

Research Article

Satisfaction with Hospital Meal Service and Associated Factors Among Adult Patients Admitted to Public Hospitals in Addis Ababa, Ethiopia, 2024

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Abstract

A sound health care system is indispensable for fast and better recovery of patients which involves best medication along with adequate and balanced diet. In public hospitals, hospital meal is the source of nutrition for most patients. Despite the critical role of appropriate hospital feeding in the recovery process of hospitalized patients, there is little understanding of satisfaction with food service in regular hospital settings among adult patients admitted to public hospitals. This study aims to assess satisfaction levels with hospital meal service and associated factors among adult patients admitted to public hospitals in Addis Ababa, Ethiopia, 2024. A multi-center cross-sectional study was conducted from June to July, 2024. Representative samples of 567 adults were chosen by multistage cluster sampling from patients admitted to public hospitals in Addis Ababa, Ethiopia. Data was collected using interviewer-administered structured questionnaires and data obtained from institution-based survey checked for completeness & inconsistencies, and then coded, entered, cleaned and transferred to Statistical package for Social Sciences (SPSS) version 27 for analysis. Results show patient satisfaction towards hospital meal services was 32.5% (95%CI: [29.0, 36.0]). Multivariable logistic regression shows Meal flavor (AOR=4.65; 95%CI:[2.26-10.97]), Meal type (AOR =2.35; 95%CI:[1.912-4.49]), provision of well-cooked meals for easily chewing (AOR=1.483; 95%CI:[1.294-1.792]), meal provider's behavior (AOR=2.20; 95%CI:[1.252-3.195]), and nutritional status (AOR=0.389; 95%CI:[0.271-0.558]) of respondents were identified as influencing factors of patient satisfaction on meal service at hospitals. Regarding nutritional status, 343 (60.5%) of admitted patients were well-nourished and 224 (39.5%) were malnourished. In general, it revealed low patient's satisfaction with hospital meal service among adult patients admitted at public hospitals, so health managers and health care providers need to work on how to maintain the good aspects of hospital meal services.

Keywords

Satisfaction, Hospital Meal Service, Associated Factors, Addis Ababa, Ethiopia

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1. Introduction

Background

Food intake and the systems that control appetite, satiety, and hunger are complex physiological processes. These processes significantly impact nutritional status, which is determined by food intake, balanced supply of macro- and micro-nutrients, and water intake [1].

A good healthcare system is indispensable for fast and better recovery of patients which involves best medication along with adequate and balanced diet. The quality of food served to patients during hospital treatment regulates their physical and mental health [2]. The provision of dietary services to patients by hospitals is an important aspect of comprehensive patient care and improves patient health outcomes [3].

Comprehensive care includes communication from health professionals, attention to social, spiritual, and psychological needs, but it also has to be tailored to the individual and prioritize those needs [4].

Most hospitalized patients often rely on hospital meals and oral nutritional intake as their main sources of sustenance. Therefore, planning hospital meals that may accommodate various dietary needs is essential. This involves considering nutritional needs, medical issues, and personal preferences. When prepared with care, hospital meals are the first line of defense against malnutrition in the hospital, particularly for those patients for whom obtaining their dietary requirements from regular hospital meal is both feasible and safe [5]. Consequently, hospital food provision should be flexible enough to cover several requirements. Maintaining the highest standards in raw material selection, cleanliness, and preparation techniques is imperative in order to guarantee patients receive the best possible nutrition. A meal that is both nutritious and aesthetically pleasing is mostly dependent on the quality of the ingredients, with a particular focus on obtaining complete, fresh foods [6]. Ensuring patient safety during food preparation necessitates strict adherence to cleanliness protocols. The attention to flavor and presentation is equally important, as these elements are crucial in getting patients to eat their meals voluntarily. To further improve the entire eating experience, it is ideal to acknowledge and include patient preferences into meal planning wherever feasible. This approach is important for promoting health and helping persons during times of sickness, since it acknowledges that food consumption is not only a physiological need but also a key predictor of quality of life and well-being. To maximize patients' entire quality of life, a comprehensive dedication to the highest standards of nutrition, flavor, and presentation is essential [5].

Doctors, nurses, medical and nursing students, volunteers, and meal service personnel contribute substantially to the fight against malnutrition. Unfortunately, this priceless instrument is frequently overlooked and misused. However it has a significant potential influence, not only in avoiding

many chronic diseases but also in lowering rates of death and morbidity and promoting complete recovery. To fully realize the promise of nutrition in improving patient outcomes and general well-being, a multidisciplinary strategy comprising a range of healthcare experts and support personnel is required [7].

