Development of a Maltese Version of Oral Health–Associated Questionnaires: OHIP-14, GOHAI, and the Denture Satisfaction Questionnaire

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Purpose: To show the reliability of the Maltese translations of OHIP-14, GOHAI, and the Denture Satisfaction Questionnaire, define the reliability of the responses, and determine the correlation between OHIP-14 and GOHAI. *Materials and Methods:* The items of the three questionnaires (OHIP-14, GOHAI, and Denture Satisfaction) were translated into Maltese and back into English to compare with the original version. Specific sampling of a population well versed in Maltese and English was carried out to obtain a sample of respondents for each questionnaire. Data were gathered through self-administered questionnaires: first administering the Maltese version and following with the English version 1 week later. *Results:* Participation rates were high (98%). Cronbach's alpha for all three questionnaires was high (> 0.7), indicating satisfactory test-retest reliability of the instruments. Similarly, the Spearman correlation coefficients for both the English and Maltese versions of OHIP-14, GOHAI, and the Denture Satisfaction Questionnaire can be safely used as a valid alternative to the English versions in studies of patients who are limited in linguistic proficiency. *Int J Prosthodont 2014;27:44–49. doi: 10.11607/ijp.3603*

Over the past 20 years, oral health researchers and policy makers have recognized the importance of the oral health domain when measuring treatment outcomes, irrespective of the area of dentistry being investigated. The term "health-related quality of life" is now widely used, and a number of oral health status measures have been developed.¹

The Oral Health Impact Profile

The Oral Health Impact Profile (OHIP), developed in South Australia by Slade and Spencer, received particular attention since it assesses the effect of oral disorders on daily life.² OHIP is a 49-statement questionnaire divided into seven subsections based on Locker's model³ of oral health, which includes

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functional limitation (eg, difficulty in pronouncing certain words), pain, psychologic discomfort, physical disability, psychologic disability, social disability, and handicap.¹ Locker³ described the above as a limitation or inability to carry out one's activities of daily living. This was in turn based on the World Health Organization's classification on the impact of disease, ranging from internal symptoms, such as functional limitation, to disability to handicaps, which affect work. All of the impacts mentioned are considered to be adverse outcomes; therefore, only the negative aspect of oral health is measured.⁴ Each statement is measured on a five-point Likert scale ranging from "very often" (highest score) to "never" (lowest score). Interviewees may also opt for a "don't know" answer for each statement. If more than nine questions are left blank or marked as don't know, the questionnaire is discarded.

Various scores are generated by adding together the number of positive responses, summing the responses for each subcategory, or by using developed weights for each response category.⁵ OHIP-14⁶ is a shortened version of the OHIP, using two questions from each subsection. Other variations of OHIP include OHIP-20, designed for edentulous individuals, and POST-OHIP-13, which was derived from the OHIP-20. Items are rated as "better," "the same," or "worse" and form a retrospective study on denture wear to assess any improvement in the oral healthrelated quality of life of denture wearers.⁷

General Oral Health Assessment Index

Atchison and Dolan⁸ developed the Geriatric Oral Health Assessment Index (GOHAI) as a self-reported assessment on the oral health status of older adults. It was later suggested that the name be changed to the General Oral Health Assessment Index because of satisfactory validity and reliability results in all age groups.⁸

The index contains 12 questions from three dimensions, including physical function, psychosocial function, and pain and discomfort. All questions are regardless of dentate status or use of prosthesis.⁹ GOHAI contains both negative and positive items. Although it allows the interviewer to gauge the interviewees' attention, it may also be misleading. A six-point, five-point, or three-point Likert scale is used to score each statement. A five-score Likert scale was used in this study to give the respondent a choice while also preventing unnecessarily widespread results. The GOHAI score is calculated by summing the total from each item (ranging from 0 to 60); the higher the score, the poorer the oral health status. Since three of the questions are worded in a positive tense, the scores for each of these three questions had to be reverse coded (ie, a GOHAI score of 5 was converted to a score of 1, a GOHAI score 4 was converted to a score of 2, a GOHAI score of 3 remained the same, a GOHAI score of 2 was converted to a score of 4, and a GOHAI score of 1 was converted to a score of 5). If three or more items were not answered, the questionnaire was discarded.9

