RESEARCH COMMUNICATION

Socio-Demographic and Behavioural Risk Factors for Cervical Cancer and Knowledge, Attitude and Practice in Rural and Urban Areas of North Bengal, India

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Abstract

Background: Cervical cancer is common among women worldwide. A multitude of risk factors aggravate the disease. This study was conducted to: (1) determine the prevalence and (2) make a comparative analysis of the socio-demographic and behavioural risk factors of cervical cancer and knowledge, attitude and practice between rural and urban women of North Bengal, India. **Study Design**: Community-based cross-sectional study. **Methods**: A survey (first in North Bengal) was conducted among 133 women in a rural area (Kawakhali) and 88 women in an urban slum (Shaktigarh) using predesigned semi-structured questionnaires. The respondents were informed of the causes (including HPV), signs and symptoms, prevention of cervical cancer and treatment, and the procedure of the PAP test and HPV vaccination. **Results**: The prevalence of risk factors like multiparity, early age of marriage, use of cloth during menstruation, use of condom and OCP, early age of first intercourse was 37.2%, 82%, 83.3%, 5.4%, 15.8% and 65.6% respectively. Awareness about the cause, signs and symptoms, prevention of cervical cancer, PAP test and HPV vaccination was 3.6%, 6.3%, 3.6%, 9.5% and 14.5% respectively. Chi-square testing revealed that in the study population, significant differential at 5% exists between rural and urban residents with respect to number of children, use of cloth/sanitary napkins, family history of cancer and awareness regarding causes of cervical cancer. Regarding KAP, again using chi-square tests, surprisingly, level of education is found to be significant for each element of KAP in urban areas in contrast to complete absence of association between education and elements of KAP in rural areas. **Conclusions**: A large number of risk factors were present in both areas, the prevalence being higher in the rural areas. The level of awareness and role of education appears to be insignificant determinants in rural compared to urban areas. This pilot study needs to be followed up by large scale programmes to re-orient awareness campaigns, especially in rural areas.

Keywords: Cervical cancer - HPV - PAP test - risk factor - chi-square test - rural urban differentials

Introduction

There are a multitude of risk factors for cervical cancer worldwide (Varghese et al., 1999). Virtually all cases of cervical cancer are attributable to persistent infection by certain strains of Human Papilloma Virus (HPV) especially HPV-16 and HPV-18. These HPV types also cause other cancers. Although cervical cancer can be detected at stages I or II with routine Papanicolaou tests, it is a slow growing disease in which women do not experience problematic symptoms until the later stages of manifestation when chances of survival are lower (Roy & Tang, 2008).

Although screening, primarily with the Pap smear technology, has reduced the incidence of this disease, cervical cancer remains the second most common cause of death from cancer in women worldwide. This is because of lack of resources for widespread high quality screening. In addition to application of Pap smear technology, the identification of HPV as the etiologic agent has led to the development of a preventive vaccine (Lowy et al., 2008)

for the primary prevention of cervical cancer. HPV assays to improve secondary prevention (screening programs) may offer the possibility of bringing cost effective cervical cancer prevention strategies.

The present study was carried out randomly on a total of 221 women of North Bengal, 88 urban and 133 of rural background. Both the areas were inhabited by people of low to medium economic status. The rural study area Kawakhali, is situated in the Matigara Gram Panchayat area in the Siliguri subdivision of Darjeeling district in West Bengal. The village is bounded by Balason river in the east, North Bengal Medical College in the west, Kadamtala Border Security Force Camp in the North and Parashar village in the south.. The other urban study area Shaktigarh, is situated in the Dabgram Urban Area of Jalpaiguri District. It is situated on the bank of Mahananda River. The main purpose of the study is to find differences in KAP between residents in rural and urban areas. This is the first recorded attempt to analyze the risk factors and generate small scale awareness about cervical cancer in this region.

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Table 1. Socio-Demographic Characteristics

Category		Percentage of total study population
Occupation:	Skilled labor	9.4
	Unskilled labor	22.8
	Business	3.7
	Unemployed	4.6
	Housewife	60.2
Age:	15-24	24.9
	25-34	37.6
	35-49	37.6
Caste:	General	15.8
	SC	82.4
	ST	0.9
	OBC	1
Marital status	Married	88.7
	Divorced	0.5
	Single	5.4
	Widow	5.4
Monthly income	<Rs.1000	6.8
	Rs.1000-2000	23.5
	Rs.2001-3000	38.9
	Rs.3001-4000	12.7
	Rs.4001-5000	10.4
	>Rs.5000	7.7

Materials and Methods

This cross sectional study of two months duration was done in a village Kawakhali and an urban slum Shaktigarh. 221 married and unmarried women, (88 urban and 133 rural) of reproductive age group (15-49 years) were randomly selected. Seriously ill and lunatic women were excluded. Sample size was determined using EPI-INFO software version 3.5.1.

Necessary permission from the concerned authorities was taken and a survey was conducted using pretested predesigned semi structured questionnaires. Prior informed consent was taken. For those not available in the first interview another visit was made to minimize non response.

