Author's response to reviews

Title: Behavioral factors to include in guidelines for lifelong oral healthiness: an observational study in Japanese adults

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Author's response to reviews: see over
Dear Dr Appleford,

Thank you very much for your letter of 19 July 2006, conveying the reviewer’s reports of our manuscript.

We enclose a revised version of our paper in which we tried to take into account all comments by the reviewer. We corrected and deleted items that were suggested in the first version. Also attached are our answers to the reviewers, outlining our alterations in detail.

We hope this revised version meets with your and the reviewer’s approval.

Please let us know if there is anything further we need to do.

Yours sincerely,

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Answer to editor

1) Ethics

The sentence
“The study was reviewed and approved by the Ethical Committee of Aichi-Gakuin University (Reference number is 12).” was added in Page 5, prg 3.

2) Questionnaire - please include a copy of this as an additional file with your manuscript.

We await your answer on whether you want a copy of Japanese questionnaire. We do not have an English version.

3) Acknowledgements

The sentences
“We should like to thank the residents of Tobishima and the staff of the Central Health Center of Tobishima and members of Ama Dental Association for conducting the dental examinations. This research was partially supported by the Ministry of Education, Science, Sports and Culture, Grant-in-Aid for Scientific Research (B), 16390623.” were added in Page 11, prg 2.

4) Your cover letter should include details on how the requested formatting changes have been incorporated into the manuscript.

I was changed article format by template at your Web page.  
I corrected title page, reference format and figure.
Answer to Referee 1

1-1) Introduction: This part of the manuscript would benefit from being restructured.

The sentences were added to: Page 3, Prg.2- Page 4, Prg. 3.

“Evidence of which behaviors contribute to retaining 20 or more teeth for a lifetime are required for developing such evidence based guidelines.

To promote the health and oral health of residents in communities, data on factors affecting oral health obtained in previous studies should be expressed in easily understood terms so that they can be understood by policy makers and lay people. A person might find lifestyle changes difficult to make if others in their group do not try to make changes as well [12]. For these reasons, residents of a community require guidelines that can be widely applied. Such guidelines should be attractive to people and interest local industries such as food companies and companies making oral health related products, such as toothbrushes and other aids. To promote the well-being of residents, local authorities must formulate and implement health-promoting programs specifically designed for the community to enable people to develop personal skills and to create supportive environments [11].

Although people in Japan are aware of some of the behaviors related to oral disease they need some practical guidelines to help them to improve their oral health related behaviors to maintain good oral health. The guidelines should be based on sound evidence on what factors affect tooth loss and tooth retention.”

1-2) Some concepts are used very loosely without further definition (e.g. “preference of poor general health”??).

The sentence was changed to: Page 4, Prg.4.

“In a later national study, Eklund and Burt [16] reported there were associations between total tooth loss and low income, education, **perceived poor oral health, smoking and negative health behavior.**”

1-3) The concept of lifestyle, whilst applied in addition to health related behaviours, needs a definition as well.

Each of the papers that were reviewed in the introduction to our paper had differing measures of lifestyle. Some used smoking, drinking, eating patterning, tooth brushing and visiting dentist. All of these are used in our study.
1-3) Page 5, second paragraph starting with—"Previous studies found that numerous factors contribute to toothloss". References are lacking here.

The reference was added in page 4, Prg. 4
“Dental and oral health are affected by diet and certain aspects of lifestyle [13-23].”

1-4) Although some references pertaining to studies identifying socio-behavioural predictors of tooth loss are provided, the above sited statement needs referring more broadly to studies that have identified different types of influencing factors.

The sentence was added to: Page 5, Prg.1.
“Some researchers reported socio-economic inequalities were related tooth loss [24-26].”

2-1) Methods: It is unclear to me whether this was a census survey or a sample survey. If the study is based on a sample survey, a more comprehensive description is needed regarding: a) sampling method, i.e how were the participants recruited from the population living in Tobishima village?. The number of participants were 777. What was the actual sample size -how was it calculated? What was the response rate? External validity??(representativeness??).

Changed in “Subjects” of Page 5.
“All 6,619 residents aged 20 years and over living in Tobishima were contacted and asked to participate in the annual health check recommended by the Ministry of Health, Labour and Welfare. Some of them chose to be examined at their workplace. They were not included in this general and dental health study for logistical reasons. That explains the low responses rate of 21.5% for this general and dental health survey. Nevertheless, 390 men and 387 women took part in the dental survey in 1998.”
We deal with the representativeness on page 5.

2-2) Information is provided as to where the completed questionnaires were collected but not on how the questionnaires were administered (mailed to the respondents, as group questionnaires ??). Some more details are needed here.

Changed in “Questionnaire and examinations” Page 6.
“The questionnaire was mailed to each participant and the completed questionnaires were collected when health examinations were performed.”

2-3) According to the objectives this study set out to determine the relationship between health related behaviours/lifestyle and "tooth loss”. The results from logistic regression analyses presented in table 4 denotes the outcome variable in terms of "number of retained teeth" and "tooth loss". (moreover in the discussion -tooth loss is emphasized as outcome variable of the study).

Changed to: Page 5, Prg 1.

“Because the factors affecting tooth retention in Japan may differ from those in other countries a study was planned to establish which behavioral factors to include in guidelines that should promote an acceptable level of oral healthiness, having 20 teeth at 80 years in Japanese adults, a study was planned with the objective of determining the relationship of specific oral health related behaviors and symptoms of oral disease and number of retained teeth in a typical Japanese community.”

Changed to: title of Table 4.