Locker et al¹⁰ compared GOHAI and OHIP-14 in measuring the quality of life of older adults. Both indices are short and therefore have a better compliance record from the interviewee and have been widely used in samples of older adults. GOHAI gives more importance to oral functional limitations, pain, and discomfort, where it dedicates 6 of 12 questions, while OHIP-14 gives more importance to the psychologic and behavioral impacts that are covered in 10 of 12 questions. GOHAI had fewer zero scores than OHIP-14; however, Cronbach's alpha for OHIP-14 was higher, indicating better internal consistency. It was concluded that one index was not any better than the other for this study's purposes.¹⁰

Both OHIP and GOHAI have been linguistically adapted to suit various populations. A list of the available adaptations is shown in Tables 1 and 2 (see the Appendix in the online version of this article at www. quintpub.com/journals).

The Denture Satisfaction Questionnaire

The Denture Satisfaction Questionnaire was used to assess pre- and posttreatment satisfaction by Allen

and McMillan in 2003.¹¹ Maxillary and mandibular dentures are rated on a Likert scale for general satisfaction, retention, comfort, stability, appearance, ability to speak, and occlusion.¹² The index was used and validated by Feine et al¹³ in an implant-related study. Attard et al¹⁴ also used the Denture Satisfaction Questionnaire in an immediate loading protocol of mandibular overdentures in edentulous older adults. This scale was again used by Alfadda et al¹⁵ in a 5-year follow-up of mandibular overdentures using an immediate loading protocol of TiUnite implants. Attard and Diacono¹⁶ also used the questionnaire to study an early loading protocol using two Fixture Original implants with a mandibular overdenture.

The European Union accepted Maltese as an official language in 2004.¹⁷ Ninety-six percent of the people living in Malta over 10 years of age speak Maltese "well" or "average" according to the National Census of 2005.¹⁸ On the other hand, 22% of the people living in Malta over 10 years of age speak "little" English or none at all. The percentage of people who do not speak English in Malta expands with increasing age. This is because education in Malta in the 1930s and 1940s was not compulsory; therefore, one finds a poor level of education in older adults in Malta. A total of 2.4% of people living in Malta over the age of 15 years have no schooling, 25.5% have a primary level of education, 45.3% have a secondary level of education, 16.5% have a postsecondary or nontertiary education, and only 9.59% have a tertiary level of education.¹⁸

In view of the educational level of Maltese adults, it was necessary to provide a Maltese version of the aforementioned questionnaires. The aims of the study were (1) to explore the reliability of the translation, (2) define the reliability of the responses, and (3) determine a positive correlation between OHIP-14 and GOHAI.

Materials and Methods

It was decided to use the OHIP-14 and not the original 49-statement questionnaire in this study to improve patient compliance. Ethics approval was obtained from the University Research Ethics Committee of the University of Malta on January 21, 2012.

The Translation Process

The OHIP, GOHAI, and Denture Satisfaction Questionnaires were translated into English using colloquial Maltese that would be easily understood by most people in Malta. The translations were carried out during three different meetings, one sitting for each questionnaire, between bilingual individuals

Volume 27. Number 1. 2014

45

(a school principal, a school headmistress, and one of the authors [DS]). Backward translation from Maltese to English was then carried out by another coauthor (NA).

The Population Study

Specific sampling of a population well versed in Maltese and English was carried out to obtain a sample of respondents for each of the questionnaires. Participants were recruited from St Vincent de Paul Residence and the Faculty of Dental Surgery at the University of Malta, where patients, informal caregivers, and staff participated. Twenty participants in this study were asked to voluntarily complete both the OHIP-14 and GOHAI to perform the correlation analysis between the questionnaires.

Main Study

Data were gathered through self-administered questionnaires. Chosen participants for each of the three questionnaires were administered the Maltese version first followed by the English version 1 week later.

