



Dental Treatment Payment System in Regional Public Hospital in Makassar City, Indonesia

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Abstract : The aim of this study is to investigate the differences in choosing payment method (capitation or payment in accordance with the service method) when using dental treatment services in Regional Public Hospital in Makassar based on educational background, lifestyle, oral health perception and oral health behavior. This research used observational-analytic with cross-sectional study design. 626 patients that came to the hospital for dental treatment during October 2017 till February 2018 with the age criteria of 20 years and above were included in this study. Labuang Baji and Daya regional public hospital were selected as subject hospitals using stratified random sampling method. 210 patients in Daya regional public hospital and 397 patients in Labuang baji regional public hospital preferred the capitation payment method to payment in accordance with the service method. There is a significant difference between payment method preference and patient's compliance to follow oral health advice and instruction ($p= 0.009$ and $p= 0.032$). Subjects that are motivated to follow instruction about oral health are 4 times more likely to choose the capitation payment with increasing bivariate to multivariate odd ratio value of 6.39 times in Daya Regional Public Hospital. Patients who choose the capitation payment system were mostly female, educated, non-smoking patients, has a good assessment about their oral health condition, motivated to follow instruction about oral health, have a good perception that diet affects dental health.

Keywords: Health Insurance, Perception, Oral Health, Patient Satisfaction, Hospital

Introduction

World Health Organization (WHO) stated that one of the main targets of the Ministry of Health of the Republic of Indonesia is to improve access to health service for citizens. According to the World Health Report in 2000, health care cost is the most important element for health improvement.^{1,2,3}

The private sector is self-financed, whereas the British National Health Service from direct taxes provided by the National Health Department and patient's own paycheck funds the public sector. Approximately 700,000 adults in Ireland are not listen on public scheme dental payment system, payment system on dental services can be done in three ways: salary, cost per item, and cost per item with shared payment. All residents are entitled to receive health care through the public health care system, combination of general tax and social insurance. The payment in accordance with service payment system is the most common system in the United States, followed by a capitation system; for example, Medicaid covers nearly 10 large populations in the state with a percentage of about 50% of children in America.^{4,5,6,7}

Indonesian government created a community-based health insurance scheme with the aim of protecting the less fortunate citizen's access to health care. This community-based is regulated by the Health and Social Insurance Agency called *BPJS*. *BPJS* has been implemented since January 1, 2014 with the aim of being a form of health protection to the people of Indonesia, regulated in Law No. 40/2004 on National Social Security System and Social Security Implementing Agency Law No.24/20011. Data from the Ministry of Health in 2013 states that there are about 181 million people or 76.18% of the total Indonesian population registered as a health insurance participant. In Indonesia, the number of primary health care facilities in collaboration with health insurance is 15,861, 9,598 public health centers, 6,263 private clinics and is expected to continue to increase to 23,768 until 2019.^{3,8,9,10,11,12}

Historically, both of the above schemes are used in the dental payment system. Both health insurance and payment in accordance with service payment to the dental service there are no studies have addressed the issue. The economic theory mention, people who use the capitation payment system are people who have high risk of dental disease. In contrast, empirical research shows that people who use capitation payment systems have good dental and oral health.^{11,13} Therefore, the purpose of this study was to investigate the differences of characteristic based on education background, lifestyle, assessment of oral health, and oral behavior among patient that choose capitation payment or fee for service payment for dental treatment.

Methods

Design

An analytic, cross-sectional study was conducted. From total of 6 regional public hospital, then performed stratified random sampling and obtained 2 hospitals including Labuang Baji and Daya regional public hospital within Makassar City. This study has obtained ethical approval from the Ethics Commission at the Faculty of Dentistry, Hasanuddin University, Indonesia.

Subjects

The subjects of this study were all outpatients who went to the regional public hospital for dental treatments. This study was conducted from October 2017 to February 2018. Subjects that included in the study were patients aged ≥ 20 years old and willing to participate fill questionnaires and able to read and understand Indonesian's language. The patient signs the informed consent. Assessment criteria were based on questionnaires.

