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Evaluation of Stages and Age Associated Cervical Cancer in Urban and Rural Women in Salem District, Tamil Nadu, India

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ABSTRACT

Cervical Cancer occurs when abnormal cells develop and spread in the cervix, the lower part of the uterus and most cases are triggered by a type of virus. Age and stages of cervical cancer has been evaluated as a prognostic factor in cervical cancer in both hospital and population-based studies. Results regarding the relation of age, stages and cervical cancer prognosis are conflicting. This study pursued a contemporary assessment of the association of age and different stages of cervical cancer diagnosis. The main purpose of this study is to find out the correlation between the factors of age and different stages cervical cancer. This study received ethical approval from Institutional Ethics Committee, Government Mohan Kumaramangalam Medical College and Hospital, Salem. The outcome of the study was the largest study to date looking at age and stages as a prognostic factor in cervical cancer and our results provide new insight into the factors that may mitigate suffered from this disease specifically in the adulthood population in rural area.

Keywords: Cervical Cancer. Age, Stages, Rural, Urban

INTRODUCTION

India has a population of 432.20 million women aged 15 years and older who are at risk of developing cervical cancer. Current estimates indicate that every year 1, 22, 844 women are diagnosed with cervical cancer and 67, 477 die from the disease. Cervical cancer ranks as the second most frequent cancer among women in India and the second most frequent cancer among women between 15 and 44 years of age (Ferlay *et al*., 2014). Cervical cancer ranks as the second cause of female cancer deaths in India and is the second leading cause of cancer deaths in women aged 15 to 44 years in India.The estimation of new cancer cases, by major states of India, reveals that burden is very high, in those states which are highly populous. Nearly 41.3 percent of cancers seen in Indian females are accounted by cancer of breast and cervix alone. The estimates of cancer of cervix incidence would rise from 96,156 cases (0.096 million) to 148,813 (0.148 million) cases during 2011 to 2026 (Dsouza *et al*., 2013).

Cervical Cancer occurs when abnormal cells develop and spread in the cervix, the lower part of the uterus and most cases are triggered by a type of virus. If it is found early is highly curable. Risk factor includes -

Top cause of cervical cancer is Human Papilloma Virus (HPV) which infects the genital areas. Worldwide 90% of cervical cancers are caused by HPV infection in sexually active women with multiple partners. Age and stages of cervical cancer has been evaluated as a prognostic factor in cervical cancer in both hospital and population-based studies. Results regarding the relation of age, stages and cervical cancer prognosis are conflicting. This study pursued a contemporary assessment of the association of age and different stages of cervical cancer diagnosis. The main purpose of this study is to find out the correlation between the factors of age and different stages cervical cancer.

MATERIALS AND METHODS

Study design

The cervical cancer patients were adopted in this study and participants were recruited from a rural and urban area in Salem district, Tamil Nadu, Southern India. Eighty eight women were selected using non-probability convenience sampling technique. The inclusion criteria were: i) those between the ages of 30 and 70 years ii) who were willing to participate in the study, iii) who were able to read, write and understand Tamil, the local language. Women who had been diagnosed of cervical cancer were excluded from the study. This study used a socio-demographic questionnaire on cervical cancer that were developed by the authors. The socio-demographic questionnaire consisted of nine items, which were regarding the participant's age, locality, educational qualification, occupation, habits, marital status, family history of any cancer or cervical cancer and stages of cervical cancer. Table 1 shows the characteristics of participants.

Ethical considerations

This study received ethical approval from Institutional Ethics Committee, Government Mohan Kumaramangalam Medical College and Hospital, Salem. The women gave written consent for the study, prior to their participation. They were assured of confidentiality and were informed that they had the right to withdraw from the study at any time they wished to.

Statistical Analysis

The analysis involved a description of the sample according to the socio-demographic variables. Mean of the overall knowledge was calculated. To analyze the differences in the mean pre-test and post-test score, paired 't' test was computed with a statistical significance level of $p<0.05$. To examine the association between pre-test knowledge scores and selected demographic variables the Chi- square was computed.