Statistical Analysis

The reliability between the Maltese and English versions was measured using Cronbach's alpha, while the correlation between OHIP-14 and GOHAI was evaluated using the Spearman correlation coefficient.

The OHIP-14 scale ranged from 0 to 56, while the GOHAI score ranged from 0 to 60. For the purpose of a Spearman correlation coefficient, a simple count score for each index was generated with each response having a weight of 1. Hence, OHIP-14 ranged from 0 to 14 and GOHAI ranged from 0 to 12.

Data analysis was carried out using SPSS version 18 for Windows (IBM). The *P* value was at .05.

Results

The participation rate was high (98%). From a total of 159 participants, 3 of the questionnaires had to be excluded due to incomplete data or the completion of only one version of the questionnaire (Maltese or English). Participants for OHIP-14 (n = 54) and GOHAI (n = 51) had a mean age of 60 years (range, 21 to 85 years). Fifty-one participants completed the Denture Satisfaction Questionnaire and were either partially dentate or completely edentulous in one or both arches, with a mean age of 65 years (range, 35 to 82 years). Tables 3 and 4 (see Appendix in online version) present the OHIP-14 frequency distribution for the

two versions of the questionnaire and the test-retest reliability. Cronbach's alpha for all items of OHIP-14 exceeded 0.8, indicating good/excellent test-retest reliability. Tables 5 and 6 (see Appendix in online version) present the GOHAI frequency distribution for the two versions of the questionnaire and the test-retest reliability. Cronbach's alpha for all items of GOHAI also exceeded 0.8, indicating good/excellent test-retest reliability. Table 7 (see Appendix in online version) presents the percentage of participants responding "sometimes," "often," or "fairly often" to each GOHAI and OHIP-14 item for both the English and Maltese versions.

Tables 8 and 9 (see Appendix in online version) present the Denture Satisfaction Questionnaire frequency distribution for the two versions of the questionnaire and the test-retest reliability. Cronbach's alpha for all items of the Denture Satisfaction Questionnaire exceeded 0.7, indicating acceptable/excellent results. The Spearman correlation coefficients for the OHIP-14 and GOHAI questionnaires are presented in Figs 1 and 2. The Spearman correlation coefficient was 0.6 for the English versions of OHIP-14 and GOHAI and 0.8 for the Maltese versions.

Discussion

This study is the first of its kind to examine the psychometric properties of the Maltese versions of OHIP-14, GOHAI, and the Denture Satisfaction Questionnaire. This type of study is necessary, even in small nations like Malta, since it is the first step in establishing a scientific basis for the use of such questionnaires. Indeed, authors have reported that Maltese patients living in other communities may not participate in studies due to a language barrier, and therefore validation of these questionnaires can serve other researchers in multicultural societies. A study carried out in Victoria, Australia, of patients on public dental care waiting lists found that a literacy barrier was impeding participation rates. In particular, patients of Maltese background did not participate in studies due to English literacy problems.¹⁹ Moreover, this study is the first phase of a larger national study to be conducted in Maltese that will correlate the oral health status of individuals with their oral health-related quality of life. Stability of the instrument over time provides scope for further research.

GOHAI was originally developed and tested on well-educated older Americans⁹; however, it was also used in poorly educated populations and in younger adults.²⁰ Our sample had a mix of younger and older adults who were well versed in both English and Maltese.

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Fig 1 Spearman correlation coefficient for the English versions of GOHAI and OHIP-14.

Cronbach's alpha for all items of OHIP-14 exceeded 0.8, indicating good/excellent test-retest reliability. This compares well with the Spanish version,²¹ where a Cronbach's alpha of 0.89 was obtained, and the Persian version,²² where a Cronbach's alpha of 0.85 was obtained. Cronbach's alpha for all items of GOHAI also exceeded 0.8, indicating good/excellent test-test reliability that is similar to the results obtained by the French version²³ of GOHAI, where Cronbach's alpha was 0.86. The Cronbach's alpha for all items of the Denture Satisfaction Questionnaire exceeded 0.7, indicating acceptable/excellent results. There is no known linguistic variation of the Denture Satisfaction Questionnaire. The lowest Cronbach's alpha score obtained for the Denture Satisfaction Questionnaire was in the last item (ability to speak with dentures). The examiners thought that rewording the question was not going to improve the item score, and a lower score might have been obtained due to respondent burden having reached the end of the questionnaire.

