

Knowledge and Practice on Periodontal Health among Women Residing in Rural Area of Bali Province, Indonesia

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Abstract

Periodontal diseases are strongly associated with systemic diseases and adverse pregnancy outcomes. Frequency of periodontal diseases in the rural population tends to be higher than the urban population, and mostly coincides with the lack of knowledge and poor oral hygiene practice. Assessing oral and periodontal health knowledge and practice is critical in providing sufficient oral health education to attain good oral hygiene and prevent periodontal diseases. Therefore, this study aims to determine the knowledge and practice regarding periodontal health among women of reproductive age residing in a rural area of Bali Province, Indonesia. Thirty-five women of reproductive age (15-49 years old) residing in a rural area of Bali Province who enrolled in a community development program held by an Indonesian University were recruited for this study. Participants were provided with a self-administered questionnaire containing several question items to assess the knowledge regarding possible relationship between periodontal diseases and pregnancy outcomes and types of periodontal diseases, and the practice of proper teeth brushing frequency. Twenty-four of 35 participants (68.57%) in this study know the possible relationship between periodontal diseases and negative pregnancy outcomes. However, knowledge and awareness regarding the type of periodontal diseases and practice of proper frequency of teeth brushing was lower (40% and 34.29%, respectively). This study suggested comprehensive education and counseling regarding oral and periodontal health should be considered for all women residing in rural area, despite their demographic characteristics.

Keywords: Periodontal health; Periodontal diseases; Women of reproductive age; Knowledge; Practice; Public health

1. Introduction

The World Health Organization (WHO) estimated close to 3.5 billion individuals worldwide were affected with oral diseases, despite most oral health problems are preventable and treatable on early stage. Severe periodontal disease is among oral problems of public health concern, with a prevalence of 19% in people aged greater than 15 years globally. Severe periodontal disease is defined as the presence of pocket of more than 6 mm depth, which may lead to increased mobility and tooth loss [1].

Indonesia is among countries with prevalence of severe periodontal disease between 19.6% - 27.3% in 2022 [1]. Previously, Basic Health Research in 2018 reported 74.1% Indonesian individuals 15 years old or older were diagnosed with periodontitis. The prevalence of periodontitis in women were slightly higher than men (74.7% vs 73.2%) [2].

Periodontal diseases are strongly associated with systemic diseases. Individuals with periodontal diseases are 19% more likely to develop cardiovascular disease, while type 2 diabetic individuals with severe periodontal disease possessed 3.2 higher risk of mortality. In pregnant women, periodontitis is related to unfavorable pregnancy outcomes

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including maternal infection, preeclampsia, preterm birth, and low birth weight [3,4]. Previous study indicates the overall rate of periodontal disease among pre-conception women in China was 73.9%, while only 12% pregnant women in Saudi Arabia was aware about the possible relationship between periodontal disease and adverse pregnancy outcomes [5,6].

Prevention of periodontal disease among pregnant women and those within reproductive age in general should be encouraged [5,6]. Assessing oral and periodontal health knowledge and practice is critical in providing sufficient oral health education to attain good oral hygiene and prevent periodontal diseases [7]. Frequency of periodontal diseases in the rural population tends to be higher than the urban population, and mostly coincides with the lack of knowledge and poor oral hygiene practice [8]. Therefore, this study aims to determine the knowledge and practice regarding periodontal health among women of reproductive age residing in a rural area of Bali Province, Indonesia.

2. Methods

2.1. Sample collection

Women of reproductive age (15-49 years old) residing in a rural area of Bali Province who enrolled in a community development program held by an Indonesian University were recruited to participate in this study. Consented participants were provided with a self-administered questionnaire containing several question items to assess the knowledge regarding possible relationship between periodontal diseases and pregnancy outcomes and types of periodontal diseases, and the practice of proper teeth brushing frequency.

2.2. Statistical analysis

Statistical analysis was performed using SPSS Statistics 17.0 (Advanced Analytics, Tokyo, Japan). A Chi-squared test of categorical variables was employed, and test results with $p < 0.05$ were considered significant.

3. Results

Thirty-five women were enrolled in this study. Sixteen participants (45.71%) were between 15-39 years old, and 19 (54.29%) were between 40-49 years old of age. Most participants (20/35; 57.14%) received formal education in junior high school or lower, were not working or stay-at-home mother (22/35; 62.86%), and were married (26/35; 74.29%). Fifteen participants (42.86%) have more than two children, while the others have none to two children. The demographic characteristics of participants are displayed in Table 1.

Around 68.57% (24/35) participants in this study know the possible relationship between periodontal diseases and adverse pregnancy outcomes, 34.29% (12/35) know and aware about types of periodontal diseases, and 40% (14/35) practice proper teeth brushing. Statistical analysis revealed no correlation between participants' characteristics with knowledge regarding possible relationship between periodontal diseases and pregnancy outcomes and the type of periodontal diseases; except for age and knowledge regarding possible relationship between periodontal diseases and pregnancy outcomes ($p < 0.05$). Proper frequency of teeth brushing practice has also not been influenced by participant's characteristics (Table 1).

