

Relationship Between Health Service Access to Dental Conditions in Urban and Rural Areas in Indonesia

Fuad Husain Akbar^{1,4}, Syahrir Pasinringi², Abd Hair Awang³

¹Department of Public Dental Health, Faculty of Dentistry, Hasanuddin University, Makassar, Indonesia.  0000-0003-4819-4820

²Hospital Administration Management, Faculty of Public Health, Hasanuddin University, Makassar, Indonesia.

 0000-0001-5947-2596

³Faculty of Social Sciences and Humanities, National University of Malaysia, Selangor, Malaysia.  0000-0002-0837-7975

⁴Hospital Administration Management, Faculty of Public Health, Hasanuddin University, Makassar, Indonesia.

Author to whom correspondence should be addressed: Fuad Husain Akbar, Department of Public Dental Health, Faculty of Dentistry, Hasanuddin University, Makassar, Indonesia. Phone: +62 81243422362. E-mail: fuadgi2@gmail.com.

Academic Editors: Alessandro Leite Cavalcanti and Wilton Wilney Nascimento Padilha

Received: 26 January 2019 / Accepted: 15 April 2019 / Published: 27 April 2019

Abstract

Objective: To determine relationship between access to dental health services with dental health conditions of adult communities in urban areas represented by Somba Opu and rural districts represented by Patalassang subdistrict in Gowa subdistrict. **Material and Methods:** This was pilot pathfinder survey, conducted in Gowa District in April 2018 with 420 subjects. Data were collected using a CoHRE questionnaire. Information regarding gender, age and location (rural and urban), transportation (public and private), toothache in past one year, dental treatment in past one year, dental treatment frequency (regular and irregular), smoking, alcohol consumption, routine activity, drugs intake, oral problems, driving car, distance to health facility (near and far) were collected. The number of teeth was dichotomized to less than 20 and 20 or more. Data were analyzed using Chi-square test and the level of significance was set at 5%. **Results:** In the urban area there was an association between routine activities with dental health conditions ($p=0.002$). There is no significant association between distance or access to health care facility with dental condition in adult society in urban area ($p>0.05$). In rural area there is a significant association between distance or access to health care facility with dental condition ($p=0.046$). **Conclusion:** There is an association between access to dental health services with dental health conditions of adult communities in urban areas represented by Somba Opu and rural disparities represented by Patalassang subdistrict in Gowa district.

Keywords: Health Services Accessibility; Dental Health Services; Tooth Loss.

Introduction

The need for dental and oral health services in Indonesia is quite high, but on the other hand the public demand for dental and oral health assessment as early as possible is still low. One of the factors influencing the demand of health service is accessibility and proximity of service place from residence becomes first order to utilization of health service. Under Indonesian Law No. 36/2009 on health regulations chapter III Rights and Responsibility section, it is stated that everyone has equal rights in accessing, safe, quality, affordable health service, the right to be independent and responsible decide the health service they need [1,2].

In improving oral health as well as prevention and management of oral diseases globally, inequality persists between urban and rural communities. It is present in the distribution of oral health care services, accessibility, utilization, outcomes, knowledge and practice of oral health, health insurance coverage, oral health-related quality of life, and the prevalence of oral diseases. People living in rural areas tend to have lower health, more caries, fewer teeth, no health insurance coverage, than the urban residents. Rural areas are often associated with lower levels of education, and poor utilization of health care services. These factors have an impact on oral health care and service delivery. Therefore, unmet dental care remains one of the most urgent health care needs in rural and urban areas. Measures aimed in improving access to oral health services in rural areas, integration of oral health into existing primary health care services, and providing policy information on the determinants of health [3].

It is known that public transport networks are less developed in rural areas than in urban areas, lack of access to dental facilities can be an obstacle to routine dental visit [3,4]. In urban areas it may be more advantageous than rural areas because having no shortages such as remote geographical, low socioeconomic levels, and inadequate access to dental and oral care services, so that urban communities can contribute to oral health or quality of life associated with oral health. People in rural areas tend to have low incomes, lack of health knowledge, more caries, fewer teeth, have no health insurance coverage, and lower economic conditions for dental care than residents in urban areas. Rural populations are often associated with lower levels of education, and low level of knowledge and poor service utilization [4-8].

