Oral health-related quality of life among pregnant women at Hospital Universiti Sains Malaysia

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Abstract. This cross sectional study aimed to determine oral health-related quality of life in pregnant women. A total of 100 pregnant women seen at the Obstetrics and Gynaecology Clinic at Hospital Universiti Sains Malaysia participated in this study. The short version of the Malaysian Oral Health Impact Profile (S-OHIP(M)) questionnaire with five-point ordinal scale that ranges from 'never' to 'very often' was used to assess the frequency of oral impacts during the previous 12 months. The majority of the respondents were Malay (96.0%), with a mean age of 29.9 years (SD 5.78). The highest education level attained by most respondents was post-secondary qualification or Diploma (39.0%). Some had formal tertiary education (27.0%). The majority of them were income earners (74.0%) and contributed to the household income. Half of the respondents were in their third trimester of pregnancy while the remaining half was either in the first or second trimester. The severity of impact experienced by the women, which is the mean S-OHIP(M) score was high at 10.43 (95% CI = 8.96, 11.90). The prevalence of impact, which is the percentage of respondents reporting 'fairly often' or 'very often' to one or more impacts, was 36.0%. Common impacts experienced by the respondents include feeling uncomfortable because food got stuck in between teeth or dentures (22.0%), feeling that oral health problems had caused bad breath (13.0%), and feeling shy because of problems with teeth, mouth or dentures (9.0%). The results also demonstrated that neither the severity nor the prevalence of impact was influenced by the women's socio-demographic background. This study concluded that pregnant women suffered from high impact of oral diseases that could affect their quality of life.

Key words: Pregnant women, oral health-related quality of life.

Introduction

Pregnancy results in complex alterations of the physical and physiological attributes that are associated with hormonal, immunologic, dietary, and behavioural changes. It could affect almost every system of the body, including the oral cavity. Increased levels of oestrogen and progesterone may cause an exaggerated gingival tissues response to plaque toxin that predisposes women to gingivitis. The tissues become inflamed, oedematous and sensitive with tendency to bleed easily, and existing gingivitis may worsen significantly during pregnancy if plaque is not removed (Loe & Silness, 1963). Studies have shown that pregnancy gingivitis affected as much as 25% to 100% of pregnant women (Amar & Chung, 1994; Gürsoy et al., 2008; Laine, 2002).

An increased in dental caries experience has also been reported among pregnant women. This could be due to the increasing need and desire to eat and snack, especially on sticky sweet foods. In addition, pregnant women may experience nausea or develop dislikes for toothpaste smells that prevent them from brushing their teeth. Worse still, frequent vomiting may cause prolonged exposure of tooth surfaces to stomach acid which may erode the tooth surfaces and make the teeth more susceptible to dental caries (Felton et al., 2009).

Poor oral health can unfavourably affect the quality of life. A study by De Oliveira and Nadanovsky (2006), on 504 low income Brazilian pregnant women revealed that the prevalence of oral pain among the women was 39.1%, and 14.7% of them had trouble doing some of their normal activities (work, household chores, studying or recreation) because of the pain. The authors concluded that oral pain during pregnancy was an essential problem for low income Brazilian women and had harmful effects on their quality of life. Acharya and Bhat (2009) investigated further on the differences in oral health and perceived oral health-related quality of life (OHRQOL) between 259 pregnant and 237 non-pregnant rural Indian women in South India. The authors reported that oral health and perceived OHRQOL were poorer among pregnant women than non-pregnant women and underlined the importance of maintaining good oral health during pregnancy.

The objective of this study was to determine perceived OHRQOL among pregnant women at Hospital Universiti Sains Malaysia. The results will undoubtedly provide essential information for planning the delivery of oral health care services to the mothers.

Materials and Methods
Population and sample
This cross sectional study was conducted on pregnant women attending antenatal care at the Obstetrics and Gynaecology Clinic, Hospital Universiti Sains Malaysia, Kelantan. The ethical approval to conduct this study was obtained from the Research and Ethics Committee (Human), Universiti Sains Malaysia. A total of 100 pregnant women participated in this study. The criteria for inclusion in this study were pregnant women who were able to read and write in Malay language and have no clear display of cognitive disturbances.

Non proportionate stratified random sampling was applied to capture women in all three trimesters of pregnancy. However, as there were not many women who came in during the first trimester, only two strata were identified, one stratum of women in the first or second trimester, and another stratum of women in the third trimester. Systematic random sampling method was applied for selection of 50 samples for each stratum.

