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Assessment of patients' satisfaction through dietary services in government and private hospitals in India

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***Abstract*---**Consumer satisfaction is a keyfeaturein delineating the quality of offered services.Similarly, in hospitals, satisfaction of patientswith the dietary services is considered as one of theparameters of estimation of quality of hospitals' food services. Food provided in the hospital must be nutritious and must qualify the clinical needs of patients along with fulfilling their dietary expectations. A satisfied patients responds to the clinical treatment in a much better way than discontented. Thus, to improve the health care system, in parallel to the development of other sectors, considering the patient satisfactionas benchmark of dietary service is seen as a pivotal factor.Such studied are essential for improvement in hospital service quality and in India relatively lesser research is done in this field. In the present study we aimed to examine the factors that could influence the dietary satisfaction of patients and could be used to amend the food services in hospital. We took qualitative and non-experimental approach where we used questionnaire as our data collection tool where we collected demographic profile of patients, their nutritional status along with the type of facilities they are availing. Data collected from inpatients of 6 different hospitals were analyzed using IBM SPSS Software and the descriptive statistics were used to finally interpret the data. In the present study we found that demographic characteristics like age and marital status of patients influence the patients' satisfaction differently. Moreover, we found that private hospitals, as per their claims of offering various advantages

over the public hospitals, provide better dietary satisfaction to the patients. We conclude that the demographic features should be taken in account while offering the dietary services to the patients.We suggest that by improving certain aspects of dietary services in the hospitals the level of patients' satisfaction and thus their recovery could be improved significantly. Additionally, such considerations in public hospitals which are more economical could make them better in demand.

***Keywords*---**patients' satisfaction, demographic characteristics, food services, hospital.

Introduction

A good healthcare system is indispensable for fast and better recovery ofpatients whichinvolvesbest medication along withadequate and balanceddiet. The quality of food served to the patients during their treatment in hospitals regulate their physicalas well as mental health. Quality offood is basically defined by its nutritional value, hygiene during its preparation, serving and ingestion by patients, its palatability, presentation and temperature (1,2, 3). A good quality food improves the medical conditions by providing nutrition, besides, could also uplift the patient's frame of mind which againpositively boost the impacts of therapeutics.Contrarily, under-nutritious food could increase theseverity of disease and prolong the healing course of the patient (4). At the same time, the un-desirability of food either because of its taste, texture or temperature reduces the food intake by patients that in turn lead to deficiency of macro and micro nutrients (5). Moreover, such poor presentation of food and its reduced intake also results in wastage of significant amount of food in hospitals (2,6).

Another challenge of dietary services in hospital is food borne diseases. Diseases caused by intake of contaminated food could have milder to severe impact even may lead to mortality in some cases(7).Food is prepared in large scale in hospitals and pose a continuous threat of getting contaminated with pathogens, toxins or other harmful chemicals. Extreme care should be taken regarding hygiene while preparing or delivering the food. Staff who are involved in catering should also be made aware of hygiene practices and undeniably it must be ensured that they follow them regularly.These days the health care system has turned up as a big and competitive industry especially with private health care insurance policies that redefined the patients as customers (8). It also affects the dietary services in hospitals. Thus, the dietary services to the patients in hospitals must be under serious observation of authorities to ensure that the food delivered to the inpatients should be nutritious as well as the services must exceed the patients' expectation(9).

Satisfaction of patients is influenced by several factors including meal services, staff issues and the physical environment. Choice of meals as well as meal size without compromising on food qualityare the major factors, however, the food should also suit to clinical needs of the patient. Besides, interaction with staff and the environment of eating are also significant contributors to the satisfaction of

patients (10,11).Moreover, demographic attributes of patients also play an important role in fulfilling the patients' expectation related with hospital food. However, association of these factors viz. age, marital status, ethnicity with patients' satisfaction with hospital food proved to be inconsistent in different studies (12).

Food in hospitals being a worldwide problem, underscores the need of evaluation of food services in hospitals regularly. Moreover, the patients' perception regarding food services is an indicator of quality of health care as well and is taken in to consideration in the betterment of health care industry (13). Since, the food is an inseparable part of treatment, it is important to evaluate the views of patients regarding the food served to them in hospitals (14). Such studies in India are relatively low. The present study was conducted to assess the patient satisfaction with the dietary services provided to them in hospitals in Chandigarh Tri-city. Chandigarh Tri-city includes three cities named- Chandigarh, Mohali, Panchkula. We conducted our study in 6 hospitals including government as well as private type and found that the public and private hospitals are equivalent in providing the dietary satisfaction to the patients. In the present study, socio-demographic characteristic of patients was found to influence the patients' perception regarding hospital food and we suggest to consider the demographics of the patients along with their individual clinical needregarding the dietary services in hospitals to fulfill their expectation as well as nutritional requirement.

