

Oral Health Knowledge of Pregnant Women on Pregnancy Gingivitis and Children's Oral Health

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Objective: Pregnancy gingivitis and early childhood caries remain prevalent in Hong Kong. The aim of this study was to assess pregnant women's knowledge and beliefs related to pregnancy gingivitis and children's oral health. **Study design:** An outreach survey was carried out in a clinic that provided antenatal examination. A written oral health questionnaire related to pregnancy gingivitis and early childhood caries was administered to pregnant women. Of the 106 pregnant women who enrolled in the study, 100 completed the questionnaires. **Results:** Among the 100 subjects, only 39% correctly identified that hormonal changes contribute to pregnancy gingivitis. Only 36% identified red and swollen gums as signs of gingivitis. Furthermore, 53% of the surveyed pregnant women were not sure about the amount of toothpaste to administer to a child aged 18 months to 5 years. Almost 50% assumed that a replanted avulsed tooth would probably not survive within a short extra-alveolar period of less than 60 minutes. **Conclusion:** Prenatal women generally lack knowledge of a common oral disease that occurs during pregnancy and of what constitutes adequate oral health care for children. Oral health care education should be implemented as part of a prenatal care program.

Key Words: pregnancy, oral health, pregnancy gingivitis, childhood caries

INTRODUCTION

According to reports from the Hong Kong Immigration Department, more than 75,000 babies were born in Hong Kong each year over the past five years, with 91,600 born in 2012. The oral health knowledge level of pregnant women is closely related to their own oral health status and that of young children.¹ Pregnancy gingivitis and early childhood caries are two major areas of concern from the pregnancy period to the first few years after delivery.

During pregnancy, women are predisposed to exaggerated gingival inflammatory response due to a change in their gestational hormone levels.² Evidence showed that poor maternal periodontal status may be associated with adverse pregnancy outcomes.³ After delivery, a child's mother is the first person to take care of the child's oral health. Maternal oral flora and oral hygiene practices are related

to children's oral health. Children are at greater risk of early childhood caries if their mothers have a high caries rate.^{4,5} Early childhood caries are known to cause many future dental problems and affect growth and cognitive development, ultimately impairing the quality of a child's life.⁶ A survey conducted in Hong Kong revealed that over half of preschool children have untreated caries in their mouths.⁷ Another survey conducted in 2001 pinpointed a lack of regular dental service among adults and children.⁸ However, no study specifically investigated the oral health profiles, knowledge and beliefs of pregnant women in Hong Kong.

An understanding of pregnant women's oral health knowledge and beliefs will allow medical and dental professionals to compose a comprehensive prenatal program that includes dental care for pregnant women and could act as the first line of defense against pregnancy gingivitis and childhood dental problems. Therefore, this study aims to assess the oral health knowledge and beliefs of pregnant women and provide a general view of what may hinder them from seeking optimal self-initiated oral health care for their children and themselves. In this way, it seeks to better promote the prevention of pregnancy gingivitis and improve awareness of children's oral health.

MATERIALS AND METHOD

We sought ethics approval from the Institutional Review Board (IRB No. UW12-213) for this study. The target group was Chinese pregnant women. An outreach survey was carried out in a major hospital in Hong Kong that provided antenatal examination. The survey was conducted in a written questionnaire format. A set of self-designed Chinese questionnaires comprising 14 questions each was administered. Half of the questions referred to prenatal dental

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care and involved an understanding of pregnancy gingivitis and its prevention. The other half referred to postnatal dental care for children and involved caries prevention, management of dental trauma and misconceptions of childhood oral health practice. Pregnant women in the prenatal checkup waiting area were randomly invited to complete the questionnaires. Those who could not read Chinese or who refused to participate in the survey were excluded. The participants were asked to complete the questionnaires independently, and the questionnaires were collected once they had been completed.

RESULTS

One hundred and six pregnant women were invited to participate in the survey, and one hundred and five sets of questionnaires were completed and collected. Only one woman refused to fill in the questionnaire. Of the 105 sets of questionnaires, 5 sets were considered invalid due to having blank answers. Based on the 100 sets of valid questionnaires collected, the response rate was 94.4% (100/106).

