

## CERVICAL CANCER IN KANO: A STUDY OF RISK FACTORS

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### INTRODUCTION

Cervical cancer is an important cause of morbidity and mortality in gynaecological practice<sup>1</sup>. In Nigeria, it is the most common gynaecological cancer and would appear to have overtaken breast cancer as the most common cancer in women<sup>2,3</sup>.

Worldwide, cervical carcinoma is the second most frequent cancer in women after breast carcinoma and therefore, presents a serious global problem<sup>4</sup>.

An estimated 466,000 new cases occur annually worldwide, with the vast majority in the developing countries. Over 80% of the estimated 231,000 deaths which occur annually due to cervical cancer also occur in these countries<sup>4</sup>, which collectively has only 5% of global cancer resources<sup>5</sup>. Also this high cervical cancer related deaths in these countries is related to the fact that, the risk factors are still prevalent,<sup>6,7</sup> and women with this condition present late<sup>1,7,8</sup>.

The incidence and mortality vary widely between countries with up to 10-fold difference between high and low risk regions. The high incidence areas include Latin America, sub-Saharan Africa and South-East Asia, while the low incidence areas are Western Europe, North America, the Middle East and China. Regional variations in incidence also occur in these countries<sup>4</sup>.

Cervical cancer is a preventable condition<sup>1</sup>, with epidemiological characteristics similar to that of a sexually transmitted infectious disease<sup>1,7</sup>. There is a strong association between it, sexual contact and human papilloma virus, in particular types 16, 18, 31 and 33<sup>9</sup>. In most studies, HPV detection is up to 96% in high grade squamous intraepithelial lesion and more than 93% in invasive cancer. With high quality molecular assays, up to 99.7% HPV prevalence has been reported in cervical carcinoma worldwide<sup>9</sup>; being a sexually transmitted virus, HPV is extremely common in women of reproductive age. Although prevalence varies, it generally reaches a peak of about 20% in those aged 20-24 years, with a subsequent decline to 3% among women over 30 years<sup>9</sup>.

### ABSTRACT

**Background:** Most women in developing world are at considerable risk of developing cervical cancer because the risk factors are still prevalent, and this situation is further worsened by the fact that, many of these women are poorly informed about the disease and its prevention.

**Objectives of the study:** To determine the risk factors in patients with cervical cancer in Aminu Kano Teaching Hospital, Kano, and suggest ways of reducing these risk factors and incidence of cervical cancer.

**Study design:** A two year descriptive study from 1<sup>st</sup> of January, 2007 to 31<sup>st</sup> of December, 2008, in Aminu Kano Teaching Hospital, Kano. All patients that were admitted into gynaecological ward with cervical cancer were included.

**Results:** There were 133 patients with cervical cancer admitted into the gynaecological ward from 1<sup>st</sup> of January, 2007 to 31<sup>st</sup> of December 2008. Of these 108 case notes were retrieved, giving a retrieval rate of 81%.

The mean age of the patients was 51.7±12.5 with a range of 32-78 years. The peak age incidence was 50-59 years, with majority (85.2%) occurring in patients above 40 years. Majority (44.4%) of the patients were Para 6-10, with a range of 0-17 and mean of 7.7±4.6. Of 108 patients, 77.8% had only Qur'anic/Informal education. The age at first intercourse/marriage ranged from 13-20 years with mean of 14±1, with 85.2% having initiated sexual activity before the age of 15 years. Majority (59.2%) had multiple numbers of marriages that ranged from 1-8 with mean of 2.2±1.6; and 88.8% of the male partners were polygamous with number of wives that ranged from 1-9 with mean of 2.6±1.5.

**Conclusion:** The risk factors for the development of cervical cancer were high in this study. Public enlightenment should be intensified with regards to the risk factors for this disease. Female education should be encouraged to avoid early age at marriage and sexual initiation

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Over 90% of immunocompetent women will have a spontaneous resolution of their HPV infection over a two-year period, thus the vast majority of women do not develop CIN or cervical cancer. This suggests that infection with HPV alone is not sufficient for the development of CIN or cervical cancer<sup>10</sup>. The increased occurrence of cervical cancer has been associated with women with multiple sexual partners, early age at first intercourse, high parity, history of venereal disease and women whose partners have multiple sexual partners<sup>7,11</sup>.

Cigarette smoking is associated with a two-fold increase in the risk of developing preinvasive and invasive cervical cancer<sup>7,11</sup>. High levels of smoked-derived nicotine and cotinine present in the cervical mucus of smokers may act alone or in association with HPV in the development of cervical cancer<sup>12</sup>.