Materials and Methods

Study design

The design of study is qualitative, descriptive and non-experimental. Since the interaction between different variables are also carried out, quantitative approaches were also taken. Study involved use of survey questionnaire.To achieve the aim of the present study primary and secondary research were conducted. Data collected through qualitative methods were analyzed to prove the hypothesis.

Sampling method

The study was conducted through a pilot study under which the technique of random sampling was applied for the data collection. For the study, 6 hospitalsfrom Tri-city, Chandigarh, Mohali and Panchkula named- Ivy hospital, Mohali; Fortis Hospital, Mohali;Alchemist Hospital, Panchkula;Government Medical College and Hospital, Sector 32, Chandigarh;Government Multi-Specialty Hospital, Sector-16, Chandigarh; Post Graduate Institute of Medical Education and Research, Sector 14, Chandigarh were selected. Data was collected from September to December 2019. Due to the research being of the pre-COVID era, questionnaires and face to face interviews were used as the source of primary qualitative research with cross sectional study as the research approach.The hospitalized patients were randomly selected from wards namely oncology, medicine, renal unit and cardio care unit.Patient satisfaction regarding therapeutic diets, diabetic, renal, hypertensive, low fat diets or normal diet were assessed.Critically ill patients were excluded due to their inability to assess food

satisfaction. Pantry and kitchen of the hospitals were also visited to get an idea about the working.Permissions for the study were obtained from the committee of the hospital authorities.A pilot study was conducted on 59 patients randomlyselected from GMCH 32, Chandigarh, as the pre-test reliability testing and validation of the study. Following this sample size was increased to 360and data was collected from the 6 hospitals.

Questionnaire, data collection tool

A set of questionnaires was self-preparedwherein the questions were focused on the nutritional quality, service, diet components, portion size and various other vectors (15). Besides the details regarding the diet, intake, time of administrations and costs were also included.The format of questionnaire was yes or noas these were easily comprehensible by the patients. The questionnaires were created in different sections that included details of the hospitals, the personal information and their food satisfaction.Part A included general details of the hospital such as name, types of wards, total beds in the hospital, number of patients, dietary service provided i.e., in house or contractual,whether the diet is fixed or changeable, dietary charges and menu. Part B and C included details of patients such as age, gender, marital status, height, weight, BMI and diet prescribed. Weight and height were recorded from patients' file.24-hour food intake was noted by recall method and caloric intake was calculated, which was then compared with the Recommended Dietary Allowances (RDA) i.e., to find out whether the required amounts of proteins, carbohydrates, fats, vitamins and minerals etc. were sufficient to meet the nutrient requirements of the patients. Part D and E comprised of patient perception of hospitality, hygiene and sanitation practices at the hospital and of the staffand about the food quality.Another questionnaire has been created to analyze the most liked food items across all the six hospitals by the 360 patients. Different food items like boiled eggs, curd, cornflakes milk, daliya and others are listed and are filled by multiple patients to analyze their favorite item across the Tri-city. The dietary services of a hospital were analyzed only when a patient has been subjected to it for more than 2 daysto develop an opinion on the satisfaction for the services. All the procedures of data collection were done under the observation of the examiner and other experts which could assist the filling of the form, in case of any confusion.

Statistical analysis of data

The data were analyzed through the IBM SPSS Software (Version 20.0). Demographic profile of the patients was obtained from questionnaire and their mean along withstandard deviationwere computed for quantitative variables like age, length of stay etc. Descriptive statistics was used to determine the dietary satisfaction.The satisfaction levels of patient and quality of food services were assessed using the chi-square test.Relationship between overall satisfaction and the various aspects related to food and the validity of null hypothesis wereestimated through the spearman's correlation coefficient (r) and regression coefficient (r). Probability level of 0.5 was used to estimate whether the data is statistically significant.

Results

Socio-demographic profile of patients

A sum of360 questionnaires were distributed in 6 hospitals of Tri-city and we received all the 360 responses completed that were included in all of our analysis. Among our all the respondents,more femalesparticipated in the study than males either it being government or from private hospitals (Table 1).Ages of maximum number of patients ranged from 21 to more than 50 years. Most of the patients belonged to the age group of 21-30 years in government hospitals, whereas in private hospitals most of the patients were more than 50 years.Less than 20 years old patients were rare in both the government and private hospitals (Table 1). Most of the respondents were married in both government and private hospitals. The respondents in the present study stayed at the respective hospitals for different time intervals. Most of the patientsstayed for a period of 1-5 days in government and private hospitals. We recorded none of our respondents staying in private hospital for more than 10 days, however, in government hospital small number of patients were admitted beyond the 10 days tenure (Table 1).Regarding type of dietary services, inhouse dietary services were availed by most of the patients in government hospital whereas in private hospital patients usually went for contractual services. Alongside, diet prescribed to the patients in government and private hospitals also differed significantly for Diet 1, High Protein and HPHC (Table 1).