Measurement variables

This questionnaire is based on research conducted by *Andas et al.* This questionnaire consists of several content and question items with an answer option, which includes: ¹³

Statistical analysis

Data process by using SPSS program version 24 (SPSS Inc., Chicago, IL, USA) and analyzed using Chi-square test and logistic regression test. ^{14,15}

Results

This study has been conducted on differences in characteristics based on socioeconomic factors, lifestyle, oral health perceptions and behaviors on oral health in patients who choose payment or payment in accordance with service systems for dental care in Labuang Baji regional public hospital were about 229 patients and Daya regional public hospital were 397 patients with a total of 626 subjects.

Table 1 shows that the distribution based on patient's gender in each hospital was higher among females than males with 62% of females in Labuang Baji hospital and 66.2% of females

in Daya hospital. Based on age distribution, most subjects were ≥ 40 years old were about 120 patients in Labuang Baji hospital. Based on the last education, most of the subjects in Labuang Baji hospital have the last education of junior-senior high school with percentage 50.2%, while in Daya hospital with percentage 55.5%. Based on the tribe, the most research subjects with Bugis tribe followed by Makassar, and other tribes.

Table 2 shows that more subjects preferred a health insurance payment system than payment in accordance with service in each 210 and 19 subject. In the group of health insurance, the female subject is higher than men who each 130 people and 80 people, most subjects who assessed good health of teeth were 112 people. In each group the payment system showed more subjects who did not smoke. There was a significant difference between the distribution motivation of the study subjects to follow the advice and oral hygiene instructions towards two payment schemes ($p = 0.009$). In both groups the most subjects have thought that diet does not affect dental and oral health. Subjects most choose restoration dental treatment Labuang Baji hospital. A total of 124 people from the group of health insurance are quite satisfied with hospital services.

In table 3, more subjects in Daya hospital also prefer health insurance payment system rather than payment with each of 362 people and 19 people. 225 subjects from the health insurance group assess their oral health as fairly good. Furthermore, there a significant difference between the distribution of answers regarding the assessment and motivation of subjects to follow advice and oral health instruction with significance value of each $p = 0.013$ and $p = 0.032$. In addition, the majority of subjects from each payment group were quite satisfied with the service of the Daya Hospital.

The results of logistic regression are shown in tables 4 and 5 in each hospital. The more subjects affirmed the answer, the more individuals will choose the health insurance payment system. In table 4 in Labuang Baji Hospital can be seen that the subjects who routinely exercise, at least 1-2 times / day then there are 1.05 times their chances of choosing health insurance payment system.

In table 5 at Daya hospital it was found that subjects with high educational background had a chance of 1.3 times choosing a capitation payment system, as well as assessed good dental health, had a chance of 2.01 times. People who have enough motivation to take advice and instructions about oral hygiene have the opportunity to choose a health insurance payment system.

Discussion

In table 1 found that female subjects were more than male in each hospital. However, when compared to each data showed no significant difference between the genders with both payment schemes. In table 2 and 3 it can be seen that the majority of patients who choose capitation payment system were junior high school up to university education background, assessed good and satisfied on oral health, not smoking, and think that oral health can affect general wellbeing. This is in line with research conducted by Andas et al¹³ in 2014 and Hakeberg et al¹⁶ in 2016.

In tables 2 and 3, especially in the habitual and behavioral variables show that most of subjects who choose the capitation scheme thought that dental health was quite influential on general health. The authors assume that these variables are indirectly linked to the universal indicator of oral health-related quality of life (OHRQoL). Furthermore, it can be concluded that they have awareness of the importance of oral health and so they can make regular visits to the dentist at least 6 months. This is in line with the results of study to take advice and instruction about oral hygiene 4 times choose the health insurance payment system shown in table 5. In tables 4 and 5 which indicates the subjects thought that dietary patterns affecting dental health on insurance payment system.^{18,19}

