age.**

Analysis of age wise distribution of cancer (Figure 1) reveals that in year 2000 maximum prevalence of genital cancer (87,65.90%) was in 45-60 years age group. This trend was maintained over the years till 2015 with a decline of about 15% (413, 48.19%). In year 2007 there was a transient shift to 40-45 years age

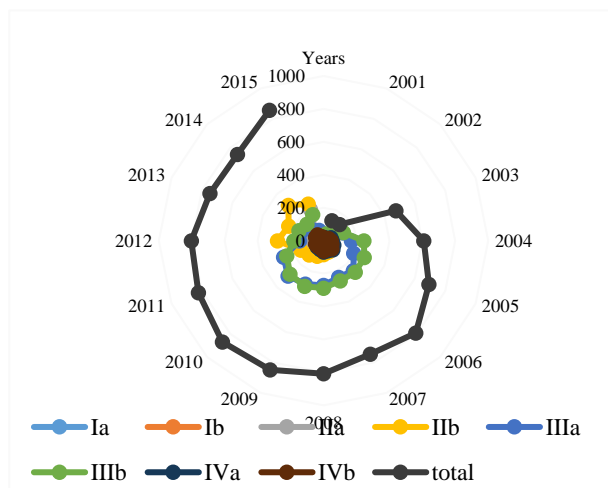
group with rise in prevalence (597,80.13%), followed by a fall by 50%.



**Figure 2: Distribution according to age of initiation of sexual activity.**



**Figure 3: Distribution according to type of genital cancer.**



**Figure 4: Distribution according to stage at the time of reporting.**

Study of age at marriage showed that 15 years back in 2000, 46.97% women gave history of early initiation of sexual activity as married at less than 18 years of age. With implementation of government policy of age at marriage should be 18 years or more, there is a shift showing that 48.07% women in 2015 gave history of

marriage at age 18-25yrs (Figure 2). Still there was history of early exposure of sexual activity, acceptance to multiple partners or live in situations leading to overall increase to high risk behaviour.

On recording the parity of women we observed that 46.97% women in year 2000 had >6 children. Increasing awareness of family planning was reflected as slight shift showing 52.02% families with 3-6 children (Table 1).

Observation of contribution of cancer cervix, cancer endometrium and ovarian cancer to genital cancer revealed that cancer cervix was contributing to more than 90% than the others type of genital cancers. Over the time

span of fifteen years there was about 11% reduction in cases of cancer cervix. It was significantly reduced over the last four- five years. Same time on the other hand there was an increase in prevalence of cancer endometrium and cancer ovary over last three years from 2.62% to 4.08% and from 10.17% to 14.59% respectively (figures 3).

Analysis of stage of cancer at the time of reporting showed that a decade and half ago nearly 44% women reported in stage III or more and this continued for a decade. Only in recent few years, there is shift to diagnosis of cancer in earlier stage i.e. stage II but still in a stage where surgical intervention cannot be offered (Figure 4).

**Table 1: Distribution according to parity.**

Years	<3 Children		3-6 Children		>6 Children		Total
	N	%	N	%	N	%	
2001	21	15.91%	49	37.12%	62	46.97%	132
2002	28	20.29%	42	30.44%	68	49.27%	138
2003	54	11.34%	126	26.47%	296	62.18%	476
2004	98	14.14%	118	19.38%	393	64.53%	609
2005	112	16.16%	223	32.18%	358	51.66%	693
2006	151	19.06%	258	32.57%	383	48.36%	792
2007	135	18.12%	287	38.52%	323	43.36%	745
2008	145	17.95%	323	39.97%	340	42.08%	808
2009	156	18.37%	331	38.99%	362	42.64%	849
2010	181	20.83%	384	44.19%	304	34.98%	869
2011	196	23.81%	341	41.43%	286	34.76%	823
2012	146	18.18%	380	47.32%	277	34.50%	803
2013	132	17.67%	383	51.27%	232	31.06%	747
2014	158	21.35%	401	54.19%	181	24.46%	740
2015	162	18.90%	446	52.05%	249	29.05%	857

## DISCUSSION

The incidence of genital cancer at our Institute increased from 27.22% in 2001 to 36.25% in 2015. Projections based on GLOBOCON 2012 predicted a significant increase of 19.3 million new cancer cases per year by 2025 due to growth and aging of global population. They also stated that more than half of all cancer and deaths due to cancer in 2012 occurred in developing regions.<sup>1,4-6</sup>

Many Indian studies supported the fact that most of women with genital cancer were from rural areas as majority of our population resides in villages.<sup>7,6</sup> However there was a study conducted in rural Delhi which reported that the incidence of cancer in rural area was less compared to urban Delhi, India. They also emphasized that rural population was less than that of

urban and was more educated compared to rest of rural India.<sup>8</sup>

In present study we found that the 85% women from rural areas 75% were educated up to middle school and 76% belong to low socioeconomic strata. These women were unaware of sign and symptoms of genital cancers and thus there was delay in seeking treatment. Other Indian studies also came out with the fact that education, socioeconomic status and cultural beliefs were variables which influenced the women from reaching the health care facilities.<sup>9-12</sup> This disparity was not limited to developing countries only but also seen in developed country.<sup>13,14</sup>

We observed that maximum incidence of genital cancer fall in women in 45-60 years age group (Figure 1). Recent studies in India reveal that age specific incidence reach a peak between 55 and 64 years. The mean age at

diagnosis is 47 years in west and around the mid-forties in India.<sup>7,15,16</sup> We observed that in year 2008 there was decreased incidence of genital cancer by almost 50% in 15-45 years age group at that period of time there was increased cases of hysterectomy reported in our state at young age group for precancerous lesions.

