
Research Article

The Prevalence of Chronic Periodontitis in the City of Bandung, Indonesia: A Cross Sectional Study

Agus Susanto, Janti Rusjanti, Nunung Rusminah, Ina Hendiani, Ira Komara, Prajna Metta

Departement of Periodontics Faculty of Dentistry Universitas Padjadjaran, Indonesia

Abstract:

Chronic periodontitis is a chronic inflammatory disorder of the tooth-supporting tissues that lead to the tooth loss. Objectives: The objective of this study was to measure the prevalence of chronic periodontitis and the treatment needs in the community of the city of Bandung. **Methods:** This study was a cross-sectional study, conducted in 6 Community Health Centres in Bandung, with 124 subjects suffered from chronic periodontitis. The index used to measure the parameters of periodontal tissue status was the Community Periodontal Index of Treatment Needs (CPITN). Questionnaires to determine the demographic data of the research subjects consisted of age, gender, frequency of toothbrushing, and occupation type. Data obtained was presented in percentage form. **Results:** Chronic periodontitis was experienced by 124 subjects, consisted of 91 women (73.3%), and 33 men (26.7%). The prevalence of chronic periodontitis in the city of Bandung was 31%, mostly needed for treatment (>90%) in the form of oral hygiene and scaling. **Conclusion:** The prevalence of chronic periodontitis in the city of Bandung was quite high, and majority of the patients require treatment.

Keywords: Community Periodontal Index of Treatment Needs (CPITN), chronic periodontitis, prevalence.

INTRODUCTION

Chronic periodontitis is the most common periodontal disease in the society, most commonly found in adults with age over 30 years old, but it is not possible for children to develop such disease. Clinical characteristics of chronic periodontitis include accumulation of supragingival and subgingival plaques, calculus, gingival inflammation, periodontal pocket, attachment loss, and alveolar bone loss [1]. Chronic periodontitis is a common oral health problem and is considered to be one of the main reasons for tooth loss in both developing and developed countries [2].

The prevalence of chronic periodontitis amongst adults worldwide is reported to be up to 30-35%, and about 10-15% are diagnosed with severe chronic periodontitis. In Malaysia, the prevalence of chronic periodontitis and severe chronic periodontitis was 48.5% and 18.2% respectively.² A research conducted by WHO on the prevalence of periodontal disease amongst older adults in Chicago, USA, in 2010 showed that the prevalence of periodontal disease was increasing into 70.1% [3].

Generally, research on the prevalence of periodontitis was using the Community Periodontal Index Treatment Need (CPITN) as the measurement tool. This index was introduced and developed by the committees of the World Health Organization (WHO) and Federation Dentaire International (FDI) to evaluate the periodontal and treatment needs of particular communities [4.5] The CPITN index is practical, easy, economical, and does not require a long time process because the examination is only performed in particular teeth as a representation of all of the teeth [6].

The city of Bandung is the capital of the West Java province, which is geographically located in the middle of the West Java province, with an area of 167.29 km². Regarding demographics, the population of Bandung in 2014 was as much as 2,470,802 people according to the Central Agency on Statistics (BPS) of Bandung. Based on the health profile of Bandung in 2011, periodontal diseases, including 20 diseases, were found mostly in the Community Health Centre (Puskesmas) throughout the city [7]. However, there has not been any clear information regarding the prevalence of periodontitis, especially chronic periodontitis in the city of Bandung.

MATERIALS AND METHODS

This research was descriptive with cross-sectional approach. The study population was the patients who went to the Community Health Centres throughout Bandung. There are 30 Community Health Centres in Bandung. The selection of the Community Health Centres was based on the sampling area thus obtained as much as 6 Community Health Centres as representation. The sampling was performed using the accidental sampling technique, with the population was the patient who went to the Community Health Centres in a certain period, obtained as much as 400 subjects being examined, and found as much as 124 subjects were diagnosed with chronic periodontitis. Information was obtained from questionnaires, and demographic and socio-demographic data were also recorded including age, gender, address, occupation, educational status, medical history, oral hygiene habit, and smoking habit.

The measurement index used was the Community Periodontal Index of Treatment Needs (CPITN). The examined teeth were teeth number 17, 16, 11, 26, 27, 37, 36, 31, 46, and 47. The examination was performed using the WHO or CPITN probe and glass mouth, under the good lighting. Every tooth was being examined for the pocket depth, calculus detection, and bleeding response. Examination of each tooth was performed on the mesial, mid-facial, distofacial, mesiolingual/palatal, mid-lingual/palatal, and distolingual/palatal parts. Prior to the research, the calibration of all operators was conducted regarding the CPITN score assessment.

