

**ORAL-HEALTH-RELATED QUALITY OF LIFE AND ORAL HEALTH
NEEDS OF ADOLESCENTS LIVING WITH HIV IN JOHANNESBURG**

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ABSTRACT

Introduction: The reported high burden of oral diseases among HIV infected adolescents raises concerns about their Oral Health-Related Quality of Life (OHRQoL). OHRQoL is described as the effect of oral conditions on the overall functioning and wellbeing of individuals and it is influenced by shared sociocultural and economic contexts. Consequently, identifying the factors influencing OHRQoL in the African setting is important to inform the provision of responsive oral health services that ensures better wellbeing of adolescents. This proposition is against the fact that the existing OHRQoL assessment tools for children and adolescents have been conceptualised in non-African settings. Consequently, these may not be applicable in an African setting given the contextual differences. Additionally, there are inconsistent reports on the prevalence of oral conditions and their associated factors among adolescents living with HIV (ALHIV). The inconsistencies may hinder the development of clear guidelines on the prevention and treatment of oral conditions among ALHIV. This study, therefore, describes the OHRQoL and oral health needs of HIV infected and undiagnosed adolescents in Johannesburg using a contextually appropriate tool.

Methods: The overall PhD study approach was a sequential mixed-method combining both qualitative and quantitative components. The qualitative component was used to generate prevailing perceptions and experiences of OHRQoL. The findings of the qualitative component were used to augment an existing OHRQoL measurement tool developed in a different context. Further, the psychometric properties of the resulting locally appropriate OHRQoL tool was assessed and the adjusted tool was used to measure the oral-health-related quality of life outcomes and their determinants among the study participants using a quantitative research approach.

A part of the quantitative component assessed the prevalence of oral conditions and the impacts of the oral conditions in both groups of the adolescents (consisting of HIV infected and undiagnosed adolescents). Decayed Teeth (DT), Decayed Missing and Filled Teeth (DMFT) and Oral HIV/AIDS Research Alliance (OHARA) case definitions were used for caries examination and reporting of the oral mucosal lesions. The OHRQoL outcomes were measured with our modified Child Oral Health Impact Profile tool.

An epidemiological update of the oral lesions' pattern among ALHIV was done as well using the DT, DMFT and OHARA indices. Data analyses were structured by the study main outcomes; chi-squared tests were performed to determine the associations between variables; and multiple logistic regressions were used to identify associated factors after adjusting for confounding exposure variables. In addition, Cronbach's alpha tests, exploratory and confirmatory analysis were conducted for the validity measurement and the psychometric properties assessment of the modified tool.

Results: Eight themes classified into three levels were identified by the qualitative exploration of the adolescents' perception of OHRQoL. The three levels were at the individual-level, external and social level. The specific eight themes included a) oral health awareness, b) felt oral symptoms, c) impaired oral functioning, d) coping e) access to dental facilities, f) experiences of using health services g) social interaction and h) self-stigmatisation. These themes were appropriately incorporated into the existing Child Oral Health Impact (COHIP) tool modified for the current setting.

From the epidemiological update of oral conditions among ALHIV (n=407) the overall prevalence of dental caries was 56.76% (n=231) with a mean DT score of 2.0 (SD 2.48) and a mean DMFT score of 2.65 (SD 3.01). The prevalence of oral mucosal lesions (OML) was 22%, with linear gingival erythema accounting for most of the lesions at 13.8%.

Dental caries prevalence was significantly associated with the HIV clinical markers (HIV RNA viral loads > 1000 copies/ml; CD4 cell counts less than 200 count cells/mm³ as well as WHO staging III, IV). Among ALHIV, the prevalence of dental caries was directly related to the presence of oral mucosal lesions (p<0.05). Multiple logistic regression modelling showed that dental caries experience (DMFT>0), age category 13-15 years, WHO staging of IV and viral load > than 1000 copies/ml significantly predicted the outcome of oral lesions (p<0.05). The odds of developing dental caries was also 1.5 times more among ALHIV who brush their teeth less frequently and those who reported a sugary diet.

In the comparative phase of the study, a total of 504 adolescents recruited from a HIV Wellness Site (n=226) and School Sites with HIV undiagnosed adolescents (n= 278) were included in the study. The overall mean decayed teeth for permanent dentition was 1.6(SD 1.99) and caries prevalence was 62.2 % (n=309) among all adolescents. The overall M-COHIP score was 59.6(SD:18.2).

The overall modified COHIP scores for those in schools were higher [62.88(SD:1.08)] when compared to that of ALHIV [55.54(SD:1.20)] recruited from the HIV Wellness Site. The poor M-COHIP scores were associated with reporting toothache, having active decay, poor oral health-self-rating, and being selected from the school site, ($p<0.005$). The main factors influencing OHRQoL followed an existing conceptual framework and were at individual-level: oral mucosal problems, children perceptions and awareness; and at external level including factors such as dental facility access and socioeconomic factors.

Conclusion: The perceptions and experiences of OHRQoL among ALHIV in Johannesburg were influenced by a combination of self-perceptions and social connections, together with the state of their structural environment and biological wellbeing. The participants placed high value on the importance of coping, symptom endurance and dental facility service experiences in determining OHRQoL.

There is high prevalence of dental caries and oral mucosal lesions among ALHIV in Johannesburg. The reported prevalence was associated with high HIV RNA viral loads, low CD4 cell count and high WHO staging of HIV disease. Additionally, caries experience contributed to the prevalence of oral mucosal lesions. Our study acknowledges the protective effect of HIV treatment and positive oral health practices on the presence of oral conditions among ALHIV in Johannesburg.

The modified oral-health-related quality of life tool displayed acceptable initial reliability and validity. The adolescents' OHRQoL scores were related to the high untreated-caries, toothache reports, poor self-rated oral health and being in schools.

In all, this PhD suggests an association between adolescents' OHRQoL and their individual-level factors such as perception, oral problems, and environmental determinants (such as socioeconomic and dental facility access factors). More studies may be needed to further assess the new sub-scales among other South African sub-groups particularly the adolescents in rural areas given the urban focus of this PhD. These findings may be relevant in improving oral health services in meeting adolescents' oral health needs.

Keywords: oral health; oral health-related quality of life; factors; children; adolescent, Africa.