FACTORS ASSOCIATED WITH DIABETIC PATIENT SATISFACTION WITH THE FOOD SERVICE OF THE HOSPITAL NACIONAL HIPÓLITO UNANUE (HNHU)

FACTORES ASOCIADOS A LA SATISFACCIÓN DE PACIENTES DIABÉTICOS SOBRE EL SERVICIO ALIMENTARIO DEL HOSPITAL NACIONAL HIPÓLITO UNANUE (HNHU)

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ABSTRACT

Type 2 diabetes mellitus (DM2) is a chronic non-communicable disease (NCD). In Peru, DM is responsible for 4% of the causes of NCD mortality. Studies indicate that, within the nutritional treatment scheme, the degree of satisfaction of patients with the service would determine a better prognosis for their health. This research aimed to determine the factors associated with the satisfaction of diabetic patients with the food service of the Hospital Nacional HipólitoUnanue (HNHU). A descriptive, quantitative, observational, cross-sectional cohort study was carried out. The population consisted of patients aged 18 and over 60 with a confirmed diagnosis of T2DM. The sample consisted of 60 patients, to whom the "Acute Care Hospital Food Service Patient Satisfaction Questionnaire" (ACHFPSQ) was applied to measure patient satisfaction. Exploratory analysis and the Chi test^2 with a p-value<0.05 (NC=95%) found that the general satisfaction with the food service was low at 6.7%; medium, 20.0%, and high, 77.3%. Neither sociodemographic nor clinical variables were significantly more associated factors if the presentation of the service (p-value<0.001; NC95%). Therefore, it was possible to conclude that the most significant number of patients reported high satisfaction, and the factor significantly associated with satisfaction was the presentation of the food served.

Keywords: food consumption, satisfaction, type 2 diabetes mellitus, service quality.
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RESUMEN

La diabetes mellitus tipo 2 (DM2) es una enfermedad crónica no transmisible (ECNT).En el Perú, la DM es responsable del 4% de las causas de mortalidad por ECNT. Estudios señalan que, dentro del esquema de tratamiento nutricional, el grado de satisfacción del servicio por parte de los pacientes determinaría un mejor pronóstico en su salud.La investigación tuvo como objetivo determinar los factores asociados a la satisfacción de pacientes diabéticos sobre el servicio alimentario del Hospital Nacional Hipólito Unanue (HNHU).Se realizó un estudio de tipo descriptivo, con modalidad cuantitativa, observacional, de cohorte transversal. La población estuvo conformada por pacientes con edades comprendidas entre 18 y hasta más de 60 años, con diagnóstico confirmado de DMT2. La muestra estuvo conformada por 60 pacientes, a los que se les aplicó el cuestionario: "AcuteCare Hospital FoodServicePatientSatisfactionQuestionnaire" (ACHFPSQ) para medir la satisfacción del paciente.Se realizó un análisisexploratorio y la Prueba de Chi^2con un p-valor<0,05 (NC=95%)entre los principales resultados se encontró que, la satisfacción general del servicio alimentario fue baja en un 6,7%; media, 20,0% y alta, 77,3%. Variables sociodemográficas ni clínicas fueron factores asociados significativamente más si la presentación del servido (p-valor<0,001; NC95%). Se pudo concluir que la mayor cantidad de pacientes refirió una satisfacción alta, y el factor que está asociado significativamente a la satisfacción fue el de la presentación del servido de los alimentos.

Palabras claves: Consumo de alimentos, satisfacción, diabetes mellitus tipo 2, calidad de servicio.

INTRODUCTION

Type 2 diabetes mellitus (DM2) is a chronic non-communicable disease (NCD) in which the pancreas does not produce enough insulin (Alam et al.). Globally, diabetes in adults has increased, doubling the figures from 1980 (4.7%) to 2014 (8.5%). Thus being one of the most important causes of mortality and morbidity due to NCDs. (World Health Organization, 2014, 2016). Although South and Central America are one of the regions with the lowest rates of the population affected by DM, some projections indicate that it could increase to 164.9% by 2040 (International Diabetes Federation, 2015).