Statistical data analysis was carried out using SPSS software version 16.0. Chi square test was performed to determine association between rural and urban prevalence of risk factors.

Results

In the present study socio- demographic characters were the foundation of research on randomly selected

Table 2. Categories for Health History and Data on Awareness

Health History Information			Data on Awareness		
Category		Percentage of total study population	Category		Percentage of total study population
Age of marriage:	<10	0.5	Educational qualification:	Illiterate	28.1
	10-14.5	30.4		Just literate	13.1
	15-18	51.1		1 to 4	5.9
	>18	12.9		5 to 10	46.6
	Unmarried	5.4		>10	6.5
Age of first sexual intercourse:	<13	13.6	Heard of cervical cancer/ not:	Yes	87.3
	14-18	65.6		No	12.7
	>18	15.6	Source of information:	Friends	41.6
	No intercourse	5.4		Relatives	3.2
Number of sex partners:	0	5.4		Health worker	11.8
	1	94.6		Radio	1.8
Number of children:	0	10.4		Television	29.4
	1	15.4		Not heard	12.2
	2	37.1	Awareness of cause:	Yes	3.6
	3	23.5		No	96.4
	>3	13.7	Awareness of signs and symptoms:	Yes	6.3
Number of abortions:	0	97.3		No	93.7
	1	1.8	Aware of prevention:	Yes	3.6
	3	0.9		No	96.4
Use of Condom:	Yes	5.4	Aware of PAP test:	Yes	9.5
	No	94.6		No	90.5
Use of other contraceptive measures:	Permanent methods	45.7	Willingness to undergo PAP test:	Yes	84.6
				No	15.4
	OCP	15.8	Aware of HPV vaccine:	Yes	14.5
Use of branded/homemade napkin:	Homemade	83.3		No	85.5
	Branded	16.7		Not gone	14.5
Presence of white discharge:	Yes	15.8		No	3.2
	No	84.2	Access to nearest PHC:	Yes	82.4
Smoking habit:	Yes	0.5	Maintains personal hygiene:	Yes	99.1
	No	99.5		No	0.9
Betel / tobacco chewing:	Yes	45.7	Aware that multiple partners is a risk factor:		
	No	54.3		Yes	68.8
Family history of cancer:	Yes	9.5		No	31.2
	No	90.5	Aware of warning signals:	Yes	9.5
Family history of cancer:	Yes	9.5			
	No	90.5			

Table 3. Chi-square Tests of Independence for Variables and Attributes

Item	Area of Residence	p-value	Item	Area of Residence	p-value
Monthly Income	2.88	0.09	Heard of Cervical Cancer χ_1^2	0.23	0.64
Age of Marriage χ_1^2	0.59	0.45	Aware of Cause χ_1^2	4.29	0.04*
Use of Condom χ_1^2	3.81	0.05	Aware of signs and symptoms χ_1^2	1.87	0.17
Other Methods of Contraception χ_1^2	5.89	0.12	Aware of prevention χ_1^2	1.78	0.18
Number of Children χ_1^2	6.06	0.01*	Aware of PAP Test χ_1^2	0.03	0.87
Use of cloth/sanitary napkins χ_1^2	9.25	0.00*	Willingness to undergo PAP test χ_1^2	0.03	0.86
Presence of White Discharge χ_1^2	3.45	0.06	Aware of HPV Vaccine χ_1^2	0.01	0.92
Family History of Cancer χ_1^2	6.98	0.01*	Maintenance of Personal Hygiene χ_1^2	1.34	0.25

*implies significant at 5% level

Table 4. Comparison of KAP with Area of Residence

Item	Urban (p-value)	Rural (p-value)
Level of education and Awareness of cause		
	χ_1^2 3.31 (0.00*)	χ_1^2 20.48 (0.07)
Level of education and Awareness of signs		
	χ_1^2 7.04 (0.01*)	χ_1^2 0.45 (0.5)
Level of education and Awareness of HPV vaccine		
	χ_1^2 5.64 (0.02*)	χ_1^2 0.38 (0.54)
Level of education and Awareness of prevention		
	χ_1^2 10.79 (0.00*)	χ_1^2 0.3 (0.58)

asymptomatic female individuals in rural and urban backdrop of North Bengal. Age range of the respondents was 15 to 49 years. Most of them (88.7%) were married and a few of them were single (12%) or widowed (5.4%). Only a single case of divorcee was found. Most families earned (38.9%) between Rs 2001 to 3000/- per month Table 1.

Regarding educational qualification 28.1% were illiterate and 5.9% of the women received primary education. However most of them (46.6%) received education between Class V and X. In terms of livelihood, majority were house wives (60.2%). Only 7.3% owned small business, while 32.2% were engaged either as skilled or unskilled labour (Table 2). With this perspective of low to medium economic status our study was conducted.

In our study 23.5% of the population had 3 children and 13.7% showed birth record of more than three children. History of abortion was negligible being negative in 97.3% cases. All married respondents had a single sex partner and this may be a reason for absence of cervical cancer in our study population. Although 28% are illiterates and almost 82% have heard of cervical cancer, surprisingly about 90% are not aware of the warning signals.