“Oral health related questions that had statistically significant odds ratios of being related to cut off groupings of retained teeth.”

2-3-1) It is somewhat unclear how the outcome variable (s) was defined (i.e. how was the outcome (s) coded as 0.1 variables) for all ages and separately in the different age groups??

The cut-off points were calculated from the average number of retained teeth for each age and sex group. The outcome variable was coded 1 if at or above cut-off point and 0 if below. The cut-off points varied according to age group (see Table 3 and 2nd paragraph at statistical analysis).

The legends were added in Table 4

“The outcome variable was coded 1: at or above cut-off point, 0: below cut-off point. The cut-off points varied according to age and sex group (see Table 3).”

2-3-2) Moreover, from the information in the table and the description of results it is less clear what is used as reference categories for the independent variables?
The reference categories were the calculated cut-off points of numbers of retained teeth.

The legend was changed at Table 4.
“The bracket inner item is reference (odds ratio=1).”
Answer to Referee 2

1) Meanwhile, the actual study has limitations to this process as the study population primarily is limited to younger/middle aged adults.

We do not fully understand this point. Yes, the study is limited to younger/middle aged adults because we were interested to assess established dental disease. It is recognized that the best age to use are 30 years plus. That is why WHO uses age 35-44 for example.

Changed in “Subjects” of Page 5.
“...All 6,619 residents aged 20 years and over living in Tobishima were contacted and asked to participate in the annual health check recommended by the Ministry of Health, Labour and Welfare. Some of them chose to be examined at their workplace. They were not included in this general and dental health study for logistical reasons. That explains the low responses rate of 21.5% for this general and dental health survey. Nevertheless, 390 men and 387 women took part in the dental survey in 1998.”

We deal with the representativeness on page 5.

2) The external validity of the study population is difficult to evaluate.

On the contrary. This community was selected by medical epidemiologists because it was considered typical for Japan. It has commercial and industrial areas and as well as smallholdings. Many people from Tobishima commute daily to adjacent cities. Perhaps the term “village” was misleading. In Japan, communities often include the word Village in its name. We have deleted the word village.

The sentences were changed in page 5, Prg. 1
“All but one of the studies mentioned above were done outside Japan. Because the factors affecting tooth retention in Japan may differ from those in other countries a study was planned to establish which behavioral factors to include in guidelines that should promote an acceptable level of oral healthiness, having 20 teeth at 80 years in Japanese adults, a study was planned with the objective of determining the relationship of specific oral health related behaviors and symptoms of oral disease and number of retained teeth in a typical Japanese community.”

3) Data are collected through self-administered questionnaires focusing on past diet
and lifestyles, when participants were in elementary school and junior high school and when they were in 20s, 30s and 50s.

This is an acknowledged method for collecting lifecourses data. See for as example: Berney LR, Blane DB: **Collecting retrospective data: accuracy of recall after 50 years judged against historical records.** *Soc Sci Med.* 1997, 45:1519-1525.

The sentences were added to: Page 8, Prg.3.

“In this retrospective study, we examined the history of each subject’s behavior and subjective conditions of the oral cavity that may have influenced their dentally related behaviors. Therefore, for example, a 70-year-old man was asked to recall conditions and behaviours when he was an elementary school student 60 years ago. Views on the reliability of memories differ. Some reported that original dietary reports and retrospective reports after 3 to 14 years have good correlation coefficients of 0.5 to 0.7 [31-33]. Berney et al. [34] reported that after a period of 50 years people recalled socio-demographic information remarkably accurately. Questions in our study were mainly about lifestyle, and we assume that the retrospective recall of their earlier lifestyle were at least as reliable as retrospective dietary reports.”

4) No information on validity of instruments is given and information bias (recall bias) must indeed be expected.

The questionnaire was validated in another community and was found to be valid. No test of recall bias was done.

5) Clinical examinations were performed according to WHO 1986 criteria. The current guidelines by WHO read 1997; it is not clear if other data than tooth presence were collected, use of dental probes for example would not be relevant for counting the number of teeth present.

Yes, other dental data such as DMF and CPI were collected but are not reported in this paper.

6) The Discussion section is somewhat weak and with little focus on the implications of the study as regards development of the guidelines emphasized in the Introduction section.
“Our results on behavioral factors affecting tooth retention were similar to those of other workers excepting that the importance of between meal snacks, a well established cause of dental caries, was the most significant factor linked to tooth loss in our Japanese population. This study found that in order of importance, frequency of between-meal snacks, alcohol consumption, smoking, frequency of tooth brushing, having some hobbies, having a family dentist and consulting a dentist when dental symptoms such as bleeding gums or toothache occurred, were significantly associated with number of retained teeth.”

“The findings from this study have important implications for developing guidelines on retaining sufficient teeth to function normally in older age. The finding that diet, alcohol consumption, smoking, oral cleanliness, having hobbies and using dental services sensibly fits well with WHO guidelines on the prevention of chronic diseases and the common risk factor approach [37] and can therefore readily be incorporated with general guidelines for the Japan national health plan, “Healthy Japan 21”. The key concept underlying the integrated common risk factor approach is that promoting general health by controlling a small number of risk factors, may have a major impact on a large number of diseases at a lower cost and greater efficiency and effectiveness than disease specific approaches [38, 39]. Savings may be made by coordinating the work done by various specialist groups and organizations. Decision-makers and individuals will be more readily influenced by measures directed at preventing heart diseases, obesity, stroke, cancers, diabetes as well as dental diseases than if disease-specific recommendations are made.”