



## **Management of Dietary Services in Secondary Level Hospitals**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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### **ABSTRACT**

Hospital diet is an essential part of modern therapy in all medical departments. It comprises both the so-called normal diets which are prepared according to modern nutrition knowledge, dietetic foods and the various forms of artificial nutrition. The dietary department provides food and nutrition services that consistently promote adequate nutritional intake, improve health and enhance the quality of life. This study was cross-sectional from January 2016 to December 2016. The nonprobability purposive sampling method was used for data collection. Total 164 samples were collected purposively within the data collection period. There were 150 hospital patients and 14 dietary staff who collected the data secondary level hospitals by using semi-structured questionnaire. The data was analyzed by using SPSS. Among 150 patients 92% of the patients ate hospital diet and only 8% of the patients did not eat hospital diet. Among them 6.7 % of the patients

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said that the hospital supply foods were unhygienic and 93.3% say the hospital food was healthily. There was 8% patients complains that the supply food was not neat and 13% of the patient says that they did not use the spoon. There were 64.3% of the dietary staff did not use non touch technique during food distribution. Majority of the patients 79.3% said they have no training about food hygiene. The satisfaction level of the dietary staff, there was 57.1% staff were satisfied and there was 21.4% dietary staff were very satisfied following 21.4% was dissatisfied. The satisfaction among the patient 75.8% patient was satisfied 9.8% of the patient were dissatisfied. Dietary department improved the food quality and supplied adequate quantity of food among the patients. Dietary department needs to clean regularly and training should be implemented among the nutrition personnel. The sufficient lighting facility may improve for the patient's satisfaction.

*Keywords: Dietary services; secondary level hospitals.*

## 1. INTRODUCTION

The dietary service is one of the important supporting services of the hospital unlike any other support services. The objective of the diet service is to make provision of clean hygiene and nutritious diet for the indoor patient as per their caloric requirement. The dietary service can be provided either by host provision or by outsourcing [1]. Dietary management is also known as "food service management" is the practice of providing nutritional options for individual and groups. They are responsible for supervising the work of other nutrition personnel such as cook and dietary aids. Dietetics is the knowledge and art of feeding individuals founded on the principles of nutrition [2]. It can moreover be believed to be the knowledge and art of human nutritional care. Diet treatment, as well as its application in patient-related settings, is the most important focus of dietetics. Therefore, the field of dietetics can be associated with: nutrition care and involvement focused on a human being and nutrition care and involvement focused on the group [3].

Diet plays the most important role in the promotion of health and well-being of a human being. A good and balanced diet habit improves the quality of life, as a poor diet might cause morbidity and illnesses. Nutritionists, as well as dietetics, are troubled with this facet. As dietetics is linked to food management, nutrition is linked to support of health. Owing to changes in food habits of the majority of the metropolitan population, the role of nutritionists and dieticians is turning out to be more significant [4]. They recommend remedial food habits bearing in mind different aspects of a person, for example, age, work habit, illness, etc. and in this manner improve their quality of life. They moreover train their customers regarding the preparation of food, in keeping with the principles of nutrition.

They are on familiar terms with food production and processing, psychological issues controlling food preferences, digestion and its outcomes on dietary aspects. A growing and aging population will add to the demand for meals and nutritional advice in nursing homes, schools, reformatories, community health programs, and home health care organizations [5]. The role of the dietitian has come a long way ever since the early 1900s. Their role is still unfamiliar to many people. The dietitian is the connection between the patient and medical team or doctor in assisting on complicated decisions making about nutrition care. A problem takes place when the infection state of the patient confuses the adequacy of nutritional support, which has resulted in the patient's undernourishment [6]. The dietitian should be able to: Arrange food and nutrition programs, Administer meal arrangements in schools as well as hospitals, Advice nutritional changes, Train patients on diets that might help their condition, Work with other healthcare experts to offer a multidisciplinary healthcare approach, Update on the severity of sickness and problems of cure, inclusive of the benefits and troubles of feeding in all imaginable routes, Be Active in the patients care as the dietitian report on the dietary condition of the patient, in addition to being a guide to the physician and medicinal team, and Enlighten the lawful choices that might help settle on the route of care for the patient, for example more aggressive or sedative care [7].

