Original Article

Sexual behaviour: human papilloma virus and cervical cancer risk among university students in cameroon

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ABSTRACT

AIM To determine sexual risk for Human Papilloma Virus (HPV) infection among students in order to delineate possible points of intervention in Cameroon among the youth in the fight against cervical cancer.

METHODS The study group consisted of 1,166 students aged 16-24 years attending first year studies at the University of Douala-Cameroon. They completed a self-administered questionnaire intended to assess sexual risk for HPV and cervical cancer. High risk was defined as at least one of the following: early sexual activity; history of STIs and HIV testing; multiple partners and/or non-use of condoms; and low level of HPV knowledge and its relationship to cervical cancer.

RESULTS Female students (FS) were younger and more likely to be virgins than male students (MS), (27.2% vs 50.9%, P< 0.0001). FS in the age range 20-22 and MS in the age range 23-24 had contracted STIs the most during the previous three months. A higher proportion of MS than FS reported having had one or more partners during the previous three months. There was a significant difference in condom use between FS and MS (48.2% vs. 61.4%, P< 0.0001). Sex related risk attitudes were significantly associated with the use of condoms. The students demonstrated a low level of HPV related knowledge. All students in the study had no knowledge of the relationship between HPV infection and cervical cancer.

CONCLUSION High sexual risk for HPV and cervical cancer is prevalent among adolescents in Cameroon. Early interventions are required to reduce this risk; and these should include information about the relationship between sexual behaviour, HPV infection and cervical cancer.

Keywords: Cameroon; Gammapapillomavirus; Cancer of Cervix; High-Risk Sex; Sexually Transmitted Diseases; HIV.

INTRODUCTION

Studies on risk factors for pre-cancerous lesions of the uterine cervix have shown strong association with sexual practice. 1-5 There is a consensus that the main risk factor for cervical cancer development is persistent infection with high-risk group Human Papilloma viruses (HPVs); together with other factors like smoking, and reproductive history.
Women with multiple sexual partners and those who start intercourse at an early age are at high risk.

Women with multiple sexual partners are at high risk of cervical cancer because the sexual behaviour of men is an important determinant of Human Papillomavirus (HPV) transmission. 3,6 HPV causes benign and malignant lesions of cutaneous and mucosal epithelial tissues 7 leading to significant morbidity and mortality worldwide. 8-9 Mucosal HPV causes genital warts in men and women and has been linked to cancers of the cervix, vulva, vagina, anus and penis. 10-11 HPVs are classified according to their oncogenic potential into low risk oncogenic HPV types and high risk oncogenic HPV types, the latter being the main cause of cancers and precancerous intraepithelial lesions of the uterine cervix. 12-13

It is possible that the cervical transformation zone is particularly vulnerable to infection between menarche and the age of sixteen, 13-14 thereby increasing the risk of HPV infection in women who start intercourse at an early age. During this phase there are large numbers of undifferentiated cells at the periphery of the metaplasia, especially at the surface of the cervix. It seems that this area is particularly susceptible to HPV infection. There are also indications that there is no secondary immune response to HPV in case of early first intercourse, making the immune response to HPV less efficient. 15-16

The sexual behaviour of men and women is a determining factor in the transmission of oncogenic HPV and the risk of cervical cancer. Therefore, factors that reduce the probability of HPV acquisition or transmission by men and women are likely to reduce the risk of HPV related disease among men and women. 3,6 Education appears important to encourage responsible sexual behaviour in young people. We sought to determine the sexual risk for HPV among students in order to delineate possible points of intervention in Cameroon among the youth in the fight against cervical cancer.

METHODS

High sexual risk for HPV and cervical cancer was defined as at least one of the following:- (a) early sexual activity among the youth (16-24 year age group); (b) history of sexually transmitted infections (STIs) and HIV testing; (c) multiple partners and/or non-use of condoms; and (d) low level of HPV knowledge and its relationship to cervical cancer. Data was collected through a self-administered questionnaire comprising structural and open-ended questions on the foregoing sexual risk factors. The study was performed according to the guidelines for human experimentation in clinical and biomedical research stated by the Cameroon Ministry of Public Health.

