

# Is the utilisation of dental care based on need or socioeconomic status? A study of dental care in Indonesia from 1999 to 2009

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**Objective:** One of the goals of Indonesian health policy is 'Health for All'; this includes dental health care. Therefore, it is important to continually evaluate and dynamically assess the effects of government policies, particularly whether these policies promote or obstruct social justice. This study is intended to describe the need for and utilisation of dental care and how disparities in dental care provision to people of varying socioeconomic status (SES) have changed over time. **Methods:** We used secondary cross-sectional data from the Indonesian Socioeconomic Surveys for 1999, 2001, 2003, 2005, 2007 and 2009. The concentration index was used to describe disparities in need for and utilisation of dental care. **Results:** The concentration index showed a significant concentration of dental care utilisation among groups of higher SES. **Conclusions:** The use of dental care services is more dependent on ability to pay than on need for care. In addition, inequality in dental care in Indonesia persisted from 1999 to 2009.

**Keywords:** Concentration index, dental care, Indonesia, socioeconomic

Thirty-four years ago, the Alma Ata Declaration of 1978 emerged from the International Conference on Primary Health Care as a major milestone in the field of public health. It was motivated by the existence of gross inequalities in health status within and among countries. Stressing that health is essential to social and economic development, the Declaration identified primary health care as a key approach to attaining the goal of 'Health for All'<sup>1</sup>. Therefore, it is important to continually evaluate and revitalise primary health care, including dental health care, in the effort to improve global health, particularly for poorer population groups<sup>2</sup>.

One of the 2010 dental health objectives of the Indonesian Ministry of Health was to increase the annual proportion of Indonesians utilising dental health care<sup>3</sup>. However, the 2007 Indonesian Basic Health Survey showed that the rate of edentulousness in the whole population was 2% and that only 4.5% of edentulous persons used dentures. These results may demonstrate inequalities in the use of dental care caused by economic and geographic barriers<sup>4</sup>. The term 'inequality' as used in this study refers only to the measurable quantity of difference and variations and does not imply any moral judgement<sup>5</sup>. Equality in health care refers to a context in which all citizens have equal access to care<sup>6</sup>.

The relationship between socioeconomic status (SES) and health outcomes is one of the most persistent themes in the epidemiological literature<sup>7</sup>. Unfortunately, few research articles on dental health in Indonesia have been published. Therefore, this study aims to describe the need for and utilisation of dental care and to seek evidence of inequalities in the dental health of Indonesians over the last 10 years. This study may also help to determine whether current health policies promote or obstruct social justice.

## METHODS

This study used secondary cross-sectional data from the Indonesian National Socioeconomic Surveys (*Susenas*) for 1999, 2001, 2003, 2005, 2007 and 2009. *Susenas* is an annual, continuous, multipurpose, cross-sectional and nationally representative survey of the Indonesian population conducted by the Indonesian National Board of Statistics (BPS). The survey includes demographic data, socioeconomic data and data on dental care need and utilisation<sup>8</sup>. Individuals of all ages and across all of the 33 provinces of Indonesia were included. The BPS approved the analysis of its data in the context of this study.

Respondents were asked a single question on their self-perceived need for dental care within a 1-month recall period. Answers were categorised as ‘Yes’ or ‘No’ responses. In addition, data on dental care utilisation within a 1-month recall period were collected. This information was also obtained by means of a single question in the interview, to which responses were categorised as ‘Yes’ or ‘No’ answers. A set of variables available in the *Susenas* data was selected to describe the proportion of respondents reporting perceived need for and utilisation of dental care services<sup>9–12</sup>. In the present study, the respondents were categorised by age (< 15, 15–29, 30–44, 45–59, ≥ 60 years), gender (female, male), SES quintile (first to fifth quintiles) and residence (rural, urban). Socioeconomic status was adjusted for the size and age structures of households. Total household consumption was divided by the adult-equivalence scale. Following previous studies, the adult-equivalence scale was defined as:  $e_h = (A_h + \alpha K_h)^\theta$ , where  $A_h$  is the number of adults in household  $h$  and  $K_h$  is the number of children (aged 0–14 years)<sup>13,14</sup>.

The data were weighted to ensure that the sample was representative of the Indonesian population. A  $P$ -value of < 0.05 was used throughout the study to denote statistical significance. Descriptive statistics were generated to describe the proportions of respondents reporting perceived need for and utilisation of dental care from 1999 to 2009. All statistical analyses were performed using STATA Version 9 (StataCorp LP, College Station, TX, USA).

