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Green Transformation of Hospitals Evaluation According to Sustainability Criteria: The Case of Afyonkarahisar

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ABSTRACT

This study aimed to determine whether the existing situation of the hospitals in the Afyonkarahisar (Afyon) Provincial center have the green hospital criteria, by emphasizing the importance of green hospitals. In the study, the green hospital suitability evaluation form, which was constituted according to the information obtained from the literature, was filled by the responsible persons by engaging in interviews at the hospitals that were the subject of the study. This form is composed of six headings: sustainable lands, water productivity, energy and atmosphere, materials and sources, quality of interior space, and waste management. The data obtained from each hospital were analyzed with percentage values. The data obtained from the green hospital suitability evaluation forms conducted at hospitals were analyzed and in general they received 73.34% points for sustainable lands, 58.33% for water productivity, 80% for energy and atmosphere, 100% for materials and sources, 80.94% for quality of interior space, and 100% points for waste management. According to the analysis results, it was observed that the hospitals that tried to fit the subject did not fulfill the criteria of being a green hospital in some areas. Suggestions were presented for becoming a green hospital, especially for the hospitals.

Keywords: Afyonkarahisar, green building, green hospital, hospital, sustainability.

INTRODUCTION

Environment is defined as the physical, biological, social, economic and cultural environment in which living beings maintain their relationships and interact with each other throughout their lives [1]. These interactions, which were initially in harmony with the natural environment, have led to the deterioration of the environment due to the change in human needs, the advancement of technology and the intensive use of resources [2]. In order to prevent these damages to the environment, the concept of sustainability has come to the agenda [3; 4].

This concept, which is based on three main economic, social and environmental components [5; 6], defines it as development that meets the needs of the present without compromising the ability of future generations to meet their own needs [7; 8]. Many professional disciplines adopt this concept as a principle in their work and work to fulfil their duty of protection against nature.

Nature, which is under the influence of environmental problems, by producing irreversible damage to the ecosystems in which we live, threatens our course of existence. Green buildings, which emerge as environmentally friendly, appear to be a crucial step for being able to prevent at least some of the environmental problems. Built environments solely consume 50% of the energy and 42% of the water in the world. A total of 50% of the release of greenhouse gases to nature and 24% of the air pollution is composed of non-green traditional buildings [9]. Green buildings, defined as well-located buildings that consume less energy, water and materials to protect human and environmental health and increase efficiency [10], by starting from the selection of land for the building, are buildings that are designed by taking into consideration the social and environmental responsibilities with an integrative perception, that use renewable energy sources having unique conditions for the climate data and the location where they are found, that use natural materials that do not produce waste, and that are sensitive to the ecosystems [11]. Green buildings, compared to traditional buildings, reduce the use of energy at the ratio of 24-50%, reduce the CO2 emissions at the ratio of 33-39%, reduce the consumption of water at the ratio of 30-50%, reduce the amount of solid waste at the ratio of 70%, and reduce the maintenance costs at the ratio of 13% [12]. Undoubtedly, health facilities are the buildings that have the most complex structures and used the most intensively within the built environment, and connected to this, that produce the most damage to the environment. Green hospitals are defined as hospitals that can produce alternatives to the use of natural resources, that encourage the effective and efficient use of energy and materials, that try to prevent wasteful expenditures, that improve the air quality in interior spaces, that aim to decrease operating expenditures, that present a comfortable milieu to users, that engage in waste management, and that pay attention to the priority of green areas on their lands and in their buildings [13]. Green hospitals generally aim to ensure that hospitals consume fewer resources, generate less waste and cause less damage to the environment [14].

