DEMAND CONCEPT IN HEALTH SECTOR

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ABSTRACT

Generally, the demand and need for health services can be described in a concept of iceberg phenomenon. This concept refers to the understanding that true demand should be the need. Conceptually, the need for health services might be released by an iceberg, with only a slight top seen as demand. In developed countries, perhaps the top of iceberg will appear relatively large when compared to undeveloped countries. The health service is attempting to keep the water as low as possible. The demand concept on the health sector discussion requires a distinction of demand for health and demand for health care. This discusses important in view of various health sectors are different with other sectors. Some key questions in discussing demand for health and demand for health care: Why do people encourage healthy? What determines a person's demand for health? What is the effect of health services in improving health status?

Keywords: health demand, hospital management, economic concept, healthy

1. INTRODUCTION

Rationally, everyone wants healthy. Health is the energy to work and live to develop offspring. The desire comes from the needs of human life [1]. Of course, the demand for healthy is different between humans. People depend on the health highly certainly trigger a higher demand of health status. For example, a professional athlete will pay more attention of health status than unemployed people [2].

The next question is the relation of demand for health and demand for health care. According to Blum's Theory, health is influenced by: (1) offspring; (2) environment, (3) behavior, and (4) health services. However, this concept is considered difficult to explain the relation of demand for health and demand for health care. To explain its relationship, it derived economic principle concept to use [3]. The economic approach emphasizes that health is the energy to work. The health service including the hospital is one of the inputs in producing healthy days [4]. Based on the production concept, the health service can be depicted in Figure 1. With this concept, health service is one of the inputs used for the production process producing health. Demand for hospital services depends on the demand for one's own health.

Figure 1. Healthy production process

- Environment
- Education
- Food
- Income
- Healthy life
- Sports

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Similar to the economic model above, in a very influential research at the health economics used human capital theory to describe the demand for health and the demand for health care. In this theory, it is stated that someone invests to work and earn money through education, training, and health [5]. The demand for health has several things that differentiate with the traditional approaches and demand in other sectors:

1. The community or consumer wants a healthy beside the health service. The health service is a derived demand as input to produce health. Thus, the demand for hospital service is generally different with the demand for hotel services.

2. People do not passively buy health from the market. The community produces by using the time for health improvement efforts, in addition to the health service.

3. Health might be considered as an investment material because it is durable and does not depreciate immediately.

4. Health might be considered as a consumption material as well as an investment material.

Initial discussion concerning demand for health could learn through the definition of wants, demands, and needs [6]. This needs its definition considering that the demand of health service is slightly different with the demand for other commodities or services. Part II has discussed briefly the demand and supply. In this paper, a discussion of the demand for health services will be in more depth with socio-economic approaches [7]. Schematically, the model is depicted in Figure 2.

In this model, it might reveal the relation of demand for health and demand for health care. Based on Grossman's model, a person's desire to earn an income requires capital or energy, including health [8]. In social terms, it is the desire to be healthy. With this want concept, a person could own self-assessment: The case below can be used to explain demand for health and demand for health care.
A 45 year old woman feels pain in the lower abdomen. As a company director secretary, she felt that her stomachache was interfering her daily work. She has a want to be healthy, free from his pain. At this point, concept of human capital is extremely relevant [9]. Without the good health, she could not work properly.

Attempting to overcome the pain she felt, took an over-the-counter stomach pain reliever. The drug information was obtained from a private television show advertisement. However, after two days of taking the medicine, it turned out that the abdominal pain had not subsided. As recommended by television advertisement, then visited the company doctor for a consultation. Thus, from a desire to be healthy (the model is recognized as demand for health), she has changed the demand for health into a demand for medical personnel services, especially general practitioners. This situation had been already a demand for health care.