Inadequate nourishment during hospitalization is associated with heightened vulnerability to hospital acquired infections, weakened immunity, postponed wound healing, and prolonged hospital stay. Furthermore, poor nutritional status raises healthcare expenses, which puts a financial strain on individuals and healthcare systems. Poor nutrition during hospital stays can also increase the risk of morbidity and death, underscoring the necessity of monitoring and addressing food needs as a crucial part of total patient care. Not only may nutritional support techniques help recovery, but they can also increase patient well-being and overall healthcare efficiency when included into protocols. Disease related malnutrition (DRM) is a significant problem, affecting 20–60% of hospitalized patients [5-8]. This problem is often exacerbated during hospitalization, as hospital procedures may necessitate fasting or skipping meals [9]. Nutrition need differs with age, gender and physiological changes such as illness, pregnancy, trauma, weight gain, changes in blood composition, metabolic changes and adaptive responses. The importance of patient satisfaction with hospital meal cannot be overstated as it directly impacts adherence to prescribed nutritional plans, overall recovery rates, and overall quality of care. As primary health care providers to a diverse population, public hospitals provide a unique context for investigating the dynamics of patient satisfaction with nutrition services [10].

Not only is the provision of meal services important, but patient satisfaction with these services is equally important [11]. Patient satisfaction has become an important measure in evaluating the quality of healthcare services. Providing delicious meals for patients must be considered an element of hospital treatment that has the potential to promote recovery [12-17].

2. Methods and Materials

Study Area

The study was conducted in public hospitals of Addis Ababa, Ethiopia. There are 5 hospitals under Ministry of health, 6 Hospitals under Addis Ababa Health Bureau, 1 Hospital under Ministry of Defense, 1 Hospital under Police Force and more than 40 Private Hospitals. The city also has more than 96 functional governmental health centers and more than 760 private clinics in 11 sub cities. The study was conducted at randomly selected 4 public hospitals in Addis Ababa from June to July, 2024 [18].

Study Design

Multi center cross sectional study was conducted from May

13 to July 4, 2024.

Source Population

All adult patients admitted to public hospital in Addis Ababa, Ethiopia.

Study Population

All adult patients admitted to selected public hospital in Addis Ababa, Ethiopia.

Inclusion and Exclusion Criteria

Inclusion Criteria

Adult patients who admitted to each ward three nights before the time of data collection were included.

This timeframe is believed to allow patients to share their experiences with hospital meals [8].

Exclusion Criteria

Patients who are unable to communicate, or unconscious, and are not receiving food from the hospital throughout their hospital stay, and patients who are admitted to mental wards were excluded from the study.

Sample Size Determination

Sample size was determined by using single population proportion formula $n = z^2 \cdot p(1-p)/d^2$ by considering the

following assumptions: margin of error ($d = 0.05$), confidence interval of 95%, non-response rate of 10%, and considering the prevalence of satisfaction of adult patients with regular hospital diet as 33.6% taken from similar study conducted in Wolayita zone, Ethiopia [8]. i.e. 95% confidence level $z = 1.96$, margin of error $d = 5\%$, $p = 0.336$, $q = 0.664$

$$N = z^2 \cdot pq/d^2$$

Sample size

$$(n) = (1.96)^2 \times 0.336(1-0.336)/(0.05)^2 = 3.8416 \times 0.223104/0.0025 = 342.8$$

$$\text{Sample} = 343$$

Then, Adding design effect

$$\text{Add design effect} = \text{sample} \times \text{design effect} (1.5) \quad 343 \times 1.5 = 514.5 = 515$$

Then considering 10% non-response rate $515 \times 0.1 = 51.5$

$$= 515 + 52 = 567$$

i.e. the total sample size was = 567

Sample Size Determination by Using Factors

For factor analysis double population proportion formula was used. $N = (Z\alpha/2 + Z\beta)^2 \cdot (p_1(1-p_1) + p_2(1-p_2))/(p_1 - p_2)^2$

Table 1. Sample size determination by using factors for the study.