Research tool
The Malay version of the 14-item Oral Health Impact Profile (S-OHIP(M)) questionnaire was used to measure the OHRQOL among the women in this study (Saub et al., 2007). The questionnaire that measures individual perceptions of impact of oral diseases on life experiences was originally developed in English by Slade and Spencer (1997). The S - OHIP(M) questionnaire consists of 14 items that are organised in seven sub-scales, namely functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap. A five-point Likert scale format that ranges from '0' for 'never', '1' for 'hardly ever', '2' for 'occasionally', '3' for 'fairly often', and '4' for 'very often' is used to assess the frequency of impact caused by oral conditions during the previous year.

Based on the responses, the prevalence of impact was determined which is the percentage of respondents reporting one or more impacts 'fairly often' or 'very often' (Slade et al., 2005). This variable identifies those whose oral health impacts are chronic rather than transitory. In addition, the extent of impact, which is the number of items with 'fairly often' or 'very often' response, and the severity of impact, which is the sum of all ordinal response codes, were determined for each participant. The mean severity score is the mean OHIP score.

Statistical analysis
Data entry and analysis was done using the Predictive Analytics Software (PASW) for Windows, version 18.0 (SPSS Inc, Chicago). Descriptive statistics such as mean and standard deviation (SD) for continuous variables, and frequency and percentage for categorical variables were determined. The chi-square test and independents *t*-test were used to determine the influence of socio-demographic attributes of the respondents on the S-OHIP (M) variables. The level of significance was set at 0.05

Results and Discussion
The socio-demographic and obstetric profile of the respondents is shown in Table 1. Their age ranged from 17 to 42 years with a mean age of 29.9 years (SD 5.78). The majority of the respondents were Malay (96.0%). Most of the women (39.0%) had an education level up to post-secondary qualification or Diploma. Some had tertiary education (27.0%). The majority of them were income earners (74.0%) and contributed to the household income. The median household income was Malaysian Ringgit (MYR) 2600 (IQR 2800). Owing to the sampling methods used, there were equal number of respondents in first or second trimester (n=50) and in the third trimester (n=50). Most of the respondents have been pregnant more than once (77.0%) and have borne one child or more (73.0%).

Table 2 shows the prevalence, mean extent and mean severity of impact experienced by the respondents. The prevalence of impact, which is the percentage of respondents reporting 'fairly often' or 'very often' to one or more impacts, was 36.0%. The mean extent of impact was 0.77 (SD 1.41). Among the respondents who reported any impact, more than half (52.7%) reported only a single impact. The severity of impact experienced by the women, which is the mean S-OHIP(M) score was 10.43 (SD 7.43). The prevalence, mean extent and mean severity of impact were not significantly different between respondents in the two trimester groups.

Table 1. Socio-demographic and obstetric profile of respondents (n=100)

Variables	Frequency (%)
Age group (years)	
≤19	5 (4.0)
20-24	12 (12.0)
25-29	31 (31.0)
30-34	32 (32.0)
35-39	14 (14.0)
40-44	7 (7.0)
Ethnic group	
Malay	96 (96.0)
Others	4 (4.0)
Highest educational level	
Primary/secondary	34 (34.0)
Post-secondary/Diploma	39 (39.0)
Tertiary	27 (27.0)
Household income (MYR)	
<1000	23 (23.0)
1000-3000	39 (39.0)
3001-5000	29 (29.0)
>5000	9 (9.0)
Employment status	
No	26 (26.0)
Yes	74 (74.0)
Period of gestation	
First/second trimester (≤27 weeks)	50 (50.0)
Third trimester (≥ 28 weeks)	50 (50.0)
Gravida status	
Primigravida	23 (23.0)
Multigravida	77 (77.0)
Parity status	
Primiparity	27 (27.0)
Multiparity	73 (73.0)

Table 2. Prevalence, mean extent and mean severity of impact experienced by the respondents (n=100)

Variables	All respondents	First/second trimester	Third trimester
Prevalence (%)	36.0	18.0	18.0
Mean extent (SD)	0.77 (1.41)	0.66 (1.10)	0.88 (1.66)
Mean severity (SD)	10.43 (7.43)	10.55 (6.62)	10.30 (8.23)

The prevalence of impact and mean score for each S-OHIP(M) item are shown in Table 3. The highest prevalence reported by the respondents was associated with psychological discomfort due to food getting stuck in between teeth or dentures (22.0%). Other common impacts experienced by the respondents include feeling that oral health problems had caused bad breath (13.0%) and feeling shy because of problems with teeth, mouth or dentures (9.0%). With regard to mean item scores, discomfort due to food getting stuck in between teeth or dentures, again, was the most frequently reported followed by problems causing bad breath, and feeling shy because of problems with teeth, mouth or dentures.