Satisfaction of patients and its association with different demographic factors

Association of dietary satisfaction with various socio-demographic factors of patients was statistically analyzed to understand how these factors could contribute to dietary satisfaction. Patients in private hospitals were more satisfied than those in government hospital (Table. 2).Marital status of patients was also found to impact the dietary satisfaction. Unmarried respondents were better satisfied with the food and dietary services than married patients (Table 2). Nevertheless, gender of patients did not affect the level of satisfaction. Additionally, whether the patients are availing inhouse dietary services or contractual services had no additive effect upon their satisfaction levels.One way ANOVA was performed to analyze any difference of type of diet and dietary satisfaction levels of patients. Our results indicated that the variance among respondents of different diet types and satisfaction level is insignificant ($p=0.318$).

Correlation of different dietary variables and satisfaction level of respondents

Nutritional level regulates the patient's satisfaction level as well as their recovery rate.Thus, correlation among satisfaction of patient, their age and length of stay at hospital with theirnutritional level was analyzed. For this, deficit of energy, deficit of protein, deficit of fat and deficit of fiber weretaken as measure of nutritional status of patient and their correlation with aforementioned factors were analyzed by Karl Pearson Coefficient of Correlation (Table 3). Out of all the intra-correlations among seven dimensions, ten correlations were found to be

highly significant ($p<0.01$) whereas two were significant ($p<0.05$) (Table. 3). Highest level of correlation exists between deficit of protein and deficit of fiber and among deficit of protein and deficit of fat where both the correlation is statistically highly significant (Table 3).Age factor with satisfaction level showed slight negative but significant association (Table3). Deficit of proteinand deficit of fat independently exhibit low level of significant positive correlation with satisfaction of patients.Interestingly, correlation value between length of stay and satisfaction level is zero suggesting no correlation between the two variables (Table 3).Deficit of energy showed correlation with deficit of fiberwith high level of significance, however none of the two were significantly correlated with level of patients' satisfaction.

Discussion

In the present study we aimed to investigate the level of satisfaction of patients with food related services in government and private hospitals of Chandigarh Tri-city, India. Study involved questionnaire as data collection tool which included demographic data,dietary variables along with their satisfaction level. Havingdemographic dataand its association with dietary services help the hospital staff to communicate with the patients effectively and also to serve them better. In our study we found that most of the patients found the hospital food services acceptable. Overall patients in private hospitals were more satisfied with the food services than in government hospitals.However, whether the dietary services are contractual or in house had no influence on satisfaction of inpatients. The recent industrialization of health-care owing to various insurance policies creates lots of pressure over private hospital to provide their inpatients with better services to retain their patient/customer for future visits. Private hospitals are reported to provide better quality food along with other services to have their inpatients more satisfied that is the major factor of their inpatients' greater satisfaction(16).

Among the demographic characteristics of patients', their age wasfound to be negatively associated with dietary satisfaction. Greater level of satisfaction in older patients might be attributed to their reduced sensitivity towards different food flavors. Because of varying life style, expectation, food preferences, patients of different age group have disparity in choices of food type and taste that might be major factor in the observed variation in satisfaction with food (6, 17). Though,there are studies showing no association of age with dietary satisfaction (18, 19), age of patients must be considered while providing the dietary services since it could greatly and positively impact their satisfaction with food.

Gender of patients had no impact upon their satisfaction levels for hospital food services. Study from Saudi Arabia found the gender of patients to be insignificant towards their dietary satisfaction (20).However, another study reported that females were better satisfied with food services provided in hospitals (21).Such differences in findings could be attributed to difference in ethnicity and other demographic variables of the study population. Contrary to gender, marital status of patients was found to influence their satisfaction towards food services where unmarried respondents were more satisfied. The study contradicts with another study from Kenya where no relation between dietary satisfaction and marital status was observed (22). A study by Dibsdall et. al. 2002 (23) showed that

unmarried/single individuals have lesser intake of fruit and vegetables. Therefore, access to healthy food in hospitals during their health challenges might be a factor to satisfy them relatively more than the married individuals.

