

Severity of Psychosocial Impact of Oral Diseases among Adult Receiving Treatment in University Health Centre, Malaysia

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ABSTRACT

Oral conditions had a significant negative impact on physical and psychosocial dimensions of individuals, which limit their daily activities, affecting quality of life, loss of concentration, tiredness and poor performance, social, economic and emotional aspects as well. The objective of this study is to measure the severity of the psychosocial impact of oral diseases among adult population receiving treatment in University Health Centre according to socio-demographic factors. Cross sectional study was conducted using the OHIP-14 validated for Malaysian population (S-OHIP (M)), using English and Malay language developed by Saub et al (2005) among adult receiving treatment in university health center. 398 respondents participated (female 272 and male 126) with majority are undergraduate students, and age group of 18-34 years. 91.2 % were having dental problems 1-3 times in the past 12 months. Psychological Discomfort dimension was the most affected followed by Physical Pain and Functional Limitation, while the lowest is Social Disability. No significant difference of the severity of oral diseases between gender and age group, while Supporting staffs had more severe impact of oral diseases compared to lecturers and patients that had 4-10 times frequency of dental problems for the past 12 months had more severe impact of oral diseases than patients' that had 1-3 times dental problems. The mean score of S-OHIP (M), of 19.46 was higher compared to other studies, should be noted with concern as it shows that oral diseases had significantly impacting psychosocial wellbeing of the respondents.

Keywords

Psychosocial impact, oral diseases, University Health Centre

Introduction

The impact of oral health conditions on physical and psychosocial dimensions has been demonstrated in a number of studies (Settineri, Rizzo, Liotta, & Mento, 2014 and Yang, Park, Han, Min and Kim, 2015). Certain dimensions of psychosocial impact had the most impact on individuals' wellbeing such as physical disability (Lawrence, Thomson, Broadbent & Poulton, 2008), psychological discomfort (Masood, Masood, Zainul, Araby, Hussain, & Newton, 2013), physical pain (Saub & Locker, 2006 and Drachev, Brenn & Trovik, 2018). Furthermore, decayed tooth especially in the anterior part of oral cavity which is at a visible area, could impacts individual's social and psychological dimensions (Montero-Martín, Pérez, Martínez, Martín & Gallardo, 2009). Oral diseases also affecting emotional aspects as well, as study found that mood states such as anxiety, depression, aggression, fatigue and confusion were significantly linked to both physical and psychological aspects of oral health (Settineri, Rizzo, Liotta & Mento, 2017).

Although studies have demonstrated the significant impact of oral diseases on individuals and communities, but not many studies have been done among the higher learning institutions community in Malaysia. Therefore, knowledge and data on the severity of psychosocial impacts of oral diseases among adult population in higher learning institutions community is needed to fully understand the impact of oral diseases to enable an effective preventive

measure such as oral health programs, disease prevention programs and right policy making to be put in place.

The objective of this study is to measure the severity of the psychosocial impact of oral diseases among adult population receiving treatment in University Health Centre according to respondent's socio-demographic factors.

Literature Review

Oral diseases are the most predominant diseases that impact health and economics conditions. Oral diseases are regarding to chronic clinical conditions that affect the teeth and mouth, such as tooth decay, gum disease, and oral cancers.

Dental caries is the acidic by-products of bacterial fermentation of free carbohydrates that cause localized damage of dental hard tissues (enamel and dentine). Periodontal diseases are inflammatory illnesses that affect the tissues that surround and support the teeth on a long-term basis. A cancer of the lips, tongue, gums, floor of mouth, palate, cheek mucosa, vestibule of the mouth, or retromolar area is classified as cancer of the lips and oral cavity (Peres et al., 2019).

Oral diseases have serious consequences, causing pain, infection, lower quality of life, missed school days, family disruption, and decreased work productivity, and dental treatment can be expensive for both the person and the health-care system as a whole (Peres et al., 2019).

Methodology

Instrument

OHIP-14 validated for Malaysian population designated as S-OHIP (M), using English and Malay language developed by Saub, Locker and Allison (2005) will be used. S- OHIP (M) was developed following the cross-cultural adaptation of the long form of OHIP, which is internally consistent and reliable with 0.89 of the Cronbach's alpha, with responses, "never", "hardly ever", "occasionally", "fairly often", and "very often", were codified from 0 to 5, respectively.

Procedure

This study is a quantitative research using cross-sectional study with the accordance to the Declaration of Helsinki. Each participant was informed regarding the methods and study objectives and required to sign a consent form if they agree to participate in the study. Approval from University Ethics Committee and University Health Centre management had been obtained prior to the study. Data were collected using a simple random sampling method to select the respondents during study period according to the inclusion and exclusion criteria.

