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A Case Control Study to Explore the Risk Factors Associated with Cervical Cancer among Women in Bagalkot

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ABSTRACT

Background: Worldwide, cervical cancer is the fourth most frequent cancer in women with an estimated 570 000 new cases in 2018. Of the estimated more than 3,11, 000 deaths from cervical cancer every year, more than 85% of these occur in low- and middle-income countries.[1]

Method: It was a Case control study with 160 subjects (80 cases and 80 controls). Cases were women diagnosed with cervical cancer and controls were women without any malignancies. The cases were enrolled from Kerudi cancer hospital and controls were selected from HSK hospital and research center Bagalkot. Data was collected by structured questionnaire prepared by the researcher. Logistic binary regression analysis was used for determining factors associated with cervical cancer.

Result: The Mean age of cases was 51.15 years ± 11.2 years and control group were 50.53 years ± 10.4 years. The factors found associated with cervical cancer were; multiple pregnancy (P<0.012), (OR 2.857, 95% CI 1.3 - 6.4), pre-cancerous wound (P<.001) (OR 12.56, 95% CI 4.7 - 33) Pap-smear test (P<.OO1) (OR 185.156, 95% CI 23.49-145.8), age of menarche (P<0.001), (OR 1.616, 95% CI 1.2-2.1), co morbidity (P<.029)(OR 12.56, 95% CI 4.7-33), Pap-smear test (P<.OO1) (OR 3.362,95% CI 1.130-9.9), any precaution (P<.OO1) (OR .022,95% CI.006 - .007), used old cloth/sanitary napkin ((P<.OO1)(OR.118, 95% CI.O54, -.254).

Conclusion: There are many factors that can be controlled to prevent cervical cancer and all women must be aware of it.

Key words: Cervical cancer, women, Pap smear, cancer hospital, risk factors

INTRODUCTION

Cervical cancer is the uncontrolled growth of abnormal cells in the lining of the cervix. Cervical cancer remains one of the most common causes of death for women globally and ranks 4th of all cancers[2]. Currently, every 2 minutes a life is lost to this disease. Importantly, it is the leading cause of cancer deaths in women in 42 countries. In 2018, the global mortality statistics increased to 3,00,000 women for the first time, Current data suggests that 90% of all cases occur in low- and middle-income countries, due largely to poor access to screening and early detection and treatment of both pre-cancers and cancer[3].

Most cervical cancers are caused by Human Papillomavirus (HPV) infections. HPV is a group of viruses that are extremely common worldwide. There are more than 100 types of HPV, of which at least 14 are cancer-causing Two HPV types (16 and 18)

cause 70% of cervical cancers and pre-cancerous cervical lesions.[4]

Globally Approximately 5, 70, 000 cases of cervical cancer and 3,11, 000 deaths from the disease occurred in 2018. The estimated age-standardized incidence of cervical cancer was 13·1 per 1,00, 000 women globally and varied widely among countries, with rates ranging from less than 2 to 75 per 100 000 women. China and India together contributed more than a third of the global cervical burden, with 106 000 cases in China and 97, 000 cases in India, and 48 000 deaths in China and 60 000 deaths in India. Cervical cancer ranked in the top three cancers affecting women younger than 45 years in 146 (79%) of 185 countries assessed.[5]

Cancer is one of the leading causes of adult deaths worldwide. Every year about 14 million new cancer cases are detected, and 8 million people die of cancer. In contrast to developed countries, cervical cancer is a public health problem in developing countries like India, so much so that India alone accounts for one-quarter of the worldwide burden of cervical cancers. It is the one of the leading causes of cancer mortality, accounting for 17% of all cancer deaths among women aged between 30 and 69 years. It is estimated that cervical cancer will occur in approximately 1 in 53 Indian women during their lifetime compared with 1 in 100 women in more developed regions of the world.[6]

Every year in India, 1,22,844 women are diagnosed with cervical cancer and 67,477 die from the disease. India has a population of 432.2 million women aged 15 years and older who are at risk of developing 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. Therefore, it is vital to understand the epidemiology of cervical cancer in India.[7]

An analysis of population-based surveys indicates that coverage of cervical cancer screening in developing countries is 19% compared to 63% in developed countries and ranges from 1% in Bangladesh to 73% in Brazil. However, older, and poor women who are at the highest risk of developing cancer are least likely to undergo screening. Opportunistic screening in various regions of India varied from 6.9% in Kerala to 0.006% and 0.002% in the western state of Maharashtra and southern state of Tamil Nadu, respectively. Most of the cases (85%) present in advanced and late stages, and more than half (63%-89%) have regional disease at the time of presentation. Cervical cancer diagnosis and treatment in the advanced stages makes it a costly exercise, with a poor prognosis resulting in poor compliance.[8]

Objective: The aim of the study was to explore the Risk factors associated with cervical cancer among women in Bagalkot."