They are responsible for overseeing the cooking and serving of food, reviewing menu plans with the nutritional therapist and ensuring the department has the appropriate food and materials supplied to meet established meal plans. As a therapeutic measure, food contributes directly through a scientifically prepared nutritious diet, aimed as specific disease condition, it is a most potent

psychological force in patient satisfaction, patient acceptance of hospital regime resulting in fast recovery, employee satisfaction, and morale and also plays a major role as a general public relation measure [8].

Majority of the patient in the hospital is not satisfied with different types of foods supplied to them by the hospital. Unfortunately, diets supplied in many hospitals are not nutritiously sound [9]. It is to supply of food from home or restaurant to the risk person by the majority of admitted patients is a big question. Appropriate diet is the essential element for the improvement of the patient sickness [10]. Find out the total management systems of the dietary department of a hospital is important to improve their lacking. So the study results the attitude of the dietary personnel, their service food quality and expectation of the patient for recovery of their sickness so it would be helpful for the dietary personnel as well as the patient in the hospital for their better life and improve the society.

## 2. METHODOLOGY

A cross-sectional study was conducted from 1st January to 31st December 2016 to assess the management of Dietary Service of Secondary Level Hospitals at chudanga Sadar hospital and meherpur Sadar hospital in Bangladesh. Convenient sampling method was used for data collection. The study population was dietary management staff and patients of the secondary level hospital who takes service. The total sample size was 150, prevalence 50% were taken, where the level of confidence 95% and 5% standard error. All participants were given the questionnaire sheet and explained about the study objective and written informed consent was obtained. The face-to-face interview was taken by using a pre-tested semi-structured questionnaire. Data were analyzed using the statistical software package SPSS-23 version for data entry and analysis. All data were analyzed after checking, cleaning, editing and compiling by the software of SPSS-23 version. The result was recorded as frequencies, figs, and P-values. Level of significance was taken 0.05.

The study was approved by the Institutional of Review Board at the National Institution of Preventive and Social Medicine (NIPSOM). The researchers highly consider the human right of

the participant in this study. Data were collected after obtaining approval from IRB of NIPSOM and was taken permission from each respondent. The researcher explained clearly about the purpose of the study, the procedure, the possible benefit, and the risk of the study to the participants.

## 3. RESULTS

After completion of the data analysis, the results were organized in the tabular form and figure as necessary. We found the majority of the respondents were 18-30 years which was 50% of the total value. The lowest value was more than 50 years which 8% of the total value. Most of the respondent was male which value 55% of the total value. Rest of the respondents was female which 45% of the total value and maximum respondent were Muslims 82.0% of the total value, the Hindu was 13.3% of the total value. Most 27.3% of the respondent had completed the HSC and Graduation level. Only 31 Patient completes the SSC level. The occupational background indicates that a sizeable number of the patients 38% were service, there were 35 representing 23.3% were Businessman, 12.7% were a housewife and 21.3% were the student. Monthly income of the respondent highest value was 10001-20000 BDT which was 47.3 % of the total value. The lowest value was 50001-60000 BDT which is 1.3% of the total value (Table 1).

The Table 2 shows that the supply quantity of vegetable was adequate or not. There was 91.3% of the patient reply that the supply quantity was adequate and there was 13 representing 8.7% of the patient responded that the supply quantity of vegetable was inadequate. About 150 respondent maximum of the respondent took the hospital diet, the frequency of taking hospital diet was 138 representing 92% among 150 respondent and 12 representing 8% was not eating hospital diet. The determination of the frequency of food supply was timely, here 142 representing 94.7% patient say they get food in timely and 8 representing 5.3% patient say they did not get food timely. About 93.3% patient reply that they get healthy food from the hospital and 10 representing 6.7% patient say they did not get healthy food from hospital. The Hospital food is an essential part of patient care. Good food can encourage patients to eat well, giving them the nutrients they need to recover from surgery or illness.

