Original

Perceived need for and utilization of dental care in Indonesia in 2006 and 2007: a secondary analysis

Diah A. Maharani[1,2]

[1] Department of Preventive and Community Dentistry, Faculty of Dentistry, University of Indonesia, Jakarta, Indonesia
[2] Health Care Economics, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan

Abstract: The objective of this study was to describe the self-perceived need for and utilization of dental care in Indonesia. Using secondary data from the Indonesian National Socio Economic Survey, 2006 (n = 1,107,594) and 2007 (n = 1,167,019), we estimated the proportion of perceived need for and utilization of dental care. Descriptive and multivariate logistic regression analyses were used to describe the perceived need for and utilization of dental care in different demographic and socioeconomic groups (based on age, gender, living standards, residence, macroregions, and health insurance entitlement) in Indonesia. Approximately only 2.33% and 2.28% of Indonesians reported a perceived need for dental care in 2006 and 2007, respectively. Dental care utilization increased from 0.65% in 2006 to 0.84% in 2007. Additionally, unmet need decreased from 72.04% in 2006 to 63.13% in 2007. Logistic regression analysis indicated that respondents aged 30-44 years, who were wealthy, and were insured had higher odds ratios in perceiving need for and utilizing dental treatment. The perceived need for and utilization of dental care among Indonesians was found to be low, and was influenced by various demographic socioeconomic factors. (J Oral Sci 51, 545-550, 2009)

Correspondence to Dr. Diah Ayu Maharani, Health Care Economics, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, 1-5-45 Yushima, Bunkyo-ku, Tokyo 113-8510, Japan
Tel: +81-03-5803-5933
Fax: +81-03-5803-5933
E-mail: rani.hce@tmd.ac.jp & raniabdillah@gmail.com

Introduction

With an estimated population of 234.7 million in 2007, Indonesia is the fourth largest country in the world, after China, India, and the United States. It is also the world's largest archipelagic state, comprised of 17,508 islands. The health status of the Indonesian people has improved significantly, though slowly, over the last two decades. Many factors are responsible for the slow improvement of health status in Indonesia, such as low income and difficult geographical access. Moreover, with only one-third of the labor force in the formal sector (salaried workers), it is not easy to mobilize financial resources to finance health care for the entire population (1).

Normative needs, dentists' assessment of dental status, are traditionally used to provide measures of dental health status for policy decisions. However, for a large country such as Indonesia, it is almost impossible to undertake this kind of survey annually. It has been suggested that perceived need, perceptions regarding the need for dental care, play a key role in whether people will, in general, seek dental care, and that a lack of perceptions regarding need constitutes an important barrier to the utilization of dental care services. Relying on normative methods such as clinical diagnosis alone, without integrating the psycho-social dimensions of dental health, seriously overestimates the need for dental care (2). Accordingly, a normative measure of dental care need estimated by converting clinical measures alone would probably yield a result that is too high to be met in the Indonesian context, where the

government's dental health care budget is inadequate to meet all the dental care needs of the entire population.

It is well established that early diagnosis and appropriate treatment, including preventive and curative measures, can prevent dental diseases from reaching a stage where pain or other symptoms force individuals to seek professional dental care, and that adopting a habit of visiting the dentist regularly is one of the common messages in dental health education. Utilization of dental services by a population is an important parameter of dental health care planning (3). Numerous studies have investigated the dental care utilization behavior of various populations, but these were mainly conducted in highly industrialized countries (4). In fact, there are very few published epidemiological studies on dental health in Indonesia, and none of them has reported specifically on the perceived need for and use of dental care services. Although change is the central goal of dental health care interventions, little attention has yet been paid to changes in self-perceptions regarding dental health status. In the majority of studies, change has been assessed by means of clinical indicators of disease. Relatively few of these prior studies have examined changes in subjective perceptions of dental health (5). The objective of the present analysis was to describe the distribution of self-perceived need for and utilization of dental care in Indonesia in 2006 and 2007 across diverse demographic and socioeconomic groups. This effort is intended to raise the issue of change in dental health as an important topic for dental health services research.