METHODS

Study design and Participants: Cross sectional Case control research design. Participants were Cases: women who are diagnosed with cervical cancer and receiving treatment for the same and control: women who are free from any kind of malignancies/cancer. Cases were enrolled from cancer hospital, Bagalkot and controls were selected from HSK hospital Bagalkot.

The sample were selected by convenient sampling technique.

Selection of cases: Formal permission was obtained from concerned authorities of cancer hospital, approached the patients receiving treatment for cervical cancer, prepared a sampling frame and enrolled 80 cases and obtained the formal consent.

Selection of controls: The researcher prepared a sampling frame considering the age group of cases. The controls were enrolled based on their age matching to cases. The controls were enrolled as they visited out patient department of hospital and research Centre.

Sample size estimation: The sample size was calculated using G-Power 3.1.9.4

software. The following parameters were considered for calculating sample size-
Level of significance (α) = 5% (0.05), Effect size = 0.15, Power of the test = 80% (0.80)
The calculation was done based on the results obtained from pilot study. The calculated sample size was 136: case=68 & control=68.Considering the possibility of attritions or missing data, the research enrolled 160 women; case: 80& control: 80.

Data collection instruments

The instrument was divided into 3 Sections.

1. Self developed Structured baseline proforma with 8 items to assess the data regarding personal factors such as age, religion, educational status, marital status, occupational status, residence, type of family, family monthly income, previous knowledge regarding cervical cancer, source of information regarding cervical cancer.
2. Self-developed Checklist with 11 items to assess the risk factors with dichotomous (Yes or No) responses associated with cervical cancer.
3. Self-Structured questionnaires with 19 items to assess risk factor associated with cervical cancer. The responses were categorical hence the responses were scored nominally.

All the above-mentioned instruments were validated by experts and pre-tested among the population. The instruments were prepared in English and translated to Kannada (the local language) by Lingual expert. Both English and Kannada versions were used according to feasibility of the participants.

Data collection: The data regarding presence of cervical cancer was obtained from hospital records of the patients receiving treatment for cervical cancer in Kerudi cancer hospital, Bagalkot. Data was collected from 02.03.2020 to 6.06.2020. The participants who knew to read and write Kannada (local language) or English were asked to respond to questionnaire by themselves. The researcher read the questions for illiterate participants and their responses were recorded.

Statistical analysis: The master sheet was prepared in Microsoft excel and transferred to SPSS statistical package 28for analysis. Binary logistic regression analysis was done and Odds ratio with 95% Class interval were calculated for determining the exact percentage of risk associated with cervical cancer.

Ethical consideration: Ethical clearance certificate is obtained from Institutional Ethical Committee and Written consent was obtained from participants.

RESULT

The study was begun with enrolment of 160 women from 2 hospitals of Bagalkot. 80 Women with cervical cancer were enrolled as cases and 80 women without cancer were considered as controls. Hence the final analysis was done based on the data obtained from 160 women.

Table No 1: Distribution of cases and controls according to their baseline factors data.

Baseline Factors	Categories	Case N_1=80		Control N_2=80		P Value
		F	%	F	%	
Age	27- 40	16	20%	16	20%	0.001*
	41-50	27	33.8%	27	35%	
	51-85	37	46.2%	37	45%	
Educational status	No formal education	43	53.8%	40	44.9%	0.002*
	Primary	29	36.3%	29	32.6%	
	Secondary	7	8.8%	4	4.5%	
	PUC	1	1.3%	4	4.5%	
	Graduation above	-	-	3	3.4%	
Marital status	Married	55	68.8%	58	65.2%	0.036*
	Unmarried	1	1.3%	2	2.2%	
	Separated	2	2.5%	2	2.2%	
	Widow/Divorced	22	26.3%	18	20.2%	

Values are presented as frequency and percentages
* Chi square test

The Mean age of control group was 50.53 ± 10.474 years with the minimum age; 27 years and maximum age; 85 years. The Mean Family Monthly Income was Rs 17,100=00 with minimum income of Rs 6,000/months to maximum Rs 80,000/ months. The mean BMI score was 24.29 ± 3.09 with minimum BMI of 18.63 and maximum BMI of 33.80.