Many of the participants commented on the fact that three items from the GOHAI (questions no. 3, 5, and 7) misled the respondents by being worded in a positive tense while the remaining questions had a negative tense. In fact, question no. 6 being in the negative between two positive questions had the lowest Cronbach's alpha for all 12 items and was the question where most respondents erred. This was also mentioned in the French version of GOHAI,²³ where the authors claimed that poorly educated individuals found difficulties in understanding the direction of the question. In this case (Maltese version), respondents who did not realize that the direction of the question had changed were from all walks of life (highly



Fig 2 Spearman correlation coefficient for the Maltese versions of GOHAI and OHIP-14.

educated to less educated individuals). The authors think that it was more a case of noncompliance, with respondents rushing through the questionnaires, than actual difficulty in understanding the questions. This error might have been further enhanced by the fact that the questionnaire was self-administered and not interviewed. Both Atchison et al²⁰ and Wong et al²⁴ had interviewers in their study.

Tubert-Jeannin et al²³ and Dolan²⁵ also reported a high percentage of individuals who could swallow comfortably according to the GOHAI questionnaire. This result was also observed in this study, where 90.2% of participants responded with answers of "fairly often," "often," and "sometimes" to the English version of GOHAI in relation to comfortable swallowing, while 86.3% responded the same in the Maltese version of GOHAI. This item was intentionally included in GOHAI to determine the extent of xerostomia in older adults²³; however, since this sample had mixed age groups, this could not be observed. Locker et al¹⁰ reported more zero scores for OHIP-14 than GOHAI since greater emphasis is placed on behavioral and psychologic impacts, which are less common. This could also be clearly observed in the present data (see Tables 4 and 5).

The Spearman correlation coefficients relating to the total scores for the English and Maltese versions of the OHIP-14 and GOHAI were 0.612 and 0.795, respectively, therefore indicating a positive correlation. Moreover, both correlations are significantly different from 0 at the 0.05 level of significance. Hence, the two instruments are compliant and exhibited construct validity. It should be noted that GOHAI measures frequency during a 3-month span, while OHIP-14

measures frequency over 1 year. Although individuals are more likely to remember an incident in the past 3 months (GOHAI), the probability for it occurring over a year (OHIP-14) is higher.

Conclusion

The reliability of the Maltese versions of three questionnaires (OHIP-14, GOHAI, and Denture Satisfaction Questionnaire) was established. In addition, a strong positive relationship between the two sets of scores elicited by OHIP-14 and GOHAI was observed. In conclusion, the Maltese questionnaires can be safely used as a valid alternative to the English versions in studies of patients who are limited in linguistic proficiency.

Acknowledgment

The authors reported no conflicts of interest related to this study.

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48 | The International Journal of Prosthodontics

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Literature Abstract

Effects of smoking on periimplant health status and IL-1b, TNF-a, and PGE2 levels in periimplant crevicular fluid: A cross-sectional study on well-maintained implant recall patients

This cross-sectional study aimed to account for the effects of smoking on peri-implant health status and inflammatory cytokines, namely interleukin-1b, tumor necrosis factor-a, and prostaglandin E2 levels in peri-implant crevicular fluid (PICF), as well as to uncover their correlation with clinical parameters in well-maintained implant recall patients. Sixty clinically successful dental implants were previously placed in a group of 27 smokers (S) and 33 nonsmokers (NS). These individuals were from a university-based implant maintenance program. The implants, which were obtained from the same dental implant company, had been inserted with a two-stage technique, and were in function for a mean period of 39.05 ± 4.93 months (range, 33 to 48 months). An investigator who was unaware of the subject's smoking habits examined patients to gather data including modified Plaque Index, Gingival Index, and four probing depth measurements around a single implant. Peri-implant crevicular fluid was collected and analyzed for levels of inflammatory cytokines. Radiographic examination noted any peri-implant bone loss. The clinical parameters were analyzed using the Pearson correlation test. It was found that there was a significant increase in the amount of cytokine levels in smokers. There was no significant data showing smokers with more marginal bone loss compared with nonsmokers. The authors believe that even though the implants appear to be clinically healthy, they are at risk of further breakdown even in a well-maintained population.