Materials and Methods

Data source

This study used secondary cross-sectional data from the Indonesian National Socio Economic Survey (*Susenas*) performed in 2006 and 2007. *Susenas* is a nationally representative survey that is carried out annually by the Indonesian National Board of Statistics. It includes demographic, socioeconomic data, and data on dental care need and utilization. The total sample size of *Susenas* 2006 was 1,107,594, and that of *Susenas* 2007 was 1,167,019. This included individuals of all ages across all of the 33 provinces in Indonesia. The data were weighted to ensure that the sample was representative of the Indonesian population. A significance level of 0.05 was used throughout the study to denote statistical significance.

Dependent variables

Respondents were asked via a single-item question about their self-perceived need for dental care with a 1-month recall period. The answers were categorized as 'yes' or 'no' responses. This perceived need was the first dependent variable in this study. The second dependent variable was dental care utilization within a 1-month recall period. This information was also obtained by means of a single question in the interview, and the responses were also categorized as either 'yes' or 'no'.

Independent variables

A set of independent variables that were found in previous studies to be important predictors and that were available in the *Susenas* data was selected as a set of possible factors affecting the perceived need for and utilization of dental care services (6-9). In the present study, the independent variables comprised of age (<15, 15-29, 30-44, 45-59, >60 years), gender (female or male), living standard quintiles (1st to 5th quintile), residence (rural or urban), macroregions (Sumatra, Java, Lesser Sunda Islands, Kalimantan, Sulawesi, and Maluku Islands including West Papua), and health insurance entitlement (uninsured or insured).

Data Analysis

Descriptive statistics were generated to describe the prevalence of perceived need for and utilization of dental care. We determined the associations between independent and dependent variables using chi-square test and multivariate logistic regression analysis with odds ratios (95% CI). All independent variables that showed a significant association with the dependent variable at a significance level of $P < 0.5$ in the bivariate analysis were selected for inclusion in the logistic regression model.

Results

The percentage of Indonesians who perceived a need for and utilized dental care in 2006 and 2007 was low (Table 1). The perceived need for dental care changed from 2.33% ($n = 25,761$) in *Susenas* 2006 to 2.28% ($n = 26,600$) in *Susenas* 2007. Dental care utilization increased from 0.65% ($n = 7,202$) in 2006 to 0.84% ($n = 9,807$) in 2007. Although an increase in dental care utilization occurred, among those who reported having a need for dental care, only 27.96% and 36.87% sought dental care treatment in 2006 and 2007, respectively. We found that 72.04% of respondents in 2006 and 63.13% in 2007 had unmet needs; they had perceived need for dental care but did not receive any dental treatment. The perceived need for dental care in 2006 was greater for individuals aged 30-44, females, those in the 4th quintile, those in rural areas, those who lived on Sumatra Island, and those who were uninsured. In 2007, the perceived need was slightly higher in males. Utilization of dental care in 2006 was greater in individuals