The doctor then gave him a medicine, but the pain did not subside. Furthermore, the doctor took to an internist because it was suspected that there was an abnormality in her stomach. By taking him to the internist, the demand had “increased” into demand for specialist medical services. In this checkup, there were various possibilities to use high technology, for example the use of Ultrasonography or CT scan as a diagnostic aid. In contrast to the purchase and use of other economic goods, she could not use the Ultrasonography according to her wish. The demand for Ultrasonography checkup would be determined based on the need set by the doctor. At this point, various possibilities emerged. The first possibility, based on the need, she was not to have the demand for Ultrasonography checkup. stomachache might be a symptom of a psychosomatic illness due to job stress. The second possibility, based on the need, to have the demand for Ultrasonography checkup. Stomachache might be a symptom of serious disease (eg uterine tumor).

In the first possibility, there was a Supplier Induced Demand condition. This term describes a condition by which a doctor determines the patient's demands based on the unneeded. It should be emphasized that this is not an "over-treatment". Supplier Induced Demand occurs due to the imbalance of information between doctors and patients. A Doctor increases the demand for the patient based on economic motivation to increase the income. A statement that supplier induced demand is the doctor's abuse of doctor-patient relationship to obtain a personal benefit.

As this case illustration, based on the education and experience, doctor is more familiar with information on stomachache complaints than who is complaining. The doctor, in this case, acts as a service provider while acting as a representative to get other services for the patient, for example a medicine, checkup, or other doctor's decisions. The patient's medical procedure understanding is very limited and the doctor has the authority to act on the patient's behalf [10]. This unbalanced understanding owned by a seller and buyer is similar to an auto mechanic and a car owner relationship in which the car owner is unfamiliar with the machine and a lawyer and a client relationship who is unfamiliar with the law. As a result, the work relation can be misused for the doctor, mechanic or lawyer benefit.

Supplier induced demand mainly occurs in fee-for-service payment systems. If no strong ethics, it will easily lead to professional deviations as ultrasonography checkup, although medically there is no an indication for this [11]. In this situation, the specialist doctor gave the order to check with Ultrasonography and received a medical service or personal benefit, even though the doctor realized that she has no need to undergo an Ultrasonography checkup.

By the change of hospital behavior in to an economic institution, the risk of professional deviation will increase due to investment demands. In the above case, if the Ultrasonography purchase is processed on a bank credit, investment rules must be considered, for example through the payback period. The principle that “hospital wards must be filled” or “medical equipment must be used” can lead to Supplier Induced Demand.

Otherwise, the Supplier Reduced Demand might occur. This term reflects the situation that doctors or hospitals set the demand below what it should be. It should have been checked up by ultrasonography. However, it is possible that the Health Assurance reimbursement owned by the company gives a compensation under the unit-cost of the Ultrasonography checkup [12]. The hospital will lose a lot of money if it used Ultrasonography. In economic terms, without Ultrasonography checkup will prevent the hospital from losing. Thus, the need of she cannot be materialized as demand. Another example is in the hospital financing system based on budget. If the hospital can provide services under budget, for example 90%, then the remaining 10% can be included as hospital services. With this concept, the hospital will have an incentive to perform Supplier Reduced Demand.
The size of demand and need should be well understood by health workers. In this case, there must be a factor understanding that can influence demand for health and demand for health care through proper analysis [13]. Demand analysis, which finally produce demand forecasting, is an important action for a hospital. From this demand forecasting, various questions will emerge, such as: (1) what number and types of medical personnel are needed to meet the demand for hospital services in the future?; (2) is the current production of hospital services sufficient to meet demand?; and (3) are the facilities, infrastructure, and various main activities of the hospital reliable to meet future demand?

In principle, demand analysis is a hospital management basic activity because it provides a basis in analyzing market influence on the hospital activities and adapting it. In addition, demand analysis will also identify factors that affect demand and provide direction for hospital planning.

2. Factors Affecting Demand on Health Service and Hospital

The factors that affect the demand for health services include: needs based on physiological aspects; personal assessment on the health status; economic variables such as tariff, the presence or absence of insurance system, and income, demographic and organizational variables. Apart from these factors, there are other factors, for example, advertising, the effect of doctor numbers and health service facilities, and the effect of inflation. These factors are interrelated in a complex way.