In the Basic Health Research (RISKESDAS) in 2013, South Sulawesi is one of the provinces with high dental and oral problems that was more than 35% with prevalence of dental and oral problem was 36,2%. The prevalence of population receiving treatment from medical personnel was 28.5% and the prevalence of ability to obtain dental or effective medical demands (EMD) services was 10.3%. Gowa is one of the districts in South Sulawesi. Based on the health profile of Gowa District, the population is the third largest of the districts in South Sulawesi. The number of population in first place is Makassar City, second is Bone and third is Gowa. By 2015 the population of Gowa district was 722,702, males were 355,381 (53%) and females were 367,321 (54.9%), the highest percentage of poor people is Somba Opu sub district (12.8%). High dental and mouth

problems with a lack of resources are likely to be one of the causes of lack of access to dental and oral care facilities [9-11].

Therefore, the purpose of this survey was to examine the relationship between access to dental health services to dental health conditions in adult communities in urban areas represented by Somba Opu and rural sub-districts represented by Patalassang district in Gowa district of South Sulawesi, Indonesia, in 2018.

Material and Methods

Study Design

This was a pilot pathfinder survey, which goal aimed in involving only one or two age groups that are the most important subgroup population to experience different levels of disease. The survey was conducted at the Dental and Oral Health Service in Somba Opu sub-district representing the urban area and Pattalassang representing the rural area, Gowa district of South Sulawesi. The survey was conducted from 9 to 14 April 2018 and obtained 420 subjects.

Data Collection

Data were collected using a Community-Based Health Research and Education (CoHRE) Questionnaire [4] used to measure access to dental health services. Information regarding gender, age (≤ 35 years and > 35 years) and location (rural and urban), transportation (public and private), toothache in past one year, dental treatment in past one year, dental treatment frequency (regular and irregular), smoking, alcohol consumption, routine activity, drugs intake, oral problems, driving car, distance to health facility (near and far) were collected. The number of teeth was dichotomized to less than 20 and 20 or more.

Data Analysis

Data were analyzed using IBM SPSS Statistics Software, version 24 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to calculate the absolute and relative frequencies. The Chi-square test was used in the bivariate analysis. The level of significance was set at 5%.

Ethical Aspects

This survey has been approved by the Medical Ethics Committee of Hasanuddin University, Indonesia and all respondents have agreed to participate in this survey by filling out the consent form.

Results

The number of males (54%) was greater than that of females (46%). Based on age, subjects aged ≤ 35 years having the highest percentage (51.4%) compared to other age (> 35 years; 48.6%). Based on survey location, 50.0% were from urban area (Somba Opu sub-district) and 50.0% from rural area (Pattalassang district).

Table 1 shows that in routine activity aspects, subjects having less than 20 teeth were 76 respondents while subjects having more than 20 teeth were 26 respondents. There was significant association between routine activities and dental health conditions ($p=0.002$). There was no significant relationship between distance and access to health care facilities with dental health conditions in adult communities in urban areas ($p>0.05$).

Table 1. Association between access to dental health service and dental health condition in adult population of urban area.

Population of urban area.					
Variables	Number of Teeth				p-value
	<20		20 or More		
	N	%	N	%	
Gender (Male vs Female)	84	83.2	17	16.8	0.908
Age (≤ 35 years vs >35 years)	81	84.4	15	15.6	0.592
Transportation (Public vs Private Transportation)	26	76.5	8	23.5	0.280
Toothache in Past One Year (Yes vs No)	44	80.0	11	20.0	0.736
Dental Treatment in Past One Year (Yes vs No)	59	79.7	15	20.3	0.620
Dental Treatment (Regular vs Irregular)	124	85.5	21	14.5	0.257
Smoking (Yes vs No)	42	84.0	8	16.0	0.831
Alcohol Consumption (Yes vs No)	12	92.3	1	7.7	0.351
Routine Activity (Yes vs No)	76	74.5	26	25.5	0.002*
Drugs Intake (Yes vs No)	23	85.2	4	14.8	0.846
Oral Problems (Yes vs No)	48	81.4	11	18.6	0.718
Driving Car (Yes vs No)	61	80.3	15	19.7	0.453
Distance to Health Facility (Near vs Far)	74	79.6	19	20.4	0.510

*Chi-square test; Statistically Significant.