Hospitals, which are a part of the construction sector, have been saved from traditional buildings, and have taken steps for becoming green hospitals by being influenced by the green building movement emerging in many places of the world [13]. In the present-day, hospitals that have an area of 60,000 m2, that have buildings where only 10% are formed of windows, that annually produce five million tons of waste, which have an excessive need for energy and water, are institutions open with the objective of providing 7/24 services. Studies have been made and started to be implemented on long-life, sustainable buildings by reducing to a minimum damage to the environment of hospitals [15]. Whereas, in the present-day, the reasons compelling hospitals to join the green building movement, just like other buildings, are their use of excessive energy and water, that produce waste, that use excessive materials, and that have become buildings that have insufficient quality of interior space [16]. From this aspect, the aim of green hospitals can be listed as follows: to provide for the more productive use of energy and water, to eliminate all the wasteful expenditures, and to contribute positively to the health level of the society by providing environmentally friendly building designs [17].

To implement green hospital design criteria in buildings provides contributions to treatment by ensuring physical, psychosocial, and neurocognitive wellbeing on patients [18].

Furthermore, green hospitals provide many benefits to nature, to the environment, to people, and to the economy. These benefits can be summarized as follows:

- Adds value to urban living areas,
- Reduces to a minimum the damages made to the natural environment during building construction, use, and demolishment,
- Develops and provides for implementation of clean technology systems,
- Provides for the support and prevalence of the use of renewable energy resources,
- Prevents wasteful energy expenditures,
- Decreases hospital costs,
- Leaves a positive impression on people and institutions in the environs where hospitals having green hospital criteria are located,
- Eliminates Sick Building Syndrome of health personnel and patients by forming high quality internal milieus,
- Provides for presenting higher quality services by eliminating the stress and pressure of hospital workers, and
- Provides positive contributions to global warming by decreasing greenhouse gas emissions [18].

Green hospitals, which use sustainable technologies, energy saving systems, and recyclable or renewable resources and materials [19; 20], are evaluated according to some international certificate systems, just like other green buildings. Among the most important of these are Building Research Establishment Environmental Assessment Methodology (BREEAM) for Healthcare, Leadership in Energy and Environmental Design (LEED) for Healthcare, and GREENSTAR Healthcare systems. All these systems give certificates at the level of different gradings and certificates by evaluating in the fields of management of hospitals, sustainability, energy and water productivity, waste management, selection of materials, innovation in design, and interior milieu quality. For example, in BREEAM for Healthcare points of 70 and above are at the Perfect level, in LEED for Healthcare points of 80 and above are at the Platinum level and in GREENSTAR Healthcare points between 75-100 are certified at the level of World Leader. Thanks to the green hospital certificates, hospitals can realize improvements in the construction processes, in the sustainable design processes, in the performance measurements, and in the decision-making processes [6]. The number of green hospital buildings designed connected to the criteria determined with the certificate programs are increasing day by day. Most of these buildings have striking “green” attributes, such as window awnings, good daylight illuminations, green roofs, or natural ventilation [15]. With the Ministry of Health's ‘Circular on Minimum Technical Standards to be Complied with in Existing and New Health Facilities dated 30.10.2012’, the green hospital era has started in Turkey with LEED, the international green building certification system, becoming mandatory for hospitals with a bed capacity of 200 or more [21].

In this study, it is aimed to determine to what extent the hospitals serving in Afyonkarahisar comply with green hospital standards. Within the scope of this purpose, answers to the following questions were sought:

- What is the level of compliance of hospitals in Afyonkarahisar with green hospital standards?
- Which green hospital standards are the best for the hospitals in Afyonkarahisar?
- Which are the green hospital standards that hospitals in Afyonkarahisar need to improve?
- What is the level of compliance of hospitals in Afyonkarahisar with LEED standards?

As a result of the research, hospitals in Afyonkarahisar will have an idea about how well they comply with green hospital standards and LEED standards and what are the aspects that need to be improved.