The UK Care Quality Commission demonstrated that, at bad food service times, more patients presented severe hypoglycemias, suggesting rescheduling pharmacological and dietary treatments (Care Quality Commission, 2010). Therefore, the quality of service would represent lower economic losses, which reinforces the need to further explore satisfaction within food services, given the lack of sources of information in this regard and an acute scenario in which diabetes is a disease whose incidence is increasing without distinguishing sociodemographic and economic conditions (World Health Organization, 2014, 2016).

In Peru, DM is responsible for 4% of the causes of NCDs, placing NCDs as one of the leading causes of mortality (69%) (Organization, 2019). Common associated factors can be overweight, physical inactivity, genetics, family history, gestational diabetes, and age (International Diabetes Federation, 2015). Peru is going through a demographic, nutritional and epidemiological transition due to economic growth and migration, which has increased the prevalence of DM (Carrillo-Larco & Bernabé-Ortiz). Likewise, there is a great economic burden due to the cost of insulin and medications affecting households and national health systems. As a result, about 5% to 20% of the total health expenditure would be focused on DM; even in 2040, it is estimated to be 19% in expenditures for DM (International Diabetes Federation, 2015).

Dietary therapeutic treatments are oriented to the adequate management of macronutrients to avoid hyperglycemia and always consider the relevant strategies with which the diabetic person feels more comfortable. Even so, it is documented that there is low adherence to medical and nutritional treatment by people with diabetes (Carpenter et al., 2019). In this regard, Ha K. et al. point out that diets high in carbohydrates and low in fat are common in people at increased risk of DM2, which

would hinder a successful nutritional intervention (Ha, Joung, & Song, 2019).

Eating satisfaction is defined as a person's overall appraisal of their food (Grunert et al., 2007); however, it is required to evaluate other factors beyond food that involve the food service as a whole. For example, some studies highlight the importance of considering organoleptic aspects, including temperature, serving time and portion size (Iff et al., 2008; Rubio-Martin et al., 2015),while others dismiss the differences between specific food preparations, such as that between a vegan diet versus a regular diabetic diet. Still, other studies even empower food education beyond the diet, noting the importance of the healthcare personnel involved (Curll et al., 2010; White et al., 2015).

Unfavorable clinical and nutritional indicators have a relationship with the quality of service, as they would be associated with a lower nutrient intake and greater weight loss versus a greater amount of food waste of patients in hospitals, thus causing a longer hospital stay and loss of resources for the institution (Khalatbari-Soltani & Marques-Vidal, 2015; Salvador-Monferrer, Fernández-Olea, & Murillo-Sanchis, 2014). Therefore, there would be a psychological component to consider in the treatment, so ensuring patient satisfaction with the treatment or service offered would be a key variable, but with limited information available so far. Some studies indicate that, in hospitalized patients, dissatisfaction would be associated with a higher risk of in-hospital malnutrition, as opposed to a longer hospitalization time (Benítez Brito et al., 2016; Fernández et al., 2014; Riveros&Berné, 2007).

Just as diabetes can be multifactorial (Mendoza Romo et al., 2018), the considerations of each patient regarding the food service could be different and even more so by social and economic contexts. Nevertheless, seeking patient satisfaction with the food service by health professionals is relevant to ensure an encouraging, favorable and focused prognosis, especially in diabetes and its impact on the patient and the health care system. For this reason, the following research aimed to determine the factors associated with the satisfaction of diabetic patients with the HipólitoUnanue National Hospital (HNHU) food service.

MATERIALS AND METHODS

Study design and population

Regarding the quantitative, observational and cross-sectional cohort study,the population consisted of patients over 18 years of age diagnosed with Type 2 Diabetes Mellitus who were hospitalized at the Hospital Nacional HipólitoUnanue (HNHU) during the first three months of 2019. A non-probabilistic convenience sampling was done, and diabetic patients with four to more days of hospitalization were included in the study. Sixty patients were selected; for the body mass index (BMI) indicator, only 58 patients met the inclusion criteria according to the research objectives could be evaluated. Those with diabetes mellitus as their main health problem, diagnosed by clinical history, were included. Those with gastrointestinal and neurological diseases were excluded.