No	Factors	Assumptions			Proportion of Satisfaction with meal service in (%)	Non Response (10%)	Sample size	Reference
		Ratio	power	CI				
1	Flavour of meal	1:1	80	95%	P1=5.7 P2=94.3	56	62	(31)
2	Provision of meal for easy chewing	1:1	80	95%	P1=91.3 P2=8.7	2	3	(8)
3	Meal service provider's behaviour	1:1	80	95%	P1=68.1 P2=31.9	3	4	(8)

From the above sample size comparing its prevalence and factors sample size calculation the largest sample size which is calculated is 567, calculated from prevalence of satisfaction with hospital meal service.

Sampling Technique

Table 2. stages and clusters of sampling.

Stage	Unit Selected	Method	Cluster Type
Stage1	4 public hospital selected	Simple random sampling	Primary cluster
Stage2	3 wards/departments selected	Random sampling	Secondary cluster
Stage3	567 participants selected	Systematic random sampling	Last sample/end

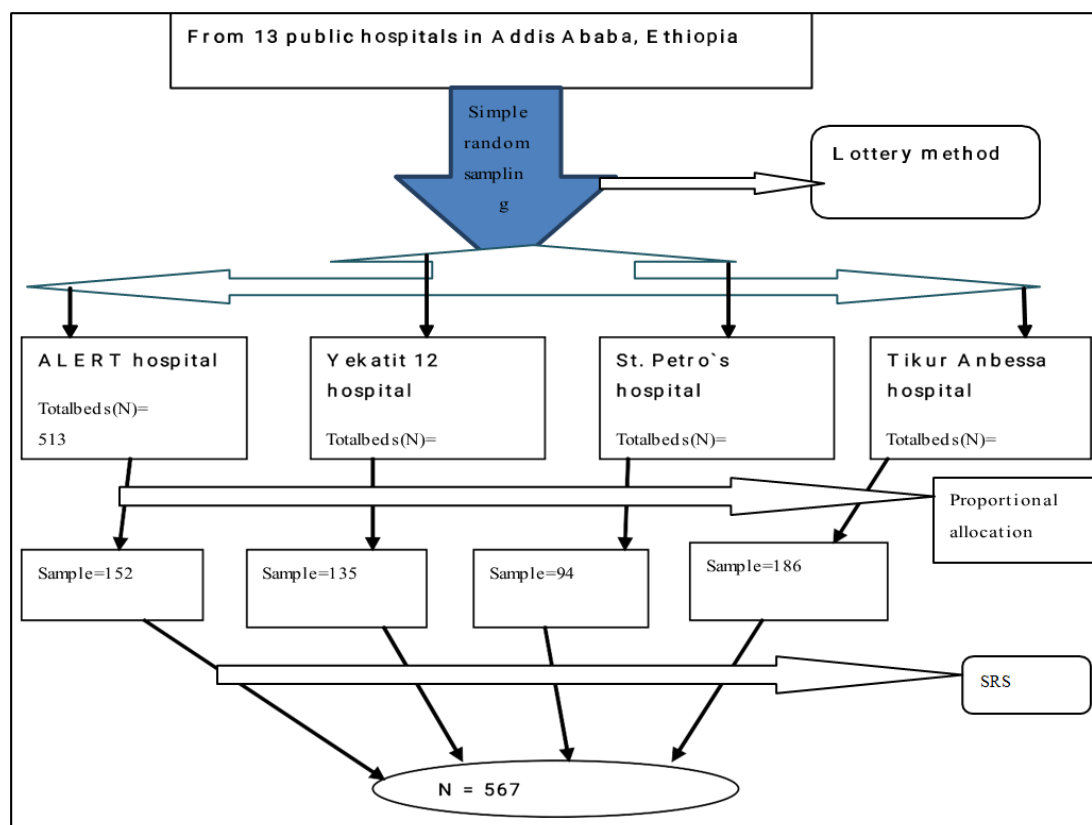


Figure 1. Schematic approach for sampling procedure and proportional allocation of samples for data collection in study participants ($n = 567$) for the study satisfaction with regular hospital meal service and associated factors among adult patients admitted to public hospitals, Addis Ababa, Ethiopia, 2024 [18].

Data Collection Tools

Data was collected using interviewer administered structured questionnaires with questions about demographic characteristics such as age, sex, marital status, residence, educational status, occupation, and income level, diet components, portion size, and other variables for that questionnaire adapted from similar studies in Wolayita & east Malaysia was used. And questionnaires adopted from Subjective Global Assessment Form were used to determine nutritional status of adult patients admitted to public hospital. The questionnaires were prepared originally in English and then translated into the local language Amharic for the purpose of data collection, then translated back to English again for consistency of the variables under question and for analysis purpose.