Table.1: Demographic characteristic of participants in Salem district

Characteristics	N=88

Age group	
Early adulthood (20-34 y)	01
Adulthood (35-59 y)	55
Elderly (60-70 y)	32
Locality	
Rural	75
Urban	13
Education level	
Primary school	37
High school	12
Diploma or equal	00
Bachelor degree	00
Higher than bachelor degree	00
Uneducated	39
Occupation	
Agriculture	10
Trader	
Laborer	60
Government official/ Enterprise/ Business	00
Out of work	18
Other	00
Habits	
Tobacco	18
Chewing	14
Panparag	00
Betel Chewing	12
None	44
Marital status	
Single	01
Married/ Partner	72
Widowed/ Divorced/ Separated	15
Family history of cancer	
Yes / No	No
Family history of cervical cancer	
Yes / No	No
Stages	
Stage I	17
Stage II	36
Stage III	31
Stage IV	04

Date collection

It is unacceptable that every two minutes one woman dies of cervical cancer in a world where we have the proven solutions to prevent and treat this disease. The WHOs improving data for decision making toolkit will support countries in collecting and using high quality data on screening coverage and uptake, interventions can be employed to make sure no woman is left behind, strong data systems will support global efforts to make this cancer a disease of the past. High quality and timely data are essential for comprehensive cervical cancer control programmes and under-pin effective policy making. A cross sectional questionnaire based survey has been

conducted on 88 women (both married and unmarried, covering both rural and urban areas). Among those 88 the following cross sectional study was carried out.

1. Assessment and diagnostic findings PAP Test[4]

   Routine screening for cervical abnormalities can detect early stage cancer and precancerous conditions that could progress to invasive disease. The process begins with a Pap test, also known as a Pap smear.

2. HPV DNA Test[5,6]

   Like the Pap test the HPV DNA test involves collecting cells from the cervix for collecting cells from the cervix for lab testing

3. CT (Computerised Tomography) scan
4. MRI (Magnetic Resonance Imaging Scan)
5. Pelvic ultrasound[7]

   The precision medicine field of targeted therapy involves testing tumours for clues about their genetic mutations and matching patients with new drugs designed to block cancer's growth on a molecular level. Patients who received molecular targeted therapies either got an investigational drug then being tested in a clinical trial or an FDA approved targeted therapy commercially approved for another indication.

RESULTS AND DISCUSSION

Age and stage are well-established prognostic factors for cervical cancer (Brun *et al*., 2003; Quinn *et al*., 2018). Thus, we aim with this study to evaluate the significance of age and stage as an independent prognostic factor in women with cervical cancer

Age distribution

It is estimated that over one million women worldwide currently have cervical cancer; most of them have not been diagnosed or have no access to treatment that could cure them or prolong their lives. There are a number of risk factors known to be associated with cervical cancer prognosis, including stage at diagnosis, histology, smoking and race. Age as an independent prognostic factor for cervical cancer (Moore *et al*., 2016). In this study, total of 88 women with cervical cancer were identified in and around Salem and assessment of ages in rural and urban women with cervical cancer. Approximately 1.13% (1 of 88) were early adulthood, 56.81% (50 of 88) were adulthood and 31.81% (28 of 88) were elderly belonging to the rural group while 1.13% (1 of 88) were early adulthood, 5.68% (050 of 88) were adulthood and 3.40% (03 of 88) were elderly in urban group. Among the two groups, rural has prone to cervical cancer than urban. Over all the highest percentage was affected in adulthood women in both rural and urban group (Table 2) which was significant with p-value 0.1709.