Tatli U, Damlar I, Erdoğan O, Esen E. Implant Dent 2013;22:519–524. References: 38. Reprints: Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Çukurova University, Çukurova Universitesi Dis Hekimligi Fakultesi, Agiz Dis ve Cene Cerrahisi Anabilim Dali, 01330 Saricam-Balcali, Adana, Turkey. Email: dr.ufuktatli@gmail.com—Sheralyn Quek, Singapore

Appendix

GOHAI-M

GOHAI

GOHAI

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Title	Language	Reference
OHIP-49	Arabic	Al-Jundi et al ²⁶ (2007)
OHIP-49	Chinese	Wong et al ²⁴ (2002)
OHIP-CRO49	Croatian	Petricevic et al ²⁷ (2009)
OHIP-NL	Dutch	van der Meulen et al ²⁸ (2008)
OHIP-G	German	John et al ²⁹ (2002)
OHIP-14	Greek	Papagiannopoulou et al ³⁰ (2012)
OHIP-14	Hebrew	Kushnir et al ³¹ (2004)
OHIP-H	Hungarian	Szentpétery et al (2006) ³²
OHIP-14	Italian	Franchignoni et al ³³ (2010)
OHIP-J	Japanese	Yamazaki et al ³⁴ (2007)
OHIP-MAC49	Macedonian	Kenig and Nikolovska ³⁵ (2012)
OHIP-14-P	Persian	Ravaghi et al ³⁶ (2010) Navabi et al ²² (2010)
OHIP-49	Portuguese	Pires et al ³⁷ (2006)
OHIP-49	Russian	Barer et al ³⁸ (2007)
OHIP-14	Serbian	Stancic et al ³⁹ (2009)
OHIP-S	Swedish	Larsson et al ⁴⁰ (2004)
OHIP-49T, OHIP-14T	Taiwanese	Kuo et al ⁴¹ (2011)

Table 1 Linguistic Variations of OHIP-49 and OHIP-14

Table 2 Linguistic Variations of GOHAI Reference Title Language Daradkeh and Khader⁴² (2008) Atieh⁴³ (2008) GOHAI Arabic GOHAI-Ar Arabic GOHAI Brazilian de Souza et al⁴⁴ (2012) GOHAI Chinese Wong et al⁴⁵ (2002) Tubert-Jeannin et al²³ (2003) GOHAI French GOHAI German Hassel et al⁴⁶ (2008) Deshmukh and Radke⁴⁷ (2012) GOHAI Hindi Naito et al⁴⁸ (2006) GOHAI Japanese GOHAI Othman et al⁴⁹ (2006) Malay

A-Dan and Jun-Qi⁵⁰ (2011)

Hagglin et al⁵¹ (2005)

Ergul and Akar⁵² (2008)

Mandarin-

Chinese

Swedish

Turkish

Table 3 OHIP-14 Items and Frequency Distribution for the English and Maltese Questionnaires

In the past year...

FI-aħħar sena...