Data Collectors

For administering the questionnaire three clinical nurses who have data collection experience were recruited to conduct an interview. 1 health officer supervisor was assigned and training on data collection was given for two sessions. And training also given regarding the SGA tool for two sessions.

Operational Definition

Satisfaction with hospital meal; the patient's subjective evaluation, of the nutritional value, flavor, and overall experience of the meals served during their hospital stay and a

client were regarded as satisfied if scored mean of $>50\%$ and considered as dissatisfied if scored mean of $<50\%$ [8].

Nutritional status; Measured using SGA Rating and score and malnutrition criteria were determined based on the results of the SGA scores, which were categorized into three groups: those scored 0–3 (non-malnourished /well nourished), 4–8 (moderate malnutrition), and ≥ 9 (severe malnutrition) [19, 20], then for analysis moderate malnutrition and severe malnutrition were considered as malnourished.

Meal type; refers to the classification of meals provided based on their physical texture or preparation method [3]. In this study, meal type was categorized based on whether the food was standard meals or not (e.g. standard meal, diabetic menu, high protein/ high energy menu, restricted diet for medical reasons, minced or pureed diet, HTN, fluid diets), as reported by the participants.

Standard hospital meal; nutritionally balanced meal that is served to patients which consists of a protein source, vegetables, carbohydrate, and drinks and is created to satisfy dietary recommendations as well as the needs of general patients.

Data Analysis

Data obtained from institution-based survey using Google docs form was checked for completeness & inconsistencies, and then coded, entered, cleaned and transferred to Statistical package for Social Sciences (SPSS) version 27. Descriptive statistics, such as mean, standard deviation, and frequencies

were primarily used to summarize and describe the dataset and Odds ratio with 95% confidence interval and level of significance p value of 0.05 used to analyze data and to assess the strength of associations for variables in the study.

Bivariate logistic regression analysis techniques was used to see the crude association between the independent variables and the dependent variable and the strength of association between each independent variable regarding satisfaction with hospital meal expressed in an odds ratio (OR) and P values < 0.05. Bivariate logistic regression with p value of < 0.25 was included in Multivariate logistic regression to control possible confounders. Multivariate logistic regression analysis was applied to identify significant predictors of satisfaction.

3. Results

Socio-Demographic Characteristics of the Study

The study conducted at 4 selected public hospitals in Addis Ababa, Ethiopia from the selected hospitals 567 individuals were participated in this study. Regarding the study participants, 331 (58.4%) were males and 236 (41.6%) were females, 334 (58.9%) were married, 22 (3.9%) were divorced. The mean age of the study participants was 39.5 ± 15.2 years with this 192 (33.9%) were 18–30 years & 33 (5.8%) were greater than 65 years old. Regarding religion of respondents 418 (73.7%) orthodox and 10 (1.8%) were catholic religion followers. From those 433 (76.4%) were urban residents, 294 (51.9%) attended higher education, 7 (1.2%) read & write only. Regarding the employment status of the participants, 247 (43.6%) were government employees, 24 (4.2%) were pensioned and 79 (13.9%) were house wife's, and 314 (55.4%) of the study participants earn more ([Table 3](#)).

Table 3. Socio-demographic characteristics of admitted adult patients at public hospitals in Addis Ababa, 2024.

Characteristics	Categories	Frequency	Percentage
Gender	Male	331	58.4
	Female	236	41.6
Age	18-30 years	192	33.9
	31-43 years	183	32.3
	44-56 years	115	20.3
	57-65 years	44	7.8
	>65 years	33	5.8
	Single	183	32.3
	Married	334	58.9
Marital status	Divorced	22	3.9
	Widowed	28	4.9
	Urban	433	76.4
Residency	Rural	134	23.6
	Orthodox	418	73.7
Religion	Muslim	78	13.8
	Catholic	10	1.8
	Protestant	61	10.8
	No formal education	14	2.5
Educational level	Read & write	7	1.2
	Primary	59	10.4
	Secondary	99	17.5
	Technical/vocational	94	16.6
	Higher	294	51.9

Characteristics	Categories	Frequency	Percentage
Occupation	Government employed	247	43.6
	Merchant	129	22.8
	Housewife	79	13.9
	Pensioned	24	4.2
	Private employed	88	15.5
Average Monthly income	<1000ETB	28	4.9
	1001-2000ETB	42	7.4
	2001-5500ETB	182	32.1
	>5500ETB	314	55.4

N.B 1USD was equivalent to 57.77ETB during data collection period.

