

FOOD PREFERENCES AND THEIR “DECISION CONTEXTS” AS PREDICTORS OF DIETARY PATTERN.

PREFERENCIAS ALIMENTARIAS Y SU CONTEXTO DE DECISIÓN COMO PREDICTORES DEL PATRÓN ALIMENTARIO.

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RESUMEN

El método utilizado habitualmente para estimar la ingesta de alimentos en los estudios epidemiológicos es el de frecuencia alimentaria. Este tipo de investigaciones, focalizadas en la ingesta de alimentos y nutrientes, no explican porqué, dónde o cómo la gente elige algunos alimentos sobre otros. Un enfoque basado en las preferencias alimentarias y su contexto de decisión podría contribuir a esclarecer estas cuestiones. Por ello, decidimos diseñar y validar un cuestionario de preferencias alimentarias (CPA) para estudios nutricionales epidemiológicos en adultos. EL CPA se aplicó a 60 adultos de ambos sexos con residencia en la ciudad de Córdoba y el área del Gran Córdoba. La validez del CPA se estimó mediante el coeficiente de correlación de Spearman que se calculó con el software SPSS 17.0. Asimismo, se valoró el coeficiente de determinación. La correlación entre la cantidad de sujetos que prefirieron determinadas comidas y la frecuencia de consumo de cada una de ellas alcanzó un valor de $r_s=0,5$ ($p < 0,1$), en tanto el coeficiente de correlación fue de $r^2= 0,25$. Podemos concluir que los patrones alimentarios de adultos cordobeses pueden estimarse a través de las preferencias alimentarias. Por su parte, los aspectos biológicos, psicológicos y socio-culturales del contexto de decisión alimentaria y sus complejas interrelaciones contribuirían a explicar porqué las personas consumen ciertos alimentos y comidas y rechazan otros.

Palabras clave: preferencias alimentarias – contexto de la decisión alimentaria – nutrición – epidemiología.

ABSTRACT

The Food Frequency Questionnaire (FFQ) is the usual method for estimating dietary intake in epidemiological studies. However, investigations focused only on nutrient and food intake does not show the reason why, where or how people choose certain foods and reject others. Food preference and its choosing decision helps to explain more accurately why people eat certain foods and how this freedom of choice is implemented. Thus, we decided to design and validate a Food Preference Questionnaire (FPQ) to be applied in adults under nutritional epidemiological studies. This FPQ was applied to 60 adults of both sexes, who lived in Córdoba, Argentina, and in the nearby cities of the Greater Córdoba region. The validity of the FPQ was estimated through the Spearman correlation coefficient and calculated by using SPSS 17.0, and the determination coefficient was also estimated. The correlation between the number of subjects who indicated a preference for a particular food or meal, and its frequency of consumption gave a result of $r_s=0.5$ ($p < 0.1$), whereas the determination coefficient had a value of $r^2= 0.25$. Thus, the dietary patterns of adult population from Córdoba were estimated by assessing food preferences. The biological, psychological and socio-cultural aspects of the food decision context, in addition to their complex relations, may contribute to understand better the choice of food intake hence precluding the role of dietary practices in health and disease.

Keywords: food preferences – food decision context – nutrition – epidemiology

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INTRODUCTION

A growing number of epidemiological studies on diet and its association with nutritional status or the risk for developing certain pathologies, such as the non-communicable diseases – such as cancer, diabetes and cardiovascular diseases – have been carried out and published in the last decades (1). These studies have mainly focused on food consumption and nutrient intake and their relationship with metabolic aspects (2), being food frequency questionnaire – FFQ – the usual method for estimating dietary intake in epidemiological studies because it provides a valid and reliable estimate of the usual food intake in a variety of populations (3, 4).

Although studies on nutrient and food intake have contributed to the understanding of the development of several highly prevalent diseases, it does not show why, where or how people choose certain foods and reject others (5). It has been suggested that previous experiences and knowledge about nutrition, health status, availability and access to food, culture, position in the social scale, gender, and the influence of the mass media all of them have an impact on most of the daily food choices (2, 6-8). In addition, the specificity of the relationship between society and nature at every historical period also affects food choices (9). All these issues belong to what we have called the “food decision context”.

It is worthy to bear in mind that people eat meals, and not just isolated foods. These meals or preparations are usually the result of a combination of foods, according to precise rules. Moreover, even certain single-food cooking preparations follow rules (10). The way food is turned into meals using specific procedures and technologies, also involves people’s conceptions about diet, health, gender and their belonging to society ranks (10, 11).

Summing up, the complex human dietary behaviour cannot be understood by simply using food frequency methods alone. It is also necessary to elucidate why some foods are chosen and others are rejected, and why foods are combined in certain manners (12). Consequently, food preference and its decision context approach may explain more accurately these issues. Thus, the FPQ is a quick and easy approach to assess usual diet

(13). In the present study, we decided to design and validate a FPQ to be applied in adult subjects for nutritional epidemiological studies.

