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Using a denture, a bridge, a crown or an implant increased the likelihood of being happy by 11-16%

Self-rated happiness is an important indicator for the well-being. But, little is known about oral health and self-rated happiness in the older population. This study investigated the association among two oral health indicators (number of teeth and using a dental prosthesis) and self-rated happiness using the survey data collected for the JAGES study at a single time point in 2016. The results for the 178,090 participants (age=65 years or older) in this study showed that those with higher number of teeth were happier than those with fewer number of teeth (categories of number of teeth were 20 teeth or more, 10-19 teeth and 0-9 teeth). Also, those who used a dental prosthesis (a denture for example) were happier than those who didn't use a dental prosthesis if the number of remaining teeth in one's mouth was less than 20 teeth. But, using a denture for those with 20 or more teeth didn't affect the self-rated happiness. The preservation of the remaining teeth may improve happiness in the older population. Also, the provision of dental prostheses for those who have fewer than 20 remaining teeth may also improve happiness.

(In this study, dental prosthesis use is defined as the use of one of the following; a denture, a bridge or a dental implant)

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Figure 1. Interaction between number of remaining teeth with and without dental prosthesis use on self-reported happiness (%), adjusted for all covariates (age, sex, marital status, educational attainment, self-rated health status, self-rated economic situation, and having symptoms of depression)
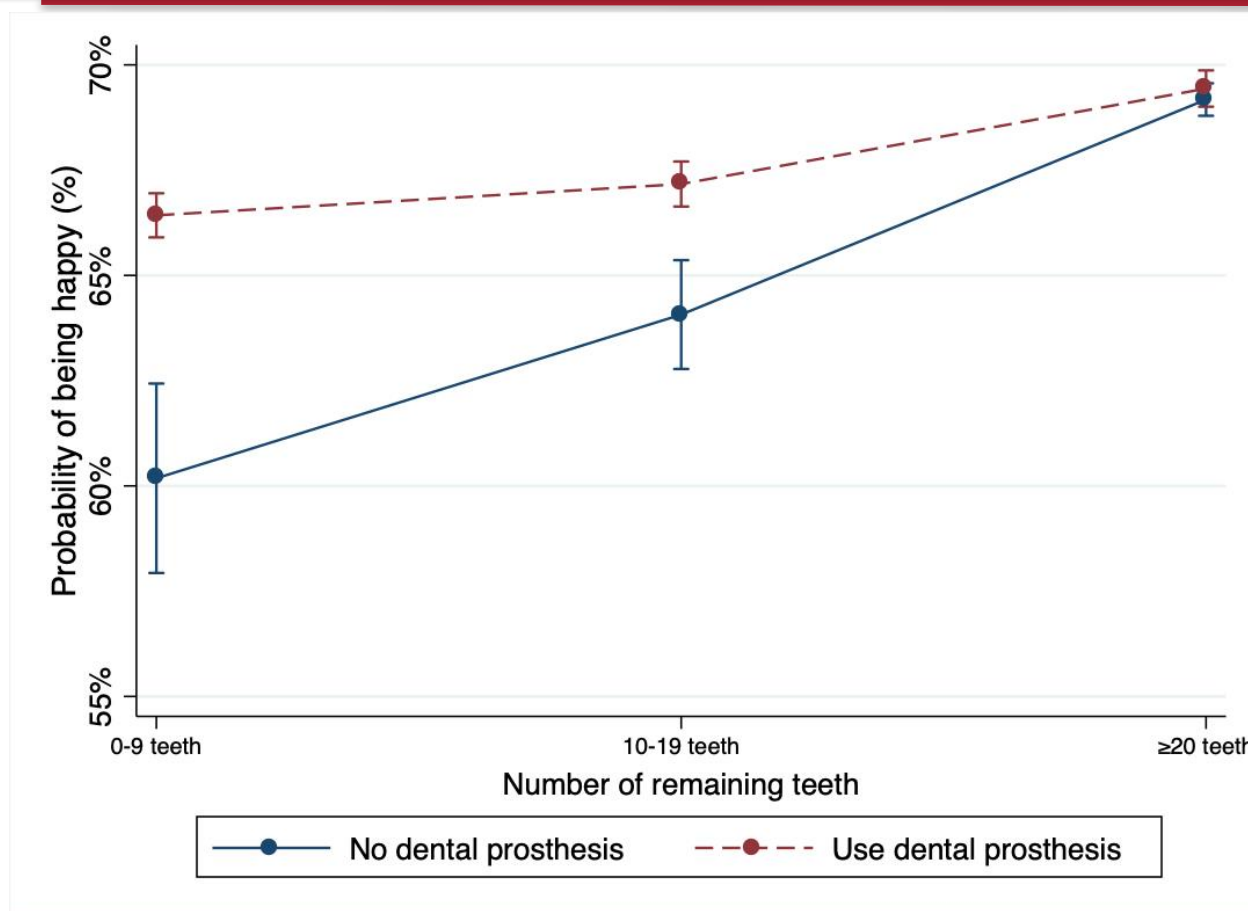
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Table 1. Descriptive statistics of participants (N=178 090)

