The perception amongst a population of high school students in South Africa about ocular manifestations of HIV/AIDS*

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\begin{abstract}
HIV and AIDS can result in visual impairment, therefore it is important that those who have or at risk of contracting the disease have a basic knowledge of its ocular manifestations, so that they may seek eye care early. This study assessed the perceptions of a sample of senior high school students at the Capricorn district, Limpopo Province, South Africa about the ocular manifestations of HIV/AIDS and its management. Questionnaires were distributed to the students in their classrooms after school hours and upon completion were collected the same day. Data analysis revealed that 27.8\% of the participants agreed that HIV/AIDS can affect the eyes. Another 27.8\% responded that HIV/AIDS could cause dry eyes. Less than a third (31.4\%) indicated that the disease could cause red eyes, 31.5\% and 38.1\% respectively indicated that HIV/AIDS could cause cancer of the eyelids and the eyeball. About half of the respondents (52\%) agreed that the disease could cause swollen eyelids; while about 46\% agreed that vision loss or blindness could occur in HIV/AIDS. Many (65.6\%) indicated that an ophthalmologist or an optometrist should be consulted for HIV/AIDS-related eye problems and only 16.5\% reported that traditional healers could be consulted. Perception about the ocular manifestations of HIV and AIDS is poor among the participants, suggesting a need for awareness campaigns and education. (\textit{S Afr Optom} 2012 \textbf{71}(3) 117-122)

\textbf{Key words:} HIV, AIDS, ocular manifestations of HIV/AIDS.
\end{abstract}

\textbf{Introduction}

Sub-Saharan Africa has just over 10\% of the world’s population, yet is home to more than 60\% of all people living with HIV\textsuperscript{1}. South Africa has a high prevalence of HIV and AIDS and for example, a prevalence of 10.6\% was reported in a peri-urban community population\textsuperscript{2}. In 2008, an estimated 5.7 million South Africans were living with HIV/AIDS\textsuperscript{3}. As a consequence of HIV infection and AIDS,

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opportunistic organisms may gain access into the body including the eyes, causing various diseases. Visual impairment is a public health problem and constitutes an important socioeconomic burden on Sub-Saharan Africa. HIV/AIDS-related eye infections may therefore compound the already high prevalence of visual impairment in the region. Ocular or orbital diseases may be the first manifestations of HIV/AIDS and can be an indicator of previously undiagnosed HIV infection. Therefore, early diagnosis and proper treatment is required to avert unnecessary blindness among HIV/AIDS patients. It is therefore important that those who have the disease or who are at risk of contracting it be aware of both the systemic and ocular implications of the condition.

Ocular complications that occur in about 75-80% of AIDS patients include non-infectious conditions such as retinal microangiography, opportunistic infections, tumours and neuro-ophthalmological lesions. Immune recovery uveitis (a non-infectious inflammation) has also been associated with HIV/AIDS. Opportunistic viral infections such as those of cytomegalovirus (CMV), herpes simplex (HSV), varicella zoster (VZV) and bacterial infections such as those of toxoplasma gondii, mycobacterium and various fungal pathogens have been associated with HIV/AIDS. Opportunistic viral infections such as those of cytomegalovirus (CMV), herpes simplex (HSV), varicella zoster (VZV) and bacterial infections such as those of toxoplasma gondii, mycobacterium and various fungal pathogens have been associated with HIV/AIDS.

Cytomegalovirus retinitis results in blurred vision, visual field loss, light flashes or floaters. Other common opportunistic infections that may affect the eyes include ocular syphilis, tuberculosis (TB) and toxoplasmosis. Early diagnosis and prompt treatment may be sight-saving in patients with such conditions.

AIDS may cause neoplasms such as Kaposi’s sarcoma (which may affect the eyelids and the conjunctiva) and lymphomas. Also ocular surface squamous neoplasia (OSSN) may manifest in AIDS patients. Herpes zoster opthalmicus (HZO) is common among those with the condition and may occur in individuals who appear healthy but are actually infected with HIV. Disorders of HZO include retinal vasculitis, herpetic retinopathy, optic neuritis and uoculomotor palsies. Vesicular lesions of the eyelid, blepharitis and loss of eyelashes as well as trichiasis and cicatrical entropion may also occur in patients with HZO. HIV may cause optic atrophy and diplopia, the latter due to palsies of cranial nerves III, IV, and VI. With such serious ocular manifestations of HIV/AIDS, it is important for those living with the condition and those who are at risk of contracting the disease to have basic knowledge of its ocular manifestations. Those affected should also be aware of who to consult for diagnosis and management.

