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The Role of Area Deprivation in Explaining Ethnic Inequalities in Adult Oral Health in England

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Background: The circumstances of the area where people live may affect their health and ethnic minority groups are often overrepresented in deprived areas. This study explored ethnic inequalities in adult oral health and the contribution of area deprivation to explain such inequalities. ***Methods***: Data from 15667 adults across 8 ethnicities (White British, Irish, Black Caribbean, Black African, Indian, Pakistani, Bangladeshi, Chinese) in the Health Survey for England 2010/2011 were analysed. Oral health was indicated by having a non-functional dentition, poor self-rated oral health and oral impacts on daily activities. Survey logistic regression and the Blinder-Oaxaca decomposition method were used. ***Results***: There were ethnic inequalities in the non-functional dentition, but not in self-rated oral health or oral impacts. Compared to White British adults (19.7%, 95% CI: 18.9, 20.6), a non-functional dentition was more common in Irish (33.1%, 95% CI: 25.9, 41.2) and less common in Black Caribbean (14.9%, 95% CI: 9.9, 21.7), Black African (6.9%, 95% CI: 3.9, 11.9), Indian (10.5%, 95% CI: 6.3, 17.2), Pakistani (7.2%, 95% CI: 4.5, 11.5), Bangladeshi (12.7%, 95% CI: 4.3, 32.3) and Chinese (2.2%, 95% CI: 0.6, 7.9) adults. In decomposition analysis, observed population characteristics explained over half of the ethnic inequalities in the non-functional dentition. Age, area deprivation and SEP were the main contributors, although results varied by ethnicity. ***Conclusion***: Ethnic inequalities in adult oral health varied according to oral health measure and ethnicity. Area deprivation and SEP contributed to, but did not fully, explain such inequalities.

Keywords*: Oral health, ethnic groups, health status disparities, tooth loss, social determinants of health*

Introduction

In England, ethnic oral health inequalities among adults vary according to the outcome assessed and do not always favour the White population. Data from the 2009 Adult Dental Health Survey showed that Indian and Pakistani/Bangladeshi adults were less likely to have had dental fillings, extractions or a non-functional dentition than White adults, after adjusting for socio demographic and behavioural factors. However, no differences were noted between Black and White adults (Arora *et al.*, 2016). Other national data showed that Indian, Pakistani, Bangladeshi and Chinese adults were less likely to be edentulous than White British adults after adjusting for sociodemographic factors. Also, Irish and Black Caribbean adults were more likely, while Bangladeshi adults were less likely to have toothache (Delgado-Angulo *et al.*, 2019).

Two common explanations for oral health ethnic inequalities are socioeconomic and behavioural factors (Bastos *et al.*, 2018). However, they explain only a small part of the observed differences between ethnic groups (Celeste *et al.*, 2013; Nazer and Sabbah, 2018), suggesting other factors may underlie disparities. Structural factors and systemic racism are now widely debated as perpetuating causes of ethnic health inequalities (Delgado and Stefancic, 2017; Ford and Airhihenbuwa, 2010). Racism is associated with poorer health, mainly through inequalities in power, prestige, freedom, neighbourhood conditions and access to health services (Phelan and Link, 2015). Within that context, the present study focuses on the role of the living area (neighbourhood conditions) to explain ethnic inequalities in adult oral health.

The circumstances of the area where people live may affect their health independently of individual socioeconomic position (SEP) (Diez Roux, 2016; Phelan and Link, 2015). Ethnic minority groups are commonly overrepresented in deprived areas, which are characterised by higher levels of disorder and crime as well as poor physical environment attributes such as low quality and quantity of leisure facilities; transport, housing and food shopping opportunities; and community and health services (Diez Roux and Mair, 2010; Macintyre and Ellaway, 2009). This unequal spatial separation, into deprived areas of ethnic minority people from the majority white population, contributes to and exacerbates existent ethnic health inequalities (White *et al.*, 2012). Whilst a few previous studies have reported associations between area deprivation and poor oral health (Bower *et al.*, 2007; Turrell *et al.*, 2007), none has explored the relationship between area disadvantage and oral health among ethnic minority groups. Given the different features of the physical and social environments where ethnic groups reside, contextual neighbourhood characteristics, including area deprivation, could contribute to ethnic oral health inequalities. The aims of this study were to explore ethnic inequalities in adult oral health and the contribution of area deprivation to explaining such inequalities.

Methods

Study population

This study used data from the Health Survey England (HSE), a series of surveys designed to monitor trends in

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