The Impact of Oral Conditions on the Quality of Life of the Malaysian Adult Population: Preliminary Results

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Summary

The aim of this paper is to describe the impact of oral conditions on the quality of life of the adult population of Malaysia. The adapted Malaysian Oral Health Impact Profile (L-OHIP-M) questionnaire was used. A total of two hundred and twenty respondents completed the L-OHIP(M). Overall, slightly more than 50% of the sample had at least one impact reported as either "very often" or "often". The younger age group, Indian ethnic and those who had tertiary education reported more impacts. The preliminary results revealed that a substantial proportion of the sample included in this study experienced frequent psychosocial impacts associated with oral conditions.

Key Words: Oral health –related quality of life, Oral Health Impact Profile, Oral Health

Introduction

Traditionally oral health is measured based on the biomedical model, which focuses on the presence or absence of disease. However, such measures fail to take into account the burden of illnesses and disabilities imposed by oral diseases [1,2,3,4]. In line with the World Health Organization's (1948) definition of health, which is defined as "a complete state of physical, mental and social well being and not just the absence of illness", measuring health should also incorporate functioning, well being and quality of life [5]. Using this, together with disease measurement, a comprehensive picture of oral disorders can be captured. Thus there are increasing numbers of researchers who include the subjective measurement in their research.

Many studies have found that oral diseases or disorders contribute to the quality of life. For example, Reisene

(1985) reported that about one-half of the study subjects who had dental pain reported sleep disturbance on at least one night and two-fifths of them were unable to work or to carry out usual activities [6].

A local study by Noralaini (1996) using a modified Geriatric Oral Health Assessment Index (GOHAI) found that the commonest impact among the elderly in Kelantan was difficulty in chewing [7]. She also observed that those who reported chewing difficulty had to limit the type and quantity of food they consumed. Another local study conducted on the commandos by Normah (1999) concluded that the impact among this group was high [8]. For example, almost 40% of the subjects reported that they had experienced some form of discomfort in the last three months.

For the first time, the National Oral Health Survey for Adult of Malaysia 2000 (NOHSA, 2000) included some items that measure the impact of oral health [9]. This data

provides valuable information on how oral health affects the quality of life of adult population in Malaysia. However, this study used a non-standardized questionnaire to measure impact on quality of life. This paper reports on the impact of oral conditions on the quality of life of the adult population, aged 18 and above, in Selangor using a standardized questionnaire.

Materials and Methods

Study design
A cross-sectional study design was used in this study, since the intention was to describe the impact of oral conditions on the quality of life at one point in time.

Subject
The participants for this study were a sub-sample of the Malaysian National Oral Health Survey of Adults (NOHSA 2000). Permission to use the NOHSA's sub-sample and access to the database was obtained from the Dental Director, Ministry of Health Malaysia. For this study, Selangor state was chosen as the sampling area. Selangor is one of the 14 states of Malaysia. Administratively, it is divided into nine districts; Gombak, Klang, Kuala Langat, Kuala Selangor, Petaling, Sabak Bernam, Sepang, Ulu Langat and Ulu Selangor. Selangor was the most populous state in Malaysia with a total population of 4.2 million [10].

A sample of Selangor state was identified from the NOHSA database. Those who were below 18 years by the year 2002, were removed from the sample. For the purpose of convenience, Petaling district, was used as the sampling frame for the interview group and all the other districts were used for the mail group.

Sample Size
A total of 979 subjects were eligible for this study. However, we selected 50% of the total sample randomly using the SPSS+ program. A total of 435 was in the final sample.

Instrument
The adapted Oral Health Impact Profile (OHIP), which is known as L-OHIP(M), was used as the instrument in this study. L-OHIP(M), contains 45 items divided into seven domains, i.e functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap [11]. The respondents were asked to answer on a five-point frequency Likert scale (very often, quite often, sometimes, once a while, and never).

Procedure
Two methods of administration, mail questionnaire and interviews, were employed. Mail questionnaire: For those in the Mail group, a set of questionnaires together with an introductory letter and a prepaid stamped return envelope were sent to the participants. In order to identify the respondents, a number, which was assigned to the respondent, was stamped on the return envelope. A pen was enclosed to show appreciation for their participation.