Data Analysis

The data analysis of this research are Mann-Whitney U tests and The Kruskal-Wallis tests. The non-parametric analysis Mann-Whitney U tests is to identify the differences of the severity of oral diseases between male and female. Besides, The Kruskal-Wallis tests and Mann-Whitney U tests were conducted to identify the differences of the severity of the impact of oral diseases between patient's categories. The Kruskal-Wallis test also conducted to identify the differences of the severity of the impact of oral diseases

according to frequency of dental problems and to identify the differences of the severity of oral diseases between age.

Results

Respondent Background. A total of 398 adults respondents participated with 126 (31.7%) male and 272 (68.3%) females, Undergraduate students 241 (60.6 %), Postgraduate students 96 (24.1 %), Lecturer 13 (3.3 %), Professional staffs 17 (4.3 %) and Supporting staff 31 (7.8 %). The majority were from age group of 18-34 years old with 343 respondents (86.2 %), 35-54 years old, 51 respondents (12.8 %) and 55-60 years old, 4 respondents (1.0 %). 363 respondents (91.2 %) were having dental problems 1-3 times, 29 respondents (7.3 %) were having dental problems 4-10 times and 6 respondents or 1.5% were having dental problems more than 10 times in the past 12 months.

Mean of total S-OHIP (M) score was 19.46 (SD=8.77), with the highest mean score is Psychological Discomfort (M=4.10, SD=1.76) followed by Physical Pain (M=3.28, SD=1.51) and Functional Limitation dimension (M=2.99, SD=1.69). While the lowest S-OHIP (M) score is Social Disability dimension (M=1.73, SD=1.61).

Severity of the Impact of Oral Diseases between Gender

Normality by Shapiro-Wilk test showed that some of the significant values were less than 0.05. Thus, it showed that data were not normally distributed. Since the data were not normally distributed, non-parametric analysis Mann-Whitney U tests were used with the aim of identifying the differences of the severity of oral diseases between male and female. Result showed no significant difference of S-OHIP (M) and its 7 dimensions between genders ($p > 0.05$) as in Table 1.

Table 1. *Severity of the Impact of Oral Diseases between Genders*

	Gender	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Asymp. Sig. (2-tailed)	Z	R
S-OHIP (M)	Male	126	194.39	24493.50	16492.5	0.546	-0.603	0.003
	Female	272	201.87	54907.50				
Functional Limit	Male	126	200.53	25266.50	17006.5	0.902	-0.123	0.006
	Female	272	199.02	54134.50				
Physical Pain	Male	126	196.17	24718.00	16717	0.688	-0.402	0.020
	Female	272	201.04	54683.00				
Psychological Discomfort	Male	126	183.26	23090.50	15089.5	0.052	-1.947	0.098
	Female	272	207.02	56310.50				
Physical Disability	Male	126	193.96	24438.50	16437.5	0.506	-0.665	0.033
	Female	272	202.07	54962.50				
Psychological Disability	Male	126	190.95	24060.00	16059	0.305	-1.026	0.051
	Female	272	203.46	55341.00				
Social Disability	Male	126	196.30	24733.50	16732.5	0.697	-0.389	0.019
	Female	272	200.98	54667.50				
Handicap	Male	126	196.40	24746.50	16745.5	0.71	-0.372	0.019
	Female	272	200.94	54654.50				

Note. Asymp. Sig. = asymptotic significance.

Severity of the Impact of Oral Diseases between Age Group

Normality by Shapiro-Wilk test showed that some of the significant values were less than 0.05. The Kruskal-Wallis

tests conducted with the aim of identifying the differences of the severity of the impact of oral diseases between age group showed no significant difference of S-OHIP (M) and its 7 dimensions between the age group ($p > 0.05$), as in Table 2.

