

Conference Paper

Theoretical Studies Green Hospital

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Abstract

The increasing number of hospitals has an influence on the damage to the environment if it is not well managed. Environmental damage is a joint responsibility of the government, private sector and the community. In Indonesia at this time there is not even a hospital that is included in the category of environmentally friendly hospitals or green hospitals, but the government prepares in 2020 each hospital is expected to participate in managing the hospital environment properly by always considering aspects of health, economy, ecology and social so that the principle of fulfilling the concept of sustainable development in the health sector will be fulfilled to the maximum, and hospitals can play an active role in minimizing the impact of climate change. This research uses descriptive analysis techniques. From the results of this study stated that of the 10 green hospital categories of the world hospital HUSADA still needs to be prepared.

Keywords: Theoretical Studies, Green Hospital, Hospital Environment

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1. Introduction

The number of hospitals in Indonesia is increasing, making the existence of each hospital in one ecosystem unity amid the issues of climate change and global warming and environmental degradation issues deemed necessary to be responsible for sustainable development in order to maintain the quality of the environment and the utilization of natural resources. According to Article 33 of the 1945 Constitution, paragraph 4 states that the national economy is based on economic democracy with the principles of togetherness, fair efficiency, sustainable, environmentally friendly, independent, and by maintaining a balance of progress and national economic unity.

Various efforts were made so that the hospital could accommodate the utilization of natural potential effectively and efficiently. Natural and environmental-based hospital resources such as clean water, energy, paper and other materials that are daily needs of hospital operations whose use also needs to be based on eco-efficiency principles, while hospital-generated products such as liquid, solid and gas waste needs to be

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processed so that the target is not only to meet waste quality standards, but also to meet the rules of reduce, reuse, recycle and recovery.

In principle, the hospital model in the future needs to be managed properly by always considering health, economic, ecological and social aspects so that the principle of fulfilling the concept of sustainable development in the health sector will be fulfilled, and the hospital can play an active role in minimizing the impact of climate change and, how World Health Organization (WHO) policies in Healthy Hospitals, healthy planet, healthy people (Addressing Climate Change in Health Care Settings).

The hospital is one of the results of the development because the hospital that was built was a public service facility for the community. According to (Muninjaya: 2005) Hospitals are part of the public health service system that must meet the criteria of availability, appropriateness, continuity sustainability, acceptability, affordable, and quality. The existence of a hospital is needed by the community, given that the function of the hospital is as a cure for disease and prevention of disease.

According to Dr. Supriyanto Sp.S. MARS as Director General of Health Efforts, in 2020 hospitals in Indonesia must implement green hospitals. Based on the instruction of the Minister of Home Affairs No. 14 of 1988 stated that Green Hospital provides benefits namely freshness, comfort, beauty and a clean and healthy environment. To create an environmentally friendly hospital, there are criteria that must be met by the hospital. But there are no standard criteria that apply throughout the world. The application of green hospitals is based on the condition of each country associated with local needs and environmental actions and primary prevention practices that are actively involved in efforts to improve public environmental health, health equality, and a green economy (Balifokus: 2010)

Health Care Without Harm said there were 10 criteria for green hospitals including leadership prioritizing environmental health, the use of chemicals and medicines, waste management, energy and water efficiency, provision of healthy food, construction of buildings and procurement of goods.

To help realize an environmentally friendly hospital, a leader who prioritizes environmental health is needed to overcome environmental problems and management. Leaders according to (Stephen. P. Robbins 2005) are people who are able to influence others and have managerial authority, while environmental leadership is the ability to influence individuals and mobilize organizations to realize a vision of long-term ecological sustainability (Egri and Herman 2000).

In the existing activities at the hospital every day produces waste, both in the form of solid, liquid and gas which is divided into medical and non-medical waste. Developing

countries produce 0.8 to 6 kg per person per year (Chandra: 2011). Kuwait hospitals produce waste per day varying from 3.87 kg / bed / day to 7.44 kg / bed / day. The waste consists of non-medical waste of 71.44% and infectious waste of 27.8% and 0.76% of sharps (Alhumoud, J.M: 2011).