The scoring criteria can be described as follows: Code 0 was healthy; 1 was bleeding on probing; 2 was the presence of supra or subgingival calculus; 3 was the presence of a pocket with a depth of 4-5 mm; and 4 was the presence of a pocket with a depth of more than 6 mm. Subjects were diagnosed with chronic periodontitis if they had scores of 3 and 4. The following care needs categories were as follows: 0 needed no treatment (code 0); I needed improvement in personal oral hygiene (code 1); II needed oral hygiene improvement and scaling treatment (codes 2 and 3); and III needed oral hygiene improvement, scaling, and complex treatment (code 4) [8].

RESULTS AND DISCUSSION

Characteristics of the study subjects showed that chronic periodontitis was more found in female subjects, which was as much as 91 people (73.3%) than in male, which was as much as 33 people (26.7%). The age range of 35-44 years old was found of having the highest diagnosis of chronic periodontitis, which was as much as 43 people (34.7%), with the most occupation was the homemakers, which was as much as 73 people (58.8%), and with the frequency of tooth-brushing twice a day in as much as 85 people (68.5%). The toothbrushing habit is an important factor in maintaining oral health. In this study, more than 60% of research subjects had performed toothbrushing twice a day. The subject of this study was living in the urban areas thus their knowledge and awareness in maintaining oral health were good enough.

Table 1. Research subjects characteristics

Variable	Number	Percentage (%)
Age (y.o.)		
25 – 34	39	31.4
35 – 44	43	34.7

Table 2. CPITN score based on age group

Age group	Subject numbers (%)	Number (%)				
		Healthy (0)	Bleeding (1)	Calculus (2)	Shallow pockets (3)	Deep Pockets (4)
25 – 34	39	0	0	0	39 (100)	0
35 – 44	43	0	0	0	42 (97.6)	1 (2.4)
45 – 54	20	0	0	0	20 (100)	0
> 55	22	0	0	0	19 (86.3)	3 (13.7)

45 – 54	20	16.2
> 55	22	17.8
Gender		
Female	91	73.3
Male	33	26.7
Occupation		
Homemakers	73	58.8
Government employees	4	3.2
Entrepreneur		
Private employees	16	12.9
Medical personnel	22	17.8
Unemployed	2	1.7
	7	5.6
Toothbrushing frequency		
Once a day		
Twice a day	8	6.5
More than thrice a day	85	68.5
	31	25

Table 2 showed the CPITN score based on the age group of the research subjects. The subject with the CPITN score of 3 (shallow pockets) in the age group of 25-34 years old was as much as 39 people, 42 people in the age group of 35-44 years old, 20 people in the age group of 45-54 years old, and as much as 19 people in the age group above 55 years old. The CPITN score of 4 (deep pockets) score in the age group of 35-44 years old was found in as much as 1 person, and as much as 3 people in the age group above 55 years old. The periodontal disease severity is related to age. In older adults, there is a tendency of more severe periodontal disease. This condition is caused by a decreasing physiological function of periodontal tissue, and the longer period of periodontal tissue being exposed by irritants and bacteria of periodontal disease. The severity of periodontal disease is also related to time. Older age may be a factor causing an increased periodontal tissue damage due to the damage accumulation.

The CPITN score results based on gender was presented in Table 3. The CPITN score of 3 (shallow pockets) was found in as much as 30 male and 89 female, and the CPITN score of 4 (deep pockets) was found in 2 male and female.

In this study, the number of research subjects who suffered chronic periodontitis was found more in female than male. The influence of hormonal changes in female may affect the severity of periodontal disease.

Table 3. CPITN score based on gender

CPITN	Gender (Number (%))	
	Male	Female
Healthy (0)	0	0
Bleeding (1)	0	0
Calculus (2)	0	0
Shallowpockets (3)	31(94.0)	89 (97.8)
Deep pockets (4)	2 (6.0)	2 (2.2)

The results showed that from the total of 400 subjects examined, as much as 124 individuals had chronic periodontitis, thus the prevalence of chronic periodontitis in Bandung was 31%. This value was almost the same as the prevalence of periodontitis in the world which was 30-35%, while the prevalence in Malaysia according to NOHSA was 48.5%.² These results, however, were very different with the research conducted by Sing et al. which stated that the prevalence of chronic periodontitis in Meerut, India, in 2012 was 90% [9]. This difference might be caused by differences in tooth-brushing and social habits of the research subjects. The subjects in Meerut, India, mostly still brushing teeth only once a day, whereas in this study they were brushing their teeth twice a day and they already aware of the importance of dental health. Also, there are various risk factors associated with periodontal diseases, such as education level, income, occupation, and socioeconomic background. The high prevalence of periodontitis in subjects with low education has been reported in studies conducted in Thailand [10]. The research conducted by Borrell et al. in 2006 reported that subjects with low education were three times more likely to suffering periodontitis than subjects with higher education [11].

