

Evaluation of Patient Health Outcomes at a Community Hospital in Thailand

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Abstract

To ensure the achievement of health services, evaluation of patient health outcomes is necessary. The objective was to evaluate health status, responsiveness, and health expenditure on the basis of effectiveness (health status and responsiveness), responsiveness (responsiveness), and equity in health (health status, responsiveness, and health expenditure). A cross-sectional study was conducted on a sample (n = 348) of out-patients at a community hospital using a questionnaire. Measures of health status consisted of physical, mental, and social health, and that of responsiveness included dignity, autonomy, choice of provider, prompt attention, and basic amenities. Health expenditure was based on patient profiles. Participants were divided into two groups by the lowest-income quintile. Percentage of health status and responsiveness was 84.7% and 70.6%, respectively. Mental and social health was independent of age. Responsiveness was positively related to health status. The lower-income group shared significantly greater health expenditure than his counterpart. Aging and chronic diseases could increase health expenditure. In conclusion, effectiveness of health status and responsiveness can't be evaluated owing to a lack of specified goals, but its measures can be used as benchmark for next evaluation. Promotion of mental and social health can enhance health status. Responsiveness measures should be informed health providers to improve their behaviors. Such improvement can additionally support health status. Equity is achieved in health status and responsiveness but not in health expenditure. This evaluation suggests the necessity to specify outcome goals, encourage health providers to engage in evaluation procedure, and define precise outcome measure for equity determination.

Key words: Thailand, Health evaluation, Patient health outcomes, Community hospital

INTRODUCTION

Provision of health welfare has been recognized as one of the most necessary public policies in many countries, including Thailand. To perform such health welfare requires many resources especially budget for health structures, programs and activities¹⁻⁵. Moreover, health needs tend to increase due to several factors such as a population growth⁶, a population aging^{7, 8}, a rise in long term care for patients with chronic diseases⁹, a wider distribution of health services¹⁰, and a higher risk of disease resulting from poor hygiene¹¹. The response to several groups of people, complexities of health needs, and limitations of health resources leads to a necessity to provide health services effectively, equitably, efficiently, and adequately¹². Health outcomes have been regarded as indicators of health success¹³. Evaluation of health outcomes is thus an indispensable procedure to indicate the achievement of health services¹⁴. Evaluation can also give information advantageous to health policy makers to create a sound decision making for different policies suitable for a variety of health needs. In addition, evaluation can identify the strength or weakness of health services¹⁵.

In health service system, patients are considered not only as center of interest but also as health service monitor¹⁶. Therefore, patient health outcomes are suitable to be evaluated. The basic health outcomes¹⁷ investigated are health status, responsiveness, and health financing. Health status is described as the wellness level of physical, mental, and social health. Ability to perform daily physical activities is indicative of physical health^{18, 19}. A feeling of oneself, zest for life, and a feeling of surrounding persons can indicate mental health²⁰ while a relationship with other persons can imply social health^{21, 22}. Responsiveness is a concept describing how well health providers respond to patients' need for

non-health aspects²³. Five elements of responsiveness determined are dignity (respectful manner), autonomy (participation in decision making), choice of provider (ability to freely choose any health provider), prompt attention (fast time to provide health care) and basic amenities (good surroundings and facilities). Measurement of prompt attention, the most important element reported, uses waiting time because it is objective and indicative of high intention and high quality care^{24, 25}. For health financing, health expenditure of patients is considered as an outcome because of its importance in health service system²⁶. This health expenditure covers the budget from any health welfare scheme spent for each patient.

There are several criteria for evaluation²⁷ but this study has concerned with three of them which are effectiveness, responsiveness and equity. Effectiveness involves attainment whether health status and responsiveness has been achieved the specified level. Responsiveness associates with health providers' response to their patients. Equity in health, which could be considered as benefit or cost view, is one of the most important aspects in health service system²⁸. There are several outcomes to measure equity in health²⁹ but this evaluation has focused on health status, responsiveness and health expenditure. Income a common factor to distinguish population for equity evaluation³⁰⁻³² has been employed to divide patients into different groups.