Table 1 Results of the *Susenas* 2006 and 2007 for selected variables

Variables	Susenas 2006			Susenas 2007		
	All respondents	Perceived need for dental care	Utilization of dental care	All respondents	Perceived need for dental care	Utilization of dental care
Dependent variables						
Perceived need for dental care						
No need	97.67 (*n* = 1,081,833)			97.72 (*n* = 1,140,419)		
Need	2.33 (*n* = 25,761)			2.28 (*n* = 26,600)		
Utilization of dental care						
Not used / unmet need	99.35 (*n* = 1,100,392)	72.04 (*n* = 18,559)		9.16 (*n* = 1,157,212)	63.13 (*n* = 16,793)	
Used / met need	0.65 (*n* = 7,202)	27.96 (*n* = 7,202)		0.84 (*n* = 9,807)	36.87 (*n* = 9,807)	
Independent variables						
Age (years)						
<15	29.92	20.62	21.29	30.99	20.98	21.60
15-29	26.74	26.40	22.59	25.67	24.16	20.96
30-44	22.44	27.31	27.21	21.96	28.79	28.37
45-59	13.66	18.14	19.31	13.67	18.44	19.97
60 <	7.24	7.53	9.59	7.70	7.63	9.11
Gender						
Females	49.69	50.27	50.76	49.86	49.72	50.48
Males	50.31	49.73	49.24	50.14	50.28	49.52
Living standards						
1st quintile (poorest)	19.46	19.35	17.62	19.30	18.95	15.77
2nd quintile	19.93	19.34	17.29	20.05	20.24	18.64
3rd quintile	20.77	20.98	21.02	20.73	21.73	21.05
4th quintile	20.97	22.05	22.01	21.34	22.15	23.76
5th quintile (richest)	18.87	18.28	22.06	18.58	16.92	20.78
Residence						
Rural	63.24	70.57	67.41	63.66	71.95	69.56
Urban	36.76	29.43	32.59	36.34	28.05	30.44
Macroregions						
Sumatra	30.13	31.83	29.34	29.71	32.79	32.98
Java	30.16	22.87	25.09	29.74	19.26	21.44
Lesser Sunda Islands	7.96	9.41	13.30	8.30	10.41	13.44
Kalimantan	11.22	11.20	10.77	11.04	10.89	9.24
Sulawesi	14.81	18.06	15.91	15.66	20.85	18.07
Maluku Islands and West Papua	5.73	6.63	5.58	5.55	5.80	4.83
Health insurance entitlement						
Uninsured	72.49	67.27	59.72	71.30	66.05	69.28
Insured	27.51	32.73	40.28	28.70	33.95	39.72
Total (*n* =)	**1,107,594**	**25,761**	**7,202**	**1,167,019**	**26,600**	**9,807**

Table 2 Logistic regression analysis of the perceived need for and utilization of dental care with selected predictors (*Susenas* 2006 and 2007)

Independent Variables	Susenas 2006				Susenas 2007			
	Dependent Variable: Perceived need for dental care		Dependent Variable: Utilization of dental care		Dependent Variable: Perceived need for dental care		Dependent Variable: Utilization of dental care	
	Odds ratio (95% CI)	*P*-value	Odds ratio (95% CI)	*P*-value	Odds ratio (95% CI)	*P*-value	Odds ratio (95% CI)	*P*-value
Age (years)		< 0.05		< 0.05		< 0.05		< 0.05
15-29	1.22 (1.18 – 1.26)		1.37 (1.28 – 1.46)		1.40 (1.35 – 1.45)		1.53 (1.44 – 1.62)	
30-44	1.35 (1.30 – 1.40)		1.61 (1.50 – 1.73)		1.46 (1.40 – 1.52)		1.75 (1.65 – 1.86)	
45-59	1.06 (1.00 – 1.11)		1.53 (1.40 – 1.67)		1.07 (1.02 – 1.12)		1.46 (1.35 – 1.58)	
60 <	0.67 (0.65 – 0.70)		0.81 (0.76 – 0.87)		0.69 (0.67 – 0.72)		0.82 (0.77 – 0.87)	
Gender		NS		NS		NS		NS
Male	0.98 (0.96 – 1.01)		0.96 (0.92 – 1.01)		1.01 (0.99 – 1.04)		0.98 (0.94 – 1.02)	
Living standards		< 0.05		< 0.05		< 0.05		< 0.05
2nd quintile	1.03 (0.99 – 1.07)		1.08 (1.00 – 1.17)		1.07 (1.02 – 1.11)		1.25 (1.17 – 1.34)	
3rd quintile	1.12 (1.07 – 1.16)		1.35 (1.25 – 1.45)		1.14 (1.09 – 1.18)		1.44 (1.34 – 1.54)	
4th quintile	1.22 (1.17 – 1.27)		1.46 (1.35 – 1.58)		1.16 (1.12 – 1.21)		1.64 (1.54 – 1.76)	
5th quintile (richest)	1.20 (1.15 – 1.26)		1.67 (1.54 – 1.81)		1.12 (1.07 – 1.17)		1.77 (1.64 – 1.90)	
Residence		< 0.05		< 0.05		< 0.05		< 0.05
Urban	0.70 (0.68 – 0.72)		0.72 (0.68 – 0.77)		0.71 (0.69 – 0.74)		0.69 (0.65 – 0.72)	
Macroregions		< 0.05		< 0.05		< 0.05		< 0.05
Java	0.74 (0.72 – 0.77)		0.89 (0.83 – 0.95)		0.61 (0.59 – 0.63)		0.71 (0.67 – 0.75)	
Lesser Sunda Islands	1.10 (1.05 – 1.15)		1.66 (1.54 – 1.80)		1.13 (1.08 – 1.18)		1.49 (1.40 – 1.60)	
Kalimantan	0.93 (0.89 – 0.97)		0.96 (0.88 – 1.04)		0.88 (0.84 – 0.92)		0.74 (0.69 – 0.79)	
Sulawesi	1.16 (1.11 – 1.20)		1.13 (1.05 – 1.23)		1.20 (1.15 – 1.24)		1.08 (1.01 – 1.14)	
Maluku Islands and West Papua	1.08 (1.02 – 1.14)		0.98 (0.88 – 1.09)		0.94 (0.89 – 0.99)		0.79 (0.72 – 0.87)	
Health insurance entitlement		< 0.05		< 0.05		< 0.05		< 0.05
Insured	1.26 (1.23 – 1.30)		1.68 (1.60 – 1.76)		1.22 (1.19 – 1.26)		1.52 (1.46 – 1.59)	