2.1 Physiological Based Needs

Psychological based need emphasizes the importance of medical personnel decision to determine people medical service needs. This medical personnel's decision will affect a personal assessment of health status. Based on this situation, the demand for health services can be increased or decreased [14]. These factors can be represented in epidemiological patterns which should be measured based on community needs. However, existing epidemiological data largely describe the top of iceberg, namely demand, not needs.

2.2 Personal Assessment of Health Status

In socio-anthropology, personal assessment of health status is affected by beliefs, culture, and social norms in society. Indonesia as an Eastern country has long had alternative medicine of shaman or healer services. This service is hundred years old so it can be seen that there is a demand for alternative medical services in the community. For example, for various mental health problems, the shaman role is still significant. In addition, the issue of illness risk perception is important. Some people really pay attention to their health status, others do not pay attention to it.

2.3 Tariff Economic Variables

The relation of tariff and demand for health service is negative. The higher tariff indicates the lower demand. It is important to note that this negative relation is particularly pronounced by a circumstance in which the patient has a choice. In hospital services, the level of patient demand is very much influenced by the doctor's decision. The doctor's decision affects the length of stay, the type of checkup, the necessity for surgery, and various other medical procedures. In an immediate medical treatment situation, the tariff factor may not influence the demand, so that price elasticity is inelastic. For example, immediate surgery due to traffic accidents. If no immediate action, the victim can die or become disabled for life.

The hospital tariff issue is a controversial one. The normative statement in the community hopes that the hospital tariff must be decreased so that the poor can have an access. However, a low tariff with insufficient subsidies can cause the low service quality for the poor and this is a major problem of hospital management.

2.4 Community’s income

An increase of family income will add the demand for health services, those are normal goods. However, there are also some inferior health services, in which the people income increase causes a consumption decrease. This has been experienced the government-owned hospital in various cities and districts. The tendency might the people with high incomes dislike health services which take a lot of time. This is anticipated by hospitals that want patients from the wealthy class. Waiting and queue for medical services should be reduced by providing outpatient services by some appointments. The people's income factor and their taste are an important part of the demand analysis for the hospital marketing need.
2.5 Health Assurance and Health Care

In developed countries, Health Assurance is an important factor on the demand for health services. For example, in United States, people do not pay directly to health services, but through the Health Assurance system. In addition, there are also government programs in Health Care form for the poor and the elderly. This government program is often well-known as social insurance. The existence of Health Assurance and Health care can increase the demand for health services [15]. Thus, the relation of Health Assurance and demand for health services is positive. Health Assurance is to reduce the tariff factor wishes getting health services when sick. Thus, the high population which is covered by Health Assurance will lead to the higher demand for health services (including hospitals). This demand increase is also influenced by moral hazard factors. A person who is covered by health service insurance will be encouraged to use as much as possible.

2.6 Demographic and Age Variables

Age factor extremely affects the demand of preventive and curative services. The older person increases the demand of curative services. Meanwhile, the demand of preventive health service is decreasing. In other words, as the sooner death time, a person feels that the benefits of preventive health service will be smaller than when he was young. This phenomenon can be seen in demographic patterns in developed countries that have turned into old societies. Expenditures for health services are very high.

2.7 Sex

The research in United States showed that the woman demand for health service is higher than man. This result is inline with two presumption. First, a woman has a higher disease than a man. Second, because the woman work performance is lower, the willingness to spend time for health services is greater than man. However, in emergency case, the difference between woman and man is not real.

2.8 Education

Someone with higher education tends to have a higher demand. Higher education tends to increase health status awareness, and consequently to use health services.

