論 文 内 容 要 旨

Effects of oral health-related quality of life on total

mortality: a prospective cohort study

（総死亡における口腔関連 QOL の影響：前向きコホ

ート研究）

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Background

The effects of oral health on mortality have been reported; however, the association between mortality and Oral Health-Related Quality of Life (OHQOL) is unknown. We investigated the effect of OHQOL on total mortality in a cohort consisting of dentists.

Methods

In this cohort study, we analyzed data from the Longitudinal Evaluation of Multi-phasic, Odonatological and Nutritional Associations in Dentists study. We conducted a baseline survey of general and oral health factors. We called for 31,178 participants and collected responses from 10,256 participants. We followed up with 10,114 participants (mean age ± standard deviation, 52.4 ± 12.1 years; females, 8.9%) for 7.7 years, until March 2014, to determine the average total mortality.

OHQOL was assessed using the General Oral Health Assessment Index (GOHAI). The total score was divided into quartiles (Q1 ≤51.6, Q2 = 51.7–56.7, Q3 = 56.8–59.9, and Q4 = 60.0), with higher GOHAI scores indicating better OHQOL (score range, 12–60).

The association between OHQOL and total mortality was analyzed using the Cox proportional hazards model. First, after analyzing the age-sex adjustment model, the background variables were analyzed using a multivariate model for continuous (age, sex, number of missing teeth, and sleeping time) and categorical variables (medication use status [with use], diabetes drug use [with use], sleeping pills use [with use], history of systemic disease [with history], vigorous physical activity [yes], smoking status [never, former, or current], alcohol consumption status [never, former, or current], and GHQ score [≥4 points]). Additionally, multivariate models were created both without (multivariate-adjusted model 1) and with adjustment for the number of missing teeth (multivariate-adjusted model 2). Trend p-values were determined for the relationship between total mortality risk and OHQOL by gender.

The statistical significance level was set at p <0.05. All statistical analyses were performed using IBM SPSS Statistics for Windows version 25 (IBM Corp., SPSS, Japan Inc., Tokyo, Japan).

Results

We documented 460 deaths. Males with low GOHAI scores possessed a remarkably high risk of total mortality. The multivariate adjusted-hazard ratios (aHRs), were 1.93 (95% confidence interval [CI], 1.07−3.48) for Q1, 1.69 (95% CI, 0.90−3.17) for Q2, and 0.65 (95% CI, 0.29−1.46) for Q3, relative to Q4 (trend p = 0.001). The aHRs in the multivariate-adjusted model 2 were 1.69 (95% CI, 1.15–2.46) for Q1, 1.53 (95% CI, 1.04–2.27) for Q2, and 1.09 (95%

CI, 0.71–1.70) for Q3, relative to Q4 (trend $p = 0.001$). In females, there was no significant association between the quartiles, in both the multivariate-adjusted model (trend $p = 0.52$) and multivariate-adjusted model 2 (trend $p = 0.79$).

Discussion

In this study, OHQOL was positively associated with the risk of total mortality in the Japanese dentist population. The results of the stratified analysis demonstrated that a lower OHQOL significantly increased the risk of total mortality in males.

Previous studies on HQOL, self-reported health and death, have found these variables to be correlated to each other only in males. Our results were consistent with the results of these studies. The relationship between biological sex and lifespan is explained by genes and sex hormones. Nevertheless, females were found to self-report poor health more accurately than males on the HQOL index.

Differences in life expectancies between the sexes may also be considered. It was suggested that the low mortality rate (mortality rate: among males 4.6%, females 3.7%) of female participants compared with that of male participants may have affected the predictive value. It has also been suggested that the average life expectancy of females compared with that of males may have influenced the results of this study. Given the age and health of the participants, there is also a concern that the average follow-up of 7.7 years may have not been long enough to examine deaths in females. The small sample size may also have affected the results, as the number of females was relatively small.

Conclusions

A lower OHQOL indicated an increased risk of total mortality in dentists. OHQOL may be used as an indicator for selecting treatment plans and personalized care interventions, thus contributing to increased healthy life expectancy.