Table 1 Demographic characteristics of study participants and its correlation to knowledge and practice regarding periodontal health and diseases

Characteristics	n	%	Knowledge regarding possible relationship between periodontal diseases and pregnancy outcomes				p	Practice regarding proper frequency of teeth brushing				p	Knowledge regarding the type of periodontal diseases				p
			Correct		Incorrect			Appropriate		Inappropriate			Correct		Incorrect		
			n	%	n	%		n	%	n	%		n	%	n	%	
Age (years old)							0.017*					0.282					0.350
15-19	5	14.29	4	11.43	1	2.86		2	5.71	3	8.57		1	2.86	4	11.43	
20-29	4	11.43	0	0.00	4	11.43		1	2.86	3	8.57		0	0.00	4	11.43	
30-39	7	20.00	6	17.14	1	2.86		5	14.29	2	5.71		3	8.57	4	11.43	
40-49	19	54.29	14	40.00	5	14.29		6	17.14	13	37.14		8	22.86	11	31.43	
Education							0.387					0.574					0.687
Junior High School or lower	20	57.14	12	34.29	8	22.86		7	20.00	13	37.14		8	22.86	12	34.29	
High School	12	34.29	10	28.57	2	5.71		5	14.29	7	20.00		3	8.57	9	25.71	
Higher Education	3	8.57	2	5.71	1	2.86		2	5.71	1	2.86		1	2.86	2	5.71	
Occupation							0.712					0.796					0.905
Not Working	22	62.86	14	40.00	8	22.86		9	25.71	13	37.14		8	22.86	14	40.00	
Student	4	11.43	3	8.57	1	2.86		1	2.86	3	8.57		1	2.86	3	8.57	
Working	9	25.71	7	20.00	2	5.71		4	11.43	5	14.29		3	8.57	6	17.14	
Marital status							0.912					0.714					0.318
Not married	6	17.14	4	11.43	2	5.71		2	5.71	4	11.43		1	2.86	5	14.29	
Married/ever married	26	74.29	20	57.14	9	25.71		12	34.29	17	48.57		11	31.43	18	51.43	

Number of children							0.306					0.634					0.298
0	8	22.86	5	14.29	3	8.57		2	5.71	6	17.14		2	5.71	6	17.14	
1	3	8.57	1	2.86	2	5.71		2	5.71	1	2.86		0	0.00	3	8.57	
2	9	25.71	8	22.86	1	2.86		4	11.43	5	14.29		5	14.29	4	11.43	
>2	15	42.86	10	28.57	5	14.29		6	17.14	9	25.71		5	14.29	10	28.57	

*Significant if p<0.05

4. Discussion

Periodontal diseases are defined as disease that involves the periodontium [9]. Collaboration between the American Academy of Periodontology and the European Federation of Periodontology has devised new classification of periodontal diseases, which subdivided periodontitis into three categories: 1) necrotizing periodontal diseases, 2) periodontitis, and 3) periodontitis as a manifestation of systemic diseases [10].

Extensive studies have underlined the possible correlation between periodontal diseases and adverse pregnancy outcomes, including preeclampsia, preterm delivery, and low birth weight [11]. Vulvovaginitis in pregnant women, fetal growth restriction, and premature membrane rupture are also among observed negative outcomes among women with severe periodontal disease [12]. It is proposed that hematogenous transport of periodontal bacteria and/or pro-inflammatory mediators presenting on infected periodontal site to the placenta, fetal membranes, and amniotic cavity are causing pathological responses which lead to the adverse outcomes [11].

Prevalence of periodontal diseases among women, especially those expecting, has been studied worldwide. Approximately 40 to 50.3% pregnant women in the United States of America were diagnosed with periodontal diseases [13,14]. Around 47% low-risk pregnant women in Brazil experienced periodontal diseases [15]. The prevalence of periodontal diseases among pregnant women in China, Ethiopia, Sudan, Jordan, and India was 6.8%, 38.8%, 24%, 31%, and 54.8%, respectively [16–19]. Higher prevalence of periodontal diseases has been observed among pre-conceived women of reproductive age in China, approximately between 73.9% to 84.7%. Moreover, much higher rates (84.7% and 73.9%) of periodontal disease were reported among women of childbearing age (preconception) in China [5,20]. In Indonesia, information regarding periodontal diseases, especially among pregnant women is limited.

Knowledge might play an important role in the prevention of periodontal diseases among women. However, studies shown despite high knowledge regarding oral health and its correlation to pregnancy outcomes, poor oral health practice and inadequate consideration of oral health importance have been observed. Low percentage of women practiced frequent dental follow-up during pregnancy [21,22]. Consistent to the previous studies, 68.57% (24/35) participants in this study know the possible relationship between periodontal diseases and negative pregnancy outcomes. However, knowledge and awareness regarding the type of periodontal diseases was lower (40%, 14/35) among women of different age group, formal educational background, occupation, marital status, and number of children. Same situation has also been observed in the practice of proper frequency of teeth brushing (34.29%, 12/35).

This study showed that despite more women of reproductive age residing in a rural area possessed knowledge of correlation between periodontal diseases and adverse pregnancy outcomes, smaller number of participants know and aware about the types of periodontal diseases and practicing proper teeth brushing to maintain good oral health. Therefore, providing adequate education regarding oral and periodontal health accompanied by sufficient counseling to encourage proper oral hygiene practice should be considered. Continuous surveillance to assess the prevalence of periodontal diseases among women of reproductive age both in urban and rural area of Indonesia is also suggested due to lack of information.

5. Conclusion

More women of reproductive age residing in a rural area of Bali Province, Indonesia, have knowledge regarding the correlation between periodontal diseases and adverse pregnancy outcomes; however, fewer women know and aware about the types of periodontal diseases and practice improper teeth brushing. These situations mostly not being affected by participants age, formal educational background, occupation, marital status, and number of children. Therefore, comprehensive education and counseling regarding oral and periodontal health should be considered for all women residing in rural area, despite their demographic characteristics.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare no potential conflict of interests.

Statement of informed consent

Written informed consent was obtained from all individual participants included in the study.

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