In 2008, young people worldwide accounted for 45% of new HIV infections, the situation may not be different in South Africa. The country has an elaborate national policy on HIV and AIDS for primary, primary and secondary school students as well as their teachers and inclusion of HIV/AIDS education in the school curricula is part of this policy. The curricula include provision of information on HIV/AIDS, HIV transmission, development of skills necessary for the prevention of HIV transmission as well as management and non-discrimination towards persons with the condition. However, ocular manifestations of the condition were not specifically indicated in the document. The purpose of this study therefore was to evaluate the perception of the high school students about the ocular manifestations of HIV/AIDS.

Methodology

Ethical approval to conduct this study was granted by the University of Limpopo Research and Ethics Committee (MREC/H/42/2008:PG). Permission to conduct the study was also granted by the Department of Education and the 18 principals of schools in which the study was conducted. A document obtained from the provincial Department of Education indicated that there were 371 high schools in the Capricorn district and there were 25,1196 students. Cluster sampling was used to select the 18 high schools included in the study and 3,070 students were systematically selected for the study from the class registers of senior grades (10 to 12). The selected students and their parents or guardians signed the informed consent forms to participate in the study. A questionnaire on demography, basic ocular manifestations of HIV and AIDS, who to consult in case of suspected ocular conditions et cetera were administered to the students over a period of one month. The questionnaires were distributed to the students in their classrooms after school hours and the questions were read to, and clarified with the participants before completion. They were assured of confidentiality and anonymity. The questionnaires were collected the same day upon completion by...
the students. Data was analyzed using the Statistical Packages for Social Sciences (SPSS) computer program version 16.

Results

Two thousand six hundred and fifty nine (2659) of the 3070 selected students completed the questionnaire at the 18 schools; a response rate of 86.6%. Contributory factors for not having greater response rate included absence of some female students during this period due to pregnancy or maternity reasons and some males students went for circumcision. The sample included (46.4%) males and (53.1%) females, others (0.5%) did not indicate their gender. Their ages ranged from 14 to 28 years (Mean 17.82 ± 1.77). Less than a third of the respondents (27.8%) agreed that HIV/AIDS could affect the eyes while 42.8%, 26.7% and 2.7% respectively disagreed, did not know the answer and did not respond to the question. However, most (65.6%) of the respondents agreed that an ophthalmologist or optometrist should be consulted for eye symptoms that are HIV/AIDS-related. Only a few respondents (16.5%) agreed that a traditional healer should be consulted for eye symptoms that were HIV/AIDS-related. The responses to the other questions are shown in the table below. Gender did not influence the responses ($p > 0.05$).

Table 1: Listed questions and the responses of the participants.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Response (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Can HIV/AIDS decrease the risk of eye infections?</td>
<td>40.3</td>
</tr>
<tr>
<td>Can HIV/AIDS cause red eyes?</td>
<td>31.4</td>
</tr>
<tr>
<td>Can HIV/AIDS cause cancer of the eyelids?</td>
<td>31.5</td>
</tr>
<tr>
<td>Can HIV/AIDS cause dry eyes?</td>
<td>27.8</td>
</tr>
<tr>
<td>Can HIV/AIDS infection affect the transparent front of the eye (cornea)?</td>
<td>26.2</td>
</tr>
<tr>
<td>Can cancer developing on the eyeball be due to HIV/AIDS?</td>
<td>38.1</td>
</tr>
<tr>
<td>Can HIV/AIDS infections cause swollen eyelids and discharge from the eyes?</td>
<td>52.0</td>
</tr>
<tr>
<td>Can HIV/AIDS cause persistent gritty (sandy) sensation in the eye?</td>
<td>19.9</td>
</tr>
<tr>
<td>Can HIV/AIDS cause itching and burning sensations in the eye?</td>
<td>26.0</td>
</tr>
<tr>
<td>Can HIV/AIDS cause vision loss (blindness)</td>
<td>46.0</td>
</tr>
<tr>
<td>Can HIV/AIDS related infections cause painful eyes?</td>
<td>42.9</td>
</tr>
</tbody>
</table>
Discussion

According to the United Nations AIDS (UNAIDS) programme on HIV/AIDS and World Health Organization (WHO) report (2008), worldwide young people account for 45% of new HIV infections, presumably because they are more sexually active and are more likely to take risks such as unprotected sexual activity; hence young people were targeted in this study. Also, ocular manifestations of the disease are not specifically mentioned in the schools’ curricula on HIV/AIDS. In view of the high prevalence of HIV/AIDS in the country, the adverse effects of the condition on the eye and non-inclusion of the ocular manifestation of the disease in the educational policy; it was considered of interest to evaluate the awareness and perception of the ocular involvement of HIV/AIDS among high school students

Although, knowledge, awareness, and attitudes towards HIV and AIDS among adolescents and high school students have been reported in many parts of the world including South Africa and ocular manifestations of the condition have been reported in many developing nations including those in Africa, no documented study could be found on ocular manifestations in South Africa. In the endemic areas, such as South Africa, young people may have an idea of ocular manifestations of HIV and AIDS in view of their interaction with people living with the conditions. However, this knowledge may be limited, therefore, there is a need for awareness and educational campaigns against HIV and AIDS that include ocular manifestations of the disease. Although detailed knowledge of ocular complications of the disease is not necessary, it is essential for those infected and those who are at risk of being infected with the disease to know that HIV/AIDS can affect the eyes or cause visual impairment and that early eye examination is important to avert visual impairment.