In tables 2 and 3 can also be seen in the category of services provided, most subjects went to restoration treatment on each hospital. This is also in line with research by Pekiner F et al²⁰ in 2010 at Turkish Oral Dental Hospital showing a predominant need for dental treatment of 61.1% of a total of 1000 study subjects.^{18,20} This is motivated by no research subjects who visit the dentist regularly unless it has caused symptoms and lack of awareness of the importance of oral health.²¹

This result is in line with research by Habib RS et al²² 2014 in Saudi Arabia which shows a high degree of satisfaction in patients treated by dentist registrars in Saudi Arabia.²² Research by Bedi et al²³ in the UK Public Health Service also showed results in line with the percentage 89% of 3,739 study subjects are satisfied with the quality of service they receive. Research by Akbar and Jaya²⁴ in 2017 in Kutai, Indonesia also shows high levels of satisfaction with health services, including the quality of registration services, doctors, nurses, pharmacies, and the health service environment. In contrast, Othman and Razak IA²⁵ in 2010 in Malaysia showed only 61.7% were satisfied with health services. But overall the level of satisfaction does not indicate the weakness of the service or the problems found.^{23,25,26,27,28,29,30}

Based on treatment and payment systems, research by Andas and Hakeberg in 2016 explains that the capitation payment system is a preventative treatment, with the intention of

preventing caries on teeth to avoid restoration and increasing patient involvement. This is supported by the results of a study by Hill et al³² in the United Kingdom indicating that the greater number of treatments administered by the capitation payment system were 463 treatments than the general practice of 392 treatments, but followed by the total price of payment in accordance with service systems it were higher than the capitation payment system.^{31,32}

In a payment in accordance with service system, the dentist receives income upon completion of the treatment and through payment of each service item provided. This could lead to the risk of induced demand or third party suppliers with the intention that the patient will have an opportunity to receive over-treatment of what they need so that maintenance costs increase. In contrast, in the capitation payment system, the dentist's income according to the number of registered patients with health insurance. Therefore, with the capitation payment system can reduce cost of dental care in the community, as well as to provide preventive care to patients.^{13,33}

Conclusion

There is a significant difference between patients who are motivated to take advice and instructions on oral hygiene against the selection of payment systems of care at Regional Public Hospital in Makassar City. Patients in RPH Makassar City which chooses capitation payment system generally is female, educated, non-smoking, assesses good dental health, is motivated to follow advice and instruction on oral health, has a mindset that diet affects dental health, quite satisfied with the look of his teeth.

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Table 1. Distribution of respondents by demographics

	Labuang Baji Hospital		Daya Hospital	
	n	%	n	%
Gender				
Male	87	48	134	33.8
Female	142	62	263	66.2
Total	229	100	397	100
Age				
20-29 years old	76	33.2	238	59.9
30-39 years old	33	14.4	60	15.1
≥40 years old	120	52.4	99	25
Total	229	100	397	100
Last education				
Elementary school	9	3.9	24	6
Junior-Senior high	115	50.2	153	38.5
University	105	45.9	220	55.5
Total	229	100	397	100
Tribe				
Bugis tribe	140	61.1	234	59.0
Makassar tribe	71	31	112	28.2
Other tribe	18	7.9	51	12.8
Total	229	100	397	100

Table 2. Distribution of answers from questionnaires between two payment schemes in Labuang Baji Hospital

Questions (Labuang Baji Hospital)	Payment schemes				p-Value
	Health Insurance		Payment in accordance with service		
	n	%	n	%	
Gender					
Male	80	38.1	7	36.8	0.914
Female	130	61.9	12	63.2	
Last education					
Elementary school	9	4.3	0	0.0	0.59
Junior-Senior High School	106	50.5	9	47.4	
University	95	45.2	10	52.6	
Assessment of own dental health					
Bad	79	37.6	7	36.8	0.977
Good	112	53.3	10	52.6	
Very Good	19	9.0	2	10.5	
Smoking					
Yes	30	14.3	2	10.5	0.651
No	180	85.7	17	89.5	
Spare time to exercise					
Never/sometimes	148	70.5	13	68.4	0.969
Regularly, 1-2times/week	50	23.8	5	26.3	
Regularly, >2times/week	12	5.7	1	5.3	
Motivation to follow self-care instructions					
No	5	2.4	0	0.0	0.009*
Yes, quite motivated	135	64.3	6	31.6	
Yes, very motivated	70	33.3	13	68.4	