Use of oral contraceptives, increases cervical cancer risk up to four-fold after five or more years among HPV-DNA positive women<sup>12</sup>. Some studies have shown decreased risk of cervical cancer with high intake of vitamins A, C and E, carotenoids and folates, and increased risk with certain micronutrient deficiency such as riboflavin, ascorbic acid and zinc<sup>13</sup>.

It has been shown that women infected with HIV are at increased risk of developing CIN lesion and invasive cervical cancer<sup>14, 15</sup>. Immunological factors have been linked with a risk of developing cervical cancers. These include a shift in an individual from Type 1 cytokines (interleukin 2 and  $\gamma$ -interferon) which are immune-stimulatory to Type 2 cytokine (interleukin 4 and 10) which are immuno-inhibitory<sup>13</sup>.

Most women in the developing world are at considerable risk of developing cancer of the cervix because the risk factors for cervical cancer are still prevalent<sup>6, 7,16</sup>, and this situation is further worsened by the fact that, many of these women are poorly informed about the disease and its

prevention<sup>17</sup>. There is paucity of study on the risk factors for cervical cancer from our environment, this informed the choice of this study, which is aimed to determine the risk factor for cervical cancer in our centre and to suggest ways of reducing it.

### Materials and Methods

This is a two year descriptive study of patients with cervical carcinoma seen at Aminu Kano Teaching Hospital, Kano, Nigeria from 1<sup>st</sup> of January 2007 to 31<sup>st</sup> of December 2008.

The record of gynaecological ward was used to identify the total number of patients admitted with cervical carcinoma over the period of review.

The case notes of these patients were retrieved from the Medical Records Department and analyzed. Information on age, parity, educational status, age at first coitus/ or marriage and number of marriages were obtained. Other information extracted include patient's occupation, previous history of sexually transmitted infections, smoking and contraceptive use and also history of cervical cancer in the co-wife. Also husband's occupation, educational status and number of wives/sexual partners were obtained.

Data obtained was analysed using Epi info version 3.01 statistical software (CDC Atlanta, Georgia, USA). Absolute numbers and simple percentages were used to describe categorical variables. Similarly, quantitative variables were described using measures of central tendency (mean, median) and measures of dispersion (range, standard deviation) as appropriate.

### Results

During the period from 1<sup>st</sup> of January, 2007 to 31<sup>st</sup> December 2008, there were total of 133 patients admitted with carcinoma of the cervix, 108 case notes were retrieved, giving a retrieval rate of 81%. The socio-demographic characteristics are depicted in table 1. The age ranged between 32-78 years, with a mean of  $51.7 \pm 12.5$ . Among the 108, about 14.8% were

under the age of 40 years. The peak age incidence was 50-59 years; 85.2% of the cases occurred in patients above 40 years.

The range of parity was 0-17, with a mean of  $7.7 \pm 4.6$ . Majority (44.4%) of the patients were Para 6-10. Of the 108 patients, only 24 (22.2%) had at least primary or secondary level of education. Majority (77.8%) had only Qur'anic/Informal education.

The age at first intercourse/marriage ranged from 13-20 years with a mean of  $14 \pm 1$ . Majority 92 (85.2%) of the patients initiated sexual activity before the age of 15 years. All (100%) of the patients were married. The number of marriages ranged from 1-8 with a mean of  $2.2 \pm 1.6$ . A large proportion 64 (59.2%) had multiple (two or more) number of marriages as showed in table 2.

Previous history of sexually transmitted infection, smoking, contraceptive use and cancer of the cervix in the co-wife were not obtained in this study.

The characteristic of the male partners is detailed in table 3. About 37% of the male partners were businessmen/traders. Only 32 (29.6%) of the male partners had secondary or tertiary level of formal education. The male partners' number of wives/sexual partners ranged from 1-9, with mean of  $2.6 \pm 1.5$ , with a significant proportion 96 (88.8%) with two or more wives/sexual partners.

### Discussion

Cancer of the cervix with epidemiological characteristics similar to that of a sexually transmitted infectious disease<sup>13</sup> was confirmed in this study in which the high risk sexual behaviours are prevalent. In this review the age range of patients with cervical cancer was between 32-78 years, which is similar to previous report from Kano<sup>2</sup> and comparable to 20-89 years reported by Olutoyin et al in South-Western Nigeria<sup>18</sup>. Majority (85.2%) of the cases in this review occurred in patients above 40 years which is

**TABLE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS ( n=108)**

Parameter	Number	%
<b>(a) Age(years)</b>		
30-39	16	14.8
40-49	28	25.9
50-59	32	29.6
=60	32	29.6
Mean age=51.7±12.5		
<b>(b)Parity</b>		
0	8	7.4
1-5	20	18.5
6-10	48	44.4
=11	32	29.6
Mean parity=7.7±4.6		
<b>(c)Educational status</b>		
Qur`anic/Informal	84	77.8
Primary Level	8	7.4
Secondary Level	16	14.8