Primary healthcare is very important for health services³³. In the country, community hospitals located at each district are responsible for primary healthcare for people in the area. Evaluation information at local healthcare can be helpful for health improvement of patients in their particular context. In addition, incorporation of local information to region or central ones can facilitate health policy evaluation. As a result, this evaluation has been conducted at a community hospital.

MATERIALS METHODS

Setting, participants and design

A northern community hospital with 30 beds at a district participated in this study. This hospital serviced, on average, a visit of 180 out-patients per official working day. Population were registered out-patients who resided in this district in 2010 (N=28,000). Participants were patients who were aged 18 and over, and literate. To evaluate equity in health, participants were divided into the lower-income and the higher-income groups by the lowest-income quintile³⁴. A cross-sectional study on a planned sample (n = 394) using a questionnaire was undertaken in a random month in 2011.

Data collection

A valid and reliable questionnaire was used to gather demographics and measures of health status and responsiveness. Health expenditures were obtained from patient profiles. Patients were selected in each day by systematic sampling. After receiving the prescription (the final step of hospital visiting), patients who experienced health services were informed about the study and asked to participate in this study. After sending a consent form, they completed the questionnaire within 10-15 minutes and returned it to data collectors. Some patients refused to join this study because they had no time.

Measures

Health status

Measures of health status were obtained by participant responses to the following items on a scale ranging from very good (5), good (4), moderate (3), bad (2) and very bad (1). a) Physical health: I can do my private routine, I can stand up by myself, I can walk by myself, I can do house work by myself, I can go out and back home by myself. b) Mental health: I am proud of myself, I am confident about living, I am satisfied with my life, I am eager to live for several years, I feel good

to everyone surrounding me. c) Social health: my relationship to my family, my relatives, my friends, my neighbors, my community friends. A sum of scores from each health dimension was the score of health status. A higher score reflected a better health.

Responsiveness

Measures of responsiveness were received by participants who experienced health services and rated the following items on a scale varying from very good (5), good (4), moderate (3), bad (2) and very bad (1). a) Dignity: the officers welcome me at the front area, the nurses talk to me, the physician intends to listen to my symptom explanation, the physician examines my illness, the pharmacist explains my prescription use. b) Autonomy: I am able to participate in asking about my illness, making a decision to select a method of treatment, discussing the method selected, discussing how to take care myself, discussing how to use medicines. c) Choice of provider: I am able to choose a physician for examination, a pharmacist to explain my prescription use, a nurse to inform how to take care myself, I am able to ask another person to discuss my illness, my method of treatment. d) Prompt attention: I wait 10 minutes for registering and getting a patient card, I wait 30 minutes for a primary investigation by nurse, I wait 60 minutes for an examination by physician, I wait 15 minutes for receiving a prescription, In case of emergency, I should reach a physician within 30 minutes. e) Basic amenities: cleanness of hospital, cleanness of climate, cleanness of drinking water, adequacy of seats for sitting and waiting for service, cleanness of toilets. A sum of scores from each responsiveness element was the score of responsiveness. A higher score indicated a better responsiveness.

Health expenditure

This measure was based on patient profiles which contained prescription and other expenditure. A few of patients visited the hospital for appointment, got no prescription but received counseling at

pharmacy department, so such patients had no health expenditure. Health expenditure covered the expenditure on medicine, essential medicine, non-essential medicine, and non-medicine items.

Data analysis

Analysis of demographics and measures used descriptive statistics. Percentages of health status and responsiveness means were demonstrated as part of the possible highest score, but those of expenditure as part of total expenditure. Relationship of variables was based on Pearson correlation coefficients. Differences in means and numbers were determined by t-test and proportional test at the significance level of 0.5.

RESULTS

A total of 348 out-patients completed the questionnaires. Their age and income were about 45 years and 5000 baht, respectively. Most of them were female (66.1%), lived with their spouse (69.3%), finished primary school (55.5%), and worked as employee (48.3%). Most participants reported chronic diseases (62.4%) and went to visit hospital because of ailment (46.8%). Almost all of them (98%) had one of these health welfare schemes which were universal coverage scheme, social security scheme and government officer scheme. Details of demographics were demonstrated in Table 1. A comparison of demographics between the lower-income group (n=70) and the higher-income group (n=278) is also displayed. Correlation coefficients among variables are shown in Table 2.

