

Socio-Demographic, Reproductive and Clinical Profile of Women Diagnosed with Advanced Cervical Cancer in a Tertiary Care Institute of Delhi

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Abstract

Introduction Cervical cancer is one of the leading cancers among Indian women with estimated 123,000 new cases and 67,477 deaths in 2012. Cervical cancer is a multi-etiological disease. Factors such as low socioeconomic status, tobacco use, sexual and reproductive factors, HIV and other sexually transmitted diseases and long-term oral contraceptive use have been suggested as determinants. Assessment of socio-demographic profile and reproductive history gives a better picture of the determinants of cervical carcinoma in low-resource settings.

Methods This hospital-based cross-sectional study was undertaken at a tertiary healthcare institute at New Delhi, India. Sixty-seven newly diagnosed women with advanced cervical cancer (stage 2B–4B), who were undertaking radio- and/or chemotherapy, were included to assess their socio-demographic, reproductive and clinical profile.

Results The mean age of women at the time of detection of cervical cancer was 52.28 ± 11.29 years (range 30–75 years). More than 60 % of patients were illiterate and belonged to middle socioeconomic status. Thirty-nine percentage of the study subjects had their first sexual experience before 15 years of age. Nearly 54 % women had 5 or more pregnancies. Nearly 73 % of women had all deliveries at home. Majority (69 %) of women had symptoms suggestive of reproductive tract infection. Among them, unusual discharge from vagina (73.13 %) followed by bleeding after menopause (55.10 %) and pain in abdomen (44.77 %) were the most common presenting complaints. Pallor was present in nearly two-third (63.93 %) study subjects. More than half (56.72 %) study subjects had moderate anemia, and 7.46 % had severe anemia before treatment. Mean hemoglobin level of the study subjects was 10.35 ± 1.72 gm% before treatment and 9.69 ± 1.29 gm% after treatment. This difference was statistically significant. Around 97 % of the study subjects had squamous cell carcinoma of the cervix. Majority (53.73 %) of the study subjects were in stage 3B of cervical cancer. Combination of radiotherapy and chemotherapy was the most common (77.67 %) modality of treatment.

Conclusions and Recommendations Illiteracy, low socioeconomic status, early sexual debut, high fertility, home delivery, reproductive tract infections, use of insani-tary clothes during menstruation and anemia were observed in majority of women with advanced cancer cervix. Presence of these factors indicates possible risk of cervical cancer and should be kept in mind when women seek health services. Early diagnosis through high risk or opportunistic screening and timely management of cervical cancer needs to be ensured for better outcomes.

Keywords Cervical cancer · Reproductive profile · Socio-demographic profile · Clinical profile

Introduction

Cervical cancer is a major public health problem in many developing countries contributing significantly to mortality [1]. Absolute burden is expected to increase in future unless effective preventive measures are undertaken. Globally, cervical cancer is the fourth commonest cancer in women with nearly 528,000 new cases reported in 2012 [2]. Nearly 85 % of the global burden occurs in the less developed regions, where it accounts for almost 12 % of all female cancers. There were an estimated 266,000 deaths from cervical cancer worldwide in 2012, accounting for 7.5 % of all female cancer deaths [2].

Cervical cancer is one of the leading cancers among Indian women with estimated 123,000 new cases and

67,477 deaths in 2012 [2]. Cervical cancer is a multi-etiology disease, and HPV infection alone is not a sufficient cause of cervical cancer. Most HPV infections regress rapidly without causing clinically significant disease [3, 4]. Cofactors such as low socioeconomic status, tobacco smoking, sexual and reproductive factors, HIV and other sexually transmitted diseases, long-term oral contraceptive use, certain micronutrient deficiencies and genetic susceptibility have been suggested as determinants [5, 6]. Assessment of socio-demographic profile and reproductive history gives a better picture of the determinants of cervical carcinoma in low-resource settings.

This study assessed the socio-demographic, reproductive and clinical profile of patients diagnosed with advanced cervical cancer in a tertiary care facility in New Delhi, India.