The study group consisted of 1,166 students of both sexes aged 16-24 years attending first year studies at the University of Douala-Cameroon. Eligible students were enlisted and the subjects for the study were randomly chosen in a systematic manner. Verbal consent was obtained.

Data were verified for consistency, coded, and computerised. Results are given as mean ± SD. Comparison was done using a two tail Z-test for two proportions. Statistical analysis was conducted using the XLSTAT-Pro software, version 6.1.9. A p value of 0.05 or less was considered statistically significant. Appropriate probabilities were calculated. 18

RESULTS

Of the 1166 students who responded to the questionnaire, female students (FS) were younger and more likely to be virgins than male students (MS), (27.2% vs 50.9%, P< 0.0001) as shown in Table 1.

STIs AND HIV TEST DISTRIBUTION IN PREVIOUS THREE MONTHS ACCORDING TO SEX AND AGE

The correlation analysis between STIs and HIV testing during the previous three months is shown in Figure 1. Positive correlation occurred only to positive responses of MS having an HIV test during the previous three months. The analysis of the graph gave three homogenous groups. The first group was constituted by students with ages ranging 16-19 years. It was characterised by a lower percentage
than the mean for STIs or HIV testing during the previous three months. The second group was constituted by students within the age range 20-22 years. The percentage of students who did not have an STI and did not do an HIV test within the previous three months was higher than the mean. FS of this age range had contracted STIs the most during the previous three months (positive F1 in figure 1) among all the FS. More MS aged 22 years old contracted STIs during the previous three months than those of 20 and 21 years of age (positive F2 in Figure 1). The last group was made up of students of 23-24 years of age. MS of this age range and particularly those aged 24 years had the highest STIs among all the MS during the previous three months. In this group, the percentage of students who did not do an HIV test and FS who were infected during the previous three months was lower than the mean. In

Table 1: Sexual characteristic of cohort and age distribution

<table>
<thead>
<tr>
<th>Sexuality</th>
<th>Male Students</th>
<th>Female Students</th>
<th>Total Students</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>%</td>
<td>Mean Age (SD)</td>
<td>No</td>
</tr>
<tr>
<td>Virgin</td>
<td>129</td>
<td>27.2</td>
<td>19.1 (0.1)</td>
<td>352</td>
</tr>
<tr>
<td>Active</td>
<td>345</td>
<td>72.8</td>
<td>20.5 (0.1)</td>
<td>340</td>
</tr>
<tr>
<td>Total</td>
<td>474</td>
<td>100</td>
<td>20.2 (0.1)</td>
<td>692</td>
</tr>
</tbody>
</table>

Figure 1: Correlation analysis between STI and HIV testing during the previous three months.

The chart represents coordinate variables (positive or negative response) and person (age) for principal components F1 and F2. F1 and F2 gave 88% of the total information of the responses to the questionnaire. F1 gave 75% of the information measuring positive and negative responses of all students for having done an HIV test during the previous three months; positive and negative responses of female students (FS) and only negative responses of male students (MS) for having STI during the previous three months. These parameters are positively correlated. F2 gave 13% of the information link to positive responses of only MS for having STI infection during the previous three months.
the same light, the percentage of students who did not contract STIs was lower than the mean.

NUMBER OF SEXUAL PARTNERS AND CONDOM USE ACCORDING TO SEX

There were gender differences in the number of sexual partners and a significant correlation when comparing the risk attitude of MS and FS having one partner (46.4% vs. 65.6%, P < 0.0001), Table 2. The majority of sexually active FS reported having had one or no sexual partner during the previous three months. A higher proportion of MS reported having had one or more partners during the same period. As regards the frequencies of condom use among youths who experienced sexual intercourse, there was a significant difference in condom use in all acts of sexual intercourse between FS and MS (48.2% vs. 61.4%, P< 0.0001). In this context FS are at higher risk than MS for STIs. When analysing how the youths use condoms, independently of gender, the risk attitude was high and there were differences in risk attitude related to gender. MS used condoms with occasional partners while there was a highly significant difference between FS and MS on the use of condoms with regular partners (40.6% vs. 16.5%, P< 0.0001) and on the use of condoms with all partners (35.9% vs. 64.6%), Table 2. Sex related risk attitudes were significantly associated with the use of condoms during premarital sex.