MATERIALS AND METHODS

Afyonkarahisar Province, which is a significant transition zone of Türkiye, is in the Aegean Region. Konya, Eskişehir, Denizli, Isparta, Kütahya, and Uşak Provinces surround it [22]. Afyonkarahisar Province is 1,034 meters above sea level and covers an area of 14,472 km2. It has a total of 18 counties, together with the Center County. According to the 2022 data, the Center has a population of 324,996 people. Afyon displays quite a large economic development, and its basic industrial products are based on marble and food products [23]. When the health structure of Afyonkarahisar is examined, there are four hospitals: Afyonkarahisar State Hospital, Afyonkarahisar Health Sciences University Hospital, Afyonkarahisar Private Fuar Hospital, and Afyonkarahisar Private Parkhayat Hospital. The Afyonkarahisar State Hospital, Afyonkarahisar Health Sciences University Hospital, and the Afyonkarahisar Private Parkhayat Hospital were researched within the scope of the study. The Afyonkarahisar Private Fuar Hospital, which did not accept the request for interviews in the data collection process, was removed from the scope of the study. The locations of the hospitals where the study was conducted have been given on the map in Figure 1.

Figure 1: Locations of study areas

The Afyonkarahisar State Hospital (H1), Afyonkarahisar Health Sciences University Hospital (H2), and the Afyonkarahisar Private Parkhayat Hospital (H3) were evaluated within the scope

of the research between March and May 2024 with the permission obtained from the Afyonkarahisar Provincial Health Directorate dated 1 April 2024. The "Green Hospital Suitability Evaluation Form" was prepared for collecting data in the research. This form was constituted by utilizing Palteki's [24] thesis study titled "Determination of the Suitability of Public Hospitals in Istanbul to the Green Hospital Criteria", the Green Guide for Health Care, World Health Organization, and the criteria of the green building certification systems. The evaluation form is composed of a total of 54 questions with yes-no selections. In the open-ended questions, there are questions included about the name of the hospital, physical condition of the hospital, construction year of the hospital, total closed and open areas of the hospital, and questions on the window and wall areas of the hospital building; questions on patient capacity, hospital parking lot capacity, number of patient beds, and average number of patients admitted to the hospital annually; questions on the annual average waste and medical waste amounts that specify the hospital's waste amount; and questions on the annual average heating energy, electricity and water consumption amount, specified as the hospital energy consumption. When making the yes-no choice questions, it used the headings of 10 questions for the six-dimensions of the green hospitals for sustainable lands, eight questions for water productivity, five questions for energy and atmosphere, two questions for materials and resources, seven questions for quality of interior space, and 27 questions for waste management and evaluation questions were included under every heading. The evaluation questions with the yes-no choice was made by aiming that every yes answer received would gain points for becoming a green hospital. This point percentage value was determined for the total 54 questions. These questions set forth the level of the hospitals having a production style sensitive to the environment and being sustainable.

The interview technique was utilized for the questions on the form that was prepared for the responses from the authorized persons or representatives in various units at the hospitals (such as clinical departments, administrative department, laboratory, laundry room, environmental health, pharmacy, cafeteria, nourishment, and energy). The interview technique is a data collection technique realized online or face-to-face in the same space [25]. Whereas the interviews are separated into two by Aziz [26] in the form of qualitative (in depth) and quantitative (superficial) interviews. Qualitative interviews are interviews where detailed information is obtained from few people. Flexibility can be obtained in the questions in this type of interview. Whereas, in the quantitative interviews that were also included in this study, standardized information is obtained from many people and the questions are formed together with the answer choices. The structured interview technique was used in this study. The basic attribute of this technique is that the questions directed at the participants are in a standardized form and listed in a certain order. In the structured interviews, the response categories have been formed to the questions or open-ended questions could be used without flexibility. From this aspect, the structured interviews are observed as the data collection technique that is closest to the quantitative technique [27].

RESULTS AND DISCUSSION

The data obtained from the three hospitals located in the Afyonkarahisar Provincial Center were analyzed under the headings of sustainable lands, water productivity, energy and atmosphere, materials and resources, quality of interior space, and waste management on the "Green Hospital Suitability Evaluation Form" The analysis results have been given in the form

of a table. The findings for the analysis results under the heading of "sustainable lands" have been given in Table 1.

It was determined that according to the findings obtained for the sustainable lands section that the highest ratios were 100% for public transportation and reaching the hospitals, 100% for the presence of open green areas in the environs of the hospital, 100% for the fact that there is rainwater management, and 100% for utilizing natural illumination and ventilation, Whereas, it was determined that the lowest ratio was 0% for not having a roof garden, and this ratio was followed at some hospitals (H1 and H2) at 33.3% for not having a hybrid parking lot. Accordingly, the average value of the sustainable lands section of the hospitals in Afyonkarahisar was found to be 73.34%.