Methods for data collection:

- Interview: the patients who made up the study sample to learn details of interest for the study.
- Questionnaire: the A Cute Care Hospital Food Service Patient Satisfaction Questionnaire (ACHFPSQ) was used to determine patients' satisfaction with the hospital food service, emphasizing the food served.
- Documentary review: the patient's medical records were reviewed to obtain information on sociodemographic data, clinical history and dietary treatment.

Procedure

1) Explain, prior to the application of the survey, the ethical norms when applying the questionnaire. For example; non-disclosure of personal data, explaining clearly the purposes of the research,
2) To determine in five dimensions the characterization of service satisfaction. This questionnaire is made up of 22 questions with 5 response options on a Likert scale: "never,""rarely,""sometimes,""very often," and "always." All these questions were divided into

five dimensions that allow the characterization of service satisfaction:

a) foodquality
b) qualityoffoodservice
c) amountoffood
d) physicalenvironment
e) aspects of personnel and service.

The ACHFPSQ also allows exploring, in other separate questions, the type of diet and the degree of appetite, which have other multiple response options. For the execution of the questionnaire, printed questionnaires were given to the patient to be completed personally and applied after three days of stay in the hospital.

3) To determine the evaluation of the satisfaction with the presentation of the food served: following the objectives of the research, it was decided to evaluate the satisfaction with the presentation of the food served (food in the tray) in general by adding a new question with five response options on a Likert scale: "very good,""good,""fair,""poor,""very poor."
4) To determine the therapeutic feeding scheme, including the various diets offered to diabetic patients only, taking into account the HNHU's therapeutic dietary scheme:

a) Hypoglucose (low in sugar and high in fiber).
b) Soft - Hypoglossy (soft consistency, without foods that irritate the gastrointestinal tract, considering the characteristics of a hypoglossal diet).
c) Hyposodium - Hypoglycemic (low salt, considering the characteristics of a hypoglycemic diet).

In addition, sociodemographic variables of interest to the study were explored, such as clinical history and dietary treatment, and evaluated categorically. This information obtained from the survey was contrasted with the review of the clinical histories of each patient because these can provide more reliable data.

Variables

Satisfaction was defined as the rating of the service for each of its five components. The degree of overall satisfaction with the food service was recategorized according to its five possible responses from the ACHFPSQ questionnaire into three new categories: low ("bad" and "very bad"), medium ("fair") and high ("very good" and "good") satisfaction in order to evaluate their associated factors from among the other variables studied. It should be noted that the evolution of the degree of appetite was measured in only 24 patients because there was a low response rate for this question. The American Diabetes Association (ADA) recommendations for the detection of comorbidities: cardiovascular diseases, nephropathies, retinopathies, neuropathies, cancer, fractures and diabetic foot were used as a reference (Iglesias et al., 2014).

Statistical analysis

An exploratory analysis of the variables by categories was carried out; the Chi-square test was also performed with a $p<0.05$ (Confidence Level=95%). Data processing was performed using the statistical software Statistical Package for the Social Sciences (SPSS) version 23.0.

RESULTS

The sample analyzed consisted of 60 patients with the diagnosis of Diabetes mellitus, from which the following characteristics could be determined (these data are expressed in Figures 1-4, respectively):

- The age with the highest representation was that of patients over 60 years of age, represented by 56.7%, equivalent to 34 patients.
- The male sex had the highest number of participants, with a total of 34.
- The level of schooling behaved as follows:

Secondary level completed 27
Secondary level incomplete 32

- Concerning marital status, the following was determined:

Married: 45.0% (n=27)
Single: 18.3% (n=11)
Cohabitants: 23.3% (n=14)
Widowedordivorced: 13.3% (n=8)

- About economic remuneration, 48 patients have no employment relationship.