Table 2 shows the Assessment of Ages in rural and urban women with cervical cancer

Characteristics	Rural		Urban		Total		p value
	Nos.	% affected	Nos.	% affected	Nos.	% affected	
Early adulthood (20-34 y)	01	1.13	01	1.13	02	2.27	0.1709
Adulthood (35-59 y)	50	56.81	05	5.68	55	62.50	
Elderly (60-70 y)	28	31.81	03	3.40	31	35.22	

It is well established that the average age of cervical cancer diagnosis ranges from 35 to 44 years, there is still a significant number of adulthood women who not only are diagnosed with cervical cancer but also die from it each year (Institute, 2017). From 2009 to 2013, 38% of cervical cancer cases occurred in women 55 years and older, with almost 20% of cases found in women greater than age 65 years (Bulletins, 2012). This information is particularly relevant given the increasing adulthood population in the coming years. The effect of age on a woman's overall prognosis, however, is something that has been debated in the literature (Brun et al., 2003; Sharma et al., 2012; Moore et al., 2016). Several investigators have examined the relation between age at diagnosis and prognosis. The incidence of cancer increases at age of 35 to 40 years and reaches its maximum in women in their 50s and 60s. (PCCW, 2005). Vrede and Sabaio, 198716 reported the 33.7% cases of cervical cancer in women aged 41 to 50 years, while Mans et al, (2003 & 2011) found no differences in cervical cancer incidence between women of 50 years and older and those aged 20 to 49 years. Sreedevi et al, (2015) reported peak age of occurrence of cervical cancer in India is between 55 and 59 years, and the highest age-adjusted rates are in Aizawl in the north eastern part of India at 24.3 per 100,000 women. In our study we observed that the peak age of cervical cancer occurrence was 35 to 59 years.

Stages

Table 3 shows that the Assessment of stages in rural and urban women with cervical cancer. Stage I was found that 10.22% for adulthood and 5.68% for elderly in rural group while 1.13% for adulthood and 2.27% for elderly in urban group which was significant with p-value 0.3229. Stage II was found that 20.45% for adulthood and 13.63% for elderly in rural group while 4.54% for adulthood and 2.27% for elderly in urban group which was significant with p-value 0.7598. Stage III was found that 1.13% for early adulthood, 22.72% for adulthood and 6.81% for elderly in rural group while 1.13% for adulthood and 3.40% for elderly in urban group which was significant with p-value 0.0939. Stage IV was found that 1.13% for early adulthood, 2.27% for adulthood and 1.13% for elderly in rural group while 1.13% for elderly in urban group which was significant with p-value 0.1353.

Table 3 shows the Assessment of stages in rural and urban women with cervical cancer

Stages	Early adulthood (20-34 y)			Adulthood (35-59 y)				Elderly (60-70 y)				p value
	Rural	%	Urban	Rural	%	Urban	%	Rural	%	Urban	%	Rural and Urban
Stage I	-	-	-	09	10.22	01	1.13	05	5.68	02	2.27	0.3229
Stage II	-	-	-	18	20.45	04	4.54	12	13.63	02	2.27	0.7598
Stage III	01	1.13	-	20	22.72	01	1.13	06	6.81	03	3.40	0.09398
Stage IV	01	1.13	-	02	2.27	-	-	01	1.13	-	-	0.1353
Total	02	2.26	-	49	55.66	06	6.80	24	27.25	07	7.94	

In a study by Rutledge *et al*, (1992) 250 women ≤35 years were matched by stage and treatment to older women. Younger women with advanced stage disease were noted to have worse overall survival (OS), yet they survived longer when diagnosed with early-stage disease. Conversely, Clark *et al* (1991) concluded that cervical cancer behaved more aggressively in their comparison of 41 women ≤35 years old with 96 women aged ≤36 years in that there was a higher incidence of nodal metastases observed in the younger patients despite less advanced clinical stage of disease. Paradoxically, they simultaneously observed that youth conferred better survival outcomes overall. In other studies, clinical behavior was age independent, but these studies compared women 35 years with older women (Carmichael et al., 1986; Smales et al., 1987). Our hypothesis is that cervical cancer in the adulthood (women 35-59 years) is a more aggressive disease.

CONCLUSION

To our knowledge, this is the largest study to date looking at age and stages as a prognostic factor in cervical cancer and our results provide new insight into the factors that may mitigate suffered from this disease specifically in the adulthood population in rural area. Public knowledge of this disease and its risk factors, and early screening / prevention programs are particularly important in reducing morbidity and mortality. The World Health Organization recommends screening for every woman between the age of 35-59 years, at least once in a life time. The screening interval (frequency) should not be less than 5 years (and not less than 10 years, if using an HPV test).

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