Table 2 shows characteristics of participants, drugs intake, routine activities, driving cars, and distance to health facilities significantly affect dental health for rural communities. For dental care ($p=0.005$), smoking ($p=0.017$), routine activity ($p=0.001$), driving car ($p=0.031$), and distance to health facility ($p=0.046$) a statistically significant difference was observed.

Table 2. Association between access to dental health service and dental health condition in adult population of rural area.

Population of Rural area.

Variables	Number of Teeth				p-value
	<20		20 or More		
	N	%	N	%	
Gender (Male vs Female)	87	69.0	39	31.0	0.186
Age (≤35 years vs >35 years)	92	76.7	28	23.3	0.109
Transportation (Public vs Private Transportation)	40	72.7	15	27.3	0.829
Toothache in Past One Year (Yes vs No)	46	63.0	27	37.0	0.062
Dental Treatment in Past One Year (Yes vs No)	26	68.4	12	31.6	0.696
Dental Treatment (Regular vs Irregular)	121	70.3	51	29.7	0.005*
Smoking (Yes vs No)	27	64.3	15	35.7	0.017
Alcohol Consumption (Yes vs No)	17	63.0	10	37.0	0.128
Routine Activity (Yes vs No)	81	63.8	46	36.2	0.001*
Drugs Intake (Yes vs No)	24	61.5	15	38.5	0.060
Oral Problems (Yes vs No)	60	72.3	23	27.7	0.594
Driving Car (Yes vs No)	54	62.8	32	37.2	0.031*
Distance to Health Facility (Near vs Far)	68	81.0	16	19.0	0.046*

*Chi-square test; Statistically Significant.

Discussion

Oral and dental health services in Indonesia are quite high, but on the other hand the public demand for dental and oral health assessment as early as possible is low. One of the factors influencing demand of health service is accessibility and proximity of service place from residence becomes first order to utilization of health service [1].

There were more male subjects compared to male on their visits to dental and oral health centers. This suggests that men visit more dental and oral care providers. Men have higher satisfaction level (70%) and respondents who have more satisfaction level high in men (87.2%). However, employees and public society in Indonesia more dominate women. In addition, women visit more dental and oral health service providers because more attention to the aesthetic and clean teeth and mouth. Women pay more attention to their appearance, while men do not heed it. In addition women are more sensitive to emotion and empathy while men are more likely to care about better physical environment and quicker and more flexible response than women [12-17].

A significant relationship between routine activity and number of tooth was observed ($p=0.002$). Tooth loss can affect physical states such as aesthetic appearance, disruption of the mastication system, and affect the comfort of speech. Tooth loss can also be linked to socioeconomic, educational, and income levels. A person who is educated and has sufficient income will also routinely perform dental and oral care [18,19].

Table 2 shows that distance to dental health services affects to dental health conditions in rural communities ($p=0.046$). This study is in agreement with previous research, which states that the availability of transportation for rural communities should be considered when discussing the relationship between distance to health services and public health [4]. Distance to dental services is a risk factor affecting tooth loss, not related to sociodemographic, lifestyle and behavioral factors. Societies located far away from dental care facilities can be important targets for dental care. Some literatures have explained that locations including distance are a very important factor, especially longer distances such as rural areas may inhibit respondents to health services and ultimately reducing their level of satisfaction. The Government of India's Family Health and Welfare Ministry of India in 1996 states the ratio of state of health care in urban and rural India. Although the population in rural areas is higher than in urban areas, health quality is worse in rural areas compared to urban areas. The importance of oral health and development in knowledge, differences in oral hygiene exist in rural communities related to access to dental care services [20-26].

