Application Quality Function Deployment to Improve Quality of Patient Service in Hemodialysis Installation

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Abstract. Hemodialysis installation is a part of hospital functions as a place to clean the blood from waste substances, by a screening process outside the body. The existence of a hospital does not serve patients in Health Insurance of North Sumatra Province currently because of the decision from Health Office of North Sumatera Province causes a drastic increase number of patients in this installation. This condition causes patient complaints about hemodialysis service and efforts needed to improve patient services based on the wishes and needs of patients using Quality Function Deployment (QFD). The results of the analysis show that 8 attributes obtained based on questionnaires, found that there were 4 attributes being top priorities for improvement including good communication with patients, preparedness of medical staff, competency of medical staff, medical equipment, dialiser reuse, and sterilization completeness. These four attributes can be applied through medical staff friendship, responsiveness / response of medical staff, abilities and knowledge by medical staff, and regular supplier and maintenance of equipment.

1. Introduction

The pace of hospital development in Indonesia increasingly made the conditions of competition in market take over is high. This is because the hospital as an institution engages in services able to provide services in health quality and always meet the needs and wishes of patients. A hospital is an organization carried out by professionally and good organization from permanent medical infrastructure, medical services, continuous nursing care, diagnosis and treatment of diseases by patients [1,2].

Various hospitals are trying to gain public trust by presenting efficient and quality services. Hospitals are required to provide quality services in accordance with established standards and reaches all levels of society. In addition, hospitals able to provide patients satisfaction. Satisfaction is a psychological statement results from expectations or expectations with services are received in real terms [3,4]. Satisfaction obtained by facilities and hospital services for patients. Patient satisfaction is a benchmark for hospital quality and as a hospital evaluation material.

Hospitals have various types of health services seeded to maintain patient loyalty. One type of health service in the hospital is service for hemodialysis installation. Hemodialysis installation is a part of hospital functions as a place to clean the blood from waste substances, by a screening process outside the body. At present, there are several hospitals perform hemodialysis services in Medan city, one of them is X hospital. Hemodialysis installation at hospital X still serves patients using Health Insurance of North Sumatra Province. However, based on the decision of Health Office of North Sumatera Province, there are hospitals that no longer serve patients using Jamkesda (Health Insurance of Regional)
and patients at this hospital transferred to hospital X. This results in a drastic increase in number of patients at hospital X resulting in a decrease in service quality due to the number of patient complaints about hemodialysis service system. Therefore, it is necessary to do an analysis to improve the quality of patient service in hemodialysis installation at Hospital X.

One method can be used to analyze service quality problems is using Quality Function Deployment (QFD). QFD is a methodology helps translating customer needs into design requirements to ensure the output, which is a product or process, meets these needs [5]. QFD developed in Japan of 1960s as a design process aid to incorporate customer voice into a product before manufactured [6]. Quality Function Deployment (QFD) is defined by Cecilia Temponi, John Yen and W. Amos Tiao as a multiattribute measurement method brings together major components of an organization and the complex task of customer expectations meet and the purpose is delivering customer satisfaction [7].

Many previous studies have been carried out in problem handling of quality improvement using QFD. Another research conducted research who applied Quality Function Deployment (QFD) at one of the fast food restaurant in Turkey. QFD is a product / service design process. The results of the study provides some input in the form of healthy products, useful equipment and customer relationships to how to satisfy customer demands which is considering the fact the newest condition of fast food restaurant and company in general [8]. Another study was also conducted by some researcher who applied QFD Technique to improve the quality service in the vegetarian food industry. This is a study to use QFD of consumers need, and explore the best options to enhance service quality to help enhance the vegetarian industry service quality. The results of the top five items: reliability and safety of the food source, ingredients quality, health and safety of the restaurant, good attitude service by staff, and comfortable dining environment [9]. However, the application of QFD in improving the quality of services is still rarely applied to hospitals, especially in certain installations. Based on that, this study aims to improve the quality of patient service in hemodialysis installation based on the wishes and needs of patients.

2. Methodology
The study conducted at one of the hospitals in Medan city where the object under study was service in hemodialysis installation. The study began with direct observation to the X hospital, especially at the hemodialysis installation to collect information relating to the patient service process. The activity carried out at this stage is observing the conditions happens in hemodialysis installations. After observation, the topic and purpose of the study are determined according to the conditions of the installation. After that, data collection is needed to improve service quality of hemodialysis patients. Data collected based on the wishes and needs of patients. After the data collected, the analysis is then carried out using Quality Function Deployment (QFD). QFD is a subset of management concepts and tools known as Total Quality Management (TQM) which is evolved from the methods of statistical quality control. Among lots of TQM methods, QFD has been used to design customer requirements into technical design requirements by integrating marketing, engineering design, manufacturing, and other relevant functions of an organization [9]. Quality Function Deployment (QFD) formed with the House of Quality (HOQ) Matrix to translate consumer needs into the company technical language. The stages in making house of quality are customer importance for hemodialysis installation services determination, service characteristics determination, relationship between service characteristics determination and level of relationship between service characteristics and patient wishes determination. Based on these stages, house of quality will be obtained which is determine the importance of highest level.

3. Result and Discussion
3.1. Determination of Quality Function Deployment (QFD)
Determination the essence of QFD is a large matrix connects what customer wants (What) and how a service designed and applied to meet customer (patient) needs. The main focus of QFD is to involve customers in the product development process as soon as possible, which is needs and desires. The application of QFD methodology in the product process / service design begins with the formation of a product / service planning matrix, called house of quality.

Determination of consumer wishes attributes determined based on the results of open questionnaire recapitulation obtained are 8 attributes of customer wishes / needs. Determination of Technical Characteristics is carried out by interviews with the management of X Hospital, especially the hemodialysis installation. The figure of House of Quality in hemodialysis services can be seen in Figure 1.

![Diagram of House of Quality in Hemodialysis Installation Service](image)

Figure 1. House of Quality in Hemodialysis Installation Service

The results of house of quality indicates that good communication with patients has the highest importance level of 3.61 and relative cost of 6.061. The cumulative calculation of rank value 1 to rank 4 contributes up to half (50\%) to the overall cumulative relative weight, the variables that rank 1 to 4 are the main priorities for improvement by hospital management because if fulfilled, it means that the
management has fulfilled half of the efforts to improve its service. The recommendation to improve customer wishes attributes can be seen in Table 1.

| No. | Attribute                                      | Service Level                                      |
|-----|-----------------------------------------------|----------------------------------------------------|
| 1   | Good communication with patients               | Medical staff friendship                            |
| 2   | Preparedness of medical staff                  | Responsiveness/response of medical staff            |
| 3   | Competency of medical staff                    | Abilities and knowledge by medical staff            |
| 4   | Medical equipment, dialiser reuse and sterilization completeness | Regular supplier and maintenance of equipment |

4. Conclusion
The essence of QFD is a large matrix connects what customer wants (What) and how a service designed and applied to meet customer (patient) needs. The results of the QFD indicates that out of the 8 attributes obtained based on questionnaires, it was found that there were 4 attributes of top priority for improvement. The four attributes are good communication with patients, preparedness of medical staff, medical competency, and equipment, dialiser reuse, and sterilization. These four attributes can be applied through medical staff friendship, responsiveness / response of medical staff, abilities and knowledge by medical staff, and regular supplier and maintenance of equipment.

Acknowledgments
Authors thank to Kartika Widya Astuti, Omaar Al Faridzi Siregar, and Alisha Rizki Siregar for the support provided during this research and Musthofa Wirawan Hasibuan who actualize the research.

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