Limitations of this study include its study design being quantitative study and such studies have their inherent limitations, which may manifest in this study. Such limitations include small population sample which may decrease the possibility of generalization. This may not be the case with this study as a large sample was used. However, another limitation of this type of study is that some participants may respond in a specific manner simply because of awareness of being observed (cited by Walker). This may in a way be the case in this study. In spite of these and other limitations, however, quantitative studies have key roles to play in the development of new knowledge, generating questions and hypotheses that could form the basis for further research. This study is therefore of significance in highlighting the poor awareness of high school students about ocular aspects of HIV/AIDS. Findings could form the basis for further and larger research studies on similar topics, which is critical in the prevention of blindness due to HIV/AIDS.

Less than a third of the respondents in this study understood that HIV/AIDS could affect the eyes. This result is of concern in view of the several HIV/AIDS-related conditions that can affect the eyes and lead to visual impairment and blindness. HIV/AIDS infections itself is a devastating health problems, and it may be unbearable if accompanied by visual impairment and blindness. Therefore, possible ocular manifestation should be prevented among those living with the condition. It is however, a good finding that many of the respondents (65.6%) knew who should be consulted for eye symptoms that are related to HIV/AIDS. Only 16.5% wrongly indicated that traditional healers should be consulted. These findings are obviously not unexpected as many of the respondents were from the rural areas and are known to patronize the traditional healers for many of their ailments.

This suggests that many of the students knew that the medical intervention is needed for HIV/AIDS-related diseases. A patient who has AIDS may complain of red eye, which may be due to iridocyclitis. HIV-infected and AIDS patients may also complain of a chronic, mildly irritated red eye that is resistant to treatment (allergic conjunctivitis), while others may complain of tearing, photophobia, foreign body sensation, dry eye (keratoconjunctivitis sicca) and redness. These may be early signs of ocular involvement; therefore eye care should be sought. However, only a smaller proportion (31.4%) of the respondents in this study agreed that HIV and AIDS-related infections can cause red eyes and fewer agreed that HIV/AIDS-related infections can cause dry eye. Further, only 26.0% agreed that HIV/AIDS can cause itching and burning sensations in the eye (Table 1). These suggest that, if many of these respondents have red eyes, dry eyes, itching or burning sensation that are HIV/AIDS-related, they might not relate such signs to HIV and AIDS. This may cause a delay in
seeking eye examination and may result in possible visual impairment.

Although tumours such as Kaposi’s sarcoma, conjunctival squamous cell dysplasia and neoplasia are associated with HIV/AIDS infection, only a small proportion (38.1%) of the participants in this study agreed that tumours can develop on the eye ball due to HIV/AIDS-related diseases. Also, fewer (31.5%) agreed that HIV/AIDS-related infections can cause cancer of the eyelids (Table 1). Many of the eye involvements such as non-Hodgkin’s lymphomas can predispose the infected individuals to cortical visual loss; however, less than half (46.0%) of the respondents in the present study agreed that HIV/AIDS can cause visual impairment. Above-mentioned tumours if not diagnosed and treated earlier could result in enucleation (removal of the eyeball) or exenteration (removal of the eyeball and orbital contents due to intraocular and orbital extension of the recurrent tumours).

Although herpes zoster ophthalmicus due to HIV and AIDS may cause severe pain, less than half (42.9%) of the respondents agreed that HIV/AIDS-related infections could cause painful eyes. Responses to other questions such as whether AIDS can affect the cornea, possible gritty sensation, itching and burning sensation in the eye were also poor (Table 1). No gender differences in responses to the questions were observed in this study (p > 0.05) and this was consistent with other survey studies among youths on HIV and AIDS.

The poor responses to questions on ocular manifestations of HIV and AIDS in this study contrasts sharply with the responses to questions on knowledge about HIV and AIDS in the same sample population, suggesting the need for an appropriate awareness campaign about HIV/AIDS and the eyes among South African adolescents and youths. Significant improvement in the knowledge of HIV/AIDS following education programmes for students have been reported. It is therefore, recommended that information on ocular manifestations of HIV/AIDS and who to consult for eye-related aspects of the diseases should be included in AIDS awareness or health promotion campaigns. Such intervention could be in the form of media education programmes and inclusion in school curricular.

References

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