Table 2. *Severity of the Impact of Oral Diseases between Age Group*

Variables	Age category (years)	N	Mean Rank	χ^2	Df	Asymp. Sig.	η^2
S-OHIP (M)	18-34	343	196.19	2.267	2	0.322	0.006
	35-54	51	218.11				
	55-60	4	245.75				
Functional Limit	18-34	343	194.15	5.868	2	0.053	0.015
	35-54	51	230.31				
	55-60	4	265.13				
Physical Pain	18-34	343	196.98	1.526	2	0.466	0.004
	35-54	51	212.99				
	55-60	4	243.75				
Psychological Discomfort	18-34	343	198.73	0.124	2	0.94	0.000
	35-54	51	203.92				
	55-60	4	209.38				
Physical Disability	18-34	343	198.35	0.488	2	0.784	0.001
	35-54	51	204.63				
	55-60	4	232.88				
Psychological Disability	18-34	343	197.48	3.768	2	0.152	0.009
	35-54	51	204.71				
	55-60	4	306.13				
Social Disability	18-34	343	198.68	0.234	2	0.889	0.001
	35-54	51	205.94				
	55-60	4	187.38				
Handicap	18-34	343	195.60	2.958	2	0.228	.007
	35-54	51	224.05				
	55-60	4	221.25				

Note. Asymp. Sig. = asymptotic significance.

Severity of the Impact of Oral Diseases between Patient's Categories

The Kruskal-Wallis test showed a significant difference by patient's categories for severity of the impact of oral diseases, $\chi^2(4, N = 398) = 11.665, p = .02$. Since there was significant difference in S-OHIP (M) across patient's categories, the Mann-Whitney U tests were used to see the differences of S-OHIP (M) between two groups of patient's

categories. Ten Mann-Whitney U tests were analysed. A Bonferroni correction was applied thus all effects are reported at $\alpha = .005$ (0.05/10) level of significance. Table 3, the Mann-Whitney U test showed that supporting staffs had more severe impact of oral diseases compared to lecturers ($U = 79, p = .002, r = -.475$; medium to large effect size).

Table 3. *Mann-Whitney U Test Results for Functional Limit between Patient's Categories*

Comparison Between Two Customer's Categories	Patient's Category	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)	R
Undergraduate - Postgraduate	Undergraduate students	241	171.01	41212.50	11084.500	-0.599	0.549	-.033
	Postgraduate students	96	163.96	15740.50				
Undergraduate -	Undergraduate	241	129.34	31170.00	1124.000	-1.716	0.086	-.108

Lecturer	students							
	Lecturer	13	93.46	1215.00				
Undergraduate - Professional staffs	Undergraduate students	241	128.58	30988.50	1827.500	-0.744	0.457	-.046
	Professional staffs	17	142.50	2422.50				
Undergraduate - Supporting staff	Undergraduate students	241	132.20	31859.50	2698.500	-2.517	0.012	-.153
	Supporting staffs	31	169.95	5268.50				
Postgraduate - Lecturer	Postgraduate students	96	56.61	5435.00	469.000	-1.450	0.147	-.139
	Lecturer	13	43.08	560.00				
Postgraduate - Professional staffs	Postgraduate students	96	55.69	5346.50	690.500	-1.009	0.313	-.095
	Professional staffs	17	64.38	1094.50				
Postgraduate - Supporting staff	Postgraduate students	96	58.86	5651.00	995.000	-2.769	0.006	-.246
	Supporting staff	31	79.90	2477.00				
Lecturer - Professional staffs	Lecturer	13	12.23	159.00	68.000	-1.781	0.075	-.325
	Professional staffs	17	18.00	306.00				
Lecturer - Supporting staff	Lecturer	13	13.08	170.00	79.000	-3.155	0.002	-.475
	Supporting staff	31	26.45	820.00				
Professional staffs - Supporting staffs	Professional staffs	17	22.06	375.00	222.000	-0.896	0.370	-.129
	Supporting staff	31	25.84	801.00				

Note. Asymp. Sig. = asymptotic significance.

Severity of the Impact of Oral Diseases According to Frequency of Dental Problems

The Kruskal-Wallis test showed a significant difference by frequency of dental problems for the past 12 months with the severity of the impact of oral diseases, $\chi^2(2, N = 398) = 24.554, p < .0001$. Since there was significant difference in S-OHIP (M) across frequency of dental problems for the past 12 months, the Mann-Whitney U tests were used to see

the differences of S-OHIP (M) between two groups of frequency of dental problems. Three Mann-Whitney U tests were analysed. A Bonferroni correction was applied thus all effects are reported at $\alpha = .017 (0.05/3)$ level of significance. In Table 4, the Mann-Whitney U test showed that the patients' that had 4-10 times frequency of dental problems for the past 12 months had more severe impact of oral diseases than patients' that had 1-3 times dental problems ($U = 2333.5, p < .000, r = -.252$; small to medium effect size).