**Table 1. Socio-demographic status of the respondents (n=150)**

<b>Variable</b>	<b>Frequency</b>	<b>%</b>
<b>Age of the respondent</b>		
Teenager 10-18 years	24	16.0
18-30 years	75	50.0
31-40 years	22	14.7
41-50 years	17	11.3
More than 50 years	12	8.0
<b>Gender of the respondent</b>		
Male	83	55
Female	67	45
<b>Religion</b>		
Islam	123	82.0
Hindu	20	13.3
Christian	7	4.7
<b>Education</b>		
Primary School	18	18
SSC	31	31
HSC	41	27.3
Graduate and above	41	27.3
Illiterate	19	19
<b>Occupation</b>		
Service	57	38.0
Business	35	23.3
Driver	5	3.3
Farmer	2	1.3
Housewife	19	12.7
Student	32	21.3
<b>Monthly Income</b>		
5000-10000 BDT	7	4.7
10001-20000 BDT	71	47.3
20001-30000 BDT	51	34.0
30001-40000 BDT	13	8.7
40001-50000 BDT	6	4.0
50001-60000 BDT	2	1.3

The status of the diet, here found that 139 representing 92.7% of the respondent say that they get warm food from the hospital and 11 representing 7.3% of the patient replay they did not get warm food from hospital. The cleanliness 138 representing 92% of the patient responded that the hospital supply food was clean and 12 representing 8% of the patient responded that the supply food was not sufficiently clean.

The Table 3 shows that there was 143 representing 95.3% of the patient used soap before eating the food and only 7 representing 4.7% of the patient replay they did not wash hand with soap before eating. Washing hands with soap and water is the best way to reduce the number of germs in most situations. The patient asks about the food-related training there was 79.3% patient responded that they did not get training about the food-related program and

only 31 representing 20.7% patient replay that they get training the food-related training. Water resources like WASA which provide water to the hospital that contains a lot of pathogens, dust that unfit for consumption. To be clear, the water should undergo treatments necessary to make it drinkable. The 92 representing 61.3% patient replay that the process of water treatment was boiling and the others 58 representing 38.7% patient replay that the process of water treatment was filtering. Water purifiers designed to eliminate or reduce certain pollutants as well as improve the quality taste of water.

Table 4 shows that the occupation of the staff, among 14 dietary staff 2 was steward, 2 was cook, 3 was mashalche, 1 was diet in-charge, 1 was head cook and 5 was cleaner. The job experience of the dietary staff, among the 14 dietary staff there was 12 staff experience 10 to

above years. Others 4-6 years was one and 7-9 years was one staff. The frequency of the waste disposal from the dietary department, there was 3 staff responded that they disposed the waste once daily and 7 staff responded they disposed twice daily and 4 staff replay they disposed of the waste three times daily.

Fig. 1 shows that the satisfaction level of the dietary staff, there was 57.1% staff were satisfied and there 21.4% dietary staff were very satisfied following 21.4% dissatisfied. The satisfaction depended on the facility provided by the management, patient behavior, job satisfaction and the duty time in hospital.

The Fig. 2 shows that the level of satisfaction among the patient 116 representing 75.8% patient satisfied and 19 representing 12.4%

patient very satisfied and rest of the 15 representing 9.8% of the patient was dissatisfied. Patient satisfaction was depending on the food, service; behavior of staff and the cleanliness of the hospital. The food quality attributes were important factors impinging on satisfaction together with the style of service.

Table 5 shows that hospital supply different kinds of food for the patient they supply food according to the patient. Most of the patient says about the quality of supply food, there were 91.3% patient say the food was average and 4% patient says that the supply food was poor and only 4.7% patient say that supply food was good quality. About the quality of bread, banana and the liquid milk 98% of the patient says that the quality of bread, banana, and liquid milk was average and only 2% patient says the supply food was poor.

**Table 2. Distribution of respondents acceding to take hospital diet (n=150)**

Variable	Frequency	%
<b>Hospital diet</b>		
Eating Hospital diet	138	92.0
Not eating hospital diet	12	8.0
<b>Sufficiency of hospital diet</b>		
Sufficient	143	95
Insufficient	7	5
<b>Frequency of food supply</b>		
Timely	142	94.7
Not timely	8	5.3
<b>Healthy food supply</b>		
Healthy	140	93.3
Unhealthy	10	6.7
<b>Diet status</b>		
Warm food	139	92.7
Not warm food	11	7.3
<b>Cleaning status</b>		
Clean	138	92.0
Not clean	12	8.0
<b>Supply quantity</b>		
Adequate	137	91.3
Inadequate	13	8.7