Nutritional Status of Respondents

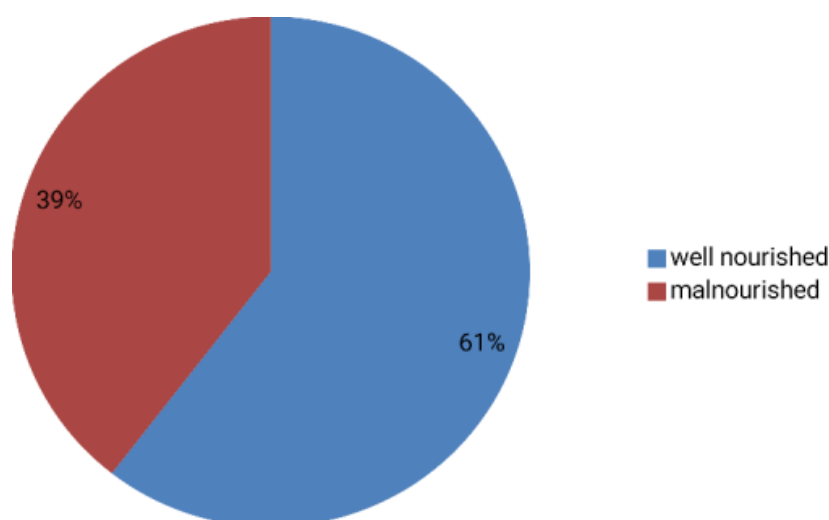


Figure 2. Nutritional status of adult patients admitted at public hospitals in Addis Ababa, Ethiopia, 2024.

The nutritional status of the respondents were evaluated using SGA tool and their nutritional status was classified as well-nourished and malnourished 343 (60.5%) of admitted patients were well nourished and 224 (39.5%) were malnourished (Figure 2).

Characteristics of Meal Service of Respondents

Among the study participants 442 (78.0%) had three meals per day for their hospital stay, 6 (1.1%) had single meal per day due to different reasons, from all respondents 489 (86.2%) states as meal was delivered on time but 59 (10.4%) reported that meal was not delivered timely and majority of meal delay time was 15–30 minutes, 503 (88.7) of the participants has another food source other than hospital meal. Only 52 (9.2%) skip meal due to new type of meal/meal aversion.

Overall Facility Experience of Respondents

The mean hospital stay was 12.95 ± 10.03 days with 285 (50.3%) of the respondents stay 8–14 days and 130 (22.9%) of them stay in hospital for longer than 14 days. 510 (89.9%) of the participants states that toilets are easily accessible and comfortable whereas 57 (10.1%) says it was not comfortable, 509 (89.9%) of respondents tells hospitals has access to clean water and hand washing facilities, the type of meal which the study participants eat for the majority of their hospital stay was 457 (80.6%) standard meal, 11 (1.9%) pureed diet, and 8 (1.4%) fluid diet, 493 (86.9%) of respondents agreed that there is provision of easily chewable meal but 74 (13.6%) disagreed with the provision of chewable meal in hospitals (Table 4).

Table 4. Overall characteristics of meal service and facility experience of adult admitted patients at public hospitals in Addis Ababa, 2024.

Characteristics	Categories	Frequency	Percentage
Length of hospital stay	3-7 days	152	26.8
	8-14 days	285	50.3
	>14 days	130	22.9
Frequency of daily meal	One & Two	60	10.6
	Three	442	78.0
	>Three	65	11.5
Timeliness of meal delivery	No	59	10.4
	Yes	489	86.2
	Not sure	19	3.4
Delaying time in minutes	<15 minutes	5	8.3
	15-30 minutes	46	76.7
	30-45 minutes	9	15.0
Food source other than hospital meal	Yes	503	88.7
	No	64	11.3
Skipping meal due to new type	Yes	52	9.2
	No	515	90.8
Hospital`s toilet easily accessible & comfortable	Yes	510	89.9
	No	57	10.1
Hospital`s access to clean water & Hand washing	Yes	509	89.8
	No	58	10.2
Facility	Standard meal	457	80.6
	Diabetic menu	20	3.5
	High protein/high energy	36	6.3
	Restricted diet for medical reasons	14	2.5
	Minced or pureed diet	11	1.9
	HTN	21	3.7
	Fluid diets	8	1.4
	Yes	493	86.9
Provision of easily chewable meal	No	74	13.1

Patient`s Satisfaction Level with Hospital Meal Services

Patients were asked for their degree of agreement on meal services items and level of satisfaction. They were assigned either as satisfied or not satisfied based on the mean score. The overall satisfaction towards hospital meal services among the 567 study participants was 32.5% (95% CI: [29.0, 36.0]).