Thinking dietary habits affect oral health					
	108	51.4	11	57.9	
No	76	36.2	7	36.8	0.641
Yes, somewhat	26	12.4	1	5.3	
Yes, very much					
Significance of oral health for well-being					
	31	14.7	4	21.1	
No	135	64.3	10	52.6	0.589
Quite significance	44	21.0	5	26.3	
Very significance					
Satisfaction with teeth's appearance					
Very dissatisfied	34	16.2	5	26.3	0.087
Quite satisfied	141	67.1	8	42.1	
Very satisfied	35	16.7	6	31.6	
Treatment choices					
Extraction	63	30.0	6	31.6	0.451
Restoration	138	65.7	11	57.9	
Scalling	9	4.3	2	10.5	
Satisfaction with hospital's services					
Very dissatisfied	2	1.0	0	0.0	0.302
Quite satisfied	124	59.0	8	42.1	
Very satisfied	84	40.0	11	57.9	
Total	210	100.0	19	100.0	

* The difference was statistically significant with $p < 0.05$

Table 3. Distribution of answers from questionnaires between two payment schemes in Daya Hospital

Questions (Daya Hospital)	Payment				P-Value
	Health Insurance		General		
	n	%	n	%	
Gender					
Male	122	33.7	12	34.3	0.944
Female	240	66.3	23	65.7	
Last education					
Elementary School	21	5.8	3	8.6	0.633
Junior-Senior High School	138	38.1	15	42.9	
University	203	56.1	17	48.6	
Assessment of own dental health					
Bad	93	25.7	17	48.6	0.013*
Good	225	62.2	14	40.0	
Very Good	44	12.1	4	11.4	
Smoking					
Yes	45	12.4	5	14.3	0.908
No	317	87.4	30	85.7	
Spare time to exercise					
Never/sometimes	211	58.3	22	62.9	0.733
Regularly, 1-2times/week	116	32.0	9	25.7	
Regularly, >2times/week	35	9.7	4	11.4	
Motivation to follow self-care instructions					
No	15	4.1	5	14.3	0.032*
Yes, quite motivated	203	56.1	18	51.4	
Yes, very motivated	144	39.3	12	34.3	

Thinking dietary habits affect oral health					
	118	32.6	18	51.4	
No	166	45.9	12	34.3	0.08
Yes, somewhat	78	21.5	5	14.3	
Yes, very much					
Significance of oral health for well-being					
	51	14.1	2	5.7	
No	217	59.9	24	68.6	0.356
Quite significance	94	26.0	9	25.7	
Very significance					
Satisfaction with teeth's appearance					
Very dissatisfied	79	21.8	12	34.3	0.162
Quite satisfied	211	58.3	15	42.9	
Very satisfied	72	19.9	8	22.9	
Treatment choices					
Extraction	93	25.7	12	34.3	0.496
Restoration	224	61.9	20	57.1	
Scalling	45	12.4	3	8.6	
Satisfaction with hospital's services					
Very dissatisfied	15	4.1	2	5.7	0.783
Quite satisfied	196	54.1	17	48.6	
Very satisfied	151	41.7	16	45.7	
Total	362	100.0	35	100.0	

* The difference was statistically significant with $p < 0.05$

Table 4. Logistic regression model of the variables affecting the scheme in Labuang Baji Hospital