MATERIALS AND METHODS

Food preference questionnaire design

Unidimensionality, simplicity, speed, responsiveness and understandability were the criteria considered in designing this FPQ (14, 15). An informed consent form was also elaborated (16). A pilot study was performed with three adults of both sexes before applying the FPQ with the sample.

Subjects and data collection

The fieldwork was carried out between February and April of 2010 in Córdoba, a Mediterranean city of 1.300.000 inhabitants located in Argentina. The FPQ was applied to 60 adult subjects of both sexes, living in Córdoba and nearby cities of the Greater Córdoba region, taking as a reference a previous study of FFQ validation carried out by our group (4). People with digestive tract diseases or with long-term modifications of their diet were excluded. The subjects were contacted in a private clinic and a public hospital of Córdoba city and interviewed after signing the informed consent. It is important to note that the sample was obtained from a hospital population, since this FPQ will be used in future studies devoted to search the relationship between food preferences and non-communicable diseases, and patients will be contacted at the same location where the FPQ was applied.

Subjects were requested to point out their food preferences, ingredients and method of preparation, culinary learning resources, sources of recipes, purchasing strategies of each food preparation and cultural roots of the decision to consume that food. They were also requested to specify the frequency of consumption of each preparation, information that was used as an indicator of dietary patterns, and permitted further validation of the FPQ (17). Other epidemiological information collected at the interview included sex, weight and height, age, educational attainment, employment status, health insurance, housing conditions, income, and perception of food in relation to the health-disease process. All these data are relevant in order to understand the context of the food

decision.

The study was conducted following all the international ethical norms for research in human populations (16) and was approved by the Ethics Review Board of Health Research of the Ministry of Health of the Province of Córdoba.

Statistical analysis

The validity of the FPQ was estimated through the correlation between the number of subjects who indicated a preference for a particular preparation and the frequency of its consumption. As previously explained the frequency of consumption is the reference method for estimating dietary intake (14, 17).

The Spearman correlation coefficient (rs) was calculated by using SPSS 17.0. The coefficient of determination (r2) was also computed in order to estimate the percentage of data variability explained by the association between the two variables (18, 19).

RESULTS

Relevant characteristics of interviewed subjects
 A descriptive analysis showed that 62% (n = 37) of the individuals were men and 38% (n = 23), women, being the average age 55.6±16 years old. Three social strata were defined by considering the employment status and educational attainment (20). Data showed that 50% (n =32) of the people belonged to the lowest stratum, 25% (n=16) to the middle stratum, and the other 25 % (n=16) to the highest stratum, respectively. Food preferences and frequency of consumption
 Over 194 favourite meals or foods were mentioned during the interviews. In order to allow statistical processing, these food preferences – FP – were regrouped into ten categories according to their main ingredients and methods of preparation. These groups are listed below:

- FP 1: Roasted, baked, grilled or fried red meats or sausages served with or without vegetables and/or cereals.
- FP 2: Roasted, baked, grilled or fried poultry served with or without vegetables and/or cereals.
- FP 3: Mixed preparations cooked by moist heat, such as: stew, rice with chicken, paella, soup, pickles, and sauces.
- FP 4: Preparations of cereals, cereal products or potatoes, with vegetables and/or meat, such as: pasta, pizza, polenta, pies, steak sandwiches,

potato cake, and potato chips.

- FP 5: Milk, yogurt, ice cream and flan.
- FP 6: Vegetables, salads, chop suey.
- FP 7: Fruits.
- FP 8: Bakery: criollos (variety of typical bread with a high content of salt and animal or/and vegetable fat), white bread and crackers served with or without jam, cheese and/or butter.
- FP 9: Cheese.
- FP 10: Seafood; roasted or grilled fish served with or without vegetables or cereals; sushi.

The average monthly frequency of consumption (MFC) was calculated for each group.

As shown in Figure 1, most people preferred the red meat group (n=77) and the group with preparations of cereals, cereal products or potatoes (n=56). In addition, the most frequently consumed foods were those of the fruit group (MFC=440), the red meat group (MFC=372), and mixed preparations cooked by moist heat (MFC=285). The greatest overlaps between FP and the frequency of consumption were observed in the food chosen by poultry group (FP2 n=5 and MFC=45) and the bakery group (FP8 n=3 and MFC=30).

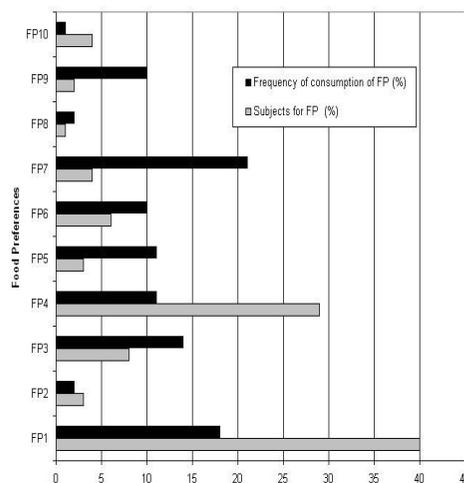


Fig. 1: Food preferences and their frequency of consumption. Córdoba, 2010.

