

Abstract

A school based, cross sectional study was conducted to assess the relationship between socioeconomic inequalities and oral health among 15-years-old adolescent school children in the Colombo District. Stratified cluster sampling technique was used to select the sample of 1225 adolescents from government, private and international schools. Data were collected by self-administered parental and student questionnaires and a clinical examination. An array of 17 socioeconomic indicators was used to categorize adolescents into different socioeconomic groups to assess socioeconomic inequalities pertaining to 14 oral health indicators. Dental caries was assessed by the DMFS and DMFT indices; oral hygiene status was assessed by the OHI-S, and gingival health status was assessed by the gingival index (GI). A validated Sinhala translation of a modified version of OIDP scale was used to assess perceived oral impacts of the adolescents.

Adolescents were categorized into heterogeneous socioeconomic groups by various socioeconomic indicators used for the present study. There was a very good agreement between parental and adolescent respondents on parental occupation. *Kappa* (95% CI) values ranged from 0.85(0.82-0.87) to 0.87 (0.85-0.90) for the fathers' occupation and 0.85(0.81-0.87) to 0.86 (0.83-0.89) for the mothers' occupation. There was a significant relationship between socioeconomic inequalities and oral health among 15-years-old adolescent school children in the Colombo District. An inverse graded relationship was demonstrated between oral ill health with regards to dental caries assessed by DMFS/DMFT and socioeconomic status among adolescents using an array of socioeconomic indicators except mother's occupation. The magnitude of the graded relationship between DMFS/DMFT and hierarchical socioeconomic indicators were measured by computing slope indices (SII), concentration indices (CI) and Index of Excess Morbidity. All unadjusted (crude) SII were positive and statistically significant thus indicating an increase in DMFS/DMFT for an unit change from highest to lowest ranking of each socioeconomic indicator with hierarchical ordering.

The unadjusted, crude concentration indices were -0.1092 and -0.0796 for DMFS and DMFT respectively, depicting pro-poor inequality in dental caries among adolescents in the Colombo district.

D 1614

The total indices of excess morbidity were positive for DMFS >6.15, and DMFT > 3.5 ranging from 89.1% and 69.6% (father's education) to 19.5% and 23.1% (perceived material deprivation) respectively, thus demonstrating a concentration of excess morbidity due to dental caries among the rest compared to the highest level, pertaining to each socioeconomic indicator. Overall slope indices of inequality and indices of excess morbidity provided a consistent pattern of magnitudes of the graded relationship between DMFS/DMFT and socioeconomic indicators. Moreover as evident from the adjusted odds ratios, ethnicity, family affluence scale, combined levels of parental occupation, household monthly income, sibling index and perceived meaningful dimension "home provides a happy life" were significantly associated with DMFS scores at various levels of combinations.

Adolescents whose parents had higher levels of education, perceived not to/rarely to be materially deprived, lived in un crowded homes were more likely to have good oral hygiene status and gingival condition than adolescents whose parents had lower level of education, perceived often to be materially deprived and lived in crowded homes. In addition lower the numbers of siblings better the oral hygiene status among adolescents. There was an inverse graded relationship between perceived oral impacts assessed by OIDP scale scores and socioeconomic status among adolescents assessed by an array of socioeconomic indicators except mother's occupation thus resembling the graded relationship of dental caries. As evident from the adjusted odds ratios gender, family affluence scale and perceived meaningful dimensions of home: "*home provided a happy life*" had the highest association with OIDP scores.

Overall higher the socioeconomic status of adolescents they were more likely to be unaware of oral disease, perceived no oral symptoms, perceive their oral health status to be good and not to perceive a need for dental care compared to adolescents from lower socioeconomic backgrounds. The adolescents whose parents' level of education was higher, living in un crowded homes with high purchasing powers (household income and expenditure) were more likely to brush their teeth twice or more times a day than adolescents whose parents' level of education was lower, living in crowded homes with low purchasing powers.

Moreover, adolescents whose mother or both parents were professionals, managers or upper level business owners with higher levels of education and perceived their homes provided a happy life were more likely to practice prudent dietary pattern than their less affluent counterparts. Socioeconomic differences were also evident in utilization of dental services except for sibling index in an intriguing way. Overall higher the socioeconomic status of adolescents they were less likely to use dental services within the preceding year compared to adolescents from lower socioeconomic backgrounds.

Most of the correlations among the array of socioeconomic indicators used in the present study were moderate to low, thus indicating that they are not being interchangeable. According to the overall performances of individual, unadjusted socioeconomic indicators, maximum and combined parental levels of education and perceived material deprivation were the indicators which were associated with a wide range of oral health outcomes. Mother's occupation was associated with least number of oral health outcomes. Overall, all socioeconomic indicators were not associated with all oral health outcomes similarly; detection of relationships between socioeconomic inequalities and oral health was both specific to the selected socioeconomic indicator and oral health outcome.

Moreover modeling of multiple indicators of socioeconomic status by appropriate statistical models enhance the understanding of the graded relationship between socioeconomic status and two main oral health outcomes dental caries and oral impacts. As evident from the adjusted odds ratios, family affluence scale, sibling index and perceived meaningful dimension: "home provides a happy life" were significantly associated with OIDP scores as well as DMFS scores. The family affluence scale emerged as the single most, robust and useful socioeconomic indicator for oral health research among adolescents in Sri Lanka. The independent influence of ethnicity on DMFS scores and gender on OIDP scores should be considered as an important additional dimension when assessing the relationship between socioeconomic inequalities and oral health among adolescents. In conclusion present study provides the first empirical investigation into the relationship between socioeconomic inequalities and oral health in Sri Lanka. The findings of the present study will not only enhance the understanding of the relationship between socioeconomic inequalities and oral health but could be used for advocacy.