The survey at the Jordanian Hospital said that the average amount of garbage produced ranged from 0.29 to 1.36 kg / bed / day with a total daily waste of 6 tons / day. Based on the survey, government hospitals produce 25% of infectious waste, private hospitals by 16% and teaching hospitals by 16% (Shabib MN: 2006). The results of a study of hospitals in Bandung in 2010 showed the amount of hospital waste produced in Bandung was 3,493 tons per year. The composition of hospital waste consists of 85% of domestic waste, 15% of medical waste, consists of 11% of infectious waste and 4% of hazardous waste, and only 19% of utilized domestic waste (Chandra, B: 2007).

From this data it is necessary to manage hospital waste effectively and efficiently. It takes a leader who is able to manage, because various types of medical and non-medical waste in hospitals need management. Implementing policies regarding the management of health service waste, medical facilities and research institutes is getting closer to meeting the goal of creating a healthy and safe environment for their employees and the surrounding community (A. Pruss: 2005). Research (Yahar: 2011) says there are still many problems that occur in terms of waste management in district hospitals. Just starting from sorting, storing, transporting up to TPS is not in accordance with Permenkes no 1204 / MENKES / X / 2004.

Saving energy, water and the use of chemicals and drugs as well as meeting the needs of healthy food, good construction and procurement of environmentally friendly hospital goods are good things to do. In a research at Surya Husada Hospital Denpasar showed that the energy management design that was prepared refers to the energy management matrix. The results of the energy management matrix show that the hospital's energy management has not been managed properly but in terms of the application of technology and lighting and AC treatment systems can be used as best practice (I Putu Gede, Rukmi Sari 2012).

Presentation of electricity usage at RSAL dr. Ramelan Surabaya is electrical energy 46.5%, fuel 32.5%, water 12.95% and LPG 6.8%. The audit previously said the Energy Consumption Intensity (IKE) averaged 9.44 kWh / m² per month, but ethically conducted an audit after saving, the Energy Consumption Intensity (IKE) a to 7.7 kWh / m² in a month (Resti Permata, Sarwono). The results of the study (Fahriza Risnawati, P. Purwanto, 2015) several alternative improvements that can be made related to eco-efficiency in environmental management in RSPC by using the concept of green hospital from

the most easily applied because it gets the highest total value of indicators namely increasing the temperature setting on the use of AC (8 points), then making biopori holes as an effort to use organic waste into compost piles (6 points), and the most difficult to implement is the use of returning the residual water resulting from Reverse Osmosis from laboratory installation (5 points). These efforts can provide benefits in the form of increased economic valuation and the environment in Pertamina Cirebon Hospital.

Based on the above research, non-medical waste management in terms of waste containers, and the collection and transportation of waste have a direct effect on patient comfort and satisfaction. Although non-medical waste management does not have a direct effect on patient satisfaction, patient comfort shows that the patient feels satisfied with the built environment. Thus, patient comfort has an effect on patient satisfaction. Indicators of patient comfort are fresh air, temperature, and humidity of the hospital.

Based on previous research states that hospital waste management can be done in various ways, preferably sterilization, which is in the form of a reduction in terms of quantity, reuse by first sterilization, recycling and management. Things that need to be considered in waste management are waste separation, storage, waste handling and waste disposal.

In a hospital, handling or management, storage and transportation of medical waste must be carried out properly and in accordance with the rules of environmentally friendly treatment so as not to cause health problems. Well managed medical and non-medical hospital waste is expected to bring a very important impact, which is towards green hospitals.

In accordance with the decision of the Minister of Health R.I No. 1204 / MENKES / SK / X / 2004 concerning hospital environmental health requirements. The scope of environmental health is in accordance with the Minister of Health's regulation that the building and hospital yard sanitation, securing radiation impacts and also waste management. Because the influence of hospital waste on environmental quality and health can cause various kinds of problems.