Regarding the items assessing satisfaction level most of

patients disagreed on flavor of meal (94.4%), taste of meal (92.5%), flexibility of beds (92.1%), temperature of cold drinks (91.4%), amount of meal (84.5%), rooms privacy to eat (76.9%), room cleanness (73.5%), the way vegetables cooked (71.6%), meal providers behavior (71.1%), variety of foods (70.7%), cleanness of meal providers (66.8%), temperature of hot drinks (64.1%), and cleanness of cups & plates to eat

(58.4%). However, patients agreed on time of meal delivery (86.2%), provision of well-cooked meal for easily chewing (86.9%), availability of clean water and hand washing facility

(89.8%), toilet's easily accessibility & comfortableness (89.9%) (Figure 3).

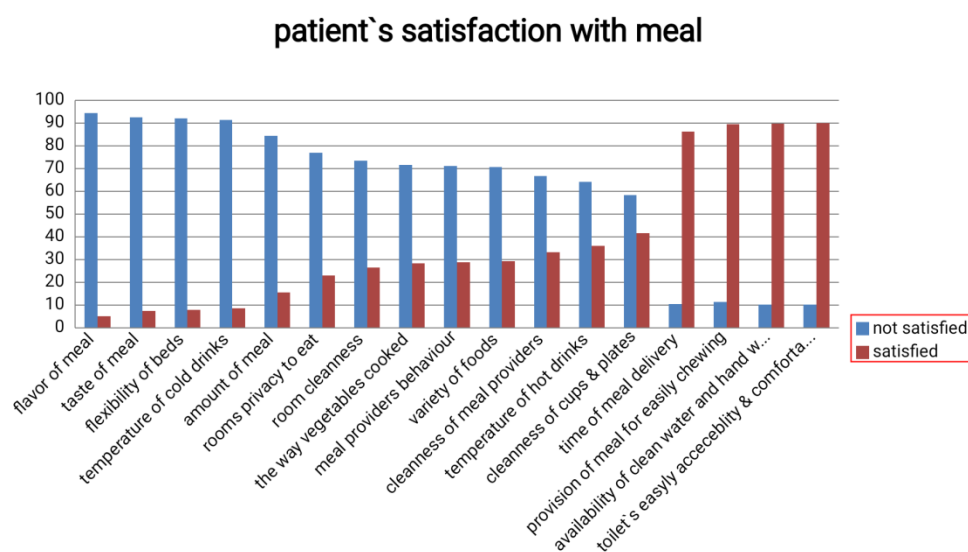


Figure 3. Shows the satisfaction level with hospital meal services and the associated factors among adult patients admitted to public hospitals in Addis Ababa in 2024.

Factors Associated with the Patient's Satisfaction Level

During the binomial logistic regression analysis variables like education level, age, religion, daily meal frequency (three meals a day), availability of food source other than hospital meal, type of meal used in the hospital, nutritional status, provision of easily chewable food, flavor of meal, and behavior of meal providers were significantly associated with patient satisfaction towards hospital meal services. However, residences, sex, monthly income, marital status, and occupa-

tion, were not associated.

In Multivariate logistic regression analysis, meal flavor, nutritional status, type of meal used in the hospital, provision of easily chewable food and behavior of meal providers were statistically significant whereas religion, level of education, age, food source other than hospital meal, daily meal frequency (three meals a day), were not statistically significant with satisfaction towards hospital meal service (Table 5).

Table 5. Bivariate and multivariate logistic regression of patient satisfaction with hospital meal service among adult patients admitted to public hospitals in Addis Ababa, 2024.