Table 3 presents measures of patient health outcomes. Percentages of health status and each health dimension varied from 80.1% to 88.1%. Each health dimension showed a significantly different percentage from each other. Participants rated their physical health better than the others. Compared to health status, responsiveness and its elements demonstrated lower percentages. There were significant differences in percentages of these responsiveness elements ranging

from 56.8% to 79.5%. Participants gave the highest score for basic amenities and the lowest one for choice of provider. Such large range implied a rather uneven responsiveness. This finding might be useful for prioritizing the element to be improved. For expenditure, medicines accounted for 77.9% of health expenditure suggesting a dependence of out-patients on medicines. Specifically, essential medicines constituting 65.3% of health expenditure seemed to be the major part of health finance.

Table 4 displays a comparison of patient health outcome measures between the lower-income and the higher-income groups. Health status of each group was similar. For health dimensions, the only significant difference was that the lower-income group had lower score for physical health. Participants with lower income tended to have lesser physical health indicating the influence of income on this health dimension. A correlation coefficient of income and physical health supported this influence. In contrast, income demonstrated no relation to mental and social health. Scores of responsiveness and its elements between the two groups were not different. This finding suggested a non-bias responsiveness of health providers expressing to their different patients. Contrary to health status and responsiveness, health expenditures in both groups were different. The lower-income group got higher expenditure on health, essential and non-essential medicines than their counterpart reflecting a greater use of medicines. This observation was correspondent with a larger number of patients with chronic disease in the lower-income group. A relationship between age and medicine expenditure supported the higher medicine expenditure in the lower-income group because this group was older. It was likely that participants with lower income, with chronic disease and older age would require greater health expenditure and medicine expenditure than their counterparts. However, there was no difference in non-medicine expenditure in both groups showed.

Table 1. Demographics of participants and their comparison between the lower-income and the higher-income groups

	All (n=348)		Lower- income group (n=70)		Higher-income group (n=278)		p-value
	Mean	SD	Mean	SD	Mean	SD	
Age, year	45.2	16.0	64.6	12.7	40.3	12.7	<0.001
Income, Baht	5498.3	6669.1	614.3	287.1	6728.1	6939.0	<0.001
	f	%	f	%	f	%	
Gender							
Female	230	66.1	47	67.1	183	65.8	
Male	118	33.9	23	32.9	95	34.2	
Marital status							
Couple	241	69.3	41	58.6	200	71.9	
Single	69	19.8	7	10.0	62	22.3	
Widow	35	10.1	21	30.0	14	5.0	
Divorce	3	0.9	1	1.4	2	0.7	
Education							
Primary school	193	55.5	67	95.7	126	45.3	
Secondary school/higher education	155	44.5	3	4.3	152	54.6	
Occupation							
Employee	168	48.3	21	30.0	147	52.9	
Private owner	94	27.0	22	31.4	72	25.9	
Student	25	7.2	-	-	25	9.0	
Government officials	17	4.9	1	1.4	16	5.8	
Others	44	12.6	26	37.4	18	6.5	
Presence of chronic disease	217	62.4	62	88.6	155	55.8	<0.001
Yes	131	37.6	8	11.4	123	44.2	
No							
Reasons to visit hospital	163	46.8	13	18.6	150	54.0	
Ailment	108	31.0	36	51.4	72	25.9	
Prescription filling	77	22.1	21	30.0	56	20.1	
Physician appointment							
Having a health welfare scheme	341	98.0	70	100.0	271	97.4	
Yes	7	2.0	-	0	7	2.5	
No							