Table 1. Clinical characteristics of the patients

Variables	n (%)
Direct Family History of Diabetes Mellitus	
No	4 (6,67)
Yes	56 (93,33)
Direct Family History of Hypertension	
No	37 (61,67)
Yes	23 (38,33)
BMI	
Under 60 yearsold (n=28)	
Thinness	1 (3,57)
Normal	15 (53,57)
Overweight	6 (21,43)
Obesity	6 (21,43)
60 years and older (n=30)	
Thinness	5 (16,67)
Normal	14 (46,67)
Overweight	8 (26,67)
Obesity	3 (10,00)
Comorbidities	
Onlyone	31 (51,67)
Fromtwoto more	29 (48,33)

Source: Own elaboration based on patient medical records.

- 61.7% (n=37) of the patients surveyed had no history of hypertension during their lifetime.
- A 93.3% (n=56) of patients had a direct family history of diabetes mellitus.
- Of the 58 patients for whom weight and height data could be collected, 50% (n=29) had a normal BMI. Of all the diabetic patients evaluated, 51.7% (n=31) had at least one comorbidity detected at the time of the study (Table 1).

The following table shows the food service

Table 2. Evaluation of diet and food service

Variables	**n (%)**
Typeofdiet	
Hypoglucent	46 (76,67)
Soft - Hypoglossy	10 (16,67)
Hyposodic - Hypoglycemic	4 (6,67)
Presentation of food served (food on a tray)	
Mala	3 (5,00)
Regular	13 (21,67)
Good	20 (33,33)
Verygood	24 (40,0)
Overall satisfaction with food service	
Download	4 (6,67)
Media	12 (20,00)

High	44 (73,33)

Source: Own elaboration based on survey results.

Within the dietary treatment, the hypoglycemic diet was indicated by the greatest number of patients, a total of 46 patients, according to the characteristics of their disease.

Table 3. Distribution of food service ratings according to satisfaction dimensions through the ACHFPSQ.

Variables	Never	Rarely	Sometimes	Veryoften	Always
Foodquality					
The food served to me has excellent and varied flavors.	6 (10,00)	3 (5,00)	16 (26,67)	15 (25,00)	20 (33,33)
I like the vegetables they serve me.	5 (8,33)	0 (0,00)	9 (15,00)	13 (21,67)	33 (55,00)
The hospital food was as good as I expected.	6 (10,00)	4 (6,67)	10 (16,67)	12 (20,00)	28 (46,67)
Meats are tough and/or dry	32 (53,33)	6 (10,00)	9 (15,00)	1 (1,67)	12 (20,00)
The menu has enough variety for me to choose the meals I want to eat.	38 (63,33)	4 (6,67)	15 (25,00)	2 (3,33)	1 (1,67)
The food served to me is healthy	1 (1,67)	0 (0,00)	1 (1,67)	5 (8,33)	53 (88,33)
Qualityoffoodservice					
Hot beverages (herbal teas, oatmeal, milk) are at the right temperature	2 (3,33)	2 (3,33)	9 (15,00)	5 (8,33)	42 (70,00)
Cold beverages (water alone) are at the right temperature	2 (3,33)	1 (1,67)	1 (1,67)	7 (11,67)	49 (81,67)
Food that is cold (salad) arrives at the right temperature.	3 (5,00)	2 (3,33)	9 (15,00)	3 (5,00)	43 (71,67)
Food that is hot (soup, second, etc.) has the right temperature.	1 (1,67)	1 (1,67)	6 (10,00)	8 (13,33)	44 (73,33)
Physicalenvironment					
The hours at which food is served are adequate	2 (3,33)	2 (3,33)	4 (6,67)	5 (8,33)	47 (78,33)
I am satisfied with the containers (plates, dishes, etc.) where food is served.	2 (3,33)	5 (8,33)	4 (6,67)	0 (,00)	49 (81,67)
Containers (plates, dishes) where food is	47(78,33)	1 (1,67)	2 (3,33)	1 (1,67)	9 (15,00)