The methods used in this study were conceptually identical to those proposed in previous studies<sup>15–19</sup>. Disparity in dental care was described by measuring inequality in need for and utilisation of dental care. We used the concentration index ( $C$ ) as a numerical measure of inequality in need for and use of dental care as related to SES and as a determinant of the significance of any inequality measures.  $C$  lies in the range of  $-1$  to  $+1$ , with a negative (or positive) value, which represents inequality in favour of groups with a lower (or higher) SES. A value of 0 indicates that there is no inequality and refers to a context in which everyone has access to the same amount of dental care<sup>20,21</sup>. For weighted data,  $C$  can be conveniently computed using the following equation:  $\frac{2\sigma_R^2}{\bar{y}} y_i = \alpha + \gamma R_i + \varepsilon_i$ <sup>18,21</sup>, where dental care need and utilisation is denoted by  $y_i$ , and  $\bar{y}_i$  is its weighted mean. In our study,  $y_i$  is binary and indicates whether a respondent had needed and had actually received dental care within a 1-month recall period.  $R_i$  is the weighted relative fractional rank of the  $i$ th individual in the SES distribution.  $R_i = i/N$ , where  $i = 1$  for the poorest and  $i = N$  for the richest.  $N$  is the sample size.  $\sigma_R^2$  is the weighted variance of  $R_i$ . The ordinary least squares (OLS) estimate of  $\gamma$  is equal to the  $C$  associated with need for and utilisation of dental care.

This research was conducted in full accordance with the World Medical Association’s Declaration of Helsinki. Moreover, the data employed in this study were secondary data and written consent was obtained from the study participants. Ethical approval was attained from the ethics committee of the Faculty of Dentistry, University of Indonesia.

## RESULTS

The age group with the highest number of respondents to *Susenas* referred to those aged < 15 years (31.01% of all respondents). However, individuals reporting perceived need for and utilisation of dental care were more concentrated in the 30–44-year-old group (Table 1). Despite the greater number of male respondents in the *Susenas* sample, perceived need for and utilisation of dental care were greater among female than male respondents. A large proportion (40.04%) of *Susenas* respondents were wealthy (fourth and fifth quintiles). However, respondents in the lowest SES quintile reported the highest (21.88%) need for dental care. Dental care was predominantly utilised by the wealthiest group (22.79%). Perceived need for and utilisation of dental care were high in rural areas. These results were in accordance with the geographic composition of *Susenas* respondents, more than half (63.39%) of whom lived in rural areas.

Table 2 shows that the concentration index of need for dental care was positive and gradually decreased in 1999, 2001 and 2003, respectively. This result means that dental care need was initially more concentrated

**Table 1** Descriptive statistics for proportions of all *Susenas* respondents, those who perceived a need for dental care and those who utilised dental care in 1999, 2001, 2003, 2005, 2007 and 2009

	All respondents, %	Respondents who perceived need for dental care, %	Respondents who received dental care, %
Age, years			
< 15	31.01	21.49	22.27
15–29	26.54	26.20	22.75
30–44	21.97	28.23	28.10
45–59	13.11	17.27	18.59
≥ 60	7.37	6.80	8.30
Gender			
Female	49.86	51.21	51.72
Male	50.14	48.79	48.29
Socioeconomic status			
Poorest	19.80	21.88	19.17
2nd quintile	19.71	19.40	16.98
3rd quintile	20.40	20.31	19.25
4th quintile	20.77	20.46	21.81
Richest	19.27	17.96	22.79
Residence			
Rural	63.39	69.48	65.17
Urban	36.61	30.52	34.83

**Table 2** Concentration index of dental care need in Indonesia in 1999, 2001, 2003, 2005, 2007 and 2009

	Dental care need					
	1999	2001	2003	2005	2007	2009
Concentration index	<b>0.103</b>	<b>0.026</b>	<b>0.019</b>	-0.045	-0.044	-0.025
Standard error	0.000	0.000	0.002	0.000	0.000	0.000
95% CI	0.076–0.131	0.014–0.038	0.007–0.031	(-0.052 to -0.038)	(-0.060 to -0.028)	(-0.033 to -0.017)

Bold values indicate statistically significant parameters at  $P < 0.05$ .  
95% CI, 95% confidence interval.