The most important issue investigated is whether location has influenced the prevention and hygiene of the persons surveyed. This is true for 3 variables, namely number of children, sanitary napkin use and family history at 5% level of significance. Regarding awareness, significant difference is observed only for causation. However, as Tables 3 and 4 show, educational level plays an important role for awareness of cause, preventive measures and vaccination only in the urban areas.

Discussion

Most of the studies in this context concentrated on comparisons between disease afflicted and control individuals (Dasgupta et al., 2002; Roy & Tang, 2008; Mitra, 2009), without focusing on the locational significance.

From the health history information of the study subjects, it was evident that both the rural as well as urban respondents consummated marriage at a tender age (Table 1) which posed a very high risk for cervical cancer. According to Mitra (2009), low age at first sexual intercourse exposed the young subjects to semen which is a potential carcinogen. Biswas et al. (1997), highlighted that cervical epithelium is more susceptible to carcinogenic agents during adolescence. Early age at marriage indicated an early exposure to sexual activities and early pregnancy which are well known etiological factors for cancer cervix. Mitra (2009), also noted that large number of child births gave rise to high parity which increased risk factor for cervical cancer. Apart from repeated hormonal influences on the risk of infection by HPV, labour related trauma might also enhance chances of infection by HPV.

Yasmeen et al. (2010), suggested that absence of promiscuity in a population from Kashmir was the cause of absence of cervical cancer in that community. Women of the present study group were mostly healthy adults including 70.1% of the population with regular menstrual cycle. Irregularity was reported by 25 respondents and 36 reported menopause. Most of the population used home-made sanitary napkins made of cotton cloth which was reused after washing. Bayo et al. (2002), in their study also found that reusing home-made sanitary napkins is a risk factor for cervical cancer. Use of different methods of contraception has been exhaustively studied in our investigation. 94.6% of women never used condom and preferred to use OCP or tubal ligation. Mitra (2009), 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.

Our investigation also included the data on addiction to potential carcinogens among the study subjects. Interestingly 99.5% of the women did not smoke tobacco and none of them were addicted to alcohol. But an alarming number of respondents (45.7%) were addicted to chewing betel leaf with areca nut and/or tobacco. Many authors have implicated these substances as causative agent of various cancers. Chen et al. (2006), correlated oral non malignant lesions with HPV infection, betel leaf chewing

and cigarette smoking. According to these authors HR HPV is quite common in the oral cavity of normal mucosa. On the other hand other reports indicated that irrespective of copy number, the integrated form of HR HPV is related to tumourigenesis of invasive cervical carcinoma (Hopman et al., 2004). Thomas et al. (1994), observed mutations in the conserved regions of p53 to be infrequent in betel associated oral cancer. However, according to Scheffner et al. (1990), inactivation of p53 gene may not require mutations but may involve cellular/viral protein (E6 protein) interaction and provided an explanation for the low frequency of p53 mutations in HPV associated cervical cancers. Transmission mechanisms of these strains of HR HPV from mouth to other organs in the same subject are not well documented. But substance addiction leading to any form of cancer caused by infective HPV might pose a serious medical problem.

In the present study, family history of cancer of 21 respondents was positive. A significant association (5% level) between the area of residence and the presence of family history of cancer was observed. The urban population showed a higher percentage (14%) as compared to the rural population. Previous testing of cervical cancer was reported only by one woman and the result was found to be negative. No medical treatment was required / received for cervical cancer. Occurrence of white discharge was reported by 15.3% respondents of our study sample. However this could not be associated with area of residence.

Data on awareness was not very encouraging, although 87% women were aware of the term cancer, and few about cervical cancer. An illustrated demonstration in Bengali language (locally spoken) made them curious about the cause and consequences, signs and symptoms of cancer. The section of population aware of cervical cancer came to know about this disease through friends or media like radio and television (Table 3). However, it was observed that 96.4% of the population were unaware of the causes of the disease, 93.7% were not aware of the signs and symptoms and 96.4% of the prevention of cervical cancer. 90.5% were unaware of the Pap test as a screening procedure although 84.6% were willing to undergo the test as they felt it would benefit them in the long run. This is in agreement with a study conducted in Kolkata (Roy and Tang, 2008). In our study 85.5% of the population had not heard of the HPV vaccine before but almost all were willing to make use of it.

Given this overall acute lack of awareness, a significant association was seen between the level of education and their awareness of the disease only in the urban areas . Those who had received higher education had greater knowledge of the disease and this was evident among the urban women. This emphasizes the importance of education in generating awareness among the population at large. On the other hand, such an association is completely absent in a rural area inhabited by relatively poor people. This difference in KAP between rural and urban residents needs deeper probe. Therefore, awareness campaigns, especially in rural areas, need a major reorientation so that fruits of education is realised by them more effectively. Larger scale follow-up surveys are needed to focus on

areas of such reoriented awareness campaigns.

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