**Table 3. Distribution of respondents according to food related training (n=150)**

Variable	Frequency	%
<b>Food related training</b>		
Yes	31	20.7
No	119	79.3
<b>Washing hand</b>		
Used soap before eating	143	95.3
Don't used soap before eating	7	4.7
<b>Treatment process</b>		
By boiling	92	61.3
By Filtering	58	38.7

**Table 4. Distribution of the staff according to their occupation (n=14)**

Occupation of Staff	Frequency	%
Steward	2	14.3
Cook	2	14.3
Mashalche	3	21.4
Diet in charge	1	7.1
Head cook	1	7.1
Cleaner	5	35.7
<b>Age of service</b>		
4-6 years	1	7.1
7-9 years	1	7.1
10 to above	12	85.7
<b>Waste dispose</b>		
Once daily	3	21.4
Twice daily	7	50.0
Three time daily	4	28.6
Total	14	100.0
<b>Water purifier</b>		
Present	6	42.9
Absent	8	57.1



**Fig. 1. Distribution of the dietary staff according to their level of satisfaction**

**Table 5. Distribution of the respondent according to quality of supply food (n=150)**

Types food	High		Average		Poor	
	Frequency	%	Frequency	%	Frequency	%
Supply tasty food	7	4.7	137	91.3	6	4.0
Quality of bread, banana and liquid milk	0	0	147	98.0	3	2.0
Quality of meat and fish	1	0.7	147	98.0	2	1.3
Quality of rice	7	4.7	141	94.0	2	1.3
Quality of vegetable	6	4.0	138	92.0	6	4.0
Quality of peas	4	2.7	139	92.7	7	4.7

Then the question asked about the meat vegetable and peas get the same result, peas and fish they responded 98% patient the supply meat and fish was average quality and 92.7% patient say that peas were average quality.

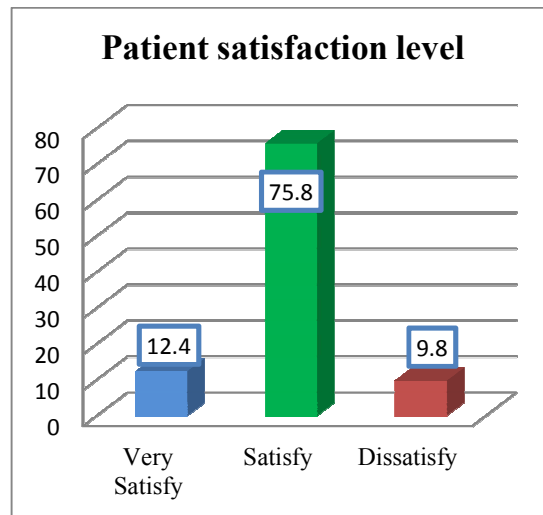


Fig. 2. Level of satisfaction among the patient

#### 4. DISCUSSION

Diet for the patients is treated as an integral part of treatment and both public and private health institutions have been catering to the patient's need as per their provision. Different diet preparation and service systems are used at the health institution level to distribute food to the patients based on the diagnosis of disease. In spite of different initiatives, there is continuing concern over the lack of attention to the nutritional needs of indoor patients, more particularly in the public health institutions [11]. The technical and management support team for Bangladesh secondary level health sector a rapid assessment to understand the present dietary practices in secondary level hospital and identify areas of improvement. Specific objectives were to compare the diet provision and its management in selected in health institutions and understand patient's preference with regard to present management practices.

However, the present study was to assess the Management of Dietary Services in Secondary Level Hospitals. Total of 150 patients and 14 hospital staff were collected from the Chuadanga Sadar hospital and Meherpur Sadar Hospital in Bangladesh. Among 150 patient 50% of the respondent's age group between 18-30 years, the lowest value was more than 50 years this was 8%. Among them, 55% of the respondent was male and 45% of the female. According to [12] 52% of the participant patients were men and 48% were women. There were three groups of the religion was found in my study, where the

majority of the religion was Muslim and secondly was Hindu and the rest of them was Christian. 82% of the patients were muslim and 13.3% of the patients were Christian. Bangladesh is a Muslim country majority of the people were Muslim.