Participants were asked to complete the questionnaire and return it to the sender using the envelope enclosed. To maximize returns, the steps outlined by Dillman (1978) were followed [12]. Seven to ten days after the first mailing, a postcard was sent to thank those who had returned the questionnaire, and remind the others of the study's importance. The card also indicated to those who had mislaid the original where they can get another copy. Three weeks later, a second letter was sent to those participants who did not return the questionnaire. A second copy of the questionnaire and a return envelope was also included. If there was no response from them after one month from the date the second questionnaire was sent, a participant was regarded as a non-respondent. Those who returned the questionnaire were considered as giving consent.

Interviews
Household interviews were carried out for the interview group by trained interviewers: Investigator (Dr Saub) and three dental students (Mr Monaj, Mr Mahadzar and Mr Huzaiman). The interviewers were trained by the investigator on how to conduct the interview. In order to obtain better response from the respondent as well as to make them aware of the study, one month before the interviews started, an introductory letter regarding the study from the Dean of the Dental Faculty of University Malaya was sent to all respondents. Subsequently, the interviewer went to each respondent's house to interview him or her. In the case that the respondent was not available, an appointment card was left at the house, asking him/her to contact the interviewer so that an appointment could be made. However, if he/she did not get back to the interviewer within one week, a second visit to the respondent's house was made. The respondent was regarded as a non-respondent after two visits were made. For convenience, the interviews were carried out area by area. A verbal consent was obtained from the respondent before the interview.

Data entry
Before data were entered into the computer, the source data were coded and then entered directly into the computer using SPSS+ program.

Data cleaning
Before analysis was performed, data were first cleaned by two procedures: range checking and contingency checking [13].

i   Range checking: this was done by running the frequency distribution for each item and verification made that only valid ranges of numbers were used. If any number in the coding was not valid, the original questionnaire was used to determine the correct answer.

ii Contingency checking: Cross-tabulation was performed on the related questions to check for accuracy in data entry. For example, if the question was meant for denture wearers, then those who were not wearing dentures should only respond to the option "not applicable" for that particular question. If another option was entered, then it was corrected to the "not applicable" option.

Missing data:
Two procedures were applied in the case of missing data: total exclusion and mean item imputation [14]:

i) If more than twenty percent of the data (nine and more items for L-OHIP(M) and two or more items for S-OHIP(M)) were missing (blank entries or "don't know" responses), then it was excluded from the final analysis.

ii) In the case where less than 20 percent of the data were missing (blank entries or "don't know" responses), then the item was imputed by the mean of that particular item.

Analysis
A descriptive analysis was performed using the SPSS+. The response categories were reduced to three: i) "very often" or "often", ii) "sometimes" and iii) "once in a while" or "never". The cut off point used in estimating the proportion of impacts was "very often" and "often". This represents the most stringent cut off point and identifies those who experienced oral health related problems on a relatively frequent basis [15].

Results

Table I shows the respondents' characteristics. The mean age was 42 years old. The proportion of male respondents was lower than female respondents. Malays formed half of the sample. All respondents had at least a primary education.

Overall, slightly more than fifty percent of the sample had at least one impact reported as either "very often" or "often" (Figure 1). This suggests that a significant number of people in this study experienced the impact on a relatively frequent basis. More than one third of the sample frequently experienced some form of psychological discomfort due to poor oral health. More than one quarter were bothered by the functional consequences of oral disorders and oral pain.

Table II shows the response to each of the 45 OHIP items organized into seven subscales. The response categories were reduced to three: 1). "very often" or "often", 2). "sometimes", and 3). "once in a while" or "never". Less than ten percent of the respondents responded "very often" or "often" for most of the items except "felt discomfort due to food stuck" (30.4%), "felt worried" (16.8%), "difficulty chewing any food" (12.1%), "felt food has not digested properly" (12.1%), "had sensitive teeth" (11.2%), "had bad breath" (10.7%) and "avoid eating certain food" (10.7%). Of these seven items, three belong to the functional limitation, two to the psychological discomfort and one each to the pain and the physical disability scales.