FPQ validity to estimate dietary pattern

The correlation between the number of subjects who indicated a preference for a particular preparation, and its frequency of consumption gave a result of rs=0.5 (p <0.1). This value indicates a moderate correlation between the two variables.

Figure 2 shows the linear trend of correlation. Thus, the dietary patterns of adult population from Córdoba could be estimated by assessing food preferences.

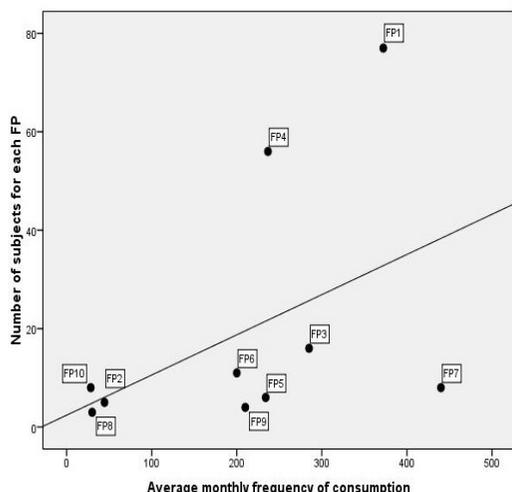


Fig. 2: Correlation between food preferences and frequency of consumption. Córdoba, 2010.

The determination coefficient had a value of $r^2=0.25$. This indicates that 25% of the dietary pattern of these subjects was explained by their preferences, whereas the biological, psychological and socio-cultural components of the food decision context, in addition to their complex relations, may also contribute in a certain degree to understand better the choice of food intake.

DISCUSSION

The aim of this study was to develop a quick and easy questionnaire to assess the usual diet of adults through their food preferences. We found that the dietary patterns and usual food intake could be estimated by assessing the food preferences of the studied population, given that the Spearman correlation was $r_s = 0.5$ for a confidence level of 90%.

Food preferences (FP) have been used for decades by marketing departments in the food industry to satisfy the consumption and tastes of people, whereas the qualitative-quantitative frequency of food consumption (FF) has been the preferred approach to assess the usual intake in epidemiological studies on non-communicable diseases (3, 4, 21-24). Although both strategies are closely related, it is generally considered that the FP

method only provides a rough approximation to the actual food consumption. Nevertheless, recent research has found significant correlations between both methods. Drewnowski and Hann (25) investigated the association between FP and food consumption in college women and found a correlation of 0.4 between the two variables. Another similar study conducted with college students of both sexes in Mexico, gave a correlation of 0.48 (13). Also, a current and more complex investigation revealed that dietary patterns related to cardiovascular risk in adult males could be efficiently estimated through FP (26).

Using the coefficient of determination, we have shown that the influence of the so-called “food decision context” is very important in the construction of FP and dietary patterns. In fact, it has been previously demonstrated that adult FP are strongly influenced by age, sex, health status, educational level and income (27-29). Similarly, the local or regional food culture, position in the social scale and the mass media are significantly involved in everyday food choices (2, 6-8). Economic access to food also determines and interacts with the other aspects of the food decision context. Regarding this latter factor, in the present study we observed that although most subjects preferred meals from the group of red meat, fruits were the most frequently consumed, as expected (30,31). Due to red meats are expensive, they cannot be consumed as frequently as desired (10). On the other hand, the general belief that fruits are “healthier” than red meats is gaining acceptance. Therefore, we can speculate that fruits are consumed more often because they are considered “good for health”, despite them not being chosen as favorite foods (32). Similarly, meals prepared with vegetables and dairy products were frequently consumed but only had a moderate preference.

Besides, the preference and the frequency of consumption of preparations based on cereals and cereal products or potatoes with meat and/or vegetables, such as pasta, pizza, pies, and steak sandwiches, among others - and mixed preparations cooked by moist heat, such as stew, rice with chicken, and soup, among others - followed the same trend of preferences. Both these types of meals are very popular (30), forming part of Argentinean food culture and also are cheaper,

which could explain why they are among the favorite foods with a high frequency of consumption (10).

Food preferences have the capability of introducing the affective or attitudinal component of the usual diet, compared with the method of frequency which is based on the recalling of past intake of the surveyed subjects (25). These two methodologies not only correlate significantly, but also complement each other since they effectively evaluate different aspects of the same phenomenon: the diet of human groups related to a particular place and time.

In conclusion, the FPQ is a valid instrument for a quick and easy estimate of consumption and dietary patterns in adults. It also has the advantage of not relying on the recalling of the past regular diet, as in the case of the FFQ. Moreover, the inclusion of the food decision context is a valuable approach to examine the socio-cultural and individual processes that influence the food preferences of individuals, thus on the health preservation and avoidance of the risk of related diseases.

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