In present study we noticed that over the span of fifteen years there was shift of age of marriage from less than 18 years 46.97% to 18-25years 48.07% (Figure 2). Still most of the women gave history of early initiation of sexual activity and multiple partners in lieu of migration, separation and second or third marriages. This behaviour was more prevalent in low socioeconomic strata. A study conducted in Maharashtra, India also reported that high-risk HPV was associated with increasing age, low education level, labour class, early age at first sexual intercourse, and widowhood or separation.<sup>18</sup> All sexually active women are infected with HPV at least once anytime during their lifetime, and the highest prevalence is seen soon after the onset of sexual activities.<sup>19,20</sup> About 50% of men and women would acquire genital HPV infection during their lifetime.<sup>20</sup> Other studies also stated that the major risk factor for HPV infection is sexual behaviour, including early age of onset of sexual activity, multiple sexual partners, and co infection with HIV.<sup>21-23</sup>

In present study the parity of women with genital cancer exhibited a shift from 46.97% incidence of >6 children in year 2000 to 52.02% families with parity of 3-6 children. A large population based South Indian study reported that there is 2.5 times increased risk associated with increase in parity and age.<sup>24</sup> Another study recorded increase in invasive cytopathological abnormalities with increasing age and parity.<sup>25</sup> The risk of HPV infection in eastern India was found to be higher in married women and in women with parity >4.

The cancer cervix was the major contributor of genital cancer. It is the second most common cancer in women aged 15-44 years. India also has the highest age standardized incidence of cervical cancer in South Asia at 22, compared to 19.2 in Bangladesh, 13 in Sri Lanka, and 2.8 in Iran.<sup>26</sup> Over last 15 years there was decline in cases of cancer cervix by 11% at our centre. Similar trends were reported by the Bangalore registry, India, the age-adjusted rate fell from 32.4 in 1982 to 18.7 in 2009, in Barshi from 22.1 in 1988 to 14.1 in 2010, in Chennai from 41 to 16.7 in 2009, and in Thiruvananthapuram from 9.2 in 2005 to 7.7 in 2011.<sup>15</sup> The annual percentage decrease ranged from a minimum of 1.3% in Bhopal to 3.5% in Chennai in the years from 1982 to 2010.<sup>27</sup> Over a 30-year study period in the Mumbai registry there was an estimated annual percent change in cervical cancer by 1.8%.<sup>28</sup> On the other hand, in Odisha, India cancer cervix was the second most common cancer, reported an increase of 3.1% from 2001 to 2011.<sup>29</sup>

For ovarian cancer, the trends vary according to geographic region- with decreasing rates in the United States and Northern Europe but increasing rates in a few Southern and Eastern European countries and in Asian countries including Japan, China and Hong Kong.<sup>30-33</sup> Similarly we observed an increase in the incidence of ovarian and endometrial cancer in recent years. Takiar et al reported from pooled data of five major cities that the second contributor was cancer ovary, fourth was cancer endometrium followed by cancer cervix. They reported cancer corpus uteri as the new emerging site for cancer in many cities of India. We attribute this increase to sedentary lifestyle, increased incidence of obesity and metabolic syndromes.

The women with genital cancer in our study when reported for the first time, about half of them were found to be in advanced stage (Figure 4). A south Indian study reported that 92.94% women when diagnosed were in stage III and IV.<sup>17</sup> Approximately 70% women with ovarian cancers were diagnosed at advanced stage disease which is associated with poorer prognosis.<sup>34</sup> endometrial cancer when diagnosed at local or regional stage the five year survival is 96% and 76% respectively. While distant stage survival decreases to 16%.<sup>13,35,36</sup>

## CONCLUSION

The increasing incidence of cancer in India has mirrored trends in developed countries. Over the last two decades, the urbanization and increasing modernization of India has transformed education, lifestyle, health-care access and longevity, and has contributed to an increased risk profile for chronic diseases such as cancer. In India, high incidence rates were reported for cancer cervix, and ovary; which together accounted for almost 59% of all cancers in women.

The most significant changing trend in our study was that cancer cervix has decreased by 11%. Another positive trend found in our study was a shift from stage III to stage II at the time of reporting. However, it is unfortunate that cancer endometrium is increasing. It could be related to an increase in PCOD, diabetes and metabolic syndrome.

The positive trends seem like a new beginning and every gynaecologist should contribute to further reduce the incidence.

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