Green hospital is a result of the implementation of the concept of green building or also known as sustainable building, which pays attention to environmental aspects, ranging from design, construction, operation, to maintenance. The purpose of the green building is the optimization of resources in a small amount, thereby reducing environmental impact.

The study (Setyawati, 2018) said that the environmental performance of the Hospital would be good if the Environmental Management Unit at the Hospital had sufficient

environmental human resources, the availability of the budget and had adequate environmental facilities and technology. The results of the study (Putri, Purnomo, & Astuti, 2016) said that hospitals in Malang currently on average showed a moderate level of readiness. In the Resource Management criteria as the criteria with the lowest readiness, caused by the sub criteria of Transportation Management and Food Management While in the Building criteria, it is necessary to increase the readiness associated with the Building Materials sub-criteria. In the PROPER criteria (management commitment to waste management), it is necessary to increase readiness, especially in the sub criteria of Air Waste Management and Hazardous Waste Management. Being a green hospital is a wise and elegant choice in the era of free competition. A hospital can revise its vision and mission to start a green hospital in the future.

Based on the background of the problems outlined above, the researcher will theoretically study hospitals in the framework of green hospitals in Husada hospitals with the criteria of green hospitals healthy and care.

2. Methods and Equipment

2.1. Methods

This study uses data collection techniques with instructors. The research instrument in the form of a questionnaire in obtaining the data needed. Research instruments are tools used by research in collecting data in order to facilitate collecting, processing, presenting data that is useful in answering research problems. The sample in this study were 30 respondents. Data obtained through questionnaires are presented using descriptive analysis to make conclusions. The sampling technique used to determine the sample is random sampling, which is random sampling. Data collection techniques using one variable to be studied, namely Green Hospital. Each research instrument is guided by a conceptual which includes conceptual definition, operational definition, lattice of research instruments.

Data will be processed using simple statistics with the percentage formula (P), namely:

$$\text{Persentasi (P)} = \frac{F}{N} \times 100\%$$

Note:

F: Frequency of Answers from Respondents

N: Total Number of Respondents

3. Results

Based on the results of the study obtained an overview of the hospitals leading to green hospitals as follows:

1. Does Husada's house prioritize environmentally friendly hospitals?

Data from the table shows that as many as 3 respondents (10%) answered always, 5 respondents (16.7%) answered frequently, 14 respondents (46.7%) sometimes, 5 respondents (16.7%) answered rarely, and 3 respondents (10%) answered never. From these data it can be concluded that the majority of people stated "sometimes" the Husada hospital prioritizes environmentally friendly hospitals.

2. Have you ever found a Husada hospital serving junk food?

Data from the table shows that as many as 1 respondent (3.3%) answered always, 1 respondent (3.3%) answered frequently, 1 respondent (3.3%) sometimes, 2 respondents (6.7%) answered rarely, and 28 respondents (93.3%) answered never. From these data it can be concluded that the majority of people stated "never" Husada hospital served junk food.

3. Does your Husada hospital manage waste properly?

Data from the table shows that as many as 9 respondents (30%) answered always, 8 respondents (26.7%) answered frequently, 6 respondents (20%) sometimes, 4 respondents (13.3%) answered rarely, and 3 respondents (3.3 %) answered never. From these data it can be concluded that the majority of the community stated that the Husada hospital "always" manages waste properly.

4. Does Husada Hospital use building materials that are not environmentally friendly?

Data from the table shows that as many as 2 respondents (6.7%) answered always, 8 respondents (26.7) answered frequently, 9 respondents (33.3%) sometimes, 4 respondents (13.3%) answered rarely, and 5 respondents (16.7%) answered never. From these data it can be concluded that the majority of people stated "sometimes" Husada hospitals use building materials that are not environmentally friendly.

5. Is Husada hospital difficult to issue permits in using hospital transportation?

Data from the table shows that as many as 3 respondents (10%) answered always, 6 respondents (20%) answered frequently, 8 respondents (26.7%) sometimes, 6 respondents (20%) answered rarely, and 7 respondents (16.7%) answered never.