Materials and Methods

This was a hospital-based follow-up study conducted at Dr. B.R.A Institute Rotary Cancer Hospital, All India Institute of Medical Sciences, New Delhi. Sixty-seven women, who were diagnosed with cervical cancer attending IRCH between January 1 and June 30, 2014, were recruited. Newly registered and diagnosed cases of advanced (stage 2B–4B) cervical cancer were included in the study. Critically ill patients, those not willing to give informed consent and those who underwent surgery and did not require radiotherapy and chemotherapy, were excluded. Socio-demographic profile, reproductive and menstrual history and clinical profile were assessed with the help of semi-structured, pretested questionnaire. Socio-demographic profile included age in completed years, religion, education and employment status. Family composition, type of family, education, occupation and socioeconomic status using modified Kuppaswamy scale with Consumer Price Index of 2013 were also recorded. Reproductive profile included number of pregnancies, type of delivery, outcome of pregnancies, type of contraceptive used and history of symptoms suggestive of reproductive tract infections. Clinical profile included presenting symptoms, general physical examination, histopathological diagnosis, clinical staging and type of treatment given.

Institutional Ethics Committee (IEC) approval was obtained from All India Institute of Medical Sciences, New Delhi, prior to initiation of the study. Prior to enrollment, written informed consent was obtained from the patients after detailed explanation about the study. Patient confidentiality was assured, and the study participants had the right to abstain from participation without affecting the quality of care being provided to them.

Results

This study included 67 patients of advanced cervical cancer who met the eligibility criteria. Five patients were lost to follow-up. The final sample that was analyzed consisted of 62 patients. Six deaths were reported during the course of the study.

Mean age of study subjects was 52.28 ± 11.29 years (Range 30–75 years), and median age was 50 years. More than one-third study subjects belonged to age group 40–49 years as well as in the group of women aged 60 years and above. Only 10.45 % subjects were below 40 years. Majority of them were Hindu (91.04 %). Majority (73.13 %) of the study subjects were currently married and the rest were widows. Nearly 64 % of subjects belonged to middle socioeconomic class. Majority (58.21 %) of women were from joint families. Nearly 61 % of study subjects were illiterate or just literate. Thirty-eight of living spouses of the study subjects were also illiterate/just literate. Majority (97 %) of study subjects were homemakers (Table 1).

Majority of women had menarche in 13–14 year age group (mean 13.16 ± 0.93 years). Nearly 39 % of the study subjects had their first sexual experience before 15 years of age. Mean age at the time of first sexual intercourse was 16.69 ± 2.23 years. Nearly 40 % of the study subjects had first sexual experience within 1–2 years of menarche. Large majority (83.58 %) of the study subjects revealed that they used only cloth as a soakage material in their lifetime. 52.24 % of study subjects had attained menopause at the time of the study. None of the study subject was nulliparous. On an average, each study subject had been pregnant 5 times. Nearly 54 % women had 5 or more pregnancies and nearly 39 % women had 3–4 pregnancies. Nearly 12 % women had still births and 27 % had history of abortions.

Nearly 73 % of women had all deliveries at home. In a large majority (97.01 %) of cases, normal vaginal delivery was conducted. Majority (69 %) of women had symptoms suggestive of reproductive tract infection. The most common symptoms were white vaginal discharge (63 %), followed by itching in genital area (45.65 %) and foul odor discharge per vaginum (28.86 %). Only 15.21 % had sought treatment for their symptoms. Around 37 % of study subjects or their spouses had never used any contraceptive. Among those who had used contraceptives, condom by spouses (52 %) was the most common method of contraception followed by tubectomy (45 %) (Table 2). Very small proportion (<10 %) of the study subjects had used spacing methods like OCP and IUDs. Nearly 6 % of study subjects had history of smoking or use of smokeless tobacco. 25.37 % of spouses of the study subject had

Table 1 Socio-demographic profile of women diagnosed with advanced cervical cancer

Socio-demographic characteristics		Number	Percentage
Age (in completed years)	30–39	7	10.45
	40–49	25	37.31
	50–59	12	17.91
	60 and above	23	34.33
Religion	Hindu	61	91.04
	Muslim	6	08.96
Marital status	Married	49	73.13
	Widow	18	26.87
Socioeconomic status	Upper	1	1.49
	Upper middle	22	32.84
	Lower middle	21	31.34
	Upper lower	22	32.84
Type of family	Lower	1	1.49
	Joint/3-generation	39	58.21
Education	Nuclear	28	41.79
	Illiterate/just literate	41	61.19
Occupation	Primary school	8	11.94
	Middle school	10	14.93
	High school	3	04.48
	Intermediate	1	01.49
	Graduation/postgraduate	4	05.97
	Unemployed/homemaker	65	97.01
	Semi-professional/professional	02	2.99

history of smoking. Unusual discharge from vagina (73.13 %) followed by bleeding after menopause (55.10 %) and pain abdomen (44.77 %) were the most common presenting complaints. The longest mean duration of complaints was for abnormal vaginal bleeding after coitus (11.35 months) and the shortest for pain abdomen (3.07 months). Based on BMI, nearly 40 % of them were overweight or obese (Table 3).