2.9 Other Factors

Various other factors influence the demand for health services are advertisement, doctor's availability and health service facilities, and inflation. Advertisement is commonly used in the economic commodity business to increase demand. However, the health service sector is traditionally prohibited because it is against doctor's ethics and if it is provided, it must be an information of hospital services. It is noteworthy that traditional health services, such as healer, shaman, and alternative medicine, are common in newspapers and magazines. Various hospitals in Indonesia have paid attention to the advertisement in increasing demand.

The doctor's availability and health service facilities is another factor that increases demand. Assuming other factors are constant, the surgeon increase by 10% will increase the surgeries by 3%. The dentist's presence will increase the demand for oral health services. The presence of Otolaryngologist will increase the demand for tonsillectomy surgery. The presence of obstetrics and gynecology doctor with surgical equipment will increase the demand for cesarean section services.

The inflation effect on demand occurs through the hospital service tariff change, relative family income, and Health Assurance. This factor must be watched over by the hospital, because during the high inflation period, or in an economic recession, the demand for health services will be affected. During the economic crisis in Indonesia, it was noted that various hospitals in Yogyakarta did not experience a demand decrease. In fact, VIP ward has not decreased the demand, even showing an increase trend. One of the presumption is that they are wealthy patients who are used to go to Jakarta and Singapore, changed the behavior to find a treatment at a hospital in Yogyakarta. When Severe Acute Respiratory Syndrome (SARS) case broke out in Singapore, an observation showed that the VIP class Bed Occupancy Ration (BOR) at various major cities in Indonesia had actually been increasing. It is possibly that Indonesian likely seek regular treatment in Singapore, then back to Indonesia for fear of being infected by SARS.

3. Using Demand Concept for Hospital Planning
Demand for health services is important that affects the hospital future or survival. Therefore, information concerning demand needs to be known. The demand information requires correct assessment. The demand assessment error might have fatal consequences for hospital management, especially in new development era using commercial credit. The demand assessment is important because traditionally the equipment purchase or the construction of new government-owned hospital facilities is usually finished on a project basis, without assessing the demand. Broadly speaking, demand assessment for hospital services can be carried out through market analysis or demand forecasting.

3.1 Market Research

The market analysis aims to provide the current market condition information and possible future market trend. By obtaining the information, the hospital could improve the service, establish a new service policy, set the tariff and promotion strategy. Market analysis will produce a market profile which should contain information concerning consumer, hospital performance, and market condition.

The consumer market profile will examine the consumer numbers, epidemiological data, distribution of residential areas, total income, income per household, income distribution, consumer tastes, characteristics, and frequency of health services use by consumers.

The market profile condition includes data on the tariff increase effect related to tariff elasticity assessment. The existence of data regarding the increasing or decreasing of people's income effect and its effect on hospital consumption will concern the hospital income elasticity. Other data include the uniqueness of services provided by the hospital, identification of health services, competitor's amount and character. This competitive situation must be analyzed not only within regional boundaries but also in terms of transportation boundary or the community's ability to use the hospital. The competitive hospital's case in Medan shows that the North Sumatra people also use hospitals in Malaysia. The competition set as a tour with an operator who arranges the trip to seek health.

In the hospital market profile, it also needs to describe the health referral system pattern which is related to the hospital size and the facilities availability and specialist medical personnel in dealing with a disease. The referral system is one of the specific characteristics of hospital market rarely found in other sectors. For example, the market for cardiac surgery is the referral system process that starts from a general practitioner, cardiologist or internist, to cardiac surgeon. This referral system can create a monopolistic situation or monopolistic behavior from certain doctors.

Another example of a typical hospital market profile is the healthcare technology change. In this case, health technology is developing very fast, so sometimes it is difficult for consumers to understand. How to understand technological developments, of course, by following the latest developments in medical science through journals or scientific conferences.

Within the health sector, it is inevitable that there are substitute products such as traditional remedy, healer, and shaman who provide health services. The market profile should record this, including having data of substitute product tariff, including the shaman tariff who provides inpatient care facility such the fracture specialist who provide lodging.