Reference category: <15yrs, female, 1st quintile, rural, Sumatra, uninsured. NS = not significant.

aged 30-44, females, those in the 5th quintile, those in rural areas, those who lived on Sumatra Island, and those who were uninsured. In 2007, the dental care utilization was slightly higher in the 4th quintile of living standards. In 2006, the richest quintile reported to have the lowest need for dental care, but at the same time, this group dominated

dental care utilization.

The results of the logistic regression analysis are shown in Table 2. The explanatory variables that were included in this study were significantly associated with perceived need for and utilization of dental care in 2006 and 2007, excluding gender. In both 2006 and 2007, the 30-44 year age group demonstrated the highest odds ratio for perceiving a need for dental care. The likelihood of utilization of dental care services by an individual increased with his or her living standard. The highest living standard quintile, which carried an odds ratio of 1.77, yielded the strongest association with utilization of dental care in 2007. Respondents who were insured displayed the highest odds ratios with regard to the utilization of dental care in 2006. Respondents who were older then 60 years and those who lived on Java Island had generally lower odds ratio in perceiving need for and utilization of dental care, both in 2006 and 2007.

Discussion

Clinical dental health was not the focus of this analysis. The goal of this study was to achieve a broader understanding of the proportion of self-perceived dental treatment needs to dental care-seeking behavior in Indonesia. Despite the fact that the national prevalence of caries was 43.4% (Indonesian Ministry of Health 2007), respondents to the *Susenas* 2006 and 2007 surveys who perceived a need for dental care were only around 2%. Moreover, the unmet need for dental care was high. These results call for stimulation of dental health care education and development of dental health care promotion programs that emphasize non-painful signs and symptoms of dental diseases accompanied by education around associated general health implications that may compromise overall health. The use of mass media and collaboration with other disciplines in primary healthcare may also constitute strategies to disseminate dental health care messages (10). Dental health policy should place more emphasis on community-based preventive programs than on clinic-based curative services. In this way, individuals would be able to identify non-painful signs and symptoms of dental diseases at an earlier stage, and correlate these with the need for dental treatment (11).