	Bivariate		Multivariate	
	OR	95% CI	OR	95%CI
Gender				
Male	1.00		1.00	
Female	0.95	0.36-2.51	1.13	0.35-3.68
Last education				
Elementary School	1.00		1.00	
Junior-Senior High School	0.00	0.00	0.00	0.00
University	0.81	0.31-2.07	0.97	0.32-2.93
Assessment of own dental health				
Bad	1.00		1.00	
Good	0.84	0.16-4.38	1.25	0.15-10.47
Very Good	0.85	0.17-4.18	1.18	0.16-8.72
Smoking				
Yes	1.00		1.00	
No	0.71	0.16-3.21	0.43	0.06-2.99
Spare time to excercise				
Never/sometimes	1.00		1.00	
Regularly, 1-2times/week	1.05	0.13-8.76	1.86	0.18-18.68
Regularly, >2times/week	0.68	0.13-11.24	1.31	0.12-14.60
Motivation to follow self-care instructions				
No	1.00		1.00	
Yes, quite motivated	0.00	0.00	0.00	0.00
Yes, very motivated	0.24	0.09-0.66	0.22	0.66-0.78
Thinking dietary habits affect oral health				
No	1.00		1.00	
Yes, somewhat	2.65	0.33-21.44	3.81	0.42-34.32
Yes, very much	2.39	0.28-20.40	0.78	0.40-42.33

Significance of oral health for well-being				
No	1.00		1.00	
Quite significance	1.14	0.28-4.57	1.85	0.34-10.01
Very significance	0.65	0.21-2.01	1.31	0.32-5.43
Satisfaction with teeth's appearance				
Very dissatisfied	1.00		1.00	
Quite satisfied	0.86	0.24-3.08	0.99	0.18-5.40
Very satisfied	0.33	0.11-1.02	0.40	0.09-1.70
Treatment choices				
Extraction	1.00		1.00	
Restoration	0.43	0.07-2.46	1.05	0.03-2.25
Scalling	0.36	0.07-1.87	0.19	0.03-1.47
Satisfaction with hospital's services				
Very dissatisfied	1.00		1.00	
Quite satisfied	0.00	0.00	0.00	0.00
Very satisfied	0.49	0.19-1.28	1.06	0.31-3.63

Table 5. Logistic regression model of the variables affecting the scheme in Daya Hospital

	Bivariate		Multivariate	
	OR	95% CI	OR	95%CI
Gender				
Male	1.00		1.00	
Female	1.03	0.49-2.13	0.94	0.37-2.39
Last education				
Elementary School	1.00		1.00	
Junior-Senior High School	1.71	0.46-6.30	2.04	0.43-9.78
University	1.30	0.63-2.69	1.10	0.47-2.58
Assessment of own dental health				
Bad	1.00		1.00	
Good	2.01	0.64-6.33	2.73	0.63-11.88
Very Good	0.68	0.22-2.18	0.86	0.22-3.34
Smoking				
Yes	1.00		1.00	
No	1.38	0.00-0.00	1.47	0.00-0.00
Spare time to excercise				
Never/sometimes	1.00		1.00	
Regularly, 1-2times/week	0.91	0.30-2.81	0.96	0.27-3.43
Regularly, >2times/week	0.68	0.20-2.34	0.71	0.18-2.74
Motivation to follow self-care instructions				
No	1.00		1.00	
Yes, quite motivated	4.00	1.24-12.90	6.39	1.56-26.12
Yes, very motivated	1.06	0.50-2.28	1.13	0.44-2.92
Thinking dietary habits affect oral health				
No	1.00		1.00	
Yes, somewhat	2.38	0.85-6.67	1.88	0.57-6.19
Yes, very much	1.13	0.38-3.31	0.78	0.22-2.70

Significance of oral health for well-being				
No	1.00		1.00	
Quite significance	0.41	0.09-1.97	0.18	0.03-1.17
Very significance	1.16	0.52-2.58	1.44	0.53-3.93
Satisfaction with teeth's appearance				
Very dissatisfied	1.00		1.00	
Quite satisfied	1.37	0.53-3.53	0.75	0.19-2.94
Very satisfied	0.64	0.26-1.57	0.57	0.18-1.83
Treatment choices				
Extraction	1.00		1.00	
Restoration	1.94	0.52-7.20	1.05	0.23-4.51
Scalling	1.34	0.38-4.70	0.19	0.20-3.30
Satisfaction with hospital's services				
Very dissatisfied	1.00		1.00	
Quite satisfied	1.26	0.26-6.01	1.62	0.27-9.59
Very satisfied	0.82	0.40-1.67	1.00	0.41-2.41

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