Pallor was present in nearly two-third (63.93 %) study subjects. More than half (56.72 %) of the study subjects had moderate anemia and 7.46 % had severe anemia before treatment (Table 4). While one subject presented with clubbing, and one with generalized lymphadenopathy, jaundice or cyanosis was absent in all the study subjects. Majority (79.1 %) of the study subjects did not have any chronic comorbidity. Diabetes was present in nearly 9 % of the study subjects, while 18 % had hypertension. While most of those with diabetes and/or hypertension were on treatment, diabetes was under control in 50 % and hypertension in 75 % of the subjects. Based on histopathological diagnosis, around 97 % of the

Table 2 Reproductive profile of women diagnosed with advanced cervical cancer

Parameter	In completed years	Number	Percentage
Age at menarche	≤12	16	23.88
	13–14	46	68.66
	Above 14	05	07.46
Age at first intercourse	≤15	26	38.81
	16–17	21	31.34
	18 and above	20	29.85
Interval between menarche and first intercourse	1–2 years	27	40.30
	3–4 years	21	31.34
	5 and above	19	28.36
No of pregnancies	2	05	07.46
	3–4	26	38.81
	5–6	25	37.31
	7 and above	11	16.42
Outcome of pregnancy	Live birth	43	64.18
	Still birth	8 ^a	11.94
	Abortion	18 ^a	26.87
Use of contraceptives	None	25	37.31
	Contraceptives ever used	42	62.69
	OCP	4	09.52
	ECP	1	02.38
	IUD	2	04.76
	Condom use by spouse	22	52.38
	Vasectomy of Spouse	4	09.52
Place of delivery/abortion	Home	240	73.39
	Hospital/health center	73	22.32
	Not known	14	04.28
Mode of delivery	Normal vaginal	284	98.61
	cesarean	04	01.39

^a Two women had history of abortion as well as still birth

study subjects had squamous cell carcinoma of the cervix. One case each was diagnosed with adenocarcinoma and adeno-squamous carcinoma. Nearly 40 % of the study subjects presented in stage 2B of the disease. Majority (53.73 %) of the study subjects were in stage 3B of cervical cancer. Two cases each presented in stage 3A and 4A. Metastasis was present in only one patient. Combination of radiotherapy and chemotherapy was the most common (77.67 %) modality of treatment. Nearly 12 % of the study subjects were treated only by radiotherapy, while another 10.45 % cases received radiotherapy after surgery. Palliative treatment was given to four patients only.

Discussion

Cancer cervix is a multi-etiological disease. Various studies have confirmed the link with sexual activity, multiparity, early marriage, multiple sexual partners, illiteracy and low socioeconomic status. It is only in a small proportion of women who have persistent HPV infection that are at risk of developing cancer cervix. Other cofactors may aid in the development of disease. Mean age of our study subjects, having advanced cancer cervix, was 52.28 ± 11.29 years. While some studies had similar findings [7, 8], other studies had lower mean age [8–11]. This difference may be due to fact that Centre at AIIMS is a national apex institute and many cases are referred from other institutions.