served are dirty or soiled					
The hospital smells do not let me enjoy my meals.	32 (53,33)	7 (11,67)	7 (11,67)	5 (8,33)	9 (15,00)
I am annoyed by the noise caused when food trays are taken away.	33 (55,00)	7 (11,67)	5 (8,33)	4 (6,67)	11 (18,33)
Hunger and quantity					
I'm still hungry after finishing the meal	42 (70,00)	(6,67)	11 (18,33)	2 (3,33)	1 (1,67)
I am hungry between meals	33 (55,00)	(6,67)	16 (26,67)	3 (5,00)	4 (6,67)
I receive a sufficient amount of food	3 (5,00)	1 (1,67)	5 (8,33)	10 (16,67)	41 (68,33)
I can choose the amount of food to be served.	34 (56,67)	7 (11,67)	14 (23,33)	3 (5,00)	2 (3,33)
Staff and serviceaspects					
The staff delivering my meals is friendly and polite.	0 (0,00)	0 (0,00)	5 (8,33)	9 (15,00)	46 (76,67)
The staff who deliver my meals are clean and tidy.	0 (0,00)	0 (0,00)	4 (6,67)	5 (8,33)	51 (85,00)
The staff delivering my meals is helpful	1 (1,67)	0 (0,00)	9 (15,00)	8 (13,33)	42 (70,00)

Source: Own elaboration based on survey results.

Figures 1, 2, 3 and 4, respectively, show the level of satisfaction of the surveyed patients according to age, sex, school level and occupational status.

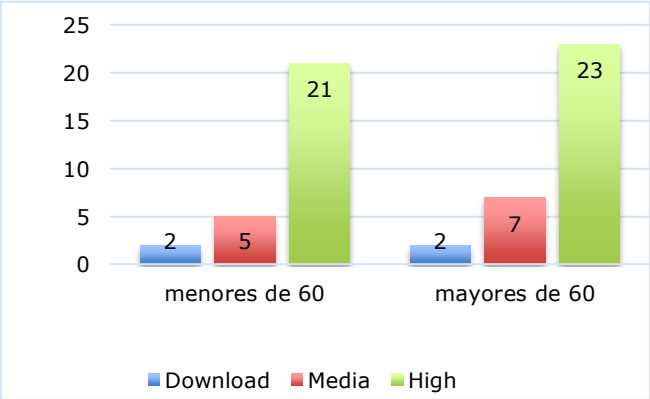


Figure 1. Age and level of satisfaction of the sample.

Source: Own elaboration based on survey results.

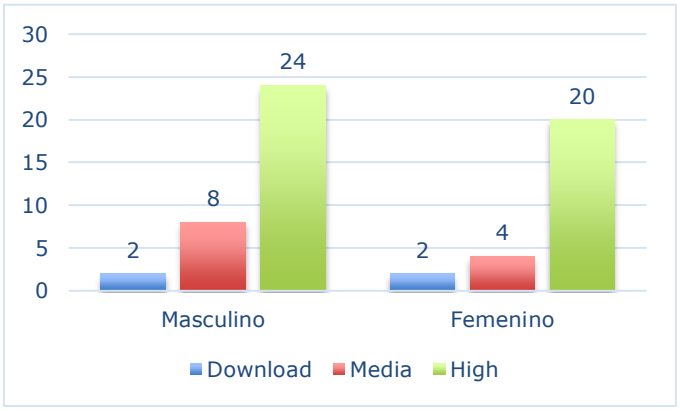


Figure 2. Level of satisfaction of the sample according to biological sex.

Source: Own elaboration based on survey results.