Table 3. Prevalence of impact and mean score for each S-OHIP(M) item (n=100)

S-OHIP(M) subscale and item	Prevalence (%)	Mean item score (SD)
Functional limitation		
Difficulty chewing any food	3.0	0.69 (0.85)
Problems cause bad breath	13.0	1.26 (1.07)
Physical pain		
Discomfort eating any foods	6.0	0.92 (0.91)
Ulcers in your mouth	6.0	0.91 (0.89)
Psychological discomfort		
Felt discomfort due to food getting stuck	22.0	1.60 (1.06)
Felt shy because of problems	9.0	1.02 (1.02)
Physical disability		
Avoiding eating certain foods	6.0	0.79 (0.94)
Avoiding smiling	5.0	0.51 (0.90)
Psychological disability		
Sleep been disturbed	2.0	0.48 (0.73)
Concentration been disturbed	2.0	0.69 (0.79)
Social disability		
Avoiding going out	1.0	0.20 (0.55)
Problems in carrying out daily activities	1.0	0.33 (0.67)
Handicap		
Had to spend a lot of money	0.0	0.38 (0.58)
Felt less confident	3.0	0.62 (0.78)

Table 4 shows the prevalence, mean extent, and mean severity of impacts by selected socio-demographic characteristics of the respondents. The results demonstrated that the extent of impact was significantly influenced by the age group of the respondents. The influence of other socio-demographic characteristics on the extent of impact was not apparent. Further, neither the severity nor the prevalence of impacts was affected by the respondents' socio-demographic background.

The results of this study showed that 36% of a sample of pregnant women who attended Hospital Universiti Sains Malaysia for antenatal care experienced one or more impacts as a result of oral diseases in the previous year. This prevalence was found to be higher than those reported in studies among the general adult populations in the United Kingdom (15.9%), the United States (15.3%), Australia (18.2%) and Canada (19.5%) (Locker & Quiñonez, 2009; Sanders et al., 2009; Slade et al., 2005). Comparable prevalence of 34.8% was reported by Williams (2010) in a study among rural-dwelling indigenous Australians. Nevertheless the prevalence of impact on those pregnant women were significantly lower when compared with that found among a rural riverine population in Isidoro (44.3%) and Lauro Sodre, (70.3%), Brazil (Cohen-Carneiro et al., 2010). The authors attributed the high prevalence of impacts in Lauro Sodre to the limited access to oral health care service centres due to geographical distance.

The mean severity and extent of the impacts found among the pregnant women in the present study were comparable to the findings by Saub et al. (2005) in a study among a sample of 206 general Malaysia population, 10.96 (SD 8.81) and 1.11 (SD 2.01) respectively. These are lower than the severity and extent of impacts among rural-dwelling indigenous Australians, 15.0 and 1.88 respectively, and the severity and the extent among the riverine population in Lauro Sodre, Brazil, 14.3 and 2.24 respectively. Again, poor accessibility of these marginalised populations to oral health care services may explain for the findings (Cohen-Carneiro et al., 2010; Williams et al., 2010).

With regard to mean item scores, feeling uncomfortable because food got stuck in between teeth or dentures and feeling that oral health problems had caused bad breath have the highest mean severity scores among pregnant women in the present study. Other problems with high impact scores include feeling shy because of problems with teeth, mouth or dentures, discomfort eating any foods, and ulcers in the mouth. On the other hand, items in physical pain domain, painful aching in mouth and feeling uncomfortable to eat any foods because of problems with teeth or mouth have the highest severity score in a

study among a group of 259 pregnant rural women in South India by Acharya and Bhat (2009). Studies among adult populations of the United Kingdom, Australia and Canada also reported items in physical pain domain as having the highest impact (Locker & Quiñonez, 2009; Slade et al., 2005). A study by de Oliveira (2006) suggested that oral pain during pregnancy is an important problem that may negatively affect the quality of life of the women. Lower severity scores for physical pain items among pregnant women in the present study may warrant further investigation because lower dental pain perception may be associated with poor dental attendance behaviour. A previous study by Saddki et al.(2010) in a sample of antenatal mothers at Hospital Universiti Sains Malaysia showed that most mothers admitted of having at least one oral health problem (59.7%) during pregnancy. On the other hand, the majority of the mothers perceived their oral health status as good (67.0%) and only 29% of them visited dentist during the current pregnancy. The common reasons for not visiting dentist were their perceptions of not having any oral health problems (65.9%), which perhaps was due to their low pain perceptions.