Table III shows the percentage of respondents who answered "very often" or "often" to one or more items in each subscale, as well the overall scores by sociodemographic characteristics. The middle age group (40-59 years old) reported more impact than the younger age group (18-39 years old) and older age group (60+ years old). More than one third of middle aged and older adults were bothered with the functional consequences of oral conditions, compared to approximately one sixth of younger adults. A higher proportion of middle-aged and older adults reported having more physical and psychological disabilities due to oral conditions than younger adults. The younger and middle adults were more likely to have experienced some form of psychological discomfort due to poor oral health. However, it was observed that there was no big difference in terms of oral pain, social disability and handicap between age groups.

Both males and females experienced the same amount of impact on their quality of life due to oral conditions. When comparing among the three main ethnic groups

in Malaysia, the results show that the quality of life of Indians was most affected by poor oral health. Slightly more than seventy percent of Indians reported having at least one of the impacts on a frequent basis. More than fifty percent of Indians experienced some psychological discomfort due to oral conditions as compared to only 25 percent of Malays and Chinese. Generally, Malays and Chinese had similar impacts on all dimensions of quality of life. However, Chinese respondents experienced more handicaps due to poor oral condition than the Malay respondents.

Those who had tertiary education (college or higher) reported more impacts than those who had a lower level of education (secondary and lower). It was observed that more than one third of the respondents having a secondary or higher education experienced some psychological discomfort.

Almost seventy percent of the edentate respondents reported that they had at least one impact "very often" or "often". About one half of the edentulous respondents experienced problems "very often" or "often" in the areas of functional limitation and physical disability.

Table I: Respondents' characteristics

Sociodemographics	N (%)
Age group	
18-39	91 (42.5)
40-59	94 (43.9)
60+	29 (13.6)
Gender	
Male	96 (44.9)
Female	118 (55.1)
Ethnic	
Malay	123 (57.5)
Chinese	58 (27.1)
Indian	25 (11.7)
Other	8 (3.7)
Level of Education	
Primary and lower	63 (29.4)
Secondary	117 (54.7)
College and higher	34 (15.9)

Table II: Response to Oral Health Impact Profile (OHIP) (M)

	Very often/often	Sometimes	Once in a while/Never
Functional Limitation			
Difficult chewing any foods	12.1	22.9	65.0
Trouble pronouncing words	1.9	10.7	87.4
Felt that appearance has been affected	4.2	12.6	83.2
Had bad breath cause by dental problem	10.7	22.4	66.8
Felt that foods you eat have not digested properly.	12.1	18.2	69.6
Felt denture was loose	7.0	5.1	87.9
Physical Pain			
Had pain on the jaw	3.3	13.1	83.6
Had headache due to dental problem	2.8	12.6	84.6
Had sensitive teeth	11.2	26.6	62.1
Had toothache	4.7	23.8	71.5
Had painful gums	3.7	16.8	79.4
Found it uncomfortable to eat any foods	9.3	18.7	72.0
Had painful ulcer in the mouth	4.7	18.2	77.1

Table II: Response to Oral Health Impact Profile (OHIP) (M)

	Very often/often	Sometimes	Once in a while/Never
Psychological Discomfort			
Felt uncomfortable with your dentures	4.7	4.2	91.1
Felt worried	16.8	21.0	62.1
Felt discomfort due to food stuck.	30.4	24.8	44.9
Felt shy	6.1	18.2	75.7
Felt uncomfortable with your appearance	6.5	14.5	79.0
Felt stressed up	5.1	10.7	84.1
Physical Disability			
Speech been unclear	4.2	5.6	90.2
People misunderstood some of your words	1.9	6.5	91.6
Felt food less tasty	4.2	10.7	85.0
Been unable to brush your teeth properly	7.5	10.3	82.2
Had to avoid eating some foods	10.7	17.8	71.5
Been unable to eat your favorite foods	5.6	12.6	81.8
Been unable to eat with your dentures	4.2	3.3	92.5
Avoided smiling	4.7	8.9	86.4
Had an interrupt meals	6.1	12.1	81.8
Psychological Disability			
Your sleep been disturbed	1.4	15.4	83.2
Been sad	7.0	7.9	85.0
Found it difficult to relax	2.3	11.2	86.4
Felt depressed	2.3	8.4	89.3
Your concentration been affected	1.9	11.7	86.4
Felt a loss of appetite to eat	4.7	13.6	81.8
Social Disability			
Avoided going out	0.9	3.3	95.8
Been less tolerant of your spouse or family	0.5	5.6	93.9
Unable to mix around with other people	1.4	4.2	94.4
Got angry easily.	1.9	5.1	93.0
Had difficulty carrying out daily activities	0.9	7.0	92.1
Handicap			
Felt unwell	2.3	10.3	87.4
Had to spend a lot of money	3.7	9.8	86.4
Felt less happy to be in the company of others	1.4	7.9	90.7
Felt that life in general was less satisfying	1.4	7.9	90.7
Felt less confident of yourself	1.4	4.7	93.9
Been unable to work to your full capacity	0.9	6.1	93.0