The low dental care utilization rate reported could be because barriers still exist, such as those between different geographical areas, which make it difficult for information to reach certain communities. Therefore, community health centers (*Puskesmas*) play a crucial role in improving dental health. *Puskesmas* represent the front line in Indonesia in providing various public health programs such as health promotion and primary health care services, including

dental care, to the community. The availability of *Puskesmas* makes community access to primary health services quite good at all income levels. The user charges at *Puskesmas* represent subsidized fees for the service system; about 50-80% of user fees are subsidized. The Indonesian health policy mandates that local governments build one *Puskesmas* for every 30,000 inhabitants and one sub-health center for every 10,000 inhabitants. There are currently more than 7,000 *Puskesmas* and more than 21,000 sub *Puskesmas* throughout Indonesia (12).

The present study had some limitations. The first limitation arises from the use of the single item binary question about dental care needs. A 'no' response may correspond to a current lack of dental problems. However, this same 'no' response may also derive from a very different explanation. Studies have reported differences in pain sensitivity, with females being less likely to report pain than males. On the other hand, unreported dental conditions may have been indicated by signs or symptoms to the host that were recognized but that, because they are not painful, did not actually signal to the host that the condition was a problem per se (13). The second limitation is the potential bias that might arise from the relatively short reference period for reported perceived need for and utilization of dental care by *Susenas* questionnaires, for which a 1-month recall period for self-assessed need for and utilization of dental care was used, reflecting the time period during which the survey was conducted. Naturally, these data do not lend themselves to annual interpretation. This assessment may have limited the validity of the outcome variable, but such a short reference period would also have reduced recall bias. The third limitation is that the measures of perceived dental care need were subjective, as they were based on the individual's perspective on the meaning of dental health and illness to him or her. Therefore, dental health perceptions may not only depend on one's sensitivity to signs and symptoms of disease, but may also be influenced by an individual's knowledge of dental health. Individuals are often unaware of their dental care needs. This could result from the fact that these conditions may not have progressed sufficiently to give rise to symptoms such as pain, because clinical signs may not have been apparent to the individuals, or because the conditions may not have affected the daily activities of these individuals. The respondents might tend to ignore illness that does not interrupt or disorganize their normal activities (14). However, subjective health status is a significant component of health-related quality of life. The direction of all these potential biases would most likely understate the degree of perceived need for and utilization of dental care.

The functional and social dimensions of dental disorders, as measured by subjective indicators, are themselves indicators of need and should be included in assessments of need. Consequently, although the degree of sensitivity of the subjective indicators was low in terms of their capacity to identify those with clinically defined dental care needs, the indicators all identified a sub-group whose dental conditions impact daily living and who, therefore, may be most likely to benefit from dental treatment (15). If the aim is to identify need that is normative as well as subjective, then subjective indicators alone are not very good as screening instruments. However, in a time of scarce or diminishing resources, as is currently the case in Indonesia, it may be more important to identify those for whom health services will produce the most health gain. In this case, the utility of subjective indicators as screening instruments looks much more promising. They provide a rapid and inexpensive way of determining who would benefit from a referral for professional attention. Subjective indicators complement rather than substitute for clinical indicators of health status and treatment needs. In other words, the need for professional care and the effectiveness of interventions will be revealed by studies that utilize both. The subjective measures assessed herein can themselves be interpreted as indicators of need that complement conventional clinical measures for the need for dental care (16).

Some investigators have questioned whether there is any merit in using complex questions, given that single-item assessments appear to be valid. Despite the doubts expressed about single-item assessments of change, these assessments possess a number of distinct advantages. They are simple, clear, and relatively easy to use than complex questionnaires, especially in cases in which administration and clinical scoring are not feasible and brevity is essential (16). Given the current economic situation in Indonesia, single-item indicators of dental health, like the one provided annually by the *Susenas*, provide benefits to the policy-maker seeking to monitor and evaluate dental health needs and utilization, and also to researchers seeking to identify the determinants of dental health and track levels of risk factors. Single-item dental health perception questions reflect individual priorities that may be of value for program and institutional planning.

