Journal of Dentistry 44 (2016) 50–56

Contents lists available at ScienceDirect

Journal of Dentistry

journal homepage: www.intl.elsevierhealth.com/journals/jden

Social position, social ties and adult's oral health: 13 year cohort study

Mario Vianna Vettore[a,*], Eduardo Faerstein[b], Sarah Ruth Baker[a]

[a] Unit of Dental Public Health, School of Clinical Dentistry, University of Sheffield, 19 Claremont Crescent, Sheffield S10 2TA, United Kingdom
[b] Department of Epidemiology, Institute of Social Medicine, State University of Rio de Janeiro, Pavilhão João Lyra Filho, 7° andar blocos D e E, e 6° andar bloco E., Rua São Francisco Xavier, 524—Maracanã, Rio de Janeiro CEP 20550-013, Brazil

ARTICLE INFO

Article history:
Received 10 July 2015
Received in revised form 1 November 2015
Accepted 3 December 2015

Keywords:
Social determinants of health
Social support
Social networks
Longitudinal studies
Tooth loss
Structural equation modelling

ABSTRACT

Objectives: This study explored different pathways by which social position and social ties influence adult's oral health over a 13-year period.
Methods: A cohort investigation (Pro-Saúde Study) was conducted of non-faculty civil servants at a university in Rio de Janeiro, Brazil ($N = 1613$). Baseline data collected in 1999 included age, social position, social ties, and access to dental care. Psychological factors and smoking were assessed in 2001, whereas tooth loss and self-rated oral health (SROH) were collected in 2012. A hypothesised model exploring different direct and indirect pathways was developed and tested using structural equation modelling.
Results: The model was a good fit to the data and accounted for 40% and 27% of the variance in tooth loss and SROH, respectively. A greater social position was linked to more social ties ($\beta = 0.31$), health insurance ($\beta = 0.48$), low psychological distress ($\beta = 0.07$), less smoking ($\beta = -0.21$), more regular dental visiting ($\beta = 0.30$), less tooth loss ($\beta = -0.44$) and better SROH ($\beta = -0.25$) over time. Social position ($\beta = 0.0005$) and social ties ($\beta = -0.0015$) were linked indirectly with psychological distress, smoking and tooth loss. Social position was linked indirectly with social ties, psychological distress and SROH ($\beta = -0.0071$).
Conclusions: Poor social position and weak social ties were important predictors for tooth loss and poor SROH in adults over the 13-year period. Direct and indirect pathways via psychological factors and smoking on the aforementioned relationships were identified, suggesting different areas of intervention to promote adults' oral health.
Clinical significance: Adult's oral health is influenced by social conditions through direct and indirect pathways, including via psychological factors and smoking.

1. Introduction

A large body of evidence suggests the role of unfavourable socio-economic conditions and weak social ties on a range of oral health outcomes. However, previous research on social predictors of oral health has largely been supported by cross-sectional studies and few studies have examined potential pathways by which these relationships may occur [1–3].

Robust findings from epidemiologic research on social determinants of oral health are underpinned by the so-called "risk factor approach" through different statistical modelling techniques [3]. Although such approach has been useful in identifying independent risk factors for oral conditions, empirical studies on the explanatory theories of social determinants of oral health remain scarce [1].

The life-course perspective is considered the most comprehensive explanation to understand the influence of social conditions on health across the lifespan [4]. Life-course epidemiology acknowledges that health inequalities result from the interconnection of material, behavioural and psychosocial factors over time [1]. However, life-course studies applied to oral health predominantly examined children's and young adult's oral health across socioeconomic trajectory groups using statistical modelling [5–7]. Thus, the resulting potential of the life-course approach in clarifying the mediating factors and mechanisms between social factors and oral health through behavioural and psychological pathways remains untapped.

Different forms of individual social relationships such as friendship and family social ties have been suggested to play a critical role in shaping people's oral health over time [8–10]. Individual social ties refer to the extent and quality of social interactions represented by one's social network and social support [11]. Social network and social support are interconnected terms since different types of social support are embedded within an individual's social networks, which are sources of mutual social

* Corresponding author.
E-mail addresses: m.vettore@sheffield.ac.uk (M.V. Vettore), efaerstein@gmail.com (E. Faerstein), s.r.baker@sheffield.ac.uk (S.R. Baker).

http://dx.doi.org/10.1016/j.jdent.2015.12.004
0300-5712/

support [12]. Weak social ties have been associated with poor health-related behaviours and psychological distress, which are considered the potential mechanisms whereby health problems can accrue from poor social relationships [13,14].

The understanding of the underlying mechanisms on the relationship between social characteristics and oral health throughout adult life is unclear and requires further investigation. The objective of this study was to develop and test a theoretical model investigating the direct and indirect (mediated) pathways between behavioural, psychological and access to dental care by which social position and social ties influence adult's oral health over a 13-year period.