The education of the respondent, among 150 patients 41 was the graduated and 19 was not educated but the occupation of the respondent, the majority were service holder, there were 38% of the respondents were service holder and only 1.3% was the driver. But their income, 47.3% of the patient income was between 10001 to 20000 BDT per month. One of the most important things for patients' educations. Few patients seem to understand that their prescription [13]. They can't read the prescription easy. Patients will not provide accurate information unless the physician or nurse comes to help. Our study shows that there was 92% of the patient eat hospital diet and only 8% of the patient did not eat hospital diet. Patient meals are an integral part of hospital treatment, and the consumption of a balanced diet is crucial to aid recovery. There was 95% of the patient's replay that the hospital diet was sufficient and only 5% of the patient says the hospital diet was insufficient. Hospital foodservice has an image problem, before even tasting it; patients generally expect poor quality [14].

Food quality attributes, particularly temperature and texture, have been demonstrated in this case study to have a critical effect on patient satisfaction. Although service features were not a

high priority from a patient perspective, it has been suggested that staff attitudes can be as crucial as food temperatures. There was 40% of the patient claim that the hospital staff behaved badly with the patients during cater. They judged positively the behavior of the foodservice personnel and the hygiene of serving conditions. Nevertheless, factors like temperature and hygiene conditions for the meal that reaches the patient are not always perceived to be in such a way to fulfill the necessary prerequisite requirements. Another bad habit of the foodservice staff was untimely food service.

There was 5.3% patient complain that they did not get the food in time. Even 6.7% of the patient says that the hospital supply foods were unhealthy and 93.3 say the hospital food was healthy. Healthy food is almost as important to healing as competent medical care, and healthy eating habits play a critical role in preventing chronic diseases such as heart disease, diabetes, and some cancers. The food supply was the need to warm when it caters among the patient. There was 7.3% patient says the hospital food was not warm. Hot food also helps warm us up and it is comforting. We prefer to have warm food as part of our diet. That's not to say that raw food doesn't play an important part too it's just that humans like a mix of both and it benefits us to do this. The ability to heat food was one of the things that helped mankind to evolve into the dominant species that it is today. Warm food also allowed us to digest some food types more easily and we were able to kill off bacteria and parasites, giving us safer food. Besides the warm food supply, food supply also needs to clean the dietary department for contamination of food. There was 8% patient complain that the supply food was not neat and clean and 21.4% staff say that they dispose the waste once daily and 50% say twice daily. They cater the food without a spoon, there was 13% of the patient say that they did not use the spoon. There was 64.3% of the dietary staff did not use the non-touch technique during food distribution. Another study was found that there were 97.3% of the patients think that the food is not prepared according to hygiene rules and regulations [12].

The hospital's Dietary Department is responsible for the regular and routine cleaning of all surfaces and maintaining a high level of hygiene in the facility in collaboration with the Infection Control Committee. Cleaning and disinfecting are crucial for preventing or minimizing the spread of contagious and zoonotic diseases and

nosocomial infections. Determining cleaning efficacy is commonly done with bacterial culture of surfaces but can be delayed and expensive. To prevent nosocomial infection, the maintenance of a high degree of hygiene in hospital settings is necessary. Poor hygiene in the system of preparation and distribution of food, poor personal hygiene of food handlers as well as food safety pose a significant risk for the development of foodborne infections in hospital settings. There was 79.3% patient says they have no training about food hygiene. There was 21.3% dietary staff replay that they have poor knowledge about the cleaning and 78.6% dietary have good knowledge about the cleaning the dietary department. In any food service program, perceptions of freshness can greatly affect how patients rate the overall meal [15].

The quality of food supplied needs to tasty and delicious. There was 91.3% patient say that the supply food was tasteful, average quality and 4% patient says that the supply food was poor. The main problem, as observed in this study, is the lack of structure and priority given to food service both pre and post-operative, with clinical considerations taking precedence. Maximum of the patients say that the supply quantity of meat and the fish was average quality and rice, vegetable and peas quality was also average. Regarding the patient's suggestions for the meals or nutrition improvement in the hospital, almost the majority of the sample suggested more meals and the use of gloves during serving. The majority of the patients suggested disposable spoons for the consumption of soup and canned fruit. The hospital menus are oriented to each patient and their needs, to the point of that, many times, the diets are part of the medical treatment for the sake of recovery. The foods must be prepared in relation to the state of health of the patients, caring for the quantities of fat, salt, sugar and other elements that affect their body. Patients with diabetes, celiac disease, hypertensive or allergy must be treated with special care. In other cases, the doctor will determine if a patient needs a special diet, such as for example it can happen to the patients of the liver or other digestive disorders. Neither will it be the same need in regard to ration and the nutritional values of those patients that have emerged from surgical intervention or of those who are going to undergo the same. It is most important that the water which people drink and use for other purposes is clean water [16]. This means that the water must be free of germs and chemicals and be clear.