Variables		Satisfaction in (%)		COR (95%CI)	AOR (95%CI)
		Satisfied	Dissatisfied		
Meal flavour	Good	48(64.0%)	27(36.0%)	4.65(2.26-10.97)	4.65(2.26-10.97)
	Not good	136(27.6%)	356(72.4%)	1	1
Meal type	Standard	331(72.4%)	126(27.6%)	1.210(1.072-1.365)	2.35(1.912-4.490)
	Other meals (cardiac, HTN, fluid meals)	58(52.7%)	52(47.3%)	1	1
Well cooked meals for easily	Yes	149(30.2%)	344(69.8%)	0.483(0.294-0.792)	0.483(0.294-0.792)
chewing	No	35(47.3%)	39(52.7%)	1	1
Meal providers	Good	96(43.2%)	126(56.8%)	1.517(1.290-1.78)	2.20(1.252-3.195)

Variables	Satisfaction in (%)		COR (95%CI)	AOR (95%CI)
	Satisfied	Dissatisfied		
behaviour			6)	
Bad	88(25.5%)	257(74.5%)	1	1
Well nourished	83(24.2%)	260(75.8%)	1	1
Nutritional status				
Malnourished	101(45.1%)	123(54.9%)	0.389(0.271-0.558)	0.389(0.271-0.558)

Participants who states that the meals flavor as good were 4.65 times more satisfied than those who perceived meal flavor as not good (AOR=4.65, 95%CI:[2.26, 10.97]). Participants who receive meal from providers with good behavior were 2 times more satisfied than those who get their meal from providers with poor behavior (AOR=2.2, 95%CI:[1.25, 3.20]). Participants who use standard meals in their hospital stay were 2.35 times more satisfied than those who use other meals (cardiac, HTN, fluid meals) (AOR=2.35, 95%CI:[1.91, 4.49]). Study participants who claimed the provision of meal for easily chewing are more satisfied than those who didn't (AOR=0.483, 95%CI: [0.294–0.792]). Participants whose nutritional status was well nourished are less satisfied than those of malnourished (AOR =0.389, 95%CI: [0.271–0.558]).

4. Discussion

This study evaluates patients' satisfaction and potential factors regarding hospital meal service in Addis Ababa, Ethiopia. The result showed that 32.5% (95%CI: [29.0, 36.0]) of patients satisfied with overall hospital meal service provision. This result was lower than findings of studies conducted in other countries like 80% in Swedish study using the Acute Care Hospital. Food service, 67.3% in Lusaka province, Zambia, 60.8% Mashhad University of Medical Sciences, Iran, 53.3% in East Malaysia, but it is similar with the previous study conducted in Wolaita zone, Ethiopia which shows 33.6% (95%CI: [29.1, 38.3]) [8, 9, 18, 19, 21, 23-27]. This result shows patient's satisfaction with hospital meal service is low in Ethiopia and possible explanations for the discrepancy between our country and those countries might be due to differences in socio-economic, cultural, and infrastructure aspects. According to the study findings, socio-demographic variables like age, gender, religion, marital status, educational level, monthly income, length of hospital stay and residency had no impact on the patients' general level of satisfaction. Regarding age, gender, education level, length of hospital stay similar studies also showed as they were insignificant variables with overall meal service satisfaction [3, 8, 11, 15]. However, the results for residency and monthly income are in contrast of previous study [8, 10, 21, 22, 23], which revealed

that patients from rural areas and those receiving 500 Ethiopian Birr or less per month were more likely to be satisfied with hospital meal service than patients from urban areas and patients receiving more than 500 Ethiopian Birr, respectively.

Patients in hospitals have reported varying experiences with different components of meal services. Accordingly 94.4% of patients disagreed on flavor of meal, 92.5% with taste of meal, and 92.1% about flexibility of beds whereas 86.2% agreed on timeliness of meal, 86.9% with provision of easily chewable meal, and 71.1% with meal providers' behavior. Previous researches' that was done provided support for these results [8, 11, 28, 29].

This might be explained by the fact that patient satisfaction was being influenced by many hospital meal service dimensions and characteristics and this suggests that in order to address the contributing elements, interventions must be done while taking into account every dimension and aspects of meal service. In relation to the predictive variables, patients who thought the hospital meal flavor as nice were more likely to be satisfied than those who thought it didn't. These result is in accordance with earlier studies and it was also suggested that improving the flavor of hospital meals with different enhancers is important to meet expectation of patients towards the meal services [8, 22, 30, 31]. The current as well as previous studies suggested that in order to improve patient satisfaction with meal, hospitals could incorporate more flavor into their meals using fresh products. Furthermore, eating tasty food made correctly may make you feel better psychologically and raise the value of the meal, which supports the link between participant satisfaction and meal flavor that has been shown. Participants who receive meal from providers with good behavior (friendly & polite) were more satisfied than those who get their meal from providers with poor behavior. This result is in line with previous studies [8, 19-23, 30, 31]. This could be due to friendly and polite approach of providers can make participants feel valued and respected, leading to a greater sense of comfort and appreciation for the service. This emotional and psychological boost can elevate the perceived quality of the meal and the service, resulting in higher satisfaction compared to those who experience poor behavior from providers.

