Association of Dental Anxiety and Oral Health-related Quality of Life in Pregnant Women: A Cross-sectional Survey

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Abstract. To explore the association between dental anxiety and oral health-related quality of life among Chinese pregnant women. A cross-sectional survey was conducted on a consecutive 502 pregnant women in the outpatient departments of Obstetrics and Gynecology from a local general hospital. The measures included a dental anxiety questionnaire to assess dental anxiety, the Chinese version of Oral Health Impact Profile to assess oral health-related quality of life, and a self-designed questionnaire to collect data on the socio-demographic and clinical characteristics. Of the participants, 26.7% suffered from dental anxiety. The overall OHIP-14 was 9.16 ± 7.19. Both bivariate and multivariate analysis found that higher dental anxiety was significantly associated with lower oral health-related quality of life ($P < 0.001$). The dental anxiety of pregnant women may be a significant indicator of their oral health-related quality of life.

Introduction

Dental anxiety (DA) is an important psychological problem. Previous studies have shown that a high level of DA be associated with a low level of dental health care usage [1], poor clinical oral health status [2], and poor oral health related quality of life (OHRQoL) [3]. OHRQoL refers to individuals’ perception of how oral health influences his or her quality of life and overall well-being. Research revealed that adults with DA more often have poorer quality of life than those without [4]. Pregnant women are at higher risk for oral diseases because of changes of hormones and eating habits. Poor oral health during pregnancy could pose more harmful effects for both mother and newborn [5]. Thus, DA might also be associated with ORHQoL, and, hence, might impair women’s everyday life during pregnancy. However, little is known as to what extent DA is related to OHRQoL among pregnant women. Therefore, this study aims to explore the relationship of DA and ORHQoL among Chinese pregnant women in order to provide useful information in helping to establish programs for maternal oral health.

Material and Method

Totally, 502 pregnant women between the age group of 20–40 years who agreed to participate were conveniently recruited from the outpatient departments of Obstetrics and Gynecology in a local general hospital. Informed consent was obtained prior to data collection.
The dental anxiety questionnaire (DAQ) [6], a single item measure asking the participants if she is anxious about going to the dentist, was used to assess the level of DA among the pregnant women. They was divided into low a DA group (“no” and “a little”) and a high DA group (“yes, quite” and “yes, very”) based on their answer. The Chinese version of Oral Health Impact Profile (OHIP-14) [7] rated on 5-point Likert scale from 0 (never) to 4 (very often) was used to assess the OHRQoL. In addition, the questionnaire included the socio-demographic and clinical characteristics, such as age, education, current residence, employment status, monthly family income, dental insurance, gestational age, the frequency pregnancy-related nausea and vomiting, and experienced complications during the current pregnancy, was used to collect the basic information of the participants. SPSS 20.0 was used for data analysis.

Results

Sample Characteristics

All of the participants was married. The mean age of the women was 28.59 ± 3.60 years (median: 28 year). The education level was as follows: secondary school and below, (n = 47); high school, 20.7 % (n = 104); college and above, 70.0% (n = 351). The majority lived in urban area (83.9%). Over half of them were covered by dental insurance (58.0%), 45.6% were not working during pregnancy, and 66.5% reported a monthly income per person over 4000 RMB. The mean gestational age were 27.15 ± 9.00 weeks (range: 12-40). Of those, 7.6% were in their first trimester, 35.7% were in their second, and 56.8% were in their third; 61.7% indicated having experience the frequency of nausea and vomiting over 2 times/d; 6.4% reported having experienced complications during their pregnancy, included gestational diabetes, gestational anemia, and gestational hypertension.

Dental Anxiety

Of the total participants, 27.6% (n = 134) were classified as belonging to the high DA group and 73.3% (n = 368) to the low DA group. There was no difference in participants’ social-demographic and clinical characteristics between the high and low DA groups.

Oral Health-Related Quality of Life

The mean score of OHIP-14 was 9.16 ± 7.19. Women who aged over 28 (t = 2.219, P = 0.027), who experienced higher frequency of nausea and vomiting (t = 8.533, P < 0.001), and who experienced complications during pregnancy (t = 2.219, P = 0.027) reported a higher score of OHIP-14, which indicates lower OHRQoL in those groups compared with their counterparts.

Oral Health-related Quality of Life and Dental Anxiety

A significant difference in the level of OHIP-14 was found when the high and low DA groups were compared. The mean score of OHIP-14 was 12.42 ± 7.79 in high DA group, and 7.97 ± 6.58 in low DA group (t = 35.475, P < 0.001).