		Prevalence of Happiness	
	N (%)	Yes (%)	No (%)
Number of teeth and dental prosthesis			
0-9 teeth and no dental prosthesis—	3102 (1.7)	45.7	54.3
0-9 teeth and use dental prosthesis	41 424 (23.3)	61.5	38.5
10-19 teeth and no dental prosthesis—	6719 (3.8)	56.8	43.2
10-19 teeth and use dental prosthesis	31 592 (17.7)	65	35
≥20 teeth and no dental prosthesis—	52 525 (29.5)	70.5	29.5
≥20 teeth and use dental prosthesis	42 728 (24.0)	70.1	29.9

Table 2 Poisson regression analysis of association between number of remaining teeth and dental prosthesis use with self−reported happiness by using multiple imputation (N=178 090)

	Crude model			Fully Adjusted model*		
	PR	95% CI		PR	95% CI	
Number of teeth & dental prosthesis						
0-9 teeth & no dental prosthesis use	**1.00**			**1.00**		
0-9 teeth & use dental prosthesis	1.34	1.29	1.40	1.11	1.07	1.15

10-19 teeth & no dental prosthesis use	1.24	1.19	1.30	1.07	1.03	1.12
10-19 teeth & use dental prosthesis	1.42	1.37	1.48	1.13	1.09	1.17
≥20 teeth & no dental prosthesis use	1.54	1.48	1.60	1.16	1.12	1.20
≥20 teeth & use dental prosthesis	1.53	1.47	1.60	1.16	1.12	1.20

CI, confidence interval; PR, prevalence ratio. The bold values are the reference category.

All p-values were statistically significant P<.001.

*Adjusted for all covariates (age, sex, marital status, educational attainment, self-rated health status, self-rated economic situation, and having symptoms of depression).

■ Introduction

Happiness has been described as a positive inner experience and the ultimate motivator for all human behavior. While self-related happiness is a subjective positive health outcome that reflects one's well-being and the individual perception of the overall quality of life. Previous research studying teeth and happiness or its resembling outcomes among older people is scarce. A previous study from JAGES showed that higher frequency of daily laughter was associated with having more than 10 teeth compared with having no teeth. But, no study investigated the association between teeth and self-rated happiness, or the association between using a dental prosthesis and self-rated happiness. The aim of this study was to investigate the association among the number of remaining teeth and dental prosthesis use with self-rated happiness in an older Japanese population.

■ Subjects and methods

This study used the survey data collected in 2016 from the Japan Gerontological Evaluation Study (JAGES) which targeted older people aged ≥65 years who did not use nursing care. The data was collected from 39 municipalities in 18 of 47 prefectures across Japan. Self-rated happiness was measured using a well-known, valid, and reliable single item question. The participants were asked to respond to the question "To what degree do you feel you are currently happy?" on a scale from 0 to 10 (Score "0" for "very unhappy" and score "10" for "very happy."). Following previous studies and using a data driven approach, this scale was dichotomized into a binary variable by using a score of ≥7 as a cut off value for being happy and a score of ≤6 for being unhappy. The question for number of teeth was "How many natural teeth do you have, including teeth covered by crowns? The total number of remaining teeth of an adult, including wisdom teeth, should be 32." with its categorical answers "I have 0 to 9 natural teeth, I have 10 to 19 natural teeth or I have 20 or more natural teeth". For the dental prosthesis use, the binary (yes/no) question, "Do you wear dentures or bridges (nonremovable dentures) or have dental implants?" was used. The following covariates were adjusted in this study; age, sex, marital status, educational attainment, self-rated health status, self-rated economic situation, and having symptoms of depression. For the data analyses, a descriptive analysis followed by Poisson regression analyses were performed. Poisson regression analyses were used due to the high prevalence of happy participants (66.4%). Two models, a crude model (not adjusted for any covariate) and a fully adjusted model (adjusted for all covariates), were used to calculate the prevalence ratio (PR) of the number of teeth and dental prosthesis use on self-rated happiness. Supplementary analyses included 1) additional analysis where number of teeth and dental prothesis use were separately included as exposure

variables 2) interaction model to examine the interaction between the number of teeth and dental prosthesis use on self-rated happiness.

■ Results

The data from 178 090 participants, 81 489 men (45.8%) and 96 601 women (54.2%), were analyzed, with a mean ±standard deviation age of 73.6 ±6.1 years. Overall, 66.4% of the participants were happy. The descriptive statistics of the participants are shown in Table 1. Table 2 shows the main findings using the Poisson regression analyses. In both the crude model and the fully adjusted models an increased PR of being happy for those who used a dental prosthesis compared with their peers who had the same number of teeth and did not use a dental prosthesis was observed, except for those with ≥20 remaining teeth. Figure 1 presents the estimated probability of being happy from the interaction model between number of teeth and dental prothesis use on self-rated happiness. The significant interaction indicated that the reduction in the probability of being happy among those with fewer teeth was smaller among those who used a dental prosthesis.

■ Discussion

This study demonstrated that having a higher number of teeth and using a dental prosthesis were independently associated with being happy. Dental prothesis use seemed to improve happiness in those having fewer than 20 teeth. These associations could be explained by the fact that teeth and dental prosthesis use enhances mastication, speech, self-esteem, and facial attractiveness and have been associated with an improved quality of life, an outcome that resembles happiness.

■ Significance

The preservation of the remaining teeth may improve happiness in an older population. The provision of dental prostheses for those who have fewer than 20 remaining teeth may also improve
happiness. Maintaining and expanding the range of the discounted dental treatment services might be important to maintain happiness in the older population in Japan.

■ Published paper

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