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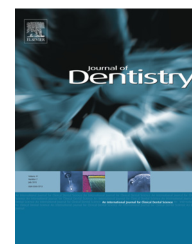

Association of personality traits with oral health-related quality of life independently of objective oral health status: A study of community-dwelling elderly Japanese

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ABSTRACT

Objectives: Oral health-related quality of life (OHRQoL) is being increasingly used in epidemiologic studies of dentistry. However, patient-reported OHRQoL does not always coincide with clinical measures. Previous studies have shown a relationship between OHRQoL and personality, but did not concomitantly investigate oral function. We aimed to examine the association among personality traits, oral function, and OHRQoL using a large sample of community-dwelling Japanese elderly.

Methods: The participants ($n = 938$; age, 69–71 years) were drawn from a complete enumeration of an urban area and a rural area of both the Tokyo metropolitan area and Hyogo Prefecture. The self-perceived impact of OHRQoL was measured using the Geriatric Oral Health Assessment Index (GOHAI). The oral status and socioeconomic characteristics were recorded in each participant, and personality traits (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) were assessed with the NEO-five-factor inventory. Multiple linear regression analysis was performed to examine the relationships between OHRQoL and other factors, with $p < 0.05$ considered to be statistically significant.

Results: Neuroticism was negatively associated with the GOHAI score in bivariate analyses (Spearman rank-order correlation coefficient (rs) = −0.20), whereas extraversion was positively associated ($rs = 0.17$). In the regression analyses, neuroticism (standardized partial regression coefficient (β) = −0.179) and extraversion ($\beta = 0.094$) were significantly associated with the GOHAI scores independently of the number of teeth, maximal occlusal force, and financial status.

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Conclusions: Personality traits are associated with OHRQoL independently of objective measures of oral health status in community-dwelling elderly Japanese.
Clinical significance: This study showed personality traits are associated with OHRQoL independently of dental status and oral function in old Japanese people. As elderly patients undergo increasingly complex dental treatments, there is a need to evaluate patient personality traits prior to dental treatment and predict patient expectations and responses to planned treatment. This is advantageous in determining the most appropriate therapy.
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1. Introduction

Oral health-related quality of life (OHRQoL) measures are increasingly being used in epidemiological studies of dentistry, and previous studies have identified a relationship between oral status and OHRQoL.[1–6] In clinical practice, however, a gap is present between treatment outcomes and patient satisfaction, especially among elderly patients.[7,8] Distinction between objective assessment (by the clinician) and subjective assessment (by the patient) is important. Objective measures are measures of stages of disease processes, not measures of health. Subjective measures deal with health and the impact of disease on health. The correlation between subjective and objective measures is often moderate to weak.

Wilson and Cleary developed a conceptual model of the relationship between general health and measures of patient health-related QoL. They concluded that characteristics of the individual and environment affect QoL both directly and indirectly.[9]

Specifically, personality has been related to the functional status of the patient. In the field of medicine, one study showed that personality had a greater impact on QoL after colorectal surgery for malignant disease than did common clinical variables such as underlying disease and the presence of a stoma.[10] In another study, the QoL scores among patients with head and neck cancer were partly predicted by treatment-related factors (e.g., TNM stage and treatment level), but were 2.5 to 10.0 times more closely associated with psychological factors.[11]

Several studies in the field of dentistry have demonstrated a relationship between QoL and patient personality. More than 20 years ago, van Waas et al. described a relationship between patient satisfaction and psychological factors in wearers of complete dentures.[12] Kressin et al. concluded that negative affectivity, which is a general disposition to experience subjective distress, was significantly associated with OHRQoL ratings in a study of older men.[13] Another study found that neuroticism, extraversion, and openness may influence dental perceptions and play a significant role in shaping satisfaction with dentition in younger people.[14] Thomson et al. suggested that personality may be related to oral health by affecting patients' self-reported health, increasing the risk of oral disease and altering their attitudes to disease.[15]

However, no consensus regarding the association between personality and OHRQoL has yet been reached. Furthermore, our previous studies illustrated a significant association among number of teeth, masticatory performance, occlusal force, and OHRQoL.[3,16] Thus, both oral status and personality have been individually associated with OHRQoL, but no study has concurrently examined the association among personality traits, oral function, and OHRQoL. Although one study examined the number of remaining teeth in their study participants,[13] we do not consider this to be an adequate objective assessment of oral function.

We hypothesized that personality traits are associated with OHRQoL independently of oral status and function. Thus, the aim of this study was to examine the association of personality traits, dental status, and oral function with OHRQoL in a large sample of community-dwelling elderly Japanese.

2. Methods

2.1. *Study population and procedure*

This was a cross-sectional examination of data collected during the baseline assessment of a prospective study of health and longevity called Septuagenarians, Octogenarians, Nonagenarians Investigation with Centenarians (SONIC). The research data were collected from two main regions of eastern and western Japan (the Tokyo metropolitan area and Hyogo Prefecture, respectively). Two additional areas (an urban area and a rural area of each region) were included in each of the main regions: Itami City, Hyogo (western, urban); Asago City, Hyogo (western, rural); Itabashi ward, Tokyo (eastern, urban); and Nishitama County, Tokyo (eastern, rural). Our sample of study participants was drawn from a complete enumeration of the district. The study participants and procedure are detailed elsewhere.[17]

The study protocol was approved by the Institutional Review Board of Osaka University Graduate School of Dentistry (approval number H22-E9). Participants with no occlusal contact with their own teeth or prostheses were excluded because of the inability to measure their bite force. This was the only exclusion criterion. All participants in this study gave written informed consent to participate.

2.2. *Numbers of remaining and carious teeth, denture use, and maximal occlusal force*

Registered dentists performed all dental examinations with a dental mirror and an explorer without X-rays, and the numbers of remaining and carious teeth and use of removable dentures were recorded. The presence of crown and root caries requiring restorative treatment was detected by means

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