Clearly, additional research is needed to examine the perceived need for and utilization of dental care. The use of only self-reported information on dental health status may have resulted in some misclassification of individuals who misrepresented their dental health status. However, the findings suggest that the perceived need for dental care

may be a useful outcome measure in dentistry because of its relationship with dental utilization (17). Relative to health promotion, it has been suggested that increasing awareness and understanding regarding patient responses to perceived dental problems can assist dental health care professionals in meeting the needs of patients who remain problem-oriented dental care seekers. The subjective dental assessment approach could be used to prioritize those really in need of dental care. Moreover, this approach provides a more realistic estimation, since those who experience no perceived impact may not demand dental treatment (4). In conclusion, dental service utilization among Indonesians was low, and was influenced by some demographic and socio-economic factors. Improvement in the dental service utilization rate in this population will depend on general social and economic development, as well as on the success of improvements in the delivery of dental care services and community-based dental health promotion activities.

References

1. World Health Organization (2005) Social health insurance: selected case studies from Asia and the Pacific. WHO (SEARO), New Delhi, 145-166.
2. Astrom AN, Kida IA (2007) Perceived dental treatment need among older Tanzanian adults – a cross-sectional study. BMC Oral Health 7, 9-19.
3. Ettinger RL, Warren JJ, Levy SM, Hand JS, Merchant JA, Stromquist AM (2004) Oral health: perceptions of need in a rural Iowa county. Spec Care Dentist 24, 13-21.
4. Lo ECM, Lin HC, Wang ZJ, Wong MCM, Schwarz E (2001) Utilization of dental services in Southern China. J Dent Res 80, 1471-1474.
5. Locker D, Jokovic A (1997) Three-year changes in self-perceived oral health status in an older Canadian population. J Dent Res 76, 1292-1297.
6. Andersen RM (1995) Revisiting the behavioral model and access to medical care: does it matter? J Health Soc Behav 36, 1-10.
7. Wu B, Tran TV, Khatutsky G (2005) Comparison of utilization of dental care services among Chinese- and Russian-speaking immigrant elders. J Public Health Dent 65, 97-103.
8. Sabbah W, Leake JL (2000) Comparing characteristics of Canadian who visited dentists and

physicians during 1993/94: a secondary analysis. J Can Dent Assoc 66, 90-95.

9. Wu B (2007) Dental service utilization among urban and rural older adults in China – a brief communication. J Public Health Dent 67, 185-188.

10. Vargas CM, Dye BA, Hayes K (2003) Oral health care utilization by US rural residents, National Health Interview Survey 1999. J Public Health Dent 63, 150-157.

11. Slaughter A, Taylor L (2005) Perceptions of dental care need among African-American elders: implications for health promotion. Spec Care Dentist 25, 158-163.

12. Kristiansen S, Santoso P (2006) Surviving decentralization? Impacts of regional autonomy on health service provision in Indonesia. Health Policy 77, 247-259.

13. Heft MW, Gilbert GH, Shelton BJ, Duncan RP (2003) Relationship of dental status, sociodemographic status, and oral symptoms to perceived need for dental care. Community Dent Oral Epidemiol 31, 351-360.

14. Ekanayake L, Perera I (2005) Perceived need for dental care among dentate older individuals in Sri Langka. Spec Care Dentist 25, 199-205.

15. Locker D, Jokovic A (1996) Using subjective oral health status indicators to screen for dental care needs in older adults. Community Dent Oral Epidemiol 24, 398-402.

16. Locker D (1998) Issues in measuring change in self-perceived oral health status. Community Dent Oral Epidemiol 26, 41-47.

17. Atchison KA, Gift HC (1997) Perceived oral health in a diverse sample. Adv Dent Res 11, 272-280.