**Table 3** Concentration index of dental care utilisation in Indonesia in 1999, 2001, 2003, 2005, 2007 and 2009

	Dental care utilisation					
	1999	2001	2003	2005	2007	2009
Concentration index	<b>0.017</b>	<b>0.140</b>	<b>0.126</b>	<b>0.061</b>	<b>0.054</b>	<b>0.034</b>
Standard error	0.000	0.000	0.000	0.000	0.000	0.000
95% CI	0.002–0.033	0.118–0.161	0.103–0.148	0.047–0.075	0.039–0.068	0.019–0.135

Bold values indicate statistically significant parameters at  $P < 0.05$ .  
95% CI, 95% confidence interval.

among groups of higher SES. The decreasing value illustrates the decrease in inequality. However, in 2005, 2007 and 2009, the C-value was negative, indicating that the need for dental care shifted to persons of lower SES. Nevertheless, the concentration index for dental care utilisation was consistently positive (Table 3). This result indicates that utilisation of dental care was significantly concentrated among higher SES groups.

## DISCUSSION

Despite the high proportion of child respondents to *Susenas*, the number of individuals reporting perceived need for and utilisation of dental care was greater in the adult group. This result possibly indicates a correlation between increasing age and increasing probability of dental illness. It may also indicate that dental problems affected the daily quality of life of these respondents, causing them to seek care. Although the number of male respondents to *Susenas* was higher than that of females, female respondents tended to perceive a need for and to use dental care more than males. These findings are supported by those of previous studies, which have reported that women tend to be more concerned with health-related and aesthetic aspects of themselves than men<sup>4</sup>. In addition, this result may also illustrate a higher prevalence of dental caries in females.

The lowest SES group reported the highest need for dental care. By contrast, dental care was predominantly utilised by the highest SES group, despite the fact that members of this group reported the lowest need for dental care. This result indicates that the utilisation of dental care depends more on ability to pay than on need

for care. The fact that they can afford to may be a major reason why members of this group access health care services<sup>12,19</sup>. The lower rate of dental care utilisation in the lower SES group illustrates the persistence of economic barriers to accessing dental care. The tendency towards a higher perceived need for and utilisation of dental care in rural areas may indicate that dental care services have not been well distributed. This explanation is consistent with data from the Indonesian Ministry of Health, which state that more than 70% of dentists in Indonesia are women who tend to live in urban areas. The higher concentration of dentists in urban areas is to be highlighted in policy recommendations designed to overcome geographic barriers to access to care for patients who live in rural areas, where most of the Indonesian population reside. Furthermore, it is evident that levels of dental care utilisation in rural areas do not meet levels of need for care. Urban areas demonstrated an opposite trend, with a slight overutilisation relative to the lower need for dental care. These data indicate that individuals who live in urban areas are better able to pay for dental care than those who reside in rural areas.

There is still some controversy in the literature regarding which indices of disparity are more accurate<sup>22–26</sup>. Nonetheless, because of its advantages, the concentration index (C) was used in this study to describe disparity in dental care. This index is able to demonstrate the socioeconomic dimension of inequalities in health: it reflects the experience of the entire population and is sensitive to changes in the distribution of the population across socioeconomic groups<sup>24,27</sup>. Our findings demonstrate that the C of dental care need was positive and that it decreased in 1999, 2001 and 2003. These findings indicate that need

for dental care was more concentrated among higher SES groups. Nonetheless, in the succeeding years, the value of C became negative, indicating that lower SES groups reported greater need for dental care. The change in the C-value for dental health care need from one that is pro-rich (favouring the rich) to one that is pro-poor (favouring the poor) may be explained by the increasing disparity between socioeconomic groups. Economic and geographic barriers to obtaining dental care have continued to increase. Furthermore, our findings support the existence of a pro-rich inequality in dental care utilisation. Although the C-value for dental care need shifted from year to year, demonstrating an increase in need for dental care in lower SES groups, the C-value for dental care utilisation was consistently positive, illustrating that the utilisation of dental care services was dominated by people in the higher SES groups. This result supports the previous statement that dental care utilisation depends more on ability to pay than it does on need, which disadvantages members of the lower SES groups.

The concentration index can potentially be used as an indicator of demonstrated disparity in health over time<sup>28</sup>. Although reducing inequalities in health has become a major focus in Indonesian government policy, widening inequalities in dental health exist between higher and lower SES groups and between urban and rural populations in the country. Dental health inequalities will only be reduced through the implementation of an effective and appropriate dental health promotion policy that allocates resources on the basis of need. This study showed that the objectives of the Alma Ata Declaration have not yet been achieved in Indonesian dental care. Nonetheless, the Indonesian government is committed to establishing universal health care coverage. Perhaps, in this way, economic and geographic barriers can be overcome and 'Health for All' can be achieved.

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### Conflicts of interest

None declared.

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