Regression Analysis

Based on the results of bivariate analyses, a stepwise linear regression was conducted with the level of OHIP-14 as the dependent variable, and with related factors such as age, frequency of nausea and vomiting, complications during the current pregnancy, and DA as
independent variables, to assess their relationships. The final model showed that frequency of nausea and vomiting ($\beta = 0.311, P < 0.001$), complications during the current pregnancy ($\beta = 0.081, P = 0.047$), and DA ($\beta = 0.311, P < 0.001$) explained 17.7% of the variance of the OHIP-14. (See Table 1).

Table 1. Step wise linear regression analysis with OHIP-14 as dependent variable.

<table>
<thead>
<tr>
<th>Model</th>
<th>Independent variable</th>
<th>$R^2$</th>
<th>$df$</th>
<th>Beta</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nausea and vomiting</td>
<td>0.122</td>
<td>500</td>
<td>0.311</td>
<td>69.527</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>DA</td>
<td>0.171</td>
<td>499</td>
<td>0.222</td>
<td>29.378</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>Complication during pregnancy</td>
<td>0.177</td>
<td>498</td>
<td>0.081</td>
<td>3.973</td>
<td>0.047</td>
</tr>
</tbody>
</table>

Discussion

In recent years, there has been a growing interest in maternal oral health as many literatures demonstrated the association of women’s oral health during pregnancy on adverse pregnancy outcomes [5]. In seeking dental care, one of the main barriers was identified as DA [1, 8]. In this study, the prevalence of high DA among pregnant women was about 27.6%. This figure is lower than that in Wen’s study (31.0%) [8]. Such difference may be attributed to the socioeconomic difference between the study populations. In Wen’s study [8], there was nearly 60.5% reported a monthly income per person lower than 2000 RMB, compared with 66.5% with monthly income over 4000 RMB in the present study. In a prior study [9], the inverse association between socioeconomic status and DA was already observed among pregnant women. Thus, it is important to pay more attention to such group of pregnant women when addressing their oral health and related psychological problems.

Oral health during pregnancy is important for both maternal health and well-being, and the general health of their fetus [10]. The results in this study showed the perceived OHRQoL measured by OHIP-14 was poor (9.16 ± 7.19). This figure is higher than that of pregnant women in Shanghai (7.92 ± 6.84) [11], and Brazil (3.8 ± 7.5) [12], indicating pregnant women in the present study perceive oral diseases as a significant negative influential on their OHRQoL. In addition, our results showed that perceived higher OHRQoL was related to higher frequency of nausea and vomiting, and experienced complications during pregnancy. Prior studies have found a significant association between severe nausea and vomiting during pregnancy and worse psychosocial health [10], as well as experienced complications during pregnancy and worse health outcomes both for mother and baby [13]. Thus, there is an urgent need to develop appropriate interventions to improve pregnant women’s oral health and general health, which will further increase their whole well-being and quality of life.

In this study, the negative relationship between DA and OHRQoL was observed from both the bivariate and multivariate analyses, which is consistent with the results of previous studies among middle-aged women in Sweden [3], Chinese adults in Shenzhen [4], and pregnant women in South India [14]. Locker [15] suggested that dental anxiety has pervasive psychosocial consequences, involving psychological reactions, social relationships and avoidance, which may further exert adverse effects on people’s general well-being and quality of life. It is possible that, in this study, individuals suffering from DA more often report avoidance in using dental service. Lu’s study [11] found that only 1.2% of the pregnant women attended dental services for regular dental checkup in Shanghai, China, although their dental health status was worse. Moreover, it is not a popular practice for health care providers to provide health education program specifically emphasizing on women’s oral health during
pregnancy when they attend antenatal checkup in maternal and child care service centers [11]. Such a situation may worsen the overall oral health among pregnant women, a vulnerable group to oral diseases, and further negative impact their perceived OHRQoL.

The cross-sectional design and the self-reported data limit the generalizability of the study results and for inferring cause and effect between the variables. Also, there was selection bias for the convenient sampling method.

**Summary**

The presented study demonstrates the frequency of nausea and vomiting and complications identification during pregnancy, and dental anxiety may have negative effects on the ORHQRoL among pregnant women. This highlights the need for oral health care components to be effectively integrated into routine antenatal health care education programs. Moreover, efforts should be made to detect and treat dental anxiety in order to promote the ORHQRoL of this group of people.

**References**