Table III: Percent responding "very often" or "often" to one or more items in each subscales by sociodemograhics and dental status

| Sociodemographic/ Dental status	Functional Limitation	Physical pain	Psychological discomfort	Physical disability	Psychological disability	Social disability	Handicap	Scale
Age group:								
18-39 (n=91)	16.5	18.7	38.5	13.2	8.8	4.4	7.7	50.5
40-59(n=94)	34.0	27.7	41.5	21.3	14.9	3.2	7.4	56.4
60+(n=29)	37.9	20.7	20.7	27.6	13.8	3.4	6.9	48.3
Gender:								
Male (n=96)	26.0	25.0	35.4	20.8	14.6	4.2	6.3	53.1
Female (n=118)	28.0	21.2	39.0	16.9	10.2	3.4	8.5	52.5
Ethnic								
Malay (n=123)	29.3	22.0	35.0	15.4	11.4	3.3	4.9	50.4
Chinese (n=58)	19.0	22.4	34.5	19.0	8.6	0.0	10.3	48.3
Indian (n=25)	36.0	32.0	56.0	32.0	28.0	16.0	16.0	72.0
Other (n=8)	25.0	12.5	37.5	25.0	0.0	0.0	0.0	65.6
Level of Education:								
Primary & lower (n=63)	36.5	28.6	27.0	23.8	12.7	6.3	6.3	52.4
Secondary (n=117)	23.1	21.4	42.7	17.9	13.7	2.6	9.4	51.3
College & higher (n=34)	23.5	17.6	38.2	11.8	5.9	2.9	2.9	58.8
Dental status:								
Dentate no denture (n=150)	24.7	21.3	38.0	14.7	12.0	4.0	5.3	52.0
Dentate with denture(n=49)	26.5	26.5	36.7	22.4	8.2	0.0	10.2	51.0
Edentate (n=15)	53.3	22.9	33.3	49.7	26.7	13.3	20.0	66.7
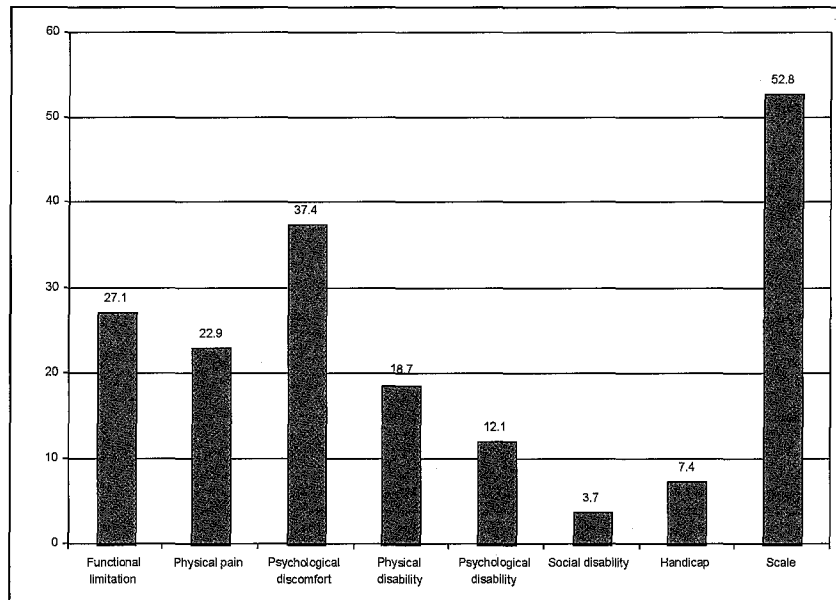
Fig. 1: Percent responding "very often" or "often" to one or more items in each subscale

Discussion

This study provided a preliminary data on the impact of oral conditions on the quality of life of the adult population of Malaysia. The data obtained by mail and interview was combined since the difference in scores was not statistically significant. Because the sample of this study was selected based on a probability sampling, the findings could be generalized at least for the Selangor population. However, due to the small sample size, only a descriptive analysis was performed.