Table 2. Pearson correlation coefficients of variables

	1	2	3	4	5	6	7	8	9	10	11	12
1 Health status												
2 Physical health	0.745*											
3 Mental health	0.841*	0.463*										
4 Social health	0.798*	0.305*	0.574*									
5 Responsiveness	0.289*	0.176*	0.315*	0.206*								
6 Dignity	0.192*	0.132*	0.203*	0.127*	0.691*							
7 Autonomy	0.174*	0.123*	0.223*	0.079	0.748*	0.501*						
8 Choice of provider	0.073	-0.027	0.138*	0.071	0.706*	0.259*	0.488*					
9 Prompt attention	0.258*	0.193*	0.207*	0.212*	0.514*	0.141*	0.157*	0.194*				
10 Basic amenities	0.297*	0.213*	0.291*	0.211*	0.595*	0.499*	0.292*	0.133*	0.186*			
11 Medicine expenditure	-0.021	-0.041	-0.009	0.042	-0.020	-0.001	-0.073	-0.084	0.094	0.025		
12 Age	-0.032	-0.132*	0.016	0.043	0.059	0.012	-0.002	-0.049	0.062	0.126*	0.231*	
13 Income	0.067	0.112*	0.060	-0.011	-0.030	-0.002	-0.025	-0.026	-0.003	-0.039	-0.068	-0.162*

*, significance level of 0.05

Table 3. Measures of patient health outcomes (n = 348)

	Minimum	Maximum	Mean ^(a)	SD	%
Health status ^(b)	34	75	63.5	8.6	84.7
Physical health	5	25	22.0	3.7	88.1
Mental health	9	25	21.4	3.3	85.8
Social health	10	25	20.0	3.8	80.1
Responsiveness ^(b)	55	125	88.2	12.3	70.6
Dignity	5	25	19.4	3.2	77.7
Autonomy	9	25	18.3	3.7	73.3
Choice of provider	5	25	14.2	4.9	56.8
Prompt attention	5	25	16.4	3.7	65.5
Basic amenities	10	25	19.9	3.3	79.5
Health expenditure ^(c)	0	3870	391.9	477.8	100.0
Medicine expenditure	0	3870	305.3	416.5	77.9
Essential medicine expenditure	0	3870	256.0	346.5	65.3
Non-essential medicine expenditure	0	1860	49.3	190.7	12.6
Non-medicine expenditure	0	1000	86.6	169.9	22.1

(a), significant differences in means of each health status, each responsiveness element, and each type of expenditure

(b), percentage of mean as part of the possible highest score

(c), percentage of mean as part of the health expenditure

Table 4. Comparison of measures between the lower-income and the higher-income groups

	Lower-income group (n=70)		Higher-income group (n=278)		p-value
	Mean	SD	Mean	SD	
Health status	62.5	10.7	63.7	8.0	0.375
Physical health	20.8	4.4	22.3	3.5	0.010
Mental health	21.1	4.1	21.5	3.1	0.442
Social health	20.6	4.1	19.9	3.8	0.189
Responsiveness	87.5	12.0	88.4	12.4	0.613
Dignity	19.6	3.0	19.4	3.3	0.659
Autonomy	17.7	4.0	18.5	3.6	0.100
Choice of provider	13.4	5.0	14.4	4.9	0.138
Prompt attention	16.7	3.9	16.3	3.7	0.469
Basic amenities	20.2	3.5	19.8	3.3	0.375
Health expenditure	555.2	568.7	350.8	443.9	0.006
Medicine expenditure	485.2	498.3	260.0	381.1	0.001
Essential medicine expenditure	377.0	326.7	225.5	345.2	0.001
Non-essential medicine expenditure	108.2	291.4	34.5	152.6	0.044
Non-medicine expenditure	70.0	164.7	90.8	171.2	0.361

DISCUSSION

This evaluation has provided information about health status, responsiveness, and health expenditure of out-patients at a community hospital on the basis of effectiveness, responsiveness, and equity in health. The information is as follows.