Table 1: Data for sustainable lands section

Sustainable Lands	**N: 3**	**Yes**	**%**
Is there public transportation to reach your institution?	3	3	100
Is there a parking place for bicycles at your institution?	3	2	66.7
Is there a hybrid vehicle parking place at your institution? (Low emission and fuel saving vehicles)	3	1	33.3
Is there a central parking lot at your institution?	3	2	66.7
Has a place been given to open green areas belonging to the institution in the environs of the institution?	3	3	100
Is rainwater management provided at your institution?	3	3	100
Is there a roof garden at your institution?	3	0	00
Have measures been taken at your institution to reduce light pollution and to provide for night savings?	3	2	66.7
Is natural illumination utilized at the institution building?	3	3	100
Are there natural ventilation possibilities at the institution building?	3	3	100

The data for the "water productivity" of the hospitals has been presented in Table 2 According to the data obtained, it was determined that the highest ratios were 100% for conducting work for water savings, 100% for the water need in the selection of garden landscaping, and 100% for discharging in a suitable manner to the regulations the wastewater coming out from the dialysis department.

Table 2: Data for the water productivity section

Water Productivity	**N: 3**	**Yes**	**%**
Are low flow fixtures that prevent wasteful expenditures used to the extent possible within the institution? (photocell faucets)	3	2	66.7
Do you have work within the building for decreasing water consumption?	3	3	100
Do you collect rainwater for various uses? Do you use it for garden watering and building services, etc. that do not require drinking water?	3	0	00
When making a decision on garden landscape, is the need for water taken into consideration?	3	3	100
Do you use the drip irrigation method in the watering of plants according to the landscape order?	3	1	33.3
Do you use the sprinkler irrigation method in the water of plants according to the landscape order?	3	2	66.7

(If there is an automatic irrigation system) Does the irrigation system turn off automatically when it rains?	3	0	00
Is the wastewater coming from the dialysis department discharged in conformance with the laws?	3	3	100

It was observed that the lowest ratios in the water productivity section were 0% in not accumulating rainwater for use and 0% for the automatic irrigation system not turning off when it rains. Accordingly, it was calculated that the average value of water productivity at the hospitals in Afyonkarahisar was 58.33%. The findings for the "energy and atmosphere" section of the hospitals researched have been given in Table 3. According to the findings obtained, the highest ratios were at 100% for taking preventive measures for decreasing the energy costs, 100% for heat insulation in the buildings, and 100% for using economical light bulbs for illumination.

Table 4: Data for materials and resources section

Materials and Resources	**N: 3**	**Yes**	**%**
Is there a place for collecting and storing recyclable materials?	3	3	100
Do you use recyclable materials, paper, plastic, etc. at your institution?	3	3	100

According to the findings obtained for the materials and resources section of the hospitals researched within the scope of the study, it was determined that 100% (all) of the public, university, and private hospitals in the Afyonkarahisar Province Center used recyclable materials and that there were collection and storage areas for the recycling of materials used. Accordingly, the average value for the materials and resources section of the hospitals in Afyonkarahisar was 100%. The findings for "quality of interior space" section obtained from the hospitals has been given in Table 5. According to the findings, it was determined that the highest values obtained were 100% for providing control of cigarette smoke, 100% for taking preventive measures for providing a minimum air quality, 100% for using low emission construction materials, 100% for providing thermal control inside the building, and 100% for using light productively and that there are applications for watching the view. Whereas it was observed that the lowest ratios for quality of interior space were 33.3% at some hospitals for not using landscape plants inside the building, and 33.3% for not making implementations for providing for acoustic performance. Accordingly, the average value of the quality of interior space section of the hospitals in Afyonkarahisar was 80.94%.