Table 4. Prevalence, mean extent, and mean severity of impact by socio-demographic characteristics of respondents (n=100)

Variables	Prevalence (%)	Mean extent score (SD)	Mean severity score (SD)
Age group (years)			
≤34	28 (35.4)	0.66 (1.19)*	9.96 (7.22)
≥35	8 (38.1)	1.19 (1.99)	12.19 (8.12)
Highest education level			
Primary/post-secondary	24 (36.5)	0.74 (1.27)	10.42 (7.16)
Tertiary	12 (34.6)	0.86 (1.74)	10.44 (8.25)
Household income (MYR)			
≤3000	27 (38.7)	0.76 (1.28)	10.26 (7.54)
>3000	9 (31.6)	0.79 (1.59)	10.71 (7.33)
Parity status			
Primiparity	8 (29.6)	0.59 (1.11)	8.48 (7.19)
Multiparity	28 (38.4)	0.84 (1.50)	11.15 (7.43)
Gravida status			
Primigravida	7 (30.4)	0.48 (0.94)	8.30 (7.06)
Multigravida	29 (37.7)	0.86 (1.51)	11.06 (7.46)

*P value = 0.02

Conclusions
The results of this study concluded that the impact of oral diseases on OHRQOL of pregnant women is high. There is a need for improved collaborative and coordinated efforts between the oral health professionals and the medical professionals to increase the health of pregnant women as a whole.

Acknowledgements

References
Acharya S., Bhat P.V. 2009. Oral health-related quality of life during pregnancy. Journal of Public Health Dentistry, 69:74-77.
Acharya S., Bhat P.V., Acharya S. 2009. Factors affecting oral health-related quality of life among pregnant women. International Journal of Dental Hygiene, 7:102-107.
Amar S., Chung K.M. 1994. Influence of hormonal variation on the periodontium in women. Periodontology 2000, 6:79-87.
Cohen-Carneiro F., Rebelo M.A., Souza-Santos R., Ambrosano G.M., Salino A.V., Pontes D.G. 2010. Psychometric properties of the OHIP-14 and prevalence and severity of

oral health impacts in a rural riverine population in Amazonas State, Brazil. Cadernos de Saude Publica, 26(6):1122-1130.

De Oliveira B.H., Nadanovsky P. 2006. The impact of oral pain on quality of life during pregnancy in low-income Brazilian women. Journal of Orofacial Pain, 20:297-305.

Felton A., Chapman A., Felton S. 2009. Basic guide to oral health education and promotion, 2nd edition. Oxford, Blackwell Publishing.

Gürsoy M., Pajukanta R., Sorsa T., Könönen E. 2008. Clinical changes in periodontium during pregnancy and post-partum. Journal of Clinical Periodontology, 35:576-583.

Laine M.A. 2002. Effect of pregnancy on periodontal and dental health. Acta Odontologica Scandinavica, 60:257-264.

Locker D., Quiñonez C. 2009. Functional and psychosocial impacts of oral disorders in Canadian adults: a national population survey. Journal Canadian Dental Association, 75(7):521.

Loe H., Silness J. 1963. Periodontal disease in pregnancy I. prevalence and severity. Acta Odontologica Scandinavica, 21:533-551.

Saddki N, Azizah Y, Yew H. 2010. Factors associated with dental visit and barriers to utilisation of oral health care services in a sample of antenatal mothers in Hospital Universiti Sains Malaysia. BioMed Central Public Health, 10:75.

Sanders A.E., Slade G.D., Lim S., Reisine S.T. 2009. Impact of oral disease on quality of life in the US and Australian populations. Community Dentistry and Oral Epidemiology, 37:171-181.

Saub R., Locker D., Allison P. 2005. Derivation and validation of the short version of the Malaysian Oral Health Impact Profile. Community Dentistry and Oral Epidemiology, 33:378-383.

Slade G.D., Nuttall N., Sanders A.E., Steele J.G., Allen P.F., Lahti S. 2005. Impacts of oral disorders in the United Kingdom and Australia. British Dental Journal, 198:489-493.

Slade G.D., Spencer A.J. 1997. Development and evaluation of the Oral Health Impact Profile. Community Dentistry and Oral Epidemiology, 25:284-290.

Williams S.D., Parker E.J., Jamieson L.M. 2010. Oral health-related quality of life among rural-dwelling Indigenous Australians. Australian Dental Journal, 55:170-176.