Among 150 patients 90 patient say that they carry water from outside of the hospital and the 57.1% staff replay that the hospital has no water treatment facility. Water suitable for drinking is unsuited for use in the preparation of hemodialysis fluid and undergoes additional treatment. The primary component of the additional treatment is reverse osmosis, which does not remove low-molecular-weight contaminants, and the water treatment system must contain carbon beds or filters to ensure effective removal of such contaminants. The boiling and filtering can remove the pathogen from water. There were 61.3% patient used boiling methods and 38.7% used filtering methods for the water treatment. It's essential to keep any kitchen utensils, dishes and equipment clean too, to prevent them becoming a source of bacteria that could contaminate the food and cause food poisoning [7].

There were 10 patient who did not clean their utensils regularly. Cleaning of utensils using detergent or others disinfectant was very important. There was 58% patient-user detergent for dishwashing 4% patient used soap and 37.3% used vimber. Disinfecting the utensil regularly, it will limit the chance of them gathering harmful bacteria. Generally, Food contact surfaces such as dishes and cooking utensils can be hygienically cleaned by washing with detergent and hot water, provided this is followed by thorough rinsing with clean water. Where there was 17.3% patient used hospital utensil and 82.7% patient used own utensil. Dishwashing detergent can be used to clean the dishes and utensils, followed by rinsing in good quality water. Hospitals are the communities' life support system in both times of crisis and in times of general healthcare needs. If something like a power outage occurs, vital power is still needed to keep life support machines and other necessary healthcare tools working in order to sustain human life [17]. There was 57.1% dietary staff say that they have a generator facility. This is where the importance of generators comes in. When the power is out, a hospital almost always uses a backup generator to make sure that all equipment remains on and running. The need for generators in the healthcare market is one of absolute importance. Whether it is a storm or a general blackout, people need to be assured that the hospital will be able to sustain power and get it from an alternative source. Finding showed that 35.7% of staff replay they have insufficient lighting facility. Unlike regular generators that people use to maintain power in their homes, the

generators used in the healthcare market are a different type.

The satisfaction level of the dietary staff, there was 57.1% staff were satisfied and there was 21.4% dietary staff was very satisfied following 21.4% were dissatisfied. An employee's overall satisfaction was depending on financial compensation. Management's role in enhancing employees' job satisfaction is to make sure the work environment is positive. One of the reasons is that the patient perception of the served meals is directly related to their satisfaction with the overall hospital services [12]. The satisfaction among the patient 75.8% patient was satisfied 9.8% of the patient were dissatisfy. Patient satisfaction was depending on the food, service; behavior of staff and the cleanliness of the hospital. The food quality attributes were important factors impinging on satisfaction together with the style of service. The consideration of patients' expectations and perceptions should have particular significance in shaping the objectives of any foodservice operation [18]. Expectations were matched by the trolley service of delivery, and hence a corresponding level of satisfaction was achieved.

## 5. CONCLUSION

Good food service is not only necessary for physiological and therapeutically needs of the patients but is also one of public relations importance. The current study has concluded that there was a shortage of manpower, the necessary instrument was not available. If factors impinging on hospital foodservice are considered holistically, there is a cyclical relationship, in that responsibility for nutritional status commences and concludes in the community with the primary healthcare team. Patient satisfaction has been shown; food quality attributes are important factors impinging on satisfaction together with the style of service. Feedback is a perceived problem, not just from a patient's perspective but from other stakeholders too. Communication needs to be more transparent and regular meetings need to be held with representatives at an operational level. The hospital feeding is a matter of care that requires it to be in the hands of professionals to ensure the best treatment and care to the sick, and the balance cost-benefit to the hospitals. That is why it is extremely advisable to hire a professional company to manage this service in a centralized manner.

## CONSENT AND ETHICAL APPROVAL

It is not applicable.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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