From these data it can be concluded that the majority of the community stated that “sometimes” the Husada hospital had difficulty issuing permits in using hospital transportation.

6. Does the Husada hospital make efficient use of water?

Data from the table shows that as many as 10 respondents (33.3%) answered always, 7 respondents (23.3%) answered frequently, 8 respondents (26.7%) sometimes, 3 respondents (16.7%) answered rarely, and 2 respondents (6.7%) answered never.

From these data it can be concluded that the majority of the community stated that the Husada hospital “always” made efficient the use of water.

7. Have you ever found a hospital that minimizes the use of materials kimia?

Data from the table shows that as many as 3 respondents (10%) answered always, 2 respondents (6.7%) answered frequently, 6 respondents (20%) sometimes, 11 respondents (36.7%) answered rarely, and 8 respondents (26.7%) answered never. From these data it can be concluded that the majority of people stated “rarely” Husada hospitals minimize the use of chemicals.

8. Does the Husada hospital recycle waste / rubbish generated from the hospital?

Data from the table shows that as many as 8 respondents (26.7%) answered always, 9 respondents (30%) answered frequently, 6 respondents (20%) sometimes, 4 respondents (13.3%) answered rarely, and 3 respondents (16.7%) answered never. From these data it can be concluded that the majority of people stated “often” the Husada hospital recycles the waste / rubbish generated from the hospital.

9. Does Husada Hospital have a green open space?

Data from the table shows that as many as 5 respondents (16.7%) answered always, 5 respondents (16.7%) answered frequently, 11 respondents (36.7%) sometimes, 5 respondents (16.7%) answered rarely, and 3 respondents (13.3%) answered never. From these data it can be concluded that the majority of the community stated “rarely” the Husada hospital that was environmentally friendly.

10. Does the Husada hospital not properly manage its waste?

Data from the table shows that as many as 4 respondents (13.3%) answered always, 4 respondents (13.3%) answered frequently, 8 respondents (26.7%) sometimes, 5 respondents (16.7%) answered rarely, and 3 respondents (10%) answered never.

From this data it can be concluded that the majority of the community stated that “sometimes” the Husada hospital did not properly manage their waste.

11. Does your Husada hospital provide medicines from natural ingredients?

Data from the table shows that as many as 1 respondent (3.3%) always answered, 2 respondents (6.7) answered frequently, 3 respondents (10%) sometimes, 3 respondents (10%) answered rarely, and 21 respondents (70%) answered never.

From these data it can be concluded that the majority of people stated “never” the Husada hospital provided medicines from natural ingredients.

12. Does Husada Hospital have leaders who care about the environment?

Data from the table shows that as many as 10 respondents (33.3%) answered always, 7 respondents (23.3%) answered frequently, 5 respondents (16.7%) sometimes, 4 respondents (13.3%) answered rarely, and 4 respondents (13.3%) answered never.

From these data it can be concluded that the majority of the community stated “always” the Husada hospital has a leader who cares about the environment.

13. Is Husada Hospital wasteful in using electricity?

Data from the table shows that as many as 5 respondents (16.7%) answered always, 6 respondents (20%) answered frequently, 11 respondents (36.7%) sometimes, 6 respondents (20%) answered rarely, and 2 respondents (6.7%) answered never.

From these data it can be concluded that the majority of the community stated “sometimes” the Husada hospital was wasteful in using electricity.

14. Did the Husada hospital notify you of calls to save water?

Data from the table shows that as many as 22 respondents (73.3%) answered always, 3 respondents (10%) answered frequently, 2 respondents (6.7%) sometimes, 2 respondents (6.7%) answered rarely, and 1 respondent (3.3%) answered never.

From these data it can be concluded that the majority of the community stated that the Husada hospital “always” made an appeal to be frugal using water.

15. Do hospital leaders attach greater importance to disease healing services rather than environmental sustainability?

Data from the table shows that as many as 14 respondents (46.7%) answered always, 6 respondents (20%) answered frequently, 5 respondents (16.7%) sometimes, 3 respondents (10%) answered rarely, and 2 respondents (6.7%) answered never.