Table 5: Data for quality of interior space section

Quality of Interior Space	**N: 3**	**Yes**	**%**
Is the control of cigarette smoke provided?	3	3	100
Are preventive measures taken for providing a minimum interior air quality?	3	3	100
Are low emission materials (adhesives, paints, coverings, wood) used for work, such as construction, repairs?	3	3	100
Is the use of landscape plants present inside the building?	3	1	33.3
Is thermal control provided inside the building?	3	3	100
Do you have implementations aimed at receiving daylight in the best manner and to look at the view?	3	3	100
Are there implementations present for providing for acoustic performance?	3	1	33.3

Finally, the findings for the "waste management" section have been given in Table 6. According to the findings obtained, the highest ratios were 100% for making a separation of waste at the areas where wastes are formed, 100% for separation of the wastes collected in conformance with the regulations, 100% for the use of color-coded waste containers in all areas, 100% for the waste cans being marked and labeled in a suitable manner, 100% for the corridor area found close to the waste container area being protected, 100% for the waste containers being emptied every other day, 100% for the container is cleaned every other day after the wastes are emptied, 100% for chemical wastes are stored in the waste storage facility, 100% for different chemical wastes are collected in different containers, 100% for the lids of the garbage cans and containers are closed correctly when wastes are transported to the storage area, 100% for the waste storage area is distant from the patients, 100% for the waste collection tanks being completely closed, 100% for the waste collection tanks not being excessively filled, 100% for the waste storage area being kept clean, 100% for the waste storage area being disinfected for insects and bugs, 100% for the waste management area being well ventilated, 100% for the waste storage area being distant from food procurement and preparation area/s, 100% for the waste storage area being distant from roads used by people, 100% for the bags in which contagious wastes are stored are defined with the resource where the waste was produced, 100% for the water supply aimed at cleaning in the storage area, 100% for the existence of a mechanism for supervising the waste management, and 100% for taking preventive measures for preventing and decreasing the production of waste. Accordingly, the average value of the waste management section of the hospitals in Afyonkarahisar is 100%.

When the findings obtained are evaluated in general, it was observed that there was public transportation for reaching all the hospitals in the study made for the sustainable lands section, that there were open green areas, that rainwater management was made, and that they utilized natural illumination and ventilation. It was determined that H1 and H2 had a bicycle parking place, a centralized parking place, and that preventive measures were taken for decreasing light pollution, however at H3 there was no bicycle parking place, no centralized parking place and that preventive measures were not taken for decreasing light pollution. It was determined that there was a hybrid vehicle parking place at H2, but there was not a hybrid vehicle parking place at H1 and H3.

When the information obtained in the energy and atmosphere section is evaluated especially for hospitals and questions, it was observed that preventive measures were taken at all the hospitals where the study was conducted for decreasing the energy costs, that there was heat insulation in the buildings, and that economical light bulbs were used for illumination. It was determined that H2 and H3 used alternative energy, but H1 did not use alternative energy. At H2 it was preferred to use alternatives instead of cooling fluids in their cooling and air conditioning systems, but the conclusion was reached that they did not prefer to use alternatives at H1 and H3.

Table 6: Data for waste management section

Waste Management	**N: 3**	**Yes**	**%**
Is waste separation made at the point where wastes are formed?	3	3	100
Are the wastes collected separated in a suitable manner?	3	3	100
Are color-coded waste containers used in all the facility areas?	3	3	100