In our study, majority of the study subjects were Hindu (91.04 %). These findings were comparable with findings of most of the Indian studies [9, 12–14]. In the present study, majority of women (73.13 %) were currently married, while 26.89 % were widows. These results are similar to results of other studies [7, 15]. Study subjects in our study mainly belonged to middle class followed by lower socioeconomic status. Some studies [14, 16] found higher frequency of CaCx in lower socioeconomic class. This may be due to limited access to healthcare services, low income, poor nutrition, poor genital and menstrual hygiene and a low level of awareness about health issues and preventive measures among lower socioeconomic classes. All these factors can increase vulnerability to cervical cancer [17]. Around 61 % of study subjects were illiterate. Similar findings were noted in several studies [15, 16, 18–22]. Low level of education may affect genital hygiene and access to healthcare facilities. In our study, mean age at menarche was 13.16 ± 0.93 years. Similar findings were also demonstrated in other studies [2, 15]. Eighty-three percentage of study subjects mentioned use of cloth as soakage material during menstruation. This proportion is higher than that of Bayo et al. [20] in which only 41.5 % women used homemade pads. In our study, 52.24 % women have attained their menopause at the time of diagnosis which is similar to findings of Dutta et al. [23]. In this study, mean age at the time of first intercourse was 16.69 years which was almost similar to results of Kahn et al. [24]. Sexual experience during adolescence and short interval between menarche and first sexual intercourse are risk factors for cervical cancer, as exposure to HPV infection may occur at young age [12]. These findings are in line with the results of several studies [9, 12, 15, 20, 21, 25, 26]. In our study, mean number of pregnancies was almost 5 (4.88). All the study subjects had experienced two or more pregnancies. These results suggest that high fertility is also a risk factor for cervical cancer. These results are consistent with the

Table 3 Clinical profile of women diagnosed with advanced cervical cancer

	Symptoms	Number	Percentage
Presenting complaints at the time of first visit	Unusual discharge from vagina	49	73.13
	Bleeding after menopause ($n = 35$)	27	77.14
	Pain abdomen	30	44.77
	Bleeding/spotting between periods	12	17.91
	Abnormal vaginal bleeding after coitus	10	14.92
	Irregular bleeding	18	26.86
Symptoms suggestive of RTI	No symptoms	21	31.34
	With symptoms ($n = 46$)	46	68.66
	White vaginal discharge	29	63.04
	Genital ulcer	03	06.52
	Foul odor discharge per vagina	13	28.26
	Itching in genital area	21	45.65
Clinic profile#	Treatment sought for RTI	7	15.21
	BMI ($n = 61$)		
	Underweight	2	03.27
	Normal	35	57.37
	Overweight	21	34.42
	Obese	3	4.91
	Pallor	39	63.93
	Clubbing	1	1.49
	Generalized lymphadenopathy	1	1.49

Jaundice and cyanosis not present in any individual

Table 4 Laboratory investigations in women diagnosed with advanced cervical cancer before and after treatment

Investigations for	Definition/classification	Before treatment		After treatment		<i>t</i> value	<i>p</i> value
		Number ($n = 67$)	Percentage	Number ($n = 53$)	Percentage		
Anemia	No anemia (≥ 12 gm %)	11	16.42	5	9.43		
	Mild (11–11.9 gm %)	12	17.91	8	15.09		
	Moderate (8–10.9 gm %)	38	56.72	36	67.92		
	Severe (< 8 gm %)	5	7.46	4	7.55		
Deranged LFT	S. bilirubin > 1 mg/dL	1	1.49	2	3.77		
Deranged KFT	Urea > 40 mg/100 ml	3	4.48	1	1.89		
	S. creatinine > 1.4 mg/dL	4	5.97	1	1.89		
Laboratory tests	Before treatment	After treatment		<i>t</i> value	<i>p</i> value		
	Mean \pm SD	Range	Mean \pm SD			Range	
Hemoglobin gm %	10.35 \pm 1.72 ($n = 52$)	5.1–14	9.69 \pm 1.29 ($n = 52$)	7.0–12.8	3.17	0.003	
Platelet count	201,347 \pm 124,764 ($n = 44$)		189,359 \pm 91,568 ($n = 44$)		0.763	0.450	

results of other studies [9, 12, 20, 27–29]. Compared to women who had never given birth, those with three or four full-term pregnancies had 2.6 times the risk of developing cervical cancer; women with seven or more births had 3.8 times the risk in a study [30]. Furthermore, women infected with HPV had seven or more full-term pregnancies and have approximately four times the risk of squamous cell

cancer compared to nulliparous women and two to three times the risk compared with women who had one or two full-term pregnancies [30].