Table 2: Association between cervical cancer & Baseline factors N_1= 80 N_2= 80

Characteristics	SE	AOR	Lower	Upper	P value
Age	.016	1.002	.972	1.033	.904
Religion	.306	1.241	.681	2.261	.480
Educational status	.196	.795	.542	1.167	.241
Marital status	.123	1.106	.870	1.406	.411
Occupational status	.223	1.253	.809	1.940	.312
Residence	.393	.847	.392	1.830	.672
Family monthly income	.00	1.000	1.000	1.000	.771
Type of family	.326	.754	.398	1.428	.386
α = 0.05 **AOR: Adjusted odds ratio, SE: Standard error.** ***Binary logistic regression analysis**					

Table No 3: Association between factors associated with cervical cancer. N_1= 80 N_2= 80

Characteristics	SE	P value	AOR	lower	upper
History of Multiple pregnancy	.418	.012*	2.857	1.260	6.479
H/O Multiple Sexual partner	.23	.999	0.81	.0	-
Have you been told by the examiner doctor that you have wound	.493	.001*	2.57	4.78	33.00
Have you attended any educational programme on prevention of cervical cancer	.42	.99	.0	.0	-
Do you Wash genitalia after intercourse	.527	.247	.543	.194	1.526
Have you undergone Pap smear test as a precaution measure	1.053	.001*	1.85	2.49	14.5
Do you have Bleeding in between mensural cycle bleeds	.656	.482	1.587	.439	5.740
Did have any Bleeding following sexual intercourse	.515	.338	.610	.222	1.675
Any H/O HPV Vaccination	.97	1.00	.00	.0	-
Any H/O STD	.722	.999	.0	.0	.0
AOR: Adjusted odds ratio, SE: Standard error. ***Binary logistic regression analysis**					

Table 4: Factors associated with cervical cancer among women.N_1= 80, N_2= 80

Variable	SE	P value	OR	lower	Upper
Age at menarche	.146	.0001*	1.62	1.21	2.15
Age at marriage	.122	.647	1.057	.832	1.34
Age at the time of first intercourse	.133	.698	.950	.733	1.23
Age at first pregnancy	.069	.948	.996	.869	1.140
Number of children	.123	.147	1.195	.939	1.521
Number of marriage/s	1.47	.480	.355	.020	6.301
Co morbidity before diagnosis of cervical cancer	.556	.029*	3.362	1.130	9.99
Have you taken any Precaution for prevention of cervical cancer	.632	.001*	.022	.006	.077
History of family member with cervical cancer	.274	.999	1.77	.006	1.2
History of cancer	.451	.999	.00	.00	-
Any abnormal obstetrical or gynecological history	.482	.444	.691	.269	1.780
Have you used any contraceptive measure	.435	.999	1.169	.00	-
Do you use old cloth sanitary napkin	.394	.001*	.118	.054	.254
Do you Bath daily	.158	1.000	1.000	1.000	-
Have you used IUD for contraceptive	1.055	.171	.236	.030.	1.865
History of Abortion	.394	.517	.775	.358	1.676
Do you Consume tobacco	.396	.128	.547	.252	1.188
Body Mass Index	.052	.255	1.061	.958	1.175
Have you taken any treatment for Infertility	.346	.999	.82	1.02	-
AOR: Adjusted odds ratio, SE: Standard error. ***Binary logistic regression analysis**					

Table No.3 shows that Women with multiple pregnancy (P<0.012) had 2.85 times more chances of acquiring cervical cancer. Presence of precancerous wound portrait 2.56 times more risk of acquiring cervical cancer.

Table No. 4 shows that Late age of menarche with odds ratio 1.67, Presence of comorbidity with odds ratio 3.36 were the factors found associated with risk of cervical cancer whereas the risk of cervical cancer was low among the women who had taken precautions in prevention (OR: 0.022) of cervical cancer.

DISCUSSION

Cancer is most hazardous for an individual at any age. Women undergo enormous hormonal fluctuations in their life time. These hormonal variations make them more prone for such diseases. The present study compared the cervical cancer patients with women of same age without cervical cancer. It was found that many factors like age at menarche, multiple pregnancy and presence of comorbidity are the risk factors for acquiring cervical cancer. Whereas adapting precautions for prevention can prevent the occurrence of cervical cancer. The mean age of patients with cervical cancer is around 51 years; hence precautions adapted at early age can prevent cervical cancer in later. Results of a hospital-based case-control study support the hypothesis that it is not so much parity per se that enhances the risk, but the rapidity of multiple pregnancies that matters[9]. In a hospital-based case-control study, conducted in Shirdi Sai Baba Cancer Hospital and Research Centre, Manipal, Udupi Districtage at menarche of 13-14 years was found to be a significant risk factor of cervical cancer with OR of 2.91(1.18-7.20)[10].

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