Are the waste cans marked and labeled in a suitable manner according to their contents?	3	3	100
Is a suitable corridor area protected close to the waste containers?	3	3	100
Are the waste containers emptied at the end of each day?	3	3	100
After the wastes are emptied, are the containers cleaned daily?	3	3	100
Are chemical wastes stored in the centralized waste storage facility of the building?	3	3	100
Are incompatible chemical wastes stored in separate waste containers?	3	3	100
Are the garbage cans and containers closed correctly with a lid during transport from the area where they are found to the centralized storage?	3	3	100
Is the waste storage area distant from the patients?	3	3	100
Are the waste collection tanks completely closed?	3	3	100
Are the waste collection tanks not filled excessively?	3	3	100
Is the waste storage area kept clean, has it been cleansed of loose garbage, and from bad smelling spills and remains?	3	3	100
Has the waste storage area been disinfected for insects and bugs?	3	3	100
Is the waste storage area well ventilated?	3	3	100
Is the waste storage area separate from the food preparation areas and the procurement rooms?	3	3	100
Is the waste storage area distant from roads used by people?	3	3	100
Are the bags in which contagious wastes are stored defined with a written label or barcode band or label with where the waste was produced?	3	3	100
Is the water supply present aimed at cleaning in the storage area?	3	3	100
Is there an existing mechanism for supervising the waste management?	3	3	100
Do you have preventive measures for preventing and decreasing wastes at the source?	3	3	100

When the findings obtained are evaluated in general, it was observed that there was public transportation for reaching all the hospitals in the study made for the sustainable lands section, that there were open green areas, that rainwater management was made, and that they utilized natural illumination and ventilation. It was determined that H1 and H2 had a bicycle parking place, a centralized parking place, and that preventive measures were taken for decreasing light pollution, however at H3 there was no bicycle parking place, no centralized parking place and that preventive measures were not taken for decreasing light pollution. It was determined that there was a hybrid vehicle parking place at H2, but there was not a hybrid vehicle parking place at H1 and H3. When the information obtained in the energy and atmosphere section is evaluated especially for hospitals and questions, it was observed that preventive measures were taken at all the hospitals where the study was conducted for decreasing the energy costs, that there was heat insulation in the buildings, and that economical light bulbs were used for illumination. It was determined that H2 and H3 used alternative energy, but H1 did not use alternative energy. At H2 it was preferred to use alternatives instead of cooling fluids in their cooling and air conditioning systems, but the conclusion was reached that they did not prefer to use alternatives at H1 and H3.

When the information obtained in the water productivity section is evaluated especially for hospitals and questions, it was observed that all the hospitals where the study was made engaged in activities for water savings, that they took as a reference the need for water in the selection of garden landscaping and that they discharged wastewater from the dialysis department in a suitable manner to the regulations. It was determined that H1 and H2 used the sprinkler watering method in the watering of plants, but at H3 this method was not used. It was observed that low flow fixtures were used at H2 and H3, but they were not used at H1. It was determined that the drip irrigation method was used for plant irrigation at H2, but that this method was not used at H1 and H3. The conclusion was reached that none of the three hospitals researched collected rainwater for use and that the watering system did not turn off automatically when it started to rain.

When the information obtained in the materials and resources section is evaluated especially for hospitals and questions, all the hospitals where the study was conducted used recyclable materials and it was concluded that they had collection and storage areas for the recycling of the materials used. When the information obtained in the quality of interior space section is evaluated especially for hospitals and questions, it was observed that the control of cigarette smoke was provided at all the hospitals where the study was made, that they took preventive measures for providing for the minimum interior air quality, that they used low emission construction materials, that thermal control was provided within the building, that they had implementations for the productive use of daylight and landscape viewing. There were landscape plants within the building at H2 and implementations were made for acoustic performance, but the conclusion was reached that these implementations were not made at H1 and H3.

When the information obtained in the waste management section are evaluated especially for hospitals and questions, it was observed that waste separation was made in the area formed for waste at all the hospitals where the study was undertaken, that the wastes collected were separated in a manner in conformance with the regulations, that color coded waste containers were use in all the areas, that the waste cans were marked and labeled in a suitable manner, that the waste container areas were protected by a nearby corridor area, that the waste containers were emptied every other day, that the cleaning of the containers was made every other day after the wastes were emptied, that chemical wastes were stored in the waste storage facility, that different chemical wastes were collected in separate containers, that the waste bins and containers were closed correctly with lids when transporting the wastes to the storage area, that the waste storage area was distant from the patients, that the waste collection tanks were completely closed, that the waste collection tanks were not filled excessively, that the waste storage area was kept clean, that the waste storage area was disinfected for insects and bugs, that the waste storage area was well ventilated, that the waste storage area was distant from the food procurement and preparation area, that the waste storage area was distant from roads used by people, that the bags where contagious wastes were stored were defined with the source where the waste was produced, that there is a water supply with the aim of cleaning in the storage area, that there is a mechanism for supervising the waste management, and that preventive measures are taken for preventing and decreasing the production of waste. Among the hospitals where the study was conducted, it was observed that H2 was the hospital where the most was done for the green hospital concept implementations and H3 was the hospital