In the present study, 69 % of women had symptoms of reproductive tract infections. These results are in disagreement with results of a study in which only 26 % had reported any symptom of venereal disease [27]. Women

who are coinfecting with HPV and another sexually transmitted agent, such as Chlamydia trachomatis or herpes simplex virus, are more likely to develop cervical cancer [31]. In our study, 37 % of study subjects had never used any contraceptive which is similar to results of Sogukpinar et al. [32] but in disagreement with results of one study where 94.2 % had never used any contraceptive [9]. In our study, condom use by spouse (52 %) followed by tubectomy (19 %) was the most common method of contraception which is in agreement with the results of Franceschi et al. [15]. Mitra et al. [33] observed that use of condoms may not be very effective in preventing HPV infection. This is because the papilloma virus lives in the skin covering the pubic area as well as the cells lining the vagina and cervix in women and urethra and anus in both sexes. Condoms do not block contact with pubic skin and hence unable to give protection from HPV. However, there is evidence that condoms can provide about 70 % protection against HPV when used at all times [34].

In our study, spouses of 13.3 % subjects were circumcised and all of them were Muslim. Many researchers have suggested that circumcision may reduce the risk of penile cancer, urinary tract infections and common sexually transmitted diseases, including human immunodeficiency virus (HIV) infection [35–39]. About 99 percent of all cervical cancer cases may be attributed to infection by oncogenic HPV genotypes as seen by Walboomers et al. [40], Bosch et al. [41]. Therefore, factors that reduce the probability of acquiring or transmitting HPV among men or women may reduce the risk of disease associated with these infections.

Six percent of study subjects in the present study had history of smoking and 25.37 % of their spouses had history of smoking. Natphopsuk et al. [25] found 70.62 % patients had a positive history of smoking. Smoking is documented to be strongly associated with the development of precancerous cervical lesions [42, 43].

In our study, the most common presenting complaints were unusual discharge from vagina (73.13 %), postmenopausal bleeding (55.10 %), irregular vaginal bleeding (26.86 %) and pain abdomen (44.77 %). These results are similar to the results of several international studies [7, 11, 13, 44, 28, 45]. The most common symptom of early cervical cancer is unusual discharge from vagina that frequently goes unrecognized by women. In the present study, 21 % of study subjects had chronic comorbidities. Similar results were seen by Ferrante et al. [8]. Presence of any chronic comorbidity can further affect the quality of life, and their management should not be ignored along with management of cervical cancer.

In our study, anemia was present in almost 84 % of the study subjects. This proportion is higher than that of Umezulike et al. [44] in which only 50 % of study subjects

were anemic. Hemoglobin level <12 g/dl seems to be associated with tumor hypoxia and poorer outcomes of radiotherapy in a number of patient populations; ignoring even modest anemia can result in decreased loco-regional control, overall survival and quality of life [46]. These findings signify that management of anemia during post-treatment phase should be given due importance.

In our study, 97 % patients had squamous cell carcinoma. These findings are in agreement with the findings of other studies [7, 10, 11, 26, 28]. Our study is one of a few studies which have focused on advanced cervical cancer (stage 2B–4B). Majority of the study subjects (55.73 %) presented in stage 3B of cervical cancer, followed by stage 2B. These results are comparable with the result of one study [11] in which they had enrolled patients of all stages, but the majority were in stage 3 only. Majority (77.67 %) of the patients had received both radio- and chemotherapy in our study.

Recommendations

This hospital-based clinico-epidemiological follow-up study was conducted in a tertiary level setting in New Delhi, and thus, conclusions cannot be generalized. However, based on conclusions, following recommendations are put forth:

1. Legal age of marriage for women is 18 years. Public awareness regarding risks of early marriage and pregnancy, legislation about age at marriage and effective implementation of this legislation will protect women from teenage pregnancy and related health hazards including risk of cervical cancer.
2. Use of contraceptives for birth spacing and limiting the size of the family should be encouraged not only for better maternal and child health but also for reducing the risk of cervical cancer.
3. Awareness of general population, especially women, should be planned using various channels of communication, focusing on knowledge about risk factors for cervical cancer, common symptoms of RTI and cervical cancer, benefits of periodic screening for early detection of precancerous lesions and early stages of cervical cancer, curability of cancer and better quality of life after treatment, if detected early.
4. Opportunistic screening of women, particularly those with higher risk, under the National programme for Prevention and Control of Cancer, Diabetes, CVD and Stroke across the country is recommended.
5. Convergence of screening of cervical cancer with RCH programme under National Health Mission particularly focusing on women living in rural and urban underprivileged areas should be planned.

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Compliance with Ethical Standards

Conflict of interest None (for all authors).

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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