**TABLE 2: AGE AT FIRST COITUS AND NUMBER OF MARRIAGES (n=108)**

Variable	Number	%
<b>a. Age at first coitus</b>		
<15	92	85.2
16-19	8	7.4
>20	8	7.4
<b>b. Number of marriages</b>		
1	44	40.8
2-3	48	44.4
=4	16	14.8

**TABLE 3: CHARACTERISTICS OF MALE PARTNERS ( n=108)**

CHARACTERISTICS	Number	%
<b>OCCUPATION</b>		
Farming	16	14.8
Force/Paramilitary	8	7.4
Driving	4	3.7
Business/trading	40	37
Others	40	37
<b>EDUCATIONAL STATUS</b>		
Illiterate	0	0
Islamic/Informal	68	63
Primary level	8	7.4
Secondary level	20	18.5
Tertiary level	12	11.1
<b>NO. OF WIVES/SEX PARTNERS</b>		
1	12	11.1
2-3	88	81.5
>4	8	7.4

similar to 85.8% reported by Olutoyin et al<sup>18</sup>. The peak age incidence in this review of 50-59 years and =60 years is

comparable to 60-69 years reported by Olutoyin et al<sup>18</sup> and Jimoh et al from Ilorin<sup>19</sup>.

The mean age of 51.7 ± 12.5 years in this review is comparable to 47.61 + 11.55 years reported by Sa'adatu in Zaria<sup>20</sup> with similar socio-cultural background<sup>21</sup>, however this is earlier than the mean age at presentation in developed countries<sup>22</sup>. This may be attributed to the earlier age at marriage and thus sexual exposure in this environment<sup>1, 21</sup>. This is supported by the fact that, the age at first intercourse in this review was low, mean of 14 ± 1 years, which is a recognized risk factor for the development of cervical cancer<sup>7,11,23</sup>. This is similar to 14.62 ± 2.65 reported by Sa'adatu et al from Zaria<sup>20</sup> with the same socio-cultural background<sup>21</sup>. This elevated risk associated with early age at first intercourse may be explained by the fact that the immature cervical epithelium especially during the period of adolescence represents an increased susceptibility and vulnerability to oncogenic agents and to sexually transmitted diseases, thereby increasing the risk of developing cervical cancer<sup>23</sup>.

Multiple sex partners is a known risk factor for cervical cancer as reported by earlier studies<sup>11,21,23</sup>, this was confirmed in this study where a large proportion (59.2%) had multiple (two or more) number of marriages, this is comparable to 63.5% reported by Paul et al<sup>7</sup> but higher than 42.85% reported by Sa'adatu et al in Zaria<sup>20</sup>. And there was also a significant proportion of polygamous marriages with 88.8% of male partners in this study with two or more wives/sexual partners. This is similar to 81.63% from Zaria<sup>20</sup>, but higher than 32.5% and 69.9% reported by Paul et al<sup>7</sup> and Jimoh et al in Ilorin<sup>19</sup>. This may be explained by differences in the socio-cultural background in relation to polygamous marriages.

This increased risk associated with multiple sex partners is most likely explained by the elevated risk of

contracting an infectious agent, playing a causal role for the development of cervical neoplasia<sup>23</sup>. Early age at first intercourse which was high in this review as noted above may strengthen this association.

Other known risk factor as documented in earlier studies included high parity<sup>7,11,21,23</sup>, this was confirmed in this review where the mean parity of the patients with cervical cancer was 7.7 ± 4.6. This is comparable to 7.4 ± 3.42 reported by Sa'adatu from Zaria<sup>20</sup>. The high parity in this review may be explained by the low socio-economic status of the patients, which is also a recognized risk factor for the development of cervical cancer<sup>11,21,23</sup>.

Poor medical care, unstable marriages and early age at first intercourse are factors associated with both low socio-economic status and cervical cancer<sup>17,23</sup>

Other risk factors that were reported by earlier studies<sup>11, 13, 21, 23</sup> included cigarette smoking, oral contraceptive use, venereal disease and history of cancer of the cervix in the co-wife. These were not evident in this review; being a retrospective study, there may be a deficiency in clerking patients with cancer of the cervix in terms of epidemiological documentation, an observation that was also noted by Jimoh from Ilorin<sup>19</sup>.

In conclusion, the risk factors for the development of cervical cancer in this study were high, especially the practice of early marriage and early exposure to sex, and also multiple sex partners. Therefore, public enlightenment should be intensified in our community with regard to the risk factors for this disease. Female education should be encouraged to avoid early age at marriage and sexual initiation.

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