Effectiveness

Effectiveness of health status and responsiveness has been not evaluated due to a lack of specified levels by the hospital. However, both measures can be used as benchmark for next evaluation. For example, a challenge goal of health status and responsiveness may aim at a higher level of 90% and 80% respectively. A negative correlation between age and physical health seems to be a weakness that we may be unable to enhance older adults to be stronger. However, there are no correlations between age and mental, and age and social health. This finding gives meaningful information that mental and social health can be maintained and improved in the long run because it is unlikely to depend on age. In addition, there are no correlations between income and mental health, and income and social health. This evaluation has revealed that mental and social health is free from not only age but also income. Both health dimensions deserve a continuous and serious promotion to be a sustainable health among people with different ages and incomes.

Responsiveness

A broad range of responsiveness element percentages has reflected a wide variation in behaviors of health providers. The responsiveness element with the lowest scores should be a priority to be improved. The other ones should also be enhanced simultaneously because health providers who perform poorly in one element are likely to perform poorly in the others³⁵. The positive correlations between each element support the necessity for this enhancement. Responsiveness is linked to

health status, so health providers can play an additional role regarded as health supporters. Moreover, a relationship between patient-provider interaction and effectiveness of medical treatment³⁶ has confirmed the importance of responsiveness. Information about responsiveness from this evaluation should be a feedback for health providers in order that they might improve their behaviors when interacting with patients. Encouraging health providers to commit themselves to performing good responsiveness continuously is also necessary.

Responsiveness is a concept not relevant to health but indicative of health outcomes. A large gap of health knowledge and skill between health providers who are superior and receivers who are inferior may result in an unsuitable expression and relationship among the two contrast parties. Every individual including patients has a right of humanity, i. e., treating others and being treated by others with respect. Health providers have to understand, accept the right of patients as human being, and commit themselves to treating their patients as respectfully as possible. Better responsiveness of health providers can enhance a strong relationship which is one important factor to achieve a mutual health goal. Improvement of responsiveness spends less time and money but yields a sustainable relationship.

Equity

Both groups of participants have demonstrated equitable distributions of mental and social health except for physical health. Income is not a barrier that would limit mental and social health. Improvement of mental and social health can be advantageous to physical health indirectly. The participants in the lower-income group are physically weaker than their counterpart since they are older. Age is a factor involving physical health so evaluation of equity should concern not only income but also age. Equity in responsiveness is a good sign showing that health providers treat their different

patients similarly without bias. Contrary to health status and responsiveness, health and medicine expenditures of the two groups are inequitable. The lower-income group has shared greater expenditure because they consist of a larger proportion of patients with chronic diseases who tend to need for more medicine resulting in higher expenditure. The older participants in this group have also contributed to higher expenditure. This group has similar health status to but has greater health expenditure than its counterpart. This suggests that a higher expenditure may not always lead to a better health status. Though equitable distribution is a good sound in health system, it should be applied with careful consideration. In this case, the solution of this inequity is not to make equity by decreasing or increasing the expenditure of the corresponding groups. Rather, the evaluation should pay more attention to redefinition and clarification of outcomes. Health expenditure based on only income may be inadequate to assess equity. For example, medicine expenditure for a specific chronic disease may be more appropriate than that for a non-specific one. Additionally, health expenditure based on age can provide clearer information about equity in health cost. This evaluation suggests that to set measures of health expenditure carefully is very necessary because several factors could associate with it.

CONCLUSION

On the basis of effectiveness, responsiveness and equity in health, this evaluation has provided information about three patient health outcomes which are health status, responsiveness and health expenditure. It is unable to evaluate the effectiveness of health status and responsiveness due to a lack of goals specified by the hospital. However, the measures can be used as benchmark for next evaluation. Responsiveness of health providers is associated with health status of patients so it could be advantageous to enhance their health. This responsiveness measure should be informed health providers as feedback from their patients

in order that they may improve their behavior. For equity evaluation, health status and responsiveness between the two groups is equitable but health expenditure is not. The lower-income group has shared greater health expenditure than the higher-income group. A rise in age and the presence of chronic disease are likely to increase health expenditure. Income alone is inadequate to divide patients into different groups for equity determination. To evaluate equity in health expenditure precisely, age and chronic disease should be considered too. This evaluation has suggested that the hospital should set a goal of health status and responsiveness, encourage health providers to engage in evaluation procedure, and specify a clearer definition of health outcomes for equity evaluation.

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