In terms of prenatal dental care, most of the respondents (78%) perceived gum bleeding as a sign of pregnancy gingivitis, but few (36%) were able to identify other signs of the disease such as swollen and reddened gums. In terms of preventive measures, most of the respondents knew that daily tooth brushing and flossing can prevent pregnancy gingivitis (84%), but not many knew that dental checkups before pregnancy (37%) and during the second trimester (18%) are also preventative measures. Only about half of the respondents considered professional scaling (53%) as a treatment. The respondents also lacked an awareness of the potential consequences of leaving the disease untreated. Some of the respondents related pregnancy gingivitis to other non-related dental problems such as tooth decay (23%) and tooth sensitivity (20%). The majority of the respondents either did not know (67%) or did not feel (21%) that the disease could cause adverse pregnancy outcomes. In general, almost all of the respondents (99%) knew that proper cleaning of the teeth by brushing and flossing is important, but fewer knew of the importance of regular dental checkups (63%). The responses to the knowledge questions about prenatal dental care are shown in Table 1.

In terms of the knowledge questions about postnatal dental care for children, about two thirds of the respondents (69%) assume that children should not use fluoridated toothpaste before the age of two. Furthermore, only two thirds of the respondents (68%) knew that adults should use fluoridated toothpaste. Many of the respondents were able to identify sugar-rich food such as sweets (97%) and ice cream (89%) as caries related, but not many knew about the hidden sugar content in juice (51%), biscuits (51%) and milk (9%). Many of the respondents were not clearly aware of the cleaning aids, with only 67% selecting wet towels and 23% selecting toothbrushes as cleaning aids for the teeth of young babies. In terms of dental trauma, about half of the respondents knew the critical time for the replacement of an avulsed tooth to be within 1 hour (52%). Some did not know the correct medium for storing an avulsed tooth, with 22% selecting distilled water and 26% selecting no medium.

In terms of the respondents' oral health beliefs (Table 3), 18% of the respondents thought that feeding a child in bed would aid his sleeping, and 18% thought that cleaning a child's teeth once per day was acceptable. Some believed that there was no need to care about a child's primary teeth, as they would be soon replaced (18%).

DISCUSSION

Previous studies have demonstrated the significant influence of pregnancy on periodontal health.⁹ Although information about pregnancy gingivitis is readily available on the website of the Department of Health in Hong Kong, the majority of pregnant women who responded to the questionnaire used in this study did not know much about pregnancy gingivitis.¹⁰ Only 39% of the respondents knew that hormonal changes are contributing factors to pregnancy gingivitis, and only 36% identified red and swollen gums as signs of gingivitis. Pregnancy gingivitis seldom causes pain and is likely to be ignored. Several studies revealed a correlation between periodontal disease and adverse pregnancy outcomes.¹¹ However, in this study, very few pregnant women were aware of the influence of pregnancy gingivitis on oral health, especially in terms of its possible influence on pregnancy outcomes. Only 15% of the respondents chose the correct answer, and as many as 67% admitted that they did not know. Surveys conducted in other countries revealed women's lack of awareness of this oral health problem. In one survey conducted in southwestern Sydney, more than half of the pregnant women respondents were unaware of the potential effects of poor maternal oral health on pregnancy and infant outcomes.¹² Another study of pregnant women in Turkey showed that more than half of the respondents did not believe tooth and periodontal problems could affect pregnancy outcomes.¹³ These findings indicate a general urgency to promote antenatal oral health.

Many of the respondents in this study believed that they did not need to have dental checkups before or during their pregnancies, and 81% did not know that dental checkups during the second trimester help to prevent pregnancy gingivitis. Women may be concerned about the safety of dental checkups during pregnancy. Evidence shows that dental treatment can be safely administered during the second trimester.^{14,15} Moreover, one study found that maternal oral hygiene practices are associated with routine dental service use during pregnancy.¹⁶ Education about the value of routine dental checkups before or during the second trimester may help pregnant women adopt good oral hygiene practices.

In addition to the oral health problems of pregnant women, previous studies showed that inadequate maternal oral health behavior place children's oral health at greater risk.¹⁴ The oral health knowledge of mothers and caregivers is directly related to the oral health of young children. Thus, it is important for oral and medical health-care providers to educate pregnant women to prevent childhood dental problems as soon as possible. For the assessment of post-natal dental care knowledge, this study addressed knowledge related to oral hygiene maintenance, tooth decay risk factors, fluoride use and the emergency management of dental trauma.

Although the majority of the respondents were aware of the risk of caries from sugar-rich food, not many were able to identify the hidden sugar content in the food that could also cause tooth decay. There was certainly a knowledge gap in terms of fluoride and toothpaste usage. Of the respondents, 94% assume that children can't use fluoridated toothpaste at the age of 6 months. Although fluoridated toothpaste use is recommended to be used daily for children older than 6 months of age, 69% of the respondents thought children aged 2 or younger should not use fluoridated toothpaste.^{17,18} In terms of dental trauma knowledge, more than half of the respondents chose the wrong medium for storing an avulsed tooth.