- 1. Have you had trouble pronouncing any words because of problems with your teeth, mouth, or dentures? Gieli kellek xi diffikultà biex tgħid xi kliem, minħabba problemi fi snienek, ħalqek jew bid-dentatura?
- 2. Have you felt that your sense of taste has worsened because of problems with your teeth, mouth, or dentures? Gieli hassejt li ma stajtx ittieghem sew, minhabba problemi fi snienek, halqek jew bid-dentatura?
- 3. Have you had painful aching in your mouth? Gieli kellek ugigħ qawwi fħalqek?
- 4. Have you found it uncomfortable to eat any foods because of problems with your teeth, mouth, or dentures? Gieli ħassejtek skomdu/a tiekol xi ikel, minħabba problemi fi snienek, ħalqek jew bid-dentatura?
- 5. Have you been self-conscious because of your teeth, mouth, or dentures? Gieli ħassejtek konxju/a bi snienek, ħalqek jew bid-dentatura?
- 6. Have you felt tense because of problems with your teeth, mouth, or dentures? Gieli kont anzjuż/a minħabba problemi fi snienek, ħalqek jew bid-dentatura?
- 7. Has your diet been unsatisfactory because of problems with your teeth, mouth, or dentures? Thoss li l-ikel ta' kuljum mhux jghogbok biżżejjed minhabba problemi fi snienek, halqek jew bid-dentatura?
- 8. Have you had to interrupt meals because of problems with your teeth, mouth, or dentures? Gieli kellek tieqaf f'nofs ikla, minħabba problemi fi snienek, ħalqek jew bid-dentatura?
- 9. Have you found it difficult to relax because of problems with your teeth, mouth, or dentures? Gieli sibtha difficili biex tirrilassa, minħabba problemi fi snienek, ħalqek jew bid-dentatura?
- 10. Have you been a bit embarrassed because of problems with your teeth, mouth, or dentures? Gieli ħassejtek imbarazzat/a, minħabba problemi fi snienek, ħalqek jew bid-dentatura?
- 11. Have you been a bit irritable with other people because of problems with your teeth, mouth, or dentures? Gieli kont urtat b'haddiehor, minhabba problemi fi snienek, halqek jew bid-dentatura?
- 12. Have you had difficulty doing your usual jobs because of problems with your teeth, mouth, or dentures? Gieli sibtha aktar difficili biex tkompli bix-xogħol tiegħek, minħabba problemi fi snienek, ħalqek jew bid-dentatura?
- 13. Have you felt that life in general was less satisfying because of problems with your teeth, mouth, or dentures? Gieli hassejt li l-hajja ma kinitx sodisfacenti bizzejjed, minhabba problemi fi snienek, halqek jew bid-dentatura?
- 14. Have you been totally unable to function because of problems with your teeth, mouth, or dentures? Gieli hassejt li ma stajtx tkampa xejn mal-hajja ta' kuljum minhabba problemi fi snienek, halqek jew bid-dentatura?

49a The International Journal of Prosthodontics

Very often	Fairly often	Occasionally	Hardly ever	Never	Don't know	Total
Spiss ħafna	Spiss	Kultant	Rari	Qatt	Ma Nafx	Total
1	0 0	2 2	5 4	46 46	0 0	54 54
0	1	5	8	39	1	54
0	1	4	7	41	1	54
0	4	17	22	11	0	54
0	2	16	22	14	0	54
0	2	12	23	17	0	54
0	3	12	21	18	0	54
1	2	19	13	29	0	54
1	3	5	15	30	0	54
1	1	6	12	33	0	54
1	1	6	12	34	0	54
0	0	2	4	48	0	54
0	0	3	3	48	0	54
0	0	5	18	31	0	54
0	1	2	16	35	0	54
0	0	5	12	37	0	54
0	0	3	15	36	0	54
0	0	8	12	34	0	54
0	0	6	11	37	0	54
0	0	3	3	46	2	54
0	0	3	3	43	5	54
0	0	2	8	43	1	54
0	0	1	9	43	1	54
0	0	1	2	51	0	54
0	0	1	1	52	0	54
0	0	1	1	52	0	54
0	0	1	1	52	0	54

Table 4	Cronbach's Alpha for the OHIP-14			
Item	Cronbach's alpha			
1	1.000			
2	0.972			
3	0.934			
4	0.946			
5	0.921			
6	0.866			
7	0.924			
8	0.890			
9	0.834			
10	0.847			
11	0.947			
12	0.805			
13	0.951			
14	1.000			

Volume 27, Number 1, 2014 49b

Table 5 GOHAI Items and Frequency Distribution for the English and Maltese Questionnaires

In the last 3 months... Fl-aħħar tlett xhur...