Participants who use standard meals in their hospital stay

were more satisfied than those who use other meals (cardiac, HTN, fluid meals), this result is similar with a study in hospitals of Lahore, Pakistan which shows the patients who were consuming standard diabetic or cardiac menu were not satisfied with food service as compared to the patients who were on restricted or textured modified diet [3] but it is in contrast with study about food services in the teaching hospitals of Tabriz, Iran which shows food type (special hospital diet or regular) did not significantly influence overall satisfaction with hospital meals and meal services, which found no correlation between food type and meal satisfaction [22]. The possible reason for this might be due to the low salt and low fat containing meal that is provided for hypertension and cardiac patients.

Study participants who claimed the provision of meal for easily chewing are more satisfied than those who didn't this result is in accordance with previous studies [8, 30]. A plausible interpretation for this finding might be that having meal that is well-cooked enhances the dining experience, hence elevating the degree of pleasure with the meal served. The current study showed that from all (567) study participants 224 (30.5%) was well-nourished this result is in line with a study by Ogada Irene Mount Saint Vincent University, Department of Applied Human Nutrition, which shows 35.4% well-nourished status [31] and participants whose nutritional status was well nourished are less satisfied than those of malnourished but further studies to assess the association between nutritional status and satisfaction with hospital meal service is required.

5. Strength and Limitation of the Study

The study offers up-to-date reflections on patient satisfaction and the factors influencing it at the center. This study may have been limited by its exclusive focus on overall patient satisfaction as perceived by the patients themselves. It did not evaluate the organizational viewpoints, such as the abilities of the team that distributes meals, the cooks, or the medical specialists. The data collectors of this study were partially selected from the study hospitals and this may lead to social desirability bias.

6. Conclusion

The findings of this research revealed low patient's satisfaction with hospital meal service among adult patients admitted at public hospitals. In this study, a significant proportion of participants were agreed on time of meal delivery, provision of well-cooked meal for easily chewing, and availability of clean water and hand washing facility while the majority of them had reported unacceptable experiences on aspect of meal flavor & taste, flexibility of beds, and temperature of cold drinks. Meal flavor, meal type, provision of well cooked meals for easily chewing, meal providers be-

havior, nutritional status of respondents were identified as statistically associated factors with patient satisfaction on meal service at hospitals. The results also insight the interventions need to be made to address the influencing factors considering each meal service aspects and dimensions.

7. Recommendation

Hospital administrators, legislators, and medical professionals should carry out targeted interventions to raise patient satisfaction with hospital meal services. These should include making sure that patients receive well-prepared meals that are suited to their dietary requirements, improving the behavior and training of meal service employees, and enhancing the flavor and diversity of meals with the help of certified nutritionists. A more comfortable dining experience can also be achieved by improving the ward's infrastructure, for as by installing adjustable beds and suitable meal delivery equipment.

Abbreviations

AAPHREM	Addis Ababa Public Health Research & Emergency Management
ACHFPSQ	The Acute Care Hospital Foodservice Patient Satisfaction Questioners
ALERT	All Africa Leprosy Rehabilitation and Training Center
DRM	Disease Related Malnutrition
MUAC	Mid Upper Arm Circumference
SGAF	Subjective Global Assessment Form
SPSS	Statistical Package for Social Sciences
TASH	Tikur Anbessa Specialized Hospital

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Author Contributions

Mulugeta Taybele: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Visualization, Writing – original draft

Chala Getaneh: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Visualization, Writing – original draft

Olyad Kuma: Conceptualization, Formal analysis, Methodology, Resources, Software, Visualization, and Writing

Elazar Tadesse: Conceptualization, Formal analysis,

Methodology, Software, Supervision, Writing – review & editing

Amanuel Nana: Conceptualization, Formal analysis, Methodology, Software, Supervision, Writing – review & editing

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