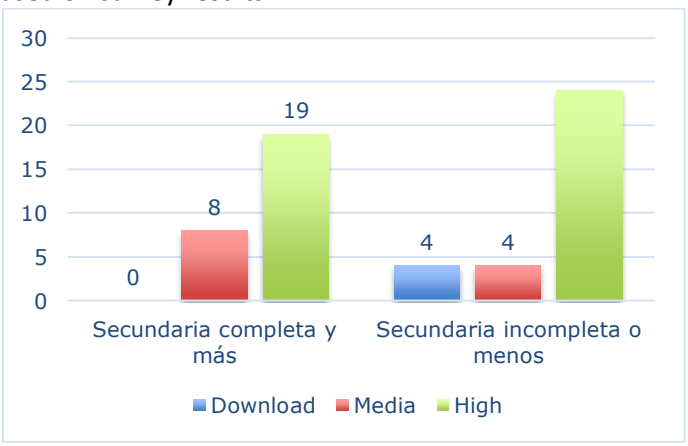
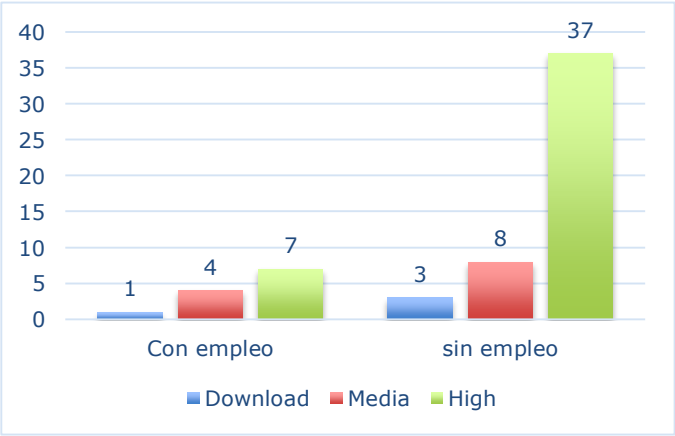


Figure 3. Degree of satisfaction according to the school level.

Source: Own elaboration based on survey results.

Figure 4. Level of satisfaction for occupational status.



Source: Own elaboration based on survey results.

Table 4. Other Factors Associated with Satisfaction

Variables	Satisfaction Download n (%)	Satisfaction Media n (%)	Satisfaction High n (%)	P value
Hypertension				
No	3 (8,11)	7 (18,92)	27 (72,97)	0,836
Yes	1 (4,35)	5 (21,74)	17 (73,91)	
Diabetes Mellitus				
No	0 (0,00)	2 (50,00)	2 (50,00)	0,282
Yes	4 (7,14)	10 (17,86)	42 (75,00)	
BMI (n=58)				
Thinness	0 (0,00)	0 (0,00)	6 (100,00)	0,650
Normal	3 (10,34)	6 (20,69)	20 (68,97)	
Overweight	1 (7,14)	3 (21,43)	10 (71,43)	
Obesity	0 (0,00)	3 (33,33)	6 (66,67)	
Comorbidities				
Onlyone	2 (6,45)	7 (22,58)	22 (70,97)	0,875
Fromtwoto more	2 (6,90)	5 (17,24)	22 (75,86)	
Typeofdiet				
Hypoglucent	3 (6,52)	11 (23,91)	32 (69,57)	0,622
Soft - Hypoglucent	1 (10,00)	1 (10,00)	8 (80,00)	
Hyposodic - Hypoglycemic	0 (0,00)	0 (0,00)	4 (100,00)	
Presentationoftheservice				
Mala	1 (33,33)	1 (33,33)	1 (33,33)	<0,001
Regular	1 (7,69)	10 (76,92)	2 (15,38)	
Good	0 (0,00)	1 (5,00)	19 (95,00)	
Verygood	2 (8,33)	0 (0,00)	22 (91,67)	

Source: Own elaboration based on survey results.

Note: *The n=58 represents the total number of patients whose body mass index could be measured.

- Overall satisfaction with the food service was rated as high at 73.3% (n=44). Regarding the quality of the food, the patients mentioned that the food preparation was adequate, following the food's taste, texture and presentation.
- 88.3% (n=53) of the patients rated the food as healthy. In the quality of service, the temperature was evaluated as acceptable for both hot and cold food served. In the physical environment, adequate ratings were obtained for the time of service, place, utensils and acoustics.

  Among the associated factors, only the service presentation showed significant differences according to the type of service, which would influence the level of satisfaction with a p-value < 0.001 (Table 4).

DISCUSSION

The study revealed that the satisfaction of diabetic patients was notorious in each of the dimensions evaluated, so the best ratings were obtained in most cases. A study of satisfaction in hospital food services through the ACHFPSQ found that only the quality of the diet was the dimension with the highest number of negative responses due to the questions on odor, taste and texture; however, in the present study, the satisfaction of diabetic patients with the quality of the diet was the dimension with the highest number of negative responses due to the questions on odor, taste and texture (Messina et al., 2013). However, in the present study, the number of positive responses was higher in more than half of the cases, regardless of the level of education, sex or employment status. After an evaluation of

hospitalized diabetic patients, showed that dissatisfaction with their dietary treatment was associated with episodes of severe hypoglycemia and longer hospital stays (Rutter et al., 2013).

