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Association between perceived oral and general health

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ABSTRACT

Objectives: The aim of this study was to determine the magnitude of the association between perceived oral and general health-related quality of life (O/HRQoL) in the German general population and to compare it with the correlation of both constructs in dental patients.
Methods: OHRQoL was assessed using the OHIP-49 and HRQoL using the SF-36 in a sample ($N = 811$) representative of the adult general population of Germany (age: 18–99 years), and in a sample ($N = 313$) of consecutive adult dental patients at least 18 years of age seeking prosthodontic care or attending their annual checkup. Correlation between OHRQoL and HRQoL was computed using structural equation modelling-based confirmatory factor analysis and path analysis. Based on the correlation coefficients, the coefficients of determination (r^2) were calculated.
Results: Correlation between OHRQoL and HRQoL after partialling out effects of age, gender and level of depression in general population subjects was rho = 0.28 resulting in an explanation of the variance of HRQoL by OHRQoL of 7.8%. In dental patients the correlation coefficient was somewhat lower (rho = 0.24) corresponding to an explanation of the variance of HRQoL by OHRQoL of 5.6%. Difference between correlation coefficients was not significant ($p = 0.514$).
Conclusion: Our findings provide evidence for the inseparable, intertwined relationship between perceived oral and general health.

1. Introduction

Dentists want to improve the health of their patients, and they do this by improving oral health. Therefore, the relationship between oral health and health in general is of considerable interest to the dental community. Most importantly, the "contribution" of oral to general health is of relevance, assuming that a change in health by intervening on impaired oral health is the most practical goal for dental health professionals. Oral and general health are substantially connected, but only a few studies have investigated this relationship.

Subjective perceptions of health and outcomes of interventions have gained continuously increasing relevance in health care.[1,2] Consequently, even if the assessment of the relationship between oral and general health can be approached from different perspectives, the subjective, patient-perceived side of the interaction between oral and

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general health is of increasing importance. The central question is how important is oral health to patients when compared to ''non-oral'' health?

Methodological techniques to answer this question differ, but one commonly used approach assesses in a correlation analysis how much of the information in the target construct, i.e., global health, can be explained by the information contained in the other construct of interest, i.e., oral health. By determining what information both constructs share the upper limit for a contribution of oral health on general health can be determined (keeping in mind that not all shared variance is causal and accessible to intervention). To operationalize the constructs perceived oral and general health, oral health-related quality of life (OHRQoL) and general health-related quality of life (HRQoL) instruments are used most frequently and questionnaires such as the SF-36 versions for HRQoL[3,4] and the OHIP versions for OHRQoL[5,6] are applied for assessment. Results showed that perceived oral and general health are substantially connected. In individuals attending general dental practices in Germany and using short HRQoL and OHRQoL instruments, for OHIP-14 scores a correlation of 0.31–0.32 with SF-12 scores was observed explaining about 10% of the information contained in HRQoL.[7] How patients with oral diseases perceive the connection between oral and general health may differ from subjects without oral diseases and data are lacking for the general population.

The magnitude of the correlation depends also on the analytic approach. How the constructs OHRQoL and HRQoL are measured is critical. Validity and reliability of construct assessments are increased with unabbreviated instruments. Measurement reliability can further be improved with modelling the individual QoL instrument items and the corresponding measurement errors directly in the analysis instead of using instrument summary scores.[8]

The aim of this study was to determine the magnitude of association between perceived oral and general health assessed with the OHIP-49 and SF-36 in the German general population using structural equation modelling-based confirmatory factor analysis, path analysis and to compare this with the correlation of both constructs in dental patients.

2. Methods

2.1. Subjects, study design and setting

In this cross-sectional study two different populations were included. One sample (N = 811) representative for the adult general population of Germany (age: 18–99 years) was drawn using a quota approach with a two times oversampling of subjects at the age of 40 years or older. This sample was selected with the assistance of a demographic consulting company (IM-Leipzig, Leipzig, Germany). The entire country was separated into sample areas representing different regions. Once a sample area was randomly selected, subjects were identified by the characteristics age and gender. Quota sampling was based on the data of the Federal Statistical Office of Germany[9] for the demographic structure of Germany in 2004. Number of contacts and participation rates were not recorded. We considered these subjects as representative for the adult German population. In addition, we studied ''typical'' dental patients, i.e., patients with a variety of oral concerns related to their teeth and dentures. We recruited a consecutive sample (N = 313) of adult dental patients at least 18 years of age seeking treatment or attending their annual checkup at the Department of Prosthodontics and Materials Science, School of Dentistry, University of Leipzig from January through July 2007. Exclusion criterion was insufficient knowledge of the German language. All information was collected using personally administered questionnaires.

The study was approved by the Institutional Review Board of the School of Medicine, University of Leipzig (Reg.-No. 063-2007). All subjects were informed about content and aim of the study and signed written informed consent.

2.2. Assessment of demographic and clinical characteristics

Demographic characteristics comprised age and gender of the participants. Characteristics of oral health (number of teeth, denture status, global assessment of perceived oral health status) and general health (number of health-care consultations during previous year except dental visits, number of currently taken medications, weeks since last stay in hospital, global assessment of perceived general health status) were ascertained as self-report from all participants. Additionally, prevalence of smoking was assessed and number of packs of cigarettes per year was calculated based on the participants' reports.

Depression was assessed using the German version of the Beck Depression Inventory (BDI) with 21 items.[10,11] For each item, subjects were asked how they had been feeling in the last week. Responses were made on a scale ranging from 0 to 3, whereby higher ratings indicate more depressed feelings. Summary scores of the BDI can therefore range from 0 (not depressed at all) to 63 (maximum depression).

2.3. Assessment of health-related quality of life and oral health-related quality of life

Health-related quality of life (HRQoL) was assessed using the German version of the SF-36 comprising of 36 items with 8 subscales (physical functioning, physical role limitations, mental health, emotional role limitations, social functioning, vitality, pain, and general health perceptions).[3,4,12] These subscales can be summarized into two composite scores (physical and mental quality of life). These scores are standardized for the general German population, i.e., a value of 50 represents the mean with a standard deviation of 10. Lower values represent poorer HRQoL.

Oral health-related quality of life (OHRQoL) was measured using OHIP-G, the German version[13] of the Oral Health Impact Profile.[5] The OHIP-G has 49 items derived from the English-language OHIP. For each OHIP question, subjects were asked how frequently they had experienced the mentioned problem in the last month. Responses were made on a scale ranging from 0-never to 4-very often. OHIP-G summary scores can range from 0 through 196 with higher scores implying more impaired OHRQoL.