The response rate of the present study was only 50% in spite of the response-enhancement strategies that were employed to a certain extent; for example, a letter of introduction was sent prior to the interview and two reminders were sent to the mail respondents. Perhaps the response rate could have been increased if a higher number of callbacks and visits to the respondents' houses were made. Due to time and resources constraints, this was not done. A high non-response rate in this study could have caused a non-response bias. However, Locker *et al* (1990) reported that "when the responders and non-responders to surveys do not differ, the response rate has no effect on prevalence estimates: high participation rates merely serve to make these estimate more precise" [16]. In the case of the present study, the respondents and non-respondents did differ in terms of age groups and ethnicity. As such, the prevalence of the OHRQoL reported here may be biased. However, the direction and the magnitude of the bias could not be determined in this study. A study by Patten et al (2003) examined the effect of giving an incentive on response rates in a community-based irritable bowel syndrome (IBS) survey and found that the prevalence of IBS was higher in the group that was offered no incentive [17]. This may suggest that persons with IBS may be more likely to participate in such survey. If the same phenomenon applies to the present study, then the result would be overestimated. Thus, to ensure that a future study addresses this issue, it is suggested that more money is put to obtain information on non-respondents rather than attempts to increase the response [16]. Nevertheless, caution has to be used when interpreting the findings from this study.

The results revealed that a substantial proportion of the adult population in this sample experienced some very frequent impacts associated with their oral condition. More than one fourth of the sample reported functional problems, about one fifth reported pain, more than one third experienced some form of psychological discomfort, and one fifth reported that they were disabled in some way because of poor oral health.

Many studies on oral health-related quality of life have focused on older populations with the assumption that they will be more likely to perceive a greater impact on their quality of life because of a lifetime's experience of oral ill health. However, the result of this study showed that the younger age group perceived slightly greater impacts than the older generation. A similar observation was also seen by Srisilapanan and Sheiham (2001) whereby based on the OIDP measure, the younger Thai adult population (35-44 years old) had higher impacts than the older people of Thailand [18]. This could be due to the fact the older generation had adapted to the situation.

Although McGrath and Bedi (2000) concluded that there are gender variations in the social and psychological impacts of oral health, this study observed that both males and females perceived similar impacts [19]. The report of NOHSA (2000) found a similar result using a non-standardized questionnaire in collecting data on the psychosocial impacts [9]. This suggests that gender did not affect how oral health is perceived among adult populations of Malaysia.

In this study, it was found that those of Indian ethnicity experienced the greatest impact on a relatively frequent basis for almost all domains, compared to the Malays and the Chinese. However, it must be noted that the sample size of Indians in this study was too small to make a valid comparison. Further research is needed using a bigger sample size to confirm this observation.

It was observed that those who attained a higher education reported more impacts related to oral conditions. It was also observed that respondents who achieved a lower education reported more impact on the functional limitation, compared to other domains. However, among those who had a higher education, psychological discomfort was most prevalent. This finding was similar with the NOHSA preliminary result, where the level III subjects (middle secondary level and below) reported a significantly higher impact on functional limitation [9].

This study observed that edentulous persons reported more social impacts than dentate persons on a more frequent basis. However, it must be noted that the sample size for the edentulous is too small. Slade and Spencer (1994) also reported that edentulous persons aged 60 and older in South Australia had more social impacts than dentate persons [20]. According to them, the result was not surprising since most of the items in the OHIP are related to chewing or eating.

The preliminary results revealed that a substantial proportion of the sample included in this study experienced frequent psychosocial impacts associated with oral conditions. However, due to a small sample size the variations observed between age group, gender, ethnicity, level of education and dental status require further study and confirmation.

Acknowledgements

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