In addition, this survey is similar to previous research indicating that people in urban areas have better accessibility than others thus delaying their treatment. Access to health care facilities appears to be lacking in rural areas rather than urban areas, although travel expenses tend to increase rapidly from a small village to a big city [23-27].

Conclusion

This survey shows that people in urban areas have better accessibility and more regular visits to health care facilities. Access to health care facilities appears to be less in rural than in urban.

Based on this survey shows that there was an association between access to dental health services to dental health conditions in adult communities in urban areas represented by Somba Opu and rural disparities represented by Patalassang subdistrict in Gowa district.

Financial Support: None.

Conflict of Interest: The authors declare no conflicts of interest.

References

- [1] Indonesia. Law of the Republic of Indonesia. Number 36 of 2009. Available at: [http://www.depkes.go.id/resources/download/general/UU Number 36 of 2009 concerning Health.pdf](http://www.depkes.go.id/resources/download/general/UU%20Number%2036%20of%202009%20concerning%20Health.pdf). [Accessed on April 17, 2018].
- [2] Akbar FH, Jaya MT. Relationship between service quality on public health center and patient satisfaction. *Glob J Health Sci* 2017; 9(7):96-102. <https://doi.org/10.5539/gjhs.v9n7p96>
- [3] Ogunbodede EO, Kida IA, Madjapa HS, Amedari M, Ehizele A, Mutave R, et al. Oral health inequalities between rural and urban populations of the African and Middle East region. *Adv Dent Res* 2015; 27(1):18-25. <https://doi.org/10.1177/0022034515575538>
- [4] Hamano T, Takeda M, Tominaga K, Sundquist K, Nabika T. Is accessibility to dental care facilities in rural areas associated with number of teeth in elderly residents?. *Int J Environ Res Public Health* 2017; 14(3):E327. <https://doi.org/10.3390/ijerph14030327>
- [5] Ali DA. Patient satisfaction in dental healthcare centers. *Eur J Dent* 2016; 10(3):309-14. <https://doi.org/10.4103/1305-7456.184147>
- [6] Singh A, Purohit BM. Addressing oral health disparities, inequity in access and workforce issues in a developing country. *Int Dent J* 2013; 63(5):225-9. <https://doi.org/10.1111/idj.12035>
- [7] Sanadhya S, Aapaliya P, Jain S, Sharma N, Choudhary G, Dobaria N. Assessment and comparison of clinical dental status and its impact on oral health-related quality of life among rural and urban adults of Udaipur, India: A cross-sectional study. *J Basic Clin Pharm* 2015; 6(2):50-8. <https://doi.org/10.4103/0976-0105.152091>
- [8] Crocombe LA, Bell E, Barnett T. Is it time for an advanced rural dentist? *Aust J Rural Health* 2014; 22(2):86. <https://doi.org/10.1111/ajr.12093>
- [9] Indonesia. National Institute of Health Research and Development (NIHRD). Ministry of Health. Indonesia Basic Health Research 2013 (RISKESDAS). Lap Nas 2013. 2013; pp. 1-384.
- [10] District Health Office Gowa. Health Profile of Gowa Regency Year 2015. 2015.
- [11] South Sulawesi Provincial Health Office. Dental and Oral Health Policy. Available at: <https://www.scribd.com/presentation/362957320/Kebijakan-Kesgilut-Kadis>. [Accessed on April 17, 2018].
- [12] Akbar FH, Pratiwi R. Patient satisfaction against the quality of dental health service at dental polyclinic of Tenriawaru General Hospital in Bone Regency. *J Dentomaxillofac Sci* 2016; 1(3):177-84. <https://doi.org/10.15562/jdmfs.v1i3.313>
- [13] Tebai Y, Maharani DA, Rahardjo A. Cross-cultural adaptation and psychometric properties of the Indonesian version of SERVQUAL for assessing oral health service quality. *J Int Dent Med Res* 2017; 10(3):945-51.
- [14] Subait AA, Ali A, Alsammahi O, Aleesa M, Alkashan S, Alsalem M, et al. Perception and level of satisfaction of patients seeking dental care: A cross-sectionsl study in a major healthcare center in Saudi Arabia. *J Dent Oral Disord* 2016; 2(4):1021.
- [15] Samad R, Akbar FH, Pasiga BD, Pratiwi R, Anwar AI, Djamaluddin N, et al. Evaluation of patient satisfaction on quality of public dental health service from different dimensions in Indonesia. *Pesqui Bras Odontopediatria Clín Integr* 2018; 18(1):e4033. <https://doi.org/10.4034/PBOCI.2018.181.49>
- [16] Silva DA, Freitas YNL, Oliveira TC, Silva RL, Pegado CPC, Lima KC. Oral health conditions and activities of daily living in an elderly population in Brazil. *Rev Bras Geriatr Gerontol* 2016; 19(6):917-29. <https://doi.org/10.1590/1981-22562016019.160031>