Table 4. Mann–Whitney U Test Results for S-OHIP (M) between Frequency of Dental Problems (for the past 12 months)

Comparison Between Two Frequency of Dental Problems	Frequency of Dental Problems	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Z	Asymp. Sig. (2-tailed)	R
1-3 times with 4-10 times	1-3 times	363	188.43	68399.50	2333.500	-4.993	0.000	-.252
	4-10 times	29	297.53	8628.50				
1-3 times with >10 times	1-3 times	363	184.91	67123.50	1057.500	-0.122	0.903	-.006
	>10 times	6	190.25	1141.50				
4-10 times with >10 times	4-10 times	29	18.74	543.50	65.500	-0.943	0.346	-.159
	>10 times	6	14.42	86.50				

Note. Asymp. Sig. = asymptotic significance.

Discussions

High percentage (91%) of respondents had oral problems at least once in the past 12 months, similar to the finding from a study among university students in five ASEAN countries which found 67.1% of students were having dental problems at least once in the past 12 months (Peltzer & Pengpid, 2017). Current study also demonstrated that patient who had 4-10 times frequency of dental problems had more severe impact due to oral diseases compared to patient that had less frequent of oral problems. This could impact the community's psychosocial wellbeing as study indicated that oral diseases could cause disturbed sleep and fatigue among university students (Asawa, Sen, Bhat, Tak, Sultane & Mandal, 2017).

In our study, the mean score of S-OHIP (M) of 19.46 was higher compared to other studies in Malaysia of 14.8 (Nachatar Singh, Maykanathan, Jacqueline Teyew, 2015), 8.09 in Nepal (Agrawal, Dahal, Shrestha & Bhagat, 2017), 6.3 in China (Lu, Wong, Lo, & McGrath, 2015) and 8.7 – 10.5 in Spain (Montero-Martín *et al.*, 2009). This finding also contrary with previous study among university's community in Malaysia (Hutagalung, Kamarul, Zulnaidi, Fong Peng, Rosli & Kassim, 2020), undergraduate students in India (Acharya & Sangam, 2008) and Russia (Drachev *et al.*, 2018) with OHIP-14 score of 14.02, 13.4 and 4.63 respectively. This study revealed that Psychological Discomfort dimensions were the most affected, followed by Physical Pain. Finding from this study was similar with studies in Malaysia (Nachatar Singh *et al.*, 2015), in Spain (Montero-Martín *et al.*, 2009) and in India (Ingle, Chaly & Zohara, 2010). High mean OHIP score and Psychological Discomfort dimensions that most affected was due to the majority of respondents in this study are from a younger age group and with better education are tend to have higher expectation and more concerned of their oral health conditions (Yen, Lee, Wu, Lan, Wang, Du, Huang & Hsu, 2015).

Current study also revealed that there was no significant difference of S-OHIP (M) score between male and female respondents which is similar with other studies (Saub & Locker, 2006 and Brennan & Spencer, 2009). However, other study concluded otherwise, with female more impacted by oral conditions than male (Drachev *et al.*, 2018). This means that the impact of oral health are affecting both male and female at the same level in this study, which suggest that gender did not affect how adult patients in higher learning institution community in this study perceived their oral health.

While previous studies have reported that oral diseases had impact on certain age group, with studies showed that middle age group (Hutagalung *et al.*, 2020) and younger age group (Nagarajappa, Batra, Sanadhya, Daryani & Ramesh, 2015) reported more impact due to oral diseases, however, this study indicated otherwise as there was no significant difference of psychosocial impact of oral diseases between age groups was found, which suggest that the impact of oral health are affecting all age group in this study.

This study revealed that supporting staffs had more severity compared to lecturers. As with most of the supporting staff were from lower socioeconomic level compared to lecturers, it corroborates with previous study, that socio-economic status was a risk factor for poor oral health knowledge and deficient good oral hygiene habits (Cepova, Cicvakova, Kolarcik, Markovska & Geckova, 2018). As most lecturers are from a better socio-economic status and from higher level of educational background, such as PhD and Master degree, they tend to have a better oral health knowledge (Márquez-Arrico, Almerich-Silla & Montiel-Company, 2019) which could contribute to a better awareness and less severe oral conditions. Findings from current study is also similar to a study in Greek by which also found that the higher the education level, the lower the

overall OHIP-14 score (Papaioannou, Oulis, Latsou & Yfantopoulos, 2011). Nevertheless, other study had found different findings (Yen *et. al*, 2015) with those who had higher level of education reported more impacts.

Conclusion

Studies have found that the impact of oral diseases on individual's psychosocial wellbeing is significant. High

Limitations and Future Studies

This research was conducted only on patients who came to a dental health clinic at a state university in Malaysia.

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