Are Oral Health Conditions Associated with Children's School Performance and School Attendance in the Kingdom of Bahrain - A Life Course Approach

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Abstract : Background: The link between oral health conditions and school performance and attendance remain unclear among Middle Eastern children. The association has been studied extensively in the Western region; however, several concerns have been raised regarding the reliability and validity of measures, low quality of studies, inadequate inclusion of potential confounders, and the lack of a conceptual framework. These limitations have meant that, to date, there has been no detailed understanding of the association or of the key social, clinical, behavioural and parental factors which may impact the association. Aim: To examine the association between oral health conditions and children's school performance and attendance at Grade 2 in Muharraq city in the Kingdom of Bahrain using Heilmann et al.'s (2015) life course framework for oral health. Objectives: To (1) describe the prevalence of oral health conditions among 7-8 years old schoolchildren in the city of Muharraq; (2) analyse the social, biological, behavioural, and parental pathways that link early and current life exposures with children's current oral health status; (3) examine the association between oral health conditions and school performance and attendance among schoolchildren; (4) explore the early and current life course social, biological, behavioural and parental factors associated with children's school outcomes. Design: A time-ordered-cross-sectional study was conducted with 466 schoolchildren aged 7-8 years and their parents from Muharraq city in KoB. Data were collected through parents' self-administered questionnaires, children's face-face interviews, and dental clinical examinations. Outcome variables, including school performance and school attendance data, were obtained from the parents and school records. The data were analysed using structural equation modelling (SEM). Results: Dental caries, the consequence of dental caries (PUFA/pufa), and enamel developmental defects (EDD) prevalence were 93.4%, 25.7%, and 17.2%, respectively. The findings from the SEM showed that children born in families with high SES were less likely to suffer from dentine dental caries (β= -0.248) and more likely to earn high school performance (β= 0.136) at 7-8 years of age in Muharraq. From the current life course of children, the dental plaque was associated significantly and directly with enamel caries (β= 0.094), dentine caries (β= 0.364), treated teeth (filled or extracted because of dental caries) (β= 0.121), and indirectly associated with dental pain (β= 0.057). Further, dentine dental caries was associated significantly and directly with low school performance (β= -0.155). At the same time, the dental plaque was indirectly associated with low school performance via dental caries ($\beta = -0.044$). Conversely, treated teeth were associated directly with high school performance (β= 0.100). Notably, none of the OHCs, biological, SES, behavioural, or parental conditions was related to school attendance in children. Conclusion: The life course approach was adequate to examine the role of OHCs on children's school performance and attendance. Birth and current (7-8-year-olds) social factors were significant predictors of poor OH and poor school performance.

Keywords : dental caries, life course, Bahrain, school outcomes