Other research conducted in India at the period of 2010 suggested that there was a strong relationship between lifestyle, education, and socio-economic towards the periodontal health [12]. In this study, the treatment needs were mostly an oral hygiene improvement and scaling treatment in the male group (94%), and in the female group (97.8%), and only a small part of all subjects required a more complex treatment. This result indicated that the need for initial treatment which was oral hygiene improvement and scaling treatment is an indispensable treatment to reduce and prevent the progression of periodontal disease

.Acknowledgement

The authors would like to thank the assistance of the Public Health Office (Dinkes) of Bandung, and this research was financially supported by the research grants from Universitas Padjadjaran and the Ministry of Research, Technology, and Higher Education (Kemenristekdikti) of the Republic of Indonesia.

References

[1]. Novak MJ. Classification of diseases and conditions affecting the periodontium. In: Newman MG, Takei HH,

Carranza FA, eds. Clinical Periodontology. 9th ed. Philadelphia: Saunders Publishers an Imprint of Elsevier Science; 2003. p.64-67.

[2]. Khan S, Saub R, Vaithilingam RD, Safii SH, Vethakkan SR, Baharuddin NA. Prevalence of chronic periodontitis in an obese population: A preliminary study. BMC Oral Health. 2015; 15(114): 1-7. DOI: [10.1186/s12903-015-0098-3](https://doi.org/10.1186/s12903-015-0098-3)

[3]. Arief EM, Khee HT, Rehman A, Hassan A, Khamis MF. Arterial stiffness in patients with localized and generalized severe chronic periodontitis: A preliminary study. Padjadjaran J Dent. 2009; 21(3): 166-70. DOI: [10.24198/pjd.vol21no3.14111](https://doi.org/10.24198/pjd.vol21no3.14111)

[4]. Archarya S, Bhat PV. Oral health related quality of life during pregnancy. J Public Health Dent. 2009; 69(2) :74-7. DOI: [10.1111/j.1752-7325.2008.00104.x](https://doi.org/10.1111/j.1752-7325.2008.00104.x)

[5]. Joseph PA, Cherry RT. Periodontal treatment needs in patients attending dental college hospital, Trivemdum. J Indian Soc Periodontol. 1996; 20: 67-71.

[6]. Ainamo J, Barmes D, Beagrie G, Cutress T, Martin J, Sardo-Infirri J. Development of the Word Health Organization (WHO) Community Periodontal Index of Treatment Needs (CPITN). Int Dent J. 1982; 32(3): 281-91.

[7]. Public Health Office of Bandung. Profil Kesehatan Kota Bandung Tahun 2011. Bandung: Public Health Office of Bandung; 2012.

[8]. Wilkins EM. Indices and scoring methods. In: Wilkins EM. Clinical practice of the dental hygienist. 9th ed. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2005. p. 323-45.

[9]. Singh A, Agarwal V, Tuli A, Khattak BP. Prevalence of chronic periodontitis in Meerut: a cross sectional survey. J Indian Soc Periodontol. 2012; 16(4): 529-32. DOI: [10.4103/0972-124X.106895](https://doi.org/10.4103/0972-124X.106895)

[10]. Torrungruang K, Tamsailom S, Rojanasomsith K, Sutdhibhisal S, Nisapakultorn K, Vanichjakvong O, et al. Risk indicator of periodontal disease in older Thai adults. J Periodontol. 2005; 76(4): 558-65. DOI: [10.1902/jop.2005.76.4.558](https://doi.org/10.1902/jop.2005.76.4.558)

[11]. Borrell LN, Burt BA, Warren RC, Neighbors HW. The role of individual and neighborhood social factors on periodontitis: The third National Health and Nutrition Examination Survey. J Periodontol. 2006; 77(3): 444-53. DOI: [10.1902/jop.2006.050158](https://doi.org/10.1902/jop.2006.050158)

[12]. Gundala R, Chava VK. Effect of lifestyle, education and socioeconomic status on periodontal health. Contemp Clin Dent. 2010; 1(1): 23-6. DOI: [10.4103/0976-237X.62516](https://doi.org/10.4103/0976-237X.62516)