2. Methods

2.1. Cohort design and participants

The Pro-Saúde Study was a prospective cohort study involving non-faculty civil servants from university campuses in the state of Rio de Janeiro, Brazil. Baseline collection was carried out in 1999 involving 4030 adults (53.6% females) aged 22–67 years (response rate = 90.4%). The cohort was followed and 3574 (response rate = 80.2%) and 3058 (response rate = 68.6%) participants were re-assessed in 2001 and 2012, respectively. All technical and administrative permanent staffs were included. Workers on leave of absence for non-medical reasons, those transferred to other institutions and participants with missing values for variables were excluded. This resulted in a final sample of 1613 participants (see online Supplementary Appendix 1).

2.2. Ethics

The project was approved by the Research Ethics Committee of the Pedro Ernesto Teaching Hospital (Hospital Universit ário Pedro Ernesto), Rio de Janeiro, Brazil.

2.3. Development of a theoretical model

A hypothesised model incorporating possible pathways on the relationship between socio-economic position, social ties and oral health in adults has been conceptualized, developed and tested considering three dimensions: psychological (stress), behavioural (smoking) and access to dental care (health insurance and frequency of dentist visits) [1,11,15] (Fig. 1). The mechanisms are suggested to operate through adjacent levels. For example, higher social position and more social ties would directly predict access to dental care (having health insurance, more frequent dental visiting) and behaviour (no smoking), lower stress (psychological distress and work stress), and better oral health (less tooth loss and better self-rated oral health). In addition, social position and social ties would predict oral health with complex, direct and indirect relationships between non-adjacent dimensions.

2.4. Measures

Self-administered questionnaires filled out in the workplace were used to collect data. For testing the hypothesised model, social position, social ties, were latent variables and the remainder observed variables.

2.5. Social position

Social position was a latent variable measured by three indicators in 1999: property status (1 = rented/loaned/borrowed or 2 = owner (fully paid/mortgage), education (1 = ≤10 years, 2 = 11–15 years, 3 = ≥16 years) as number of concluded years at school, and per capita monthly income (1 = <3 Brazilian minimal wages, 2 = 3–6 BM Wages, 3 = >6 BMW) considering 1 BMW = US $57.17 in 1999. A higher score for this latent variable indicated better social position.

2.6. Social ties

Social ties was a latent variable measured by three indicators in 1999: the 19-item perceived social support questionnaire comprises five dimensions of functional social support: material, affective, emotional, positive social interaction and information [16]. A higher score indicates greater perceived social support [17,18]. Social network was collected by means of the Medical Outcomes Study (MOS) questionnaire [19].

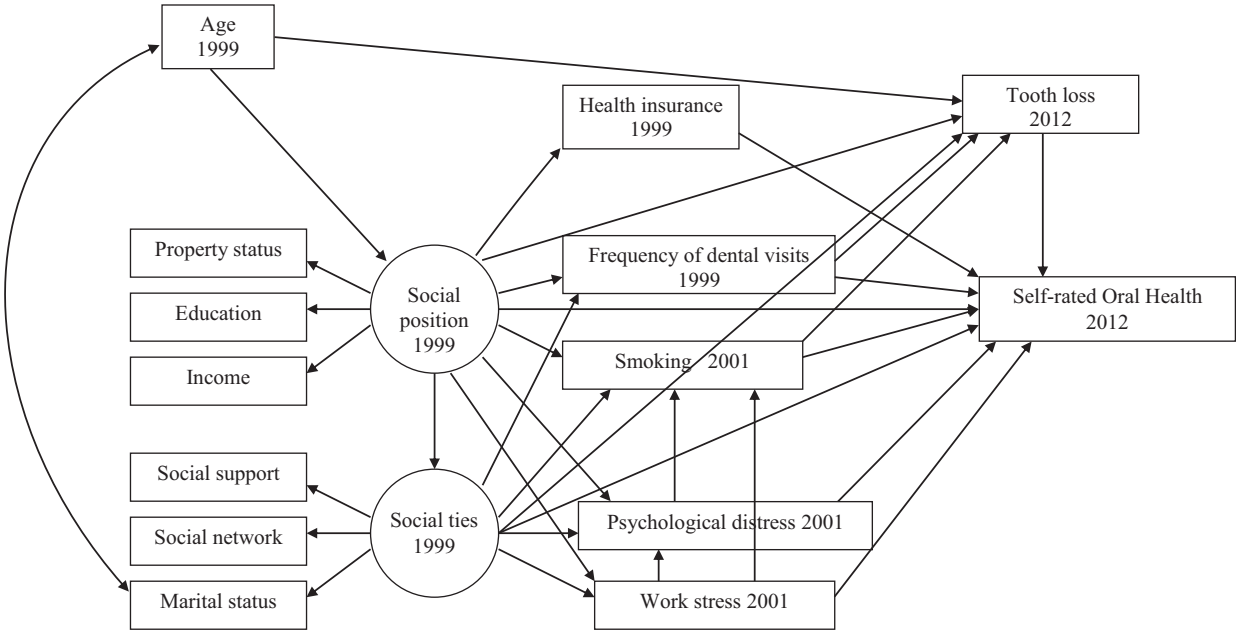

Fig. 1. Full hypothesised model. Arrows indicate hypothesised direct pathways between variables. Latent variables are in ellipses, measured variables in rectangles, and error terms in circles.