Like any other sectors, the hospital market profile needs to have data on society's general matters, for example the daily necessity's price. In this case, it should be noted that in fact Indonesian people prefer to spend money on cigarettes than on health. This comparison is important in understanding the demand for health services [16]. In addition, it is necessary to pay attention to the economic condition, the activity level, the unemployment rate, the government's economic and health policies and the taxes.

Another important data is the performance comparison among hospitals in a region. In this case, it is necessary to compare the amount of BOR, Length of Stay, Bed's Turn Over Interval, and the visitors of various outpatients. In this comparison, it is necessary to look at the trends that occur. In comparing the data, the existing market share will be seen as well as the weaknesses and strengths of the performance of each hospital.

From the description above, it can be seen that measuring the demand for hospital services is difficult and complex. It should be noted that the hospital is a multi-product institution. The hospital services include
outpatient, inpatient care facility, laboratory, pharmacy, and various other products with various types of specialties. Therefore, the demand and supply concept in economics that requires ceteris paribus is very difficult to find at the hospital sector. However, the most important is the demand and supply concept that must be taken into account in managing the hospital. The market profile analysis result will be very useful for the hospital business plan.

Market analysis methods can use interviews and surveys. For example, if the VIP hospital ward tariff are increased, will potential targets still use it? This question is addressed to the target sample by means of a questionnaire. In order to be representative, the sample size must be large enough. This can cause uncomfortable. If the question of hospital use is not designed carefully, it will cause some misunderstandings as if expecting respondents to get sick. Another way is to conduct group discussions in a qualitative research manner. A potential target group is gathered to discuss the pattern of VIP ward tariff increase.

3.2 Forecasting Demand

This action means forecasting activity. Existing data will be analyzed to obtain future hospital use forecasting. This future might be a short term (one year) or medium and long term. It should remember that the longer forecasting period would lead the greater potential for missed forecasting results. In this case, there are three phases of demand forecasting. Phase 1, assessment of the general national and local economic condition. This assessment will provide information concerning the government policies and the possible new policies effect on income levels, population trends, epidemiology, and potential community resources for health services. Phase 2, an assessment of the total population demand for health services, particularly hospitals, is conducted. Various existing demand factors must be considered and arranged in a model. Phase 3, an assessment of the hospital position is carried out on the total existing demand. At this phase, several actions can be examined, for example changing tariffs to examine the market or carrying out social marketing activities.

This demand forecasting method can use econometrics that combines economic theory with mathematical and statistical tools. Some advantages in using econometric techniques are, first, the various variables that affect demand can be assessed explicitly and their cause-and-effect relationship can be determined. This provides the benefit of providing logical forecasting results. The second benefit, the econometric approach is very appropriate in assessing demand from time to time (time-series). The third benefit, it can provide information concerning the variable influence amounts and the direction influence. As an illustration, the econometric method can be used to measure the demand for health services which has the following model:

$$D = f \text{ (the epidemiological variable or need, perception, economic variable, demographic variable, and other variables)}$$

II. CONCLUSION

The demand analysis for hospital has various weaknesses caused by the assumption of demand behavior in general. The first weakness is that the public can fully choose a service (the principle of completeness). For example, in the case of acute appendicitis surgery, the patient does not have the choice to compare surgeon services, moreover the choice to delay the surgery. Thus, the option is limited, namely, surgery process must be taken as quickly as possible. In the hospital sector, it will be difficult to find consumer independent, free choice which is not influenced by other factors. In the doctor-patient relationship, the patient's choice is influenced by the doctor. The case of using Ultrasonography is the medical device use example that must be influenced by a doctor. The prescription drug purchase is the classic example of patient's choice lack. The next weakness of demand analysis is related to the non-satiation assumption, that consumers always choose more goods than less. In hospital service consumption, a normal person certainly does not expect to staylong at the hospital ward or continuously visit the hospital polyclinic.

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