- 1. How often did you limit the kinds or amounts of food you eat because of problems with your teeth or denture? Kemm il-darba kellek toggħod lura mill-ammont jew tip ta' ikel li tiekol minħabba problemi bi snienek jew bid-dentatura?
- 2. How often did you have trouble biting or chewing any kinds of food, such as firm meat or apples? Kemm il-darba sibt diffikulta' biex tigdem jew tomgħod kul tip ta' ikel, bħal laħam xieref jew tuffieħ?
- How often were you able to swallow comfortably? Kemm il-darba stajt tibla' komdu/a?
- 4. How often have your teeth or dentures prevented you from speaking the way you wanted? Kemm il-darba sibt diffikulta' biex titkellem sew minħabba problemi bi snienek jew bid-dentatura?
- 5. How often were you able to eat anything without feeling discomfort? Kemm il-darba stajt tiekol kollox b'kumdita'?
- 6. How often did you limit contacts with people because of the condition of your teeth or dentures? Kemm il-darba kellek tevita kuntatt man-nies minībaba snienek jew id-dentatura?
- 7. How often were you pleased or happy with the looks of your teeth, gums, or dentures? Kemm il-darba kont kuntent/a bid-dehra ta' snienek, tal-ħanek, jew tad-dentatura?
- 8. How often did you use medication to relieve pain or discomfort from around your mouth? Kemm il-darba ħadt pinnoli biex ittaffi xi ugigħ fħalqek?
- 9. How often were you worried or concerned about the problems with your teeth, gums, or dentures? Kemm il-darba kont inkwtat/a jew imħasseb/imħassba minħabba problemi fi snienek, fil-ħanek jew bid-dentatura?
- 10. How often did you feel nervous or self-conscious because of problems with your teeth, gums, or dentures? Kemm il-darba kont anzjuz/a jew konxju/a minħabba problemi fi snienek, fil-ħanek jew bid-dentatura?
- 11. How often did you feel uncomfortable eating in front of people because of problems with your teeth or dentures? Kemm il-darba ħassejtek skomdu/a biex tiekol quddiem in-nies minħabba problemi fi snienek jew bid-dentatura?
- 12. How often were your teeth or gums sensitive to hot, cold, or sweets? Kemm il-darba kellek snienek jew il-ħanek sensittivi għas-sħun, għal-kiesaħ jew għal-ħlewwa?

ltem	Cronbach's alpha
1	0.983
2	0.978
3	0.892
4	0.939
5	0.928
6	0.857
7	0.954
8	0.935
9	0.910
10	0.945
11	0.988
12	0.987

Table 6 Cronbach's Alpha for the GOHAI

49c | The International Journal of Prosthodontics

Very often Spiss ħafna	Fairly often Spiss	Occasionally Kultant	Hardly ever Rari	Never Qatt	Don't know Ma Nafx	Total Total	
2 2	3 3	6 6	17 16	23 23	0 1	51 51	
2 2	4 4	7 8	10 10	28 27	0 0	51 51	
37 35	7 8	2 1	2 2	2 4	1 1	51 51	
0 0	1 1	1 1	8 6	41 43	0 0	51 51	
34 32	9 8	2 6	3 1	3 3	0 0	51 51	
0 0	1 1	1 3	4 2	43 45	2 0	51 51	
22 24	17 13	4 6	1 1	4 4	3 3	51 51	
0 0	0 0	8 6	18 19	24 25	1 1	51 51	
1 1	4 4	9 8	14 13	23 25	0 0	51 51	
1 1	1 2	6 7	20 18	23 23	0 0	51 51	
2 3	3 2	0 1	4 4	42 41	0 0	51 51	
2 2	2 3	20 19	11 11	16 16	0 0	51 51	

Table 7Percentage of Participants Responding "Sometimes," "Often," or"Fairly Often" to Each GOHAI and OHIP-14 Item