It was seen that macro and micro nutrients significantly improves the patients' satiation. Balanced diet proved to be more satiating whereas deficiency of macro and micro not only cause malnutrition but also negatively influence satiation. Our study revealed a slightly positive and significant correlation between deficit of protein and satisfaction. Contrarily,high protein diet is reported to boost satiation (24). Thisobserved discrepancy could be attributed to some other unknown clinical or non-clinical factors. Fat in diet is found to have very weak effect upon satiation when compared with protein or carbohydrate (25). Nevertheless, combination of fat with fiber is reported to improve satiety (26, 27).In consistent to this, the present study showed highly significant correlation between deficit of fat and deficit of fiber.Although, it could not justify the positive correlation of deficit of fat with dietary satisfaction of patients, that could be because of other clinical or demographical characteristic.We found no correlation of deficit of fiber with overall satisfaction level of patients. Moreover, our study identified zero correlation of length of stay at hospital with patients' satisfaction. In other studies, length of stay at hospital was reported to negatively influence the satisfaction of patient (28, 29). The deviation in these results could be due to the difference in the study population. Besides, different types of diets prescribed to the patients according to their clinical needs also did not impact the patients' dietary satisfaction. Another study reported that monotony in food provided in hospital results in lesser satisfaction (30). Thus, by improving upon variety of food within the limits of distinct diet type would lift the patients' satisfaction.

Conclusion

Our study highlights the demographic features like age and marital status as well as factors like type of hospital, whether it is private or government, significantly influence the patients' satisfaction through dietary services.Such study helps the dieticians to improve upon the food services in hospital that subsequently will help the faster and better recovery of patients. Government hospitals being cost-effective are first choice of economically weaker section of our society. We suggest that the by improving upon factors like food services,government hospital could be more prevalently demanded.

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Conflicts of interest

There is no conflicts of interest among the authors associated with this present study.

Author contributions

How each author of the paper has contributed towards this research and in its publication.

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Table 1
Sociodemographic information of patients responded through questionnaire in the study

Variables	Number (%)	
	Private Hospital	Government Hospital
Gender		
Male	81 (45%)	51 (28.7%)
Female	100 (55%)	130 (71.3%)
Age		
<20	2 (1.10%)	7 (3.83%)
21-30	13 (7.14%)	66 (36.07%)
31-40	26 (14.29%)	28 (15.30%)
41-50	29 (15.93%)	29 (15.85%)
>50	110 (60.44%)	51 (27.87%)
Marital Status		
Married	168 (92.31%)	174 (95.08%)
Unmarried	14 (7.69%)	9 (4.92%)
Dietary Services		
Inhouse	61 (35.06%)	113 (64.94%)
Contractual	119 (63.64%)	68 (36.36%)
Length of stay		
1-5 days	147 (80.77%)	105 (57.38%)
6-10 days	33 (18.13%)	42 (22.95%)
> 10 days	0 (0.00%)	36 (19.67%)
Diet Prescribed		
Diet 1	102 (56.67%)	68 (37.57%)
Soft	32 (17.78%)	41 (22.65%)
Diabetic Diet	44 (24.44%)	35 (19.34%)
High Protein	2 (1.11%)	23 (12.71%)
HPHC	0 (0.00%)	14 (7.73%)

Table 2
Association of demographic characteristics with satisfaction level of patient (assessed by independent t-test)

S. No.	Demographic characteristic	Satisfaction level			
		Mean	Std dev	Sig	Sig (2 tailed)
1	Type of hospital				
	Government	89.8333	11.06179	.005	.039*
	Private	86.7667	13.41561		
2	Marital status				
	Unmarried	93.7059	7.92752	.79	.007*
	Married	88.3004	12.27976		
3	Gender				
	Male	88.5812	13.09925	.118	.977
	Female	88.6230	11.50561		

4	Dietary services				
	Inhouse	88.9833	12.62782	.861	.661
	Contractual	88.3556	11.81639		

* Association is significant at the 0.05 probability level (2-tailed).

Table 3
Variables' correlation matrix (computed by Karl Pearson Coefficient of Correlation)

Variables	Age	Satisfaction Points	Length of Stay	Deficit of Energy	Deficit of Protein	Deficit of Fat	Deficit of Fibre
Age	1						
Satisfaction Points	-.145*	1					
Length of Stay	-.014	.000	1				
Deficit of Energy	-.023	.079	.436**	1			
Deficit of Protein	.240**	.150*	.125	.351**	1		
Deficit of Fat	.271**	.193**	.289**	-.108	.680**	1	
Deficit of Fibre	-.012	-.106	.046	.505**	.693**	.327**	1

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).