The population of older adult diabetic patients made up the largest proportion of the sample; even so, it was not far removed from the adult population, even though national statistics indicated that as of 2018, the highest concentration was between the ages of 45 and 64 years (50.9%)(Revilla, 2018). Although DM is more prevalent in the female gender at the national level, it was more in men in the study. Other studies reinforce the possible influence of social factors such as socioeconomic level, education and quality of life, which would be related to a higher incidence of DM at a lower level(Mendoza Romo et al., 2018). Likewise, 80% of diabetic patients reported not having a job and half of them only had incomplete secondary education or less, which exposes them to a shorter life expectancy and an increase in NCD-related mortality (Heitzinger et al., 2014).

Regarding the degree of satisfaction of diabetic patients towards the food service, it was observed within the dimensions of satisfaction that only the presentation of the nutrition service in the hospital could be an associated factor, even though other studies point out that the educational level and the working condition can also influence the patient when assessing the programmed diet in aspects such as, for example, free choice of food and feasibility in schedules (Ponzo et al., 2017). Furthermore, it should be taken into account that in national hospitals, only one standard dietary plan is planned per pathology, with very few or no variations per patient, so mechanisms for diversification of dietary regimens that are more familiar to the patient could be evaluated.

Studies in various countries in Europe and Asia evidenced that populations with a lower economic income had higher risk factors for death from NCDs, such as diabetes, with hypertension being the main risk factor (Lu et al., 2014). A study in Peruvian populations showed that obesity was the main risk factor for hypertension and diabetes (Heitzinger et al., 2014). This would explain, in our patients studied, the eventual diagnosis of DM due to exposure to the risk factors mentioned in their history: one-third of the patients are overweight and have a history of hypertension. The number of patients with comorbidities is important to target therapeutic interventions better since greater comorbidities would be associated with a higher risk of in-hospital mortality (Zelada et al., 2016).

One of the study's limitations was the sample, composed of patients of different ages, a variable that may affect the appreciation and assessment when issuing responses. In addition, the patient state of mind during data collection was another factor; since being hospitalized, it was necessary to look for favorable periods to collect their answers and thus avoid biases. Other research has shown that prejudices, customs and emotional states can influence the results (Dall'Oglio et al., 2015; Messina et al., 2013). The length of hospital stay for each patient could also affect the survey results due to the emotional stress he/she is subjected to (Rutter et al., 2013).

Even so, it is suggested to implement food service systems that are compatible with individual preferences and nutritional needs per patient to ensure the food service overall satisfaction and a better health care system. The achievement of this objective would be mediated by an identification of the social and clinical characteristics of the pathology for each patient; because, as well as general quality standards must be met within a service, it should be taken into account that nutritional treatment is individualized (Messina et al., 2013; Ponzo et al., 2017).

CONCLUSIONS

The survey application revealed that the factors directly influencing the patient evaluation were: the quality of the food, quality of the food service, quantity of food, the physical environment and aspects of the staff and service. Therefore, it can be said that the objective was achieved.

In addition to these factors, it was found that the type of diet can define the patient perception; in the study, the most commonly used was the hypoglycemic diet. Factors such as school level, age and sex can influence patient perception when

establishing an assessment of the hospital food service.

According to the patient condition, the type of diet they should use to improve their health is defined largely by their quality of life. Therefore, to prepare the food for these patients, it is of great importance in hospital centers to consider the quality of the preparation and presentation of the food and the service provided. This will allow them to consume the food with a better disposition and make it easier for them to adapt to their new life condition.

This article presented an adequate satisfaction index of the diabetic patients in the sample for the quality of the food service at the Hospital Nacional HipólitoUnanue. Only the presentation of the service (food on a tray) in the hospital would be significantly associated with overall satisfaction with the food service.

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