HPV AND CERVICAL CANCER KNOWLEDGE RELATED TO SEX AND SEXUAL ACTIVITY

In general, the students demonstrated a low level of HPV related knowledge independent of gender and sexual activities (P< 0.0001), Table 3. All students in the study (100%) had no knowledge of the relationship between HPV infection and cervical cancer.

DISCUSSION

There is a high prevalence of HIV infection in Cameroon. 17-19 High levels of sexual activity expose the youth to the risk of HIV and HPV infections, and cervical cancer development. 20 Some studies out of Cameroon have highlighted the negative consequences of STIs on adolescent women and extended families. 21-22 The literature obtained so far in Cameroon is however not definite about such negative consequences and especially for HPV infection and cervical cancer.

This is the first study to assess awareness, knowledge, and beliefs about HPV in Cameroon. The results of this study, carried out among Cameroononian university students attending first year studies, have revealed high risk behaviour. Adolescents are engaging in sexual activity early. As such, prevention campaigns must not be based exclusively on the promotion of condom use, but should aim to stop the decline in age of sexual debut and to reduce the degree of excessive sexual promiscuity. “Abstinence” is a reasonable programme goal for adolescents and should be based on the balance between environmental, contextual factors and individual choices in determining why and how adolescents have sex.

High risk sexual behaviour includes unprotected sex and the number of sexual partners. Our findings indicate that although MS were more likely to use condoms with all partners, while FS used condoms on only a few partners, the students in general did not use condoms consistently. This increases the risk of both HIV and HPV infections. Studies out of Cameroon have indicated that the lack of condom use is often the result of social stigma or lack of knowledge, as well as the inability of women to negotiate the use of condoms with their partners. In Cameroon, more emphasis is placed on the promotion of condoms as either protection against pregnancy or protection against diseases like HPV infection as separate components. 23 In most instances, there is failure to accommodate the changing sexual and reproductive health needs of clients by not becoming more integrated and not adequately recognising the necessity of referral between the different components. It is commonly noted that limited condom discussions between partners are associated with inconsistent use. This suggests that part of the solution to increase the use of condoms lies in the involvement of male partners and working with young people as early as possible on the development of their communication skills in sexual relationships. The importance of early intervention is shown by the cross sectional analysis of HIV-infection and STI during the previous three
months. There is a correlation between age and both STIs and HIV testing. It is therefore clear that there is a great need for the integration of services for young people on reproductive health.

All the students who took part in the study did not know the link between HPV infection and cervical cancer. This result is very important in the context of cervical cancer. In this context, sexual behaviour becomes a determining risk factor. Sexual behaviour needs to be addressed and explored to prevent contact with HPVs and other sexually transmitted diseases (STD), including cervical cancer.

The results of this study also have implications for future HIV prevention programs. Today, there are possibilities to improve immune protection against HPV infection through the use of a preventive vaccine. This should not negate the importance of education in encouraging responsible sexual behaviour in young people.

CONCLUSION

This study suggests that high risk sexual behaviour is prevalent among adolescents in Cameroon. The education of early teens is important not only for the avoidance of HIV and AIDS, but also for prevention
of cervical cancer. This education should include information about the relationship between sexual behaviour, HPV infection and cervical cancer. Adolescents should be targeted with preventive interventions when they are in secondary schools to discourage early initiation of intercourse. This is likely to remain important even when primary prevention of cervical neoplasia through HPV immunisation of populations is effected.

ACKNOWLEDGEMENTS

These results were obtained thanks to the support of AIRES-Sud, a programme from the French Ministry of Foreign and European Affairs and implemented by the Institut de Recherche pour le Développement (IRD-DSF). The authors thank students for their voluntary participation in the study. We would like to acknowledge Mrs Leng Marlyse for providing assistance with statistical analysis and Mr Ewane Leonard for manuscript revision.

FOOTNOTES

Competing interests: Authors declare no competing interests.

Authors’ contributions: All authors were responsible for the conception and design of the study protocol, and approved the final version of the manuscript. In addition KMML conceived the study, participated in the acquisition of data, performed the statistical analysis, and drafted the manuscript; WA and DNR participated in data acquisition; NNA participated in data analysis, statistical analysis and critically read the manuscript.

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