From these data it can be concluded that the majority of the community stated that the leaders of the Husada hospital “never” prioritized disease healing services rather than environmental sustainability.

16. Does the hospital have an environmentally friendly building design concept?

Data from the table shows that as many as 4 respondents (13.3%) answered always, 7 respondents (23.3%) answered frequently, 10 respondents (33.3%) sometimes, 5 respondents (16.7%) answered rarely, and 4 respondents (13.3%) answered never.

From these data it can be concluded that the majority of people stated “sometimes” the Husada hospital had an environmentally friendly building design concept.

17. Does Husada Hospital use environmentally friendly building materials?

Data from the table shows that as many as 2 respondents (6.7%) answered always, 5 respondents (16.7%) answered frequently, 6 respondents (20%) sometimes, 9 respondents (30%) answered rarely, and 8 respondents (26.7%) answered never.

From these data it can be concluded that the majority of people stated “rarely” Husada hospitals use building materials that are environmentally friendly.

18. Does Husada Hospital use the latest environmentally friendly technologies?

Data from the table shows that as many as 10 respondents (33.3%) answered always, 7 respondents (23.3%) answered frequently, 6 respondents (20%) sometimes, 6 respondents (20%) answered rarely, and 1 respondent (3.3%) answered never.

From these data it can be concluded that the majority of people stated “always” finding hospitals that use the latest technologies.

19. Does the Husada hospital empower local food products?

Data from the table shows that as many as 2 respondents (6.7%) answered always, 7 respondents (23.3%) answered frequently, 6 respondents (20%) sometimes, 9 respondents (30%) answered rarely, and 6 respondents (20%) answered never.

From these data it can be concluded that the majority of the community stated ‘rarely’ found hospitals that empower local food products.

20. Does Husada Hospital make efficient use of energy?

Data from the table shows that as many as 15 respondents (50%) answered always, 7 respondents (23.3%) answered frequently, 8 respondents (26.7%) sometimes, 2 respondents (6.7%) answered rarely, and 3 respondents (10%) answered never.

From these data it can be concluded that the majority of the public stated “always” hospitals that make efficient use of energy.

3.1. Data analysis

Based on the description of the research data described above, the following analysis can be carried out:

1. Leadership

Research data relating to the form of leadership in hospital environmental management 46.7% stated that the leaders of Husada hospitals prioritize environmentally friendly hospitals.

2. Energy Use

Research data relating to the form of energy use in hospitals 50% said the Husada hospital made efficient use of energy.

3. Water use

Research data relating to the form of appeals and water usage in hospitals around 70% stated that Husada Hospital has water efficiency, including in providing appeals to use water efficiently.

4. Use of Chemicals

Research data relating to the use of chemicals in hospitals around 36.7% said the Husada hospital minimized the use of chemicals.

5. Waste Management

Research data relating to the form of hospital environmental waste management around 70% stated that the Husada hospital carries out waste management properly and correctly.

6. Buildings

Research data related to the concept of hospital building around 33.3% stated that Husada hospital has green open space in the hospital.

7. Provision of Food

Research data relating to the form of food supply around 30% stated that "rarely" Husada hospitals use local food products.

8. Pharmacy Use

Research data relating to the form of pharmaceutical use about 70% said they still use drugs from chemicals.

9. Procurement of Goods

Research data relating to the form of procurement of goods around 33.3% stated that the Husada hospital uses environmentally friendly technologies.

4. Conclusion

In Indonesia at this time there is not even a hospital that has been included as a green hospital, but the government is preparing for 2020 each hospital is expected to participate in managing it well by always considering health, economic, ecological and social aspects so that the principle of fulfilling the concept of sustainable development in the field of health will be fulfilled, and hospitals can play an active role in minimizing the impact of climate change. From the results of this study stated that of the 10 world green hospital categories of Husada hospitals, many still had to be prepared.

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