where the least was done. It was observed that H2 was constructed later than the other two hospitals, that it had academic studies due to its connection to the university, that there was a planned settlement since the hospital is located on a rather large plot of land, and that it is located at a distance from the city center appeared to be advantageous. According to the percentage results between H1 and H3 on the green hospital suitability evaluation form, there was a very small difference. According to the H1 evaluation results, it was a point between the other two hospitals, which were researched numerically. By looking at this average result, it can be stated that it has both advantages and disadvantages in becoming a green hospital. It is observed that the fact that H1 was constructed in 2012, that due to the land limitations, it is a disadvantage that the area is insufficient for the existing users. After the hospital was constructed, by preserving the standards of the period, the environment was made with a planned urbanization, and the sufficient budget presented by the state about the use of developing technologies in the field of health provides advantages. The fact that H3 was constructed in 2006 prior to the two other hospitals, that it is in a location close to the city center, and that the land where it is located is not sufficiently large are disadvantages. The ratios of the hospitals according to the green hospital criteria have been given in Table 7.

Table 7: Green hospital ratios of the hospitals

(H1) Section	**Ratio (%)**	**(H1) Section**	**Ratio (%)**
Sustainable Lands	80	Materials and Resources	100
Water Productivity	50	Quality of Interior Space	71.42
Energy and Atmosphere	60	Waste Management	100
(H2) Section	**Ratio (%)**	**(H2) Section**	**Ratio (%)**
Sustainable Lands	90	Materials and Resources	100
Water Productivity	75	Quality of Interior Space	85.71
Energy and Atmosphere	100	Waste Management	100
(H3) Section	**Ratio (%)**	**(H3) Section**	**Ratio (%)**
Sustainable Lands	50	Materials and Resources	100
Water Productivity	50	Quality of Interior Space	85.71
Energy and Atmosphere	80	Waste Management	100

CONCLUSION

The conclusion of the research only sets forth the existing situation of the hospitals in the Afyonkarahisar Provincial Center and does not reflect a result for throughout Türkiye. The study has supports, such as forming an inspiration and literature resource for other studies by increasing the awareness on the concept of sustainability in the health sector. It is recommended that studies be conducted in Türkiye in the future that would attain more general evaluation results by broadening the scope of the research.

According to the data obtained, suggestions for improvement of the existing situation have been presented to those concerned within the scope of the study. These suggestions are:

- Afyonkarahisar Province has a continental climate with hot and dry summers and cold and rainy/snowy winters. Repairs should be made annually for the thermal insulation of the buildings.
- Systems should be formed for use in another area of the water obtained from precipitation.

- A solar panel activity should be undertaken that is suitable to the capacity of the buildings.
- It should be preferred to use fittings, electrical switches, and light bulbs that are economical in the transfer of energy used in the hospitals.
- It should be encouraged to use recycling bins by increasing them in the building in general.
- All the documents possible should be made in a digital environment with the objective of decreasing the use of paper.
- Supervision should be made more frequently by the institutional authorities.
- Society should be made conscious about a sustainable environment.
- Personnel transport services should be formed for those working at the hospital by increasing the car parking capacity and reducing the use of vehicles to a minimum.
- Green hospital implementations should be encouraged throughout Türkiye.

The conclusion of the research only sets forth the existing situation of the hospitals in the Afyonkarahisar Provincial Center and does not reflect a result for throughout Türkiye. The study has supports, such as forming an inspiration and literature resource for other studies by increasing the awareness on the concept of sustainability in the health sector. It is recommended that studies be conducted in Türkiye in the future that would attain more general evaluation results by broadening the scope of the research.

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