- [17] Esan TA, Olusile AO, Akeredolu PA, Esan AO. Socio-demographic factors and edentulism the Nigerian experience. *BMC Oral Health* 2004; 4(1):3. <https://doi.org/10.1186/1472-6831-4-3>
- [18] Akbar FH, Pratiwi R, Samad R, Fanissa F. Patient satisfaction on health service center in urban and rural area. *Adv Health Sci Res* 2017; 2:92-9. <https://doi.org/10.2991/hsic-17.2017.14>
- [19] Ezat WPS, Jamsiah M, Malka SA, Noor AA, Ningseh T, Izzah ASN. Customers' satisfaction among urban and rural public health clinics in State on Selangor, Malaysia. *Malaysian J Public Health Med* 2010; 10(2):52-67.
- [20] Pramanik A. Patient's perception of service quality of health care services in India: A comparative study on urban and rural hospitals. *J Health Managem* 2016; 18(2):205-17. <https://doi.org/10.1177/0972063416637695>
- [21] Bayne A, Knudson A, Garg A, Kassahun M. Promising practices to improve access to oral health care in rural communities. *Rural Eval Brief* 2013; 7:1-6.
- [22] Jalimun YP, Widjanarko B, Peitojo H. Kepuasan pasien dibalai pengobatan gigi (BPG) puskesmas Kahuripan Kota Tasikmalaya. *J Kesehatan Komunitas Indonesia* 2014; 10(1):898-910. [In Indonesian].
- [23] Voutilainen A. Meta-analysis: Complex relationships between patient satisfaction, age and item-level response rate. *J Res Nurs* 2016; 21(8):611-20. <https://doi.org/10.1177/1744987116655595>
- [24] Shetty N, Mala K, Suprabha B, Shenoy R. Association of level of education and utilization of restorative dental care among rural women in India: Cross-sectional study. *Indian J Dent Res* 2017; 28(6):642-5. https://doi.org/10.4103/ijdr.IJDR_456_16
- [25] Stuart J, Hoang H, Crocombe L, Barnett T. Relationships between dental personnel and non-dental primary health care providers in rural and remote Queensland, Australia: Dental perspectives. *BMC Oral Health* 2017; 17(1):99. <https://doi.org/10.1186/s12903-017-0389-y>
- [26] Akbar FH, Ayuandika U. Gender and age differences in patient satisfaction with dental care in the urban and rural areas of Indonesia: Pilot pathfinder survey. *Pesqui Bras Odontopediatria Clin Integr* 2018; 18(1):e4093. <https://doi.org/10.4034/PBOCI.2018.181.80>
- [27] Akbar FH, Pasiga BD, Samad R, Pratiwi R, Anwar AI, Djamaluddin N, et al. Evaluation of expectations and perceptions on quality of dental services in Bantaeng District, South Sulawesi, Indonesia. *J Int Dent Med Res* 2018; 11(3):938-44.