	English		Maltese	
ltem no.	GOHAI (%)	OHIP-14 (%)	GOHAI-Mt (%)	OHIP-14Mt (%)
1	21.6	5.6	21.6	5.6
2	25.5	11.1	27.5	9.3
3	90.2	38.9	86.3	33.3
4	3.9	25.9	3.9	27.8
5	88.2	40.7	90.2	16.7
6	3.9	14.8	7.8	14.8
7	84.3	3.7	84.3	5.6
8	15.7	9.3	11.8	5.6
9	27.5	9.3	25.5	5.6
10	15.7	14.8	19.6	11.1
11	9.8	5.6	11.8	5.6
12	47.1	3.7	47.1	1.9
13		1.9		1.9
14		1.9		1.9

	Totally satisfied Sodisfatt Għall-aħħar	Very satisfied Sodisfatt ħafna	
 How satisfied are you with your maxillary (upper) denture?	16	16	
Kemm inti sodisfatt/a bid-dentatura ta' fuq?	13	21	
2. How satisfied are you with your mandibular (lower) denture?	7	9	
Kemm inti sodisfatt/a bid-dentatura t'isfel?	9	7	
3. How satisfied are you with the retention of your maxillary denture?	22	10	
Kemm inti sodisfatt/a bil-mod kif teħel id-dentatura ta' fuq?	21	13	
4. How satisfied are you with the retention of your mandibular denture?	10	4	
Kemm inti sodisfatt/a bil-mod kif teħel id-dentatura t'isfel?	11	9	
5. How satisfied are you with the stability of your maxillary denture?	20	6	
Kemm inti sodisfatt/a li d-dentatura ta' fuq hija soda f'halqek?	22	11	
6. How satisfied are you with the stability of your mandibular denture?	11	4	
Kemm inti sodisfatt/a li d-dentatura ta' taħt hija soda fħalqek?	11	6	
7. How satisfied are you with the comfort of your maxillary denture?	24	11	
Kemm thossha komda d-dentatura ta' fuq?	21	17	
8. How satisfied are you with the comfort of your mandibular denture?	12	8	
Kemm thossha komda d-dentatura t'isfel?	10	8	
9. How satisfied are you with the occlusion of your dentures?	14	15	
Kemm thossok sodisfatt/a bil-gidma tad-dentatura?	15	12	
10. How satisfied are you with the appearance of your maxillary denture?	19	16	
Kemm thossok sodisfatt/a bid-dehra tad-dentatura ta' fuq?	17	19	
11. How satisfied are you with the appearance of your mandibular denture?	16	9	
Kemm thossok sodisfatt/a bid-dehra tad-dentatura t'isfel?	13	12	
12. How satisfied are you with the ability to speak with your dentures?	27	8	
Kemm thossok kapaċi titkellem tajjeb bid-dentatura?	30	13	

Table 8 Denture Satisfaction Items and Frequency Distribution for the English and Maltese Questionnaires

Table 9 Cronbach's Alpha for the Denture Satisfaction Questionnaire

ltem	Cronbach's alpha
1	0.943
2	0.972
3	0.970
4	0.954
5	0.903
6	0.953
7	0.945
8	0.971
9	0.941
10	0.971
11	0.960
12	0.749

49e | The International Journal of Prosthodontics

Reas	sonably satisfied Hekk u Hekk	Not very satisfied Mhux Sodisfatt ħafna	Not at all satisfied Lanqas Xejn	N/A	Total
	9	1	5	4	51
	8	0	5	4	51
	11	5	8	11	51
	15	3	6	11	51
	7	5	3	4	51
	7	3	3	4	51
	9	9	8	11	51
	6	6	8	11	51
	11	6	3	5	51
	4	6	4	4	51
	4	11	10	11	51
	6	7	10	11	51
	9	1	2	4	51
	6	1	2	4	51
	8	4	8	11	51
	9	6	7	11	51
	6	11	3	2	51
	11	6	5	2	51
	5	5	2	5	51
	3	4	3	5	51
	3	6	4	13	51
	5	4	3	14	51
	8	8	0	0	51
	6	2	0	0	51

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