Table 1. Responses to knowledge questions about prenatal dental care

Correct answers		Incorrect answers	
1) Causes of pregnancy gingivitis			
Hormonal changes	39%	Traumatic tooth brushing	5%
Poor oral hygiene	58%	Eating fried food	8%
		Malnutrition	3%
		Don't know	12%
2) Signs of pregnancy gingivitis:			
Swollen and reddened gums	36%	Bad breath	18%
Gum bleeding	78%	Red Spot over oral lining	1%
		Don't know	10%
3) Preventive measures for pregnancy gingivitis:			
Daily tooth brushing and flossing	84%	Balanced diet	14%
Dental checkup before pregnancy	37%	Scaling every month	41%
Dental checkup during second trimester	18%	Don't know	9%
4) Treatment for pregnancy gingivitis:			
Surgical removal of swollen gum	2%	No treatment needed	10%
Professional scaling	53%	Extract the affected teeth	0%
		Medication	10%
		Don't know	16%
5) Effect of pregnancy gingivitis on oral health:			
Overgrowth of gum tissue	13%	No effect	9%
Periodontal disease	45%	Tooth decay	23%
		Tooth sensitivity	20%
		Tooth becoming loose	26%
		Don't know	15%
6) Effect of pregnancy gingivitis on pregnancy outcome:			
Pre-term birth	8%	No effect	21%
		Malformation of bone	1%
		Cleft lip and palate	1%
		Don't know	67%
7) Key to proper oral health care:			
Daily tooth brushing and flossing	99%		
Dental checkup before pregnancy	63%		

Table 2. Responses to knowledge questions about postnatal dental care for children

Correct answers		Incorrect answers	
1) Should a child aged 2 or younger use fluoridated tooth-paste?^{9, 10}			
Yes	31%	No	69%
2) Should an adult use fluoridated toothpaste?			
Yes	68%	No	32%
3) Food that can cause tooth decay:			
Juice	51%	Vegetables	5%
Biscuits	51%		
Sweets	97%		
Milk	9%		
Ice cream	89%		
4)When will the healing of an avulsed tooth be affected upon replacement?			
After 60 minutes	52%	In less than 30 minutes	18%
		In 30-60 minutes	30%
5)Medium for storing avulsed tooth:			
Tooth socket	23%	No medium needed	26%
Between cheek and alveolus	7%		
Physiological saline	50%		
Milk	7%		
6)Correct oral cleaning aid for children younger than 18 months:			
Toothbrush	23%	Electric toothbrush	2%
Wet towel	67%	Mouthrinse	3%
		Saline	3%

Table 3. Responses to belief questions about postnatal dental care for children

	True (Incorrect answer)	False (Correct answer)
Feeding a child in bed aids his sleeping	18%	82%
Children can not use toothpaste to clean their teeth at the age of 6 months	94%	6%
Children aged 18 months to 5 years can not brush their teeth with a pea-sized amount of toothpaste	53%	47%
Cleaning a child's teeth once every day is acceptable	18%	82%
There is no need to see a dentist if a child's primary tooth was traumatized and fell out	9%	91%
Sucking habits will not affect the development of teeth	5%	95%
There is no need to care about a child's primary teeth as they will be soon be replaced	18%	82%

A high response rate (94.4%) was achieved in this study. All of the women invited to participate were fairly interested and willing to learn more about oral health knowledge. Thus, the post-questionnaire education received very good feedback. Oral health education programs would be welcomed and high attendance rates could be expected.

Although the questionnaires were only administered at one ante-natal checkup hospital, the hospital is one of the major ante-natal checkup centers in Hong Kong, and its patients hail from different parts of the city. Further study involving multiple centers is expected. In terms of the questionnaire, as the "Don't know" option was not offered as an answer for all of the questions, some of the respondents left those answers blank. The questionnaires with blank answers were considered invalid and excluded. The questionnaire should be modified in future studies.

In spite of these limitations, this study was the first to investigate the level of oral health knowledge of pregnant women in Hong Kong. The findings are meaningful, as they indicate areas that require intervention and improvement.

CONCLUSION

Pregnant women were generally found to lack oral health knowledge and an awareness of oral care during the prenatal period. The improvement of oral health knowledge and behavior prevent both pregnancy gingivitis and childhood dental disease, and more oral health education programs for pregnant women are required. Meanwhile, more studies of the oral health of pregnant women in Hong Kong should be conducted to gain a better understanding of the current general condition.

ACKNOWLEDGEMENTS

We thank Prof. Ngan Yuen Sheung at Queen Mary Hospital and Miss Lee Tak Ping at Tsan Yuk Hospital for their assistance in this study.

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