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Research Article

Food Security and Nutritional Status of Beneficiary Families from the Selection System for Colombian Social Programs in the Municipality of Sitionuevo, Magdalena

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Abstract: This study aimed to measure the level of food security and its relationship with the nutritional status of 82 families which belong to the Selection System for Colombian Social Programs (SISBEN 1) from Sitionuevo (Magdalena, Colombia). A descriptive cross-sectional study with simple random sampling was used to study socio-demographic, economic, nutritional status and food security variables. A questionnaire for the sociodemographic variables and the Latin American and Caribbean Scale of Food Safety (ELCSA) validated with a pilot test was used as an instrument for data collection. The results showed food insecurity level (97.6%) and overweight (obesity) in household members, which may be due to the acquisition of more low-cost foods with high energy density by the participants. These results constitute part of the baseline for the diagnosis of food security, which is necessary to carry out in Sitionuevo. This will allow identifying the real issues related to the five aspects of food security, in order to improve the quality of life of the community, combined with the empowerment of the territorial entity and decision-making strategies for the implementation of improvement plans.

Keywords: Families, food insecurity, food security, nutrition status, SISBEN 1

INTRODUCTION

The Food and Agriculture Organization of the United Nations (FAO), in its latest report on food insecurity in the world, published in 2015, shows that while the number of undernourished people has declined, there are still 795 million People who suffer from this situation, who live mostly in developing countries and this figure represents 10.9% of the world's population (FAO *et al*., 2015). The National Nutrition Situation Survey in Colombia (ICBF, 2010) identified that the prevalence of food insecurity in Colombian households increased by 1.9% in relation to the figure reported by ENSIN (2005), from 40.8 to 42.7% (ICBF, 2010).

The food insecurity in the Department of Magdalena, exceeds the national average 42.7% according to the National Food and Nutrition Security Survey (ICBF, 2010) with 61.4% of insecure households, located in level 1 and 2 of the Selection System for Colombian Social Programs (SISBEN) (ICBF, 2010), confirming that the nutritional situation of the population is determined by poverty and social inequality, which is affected by the presence of factors related to the deterioration of the environment, disease, illiteracy, discrimination and displacement that have led to changes in adequate eating habits, increasing the problems of malnutrition (FAO, 2012).

The study of food insecurity in Colombian homes by region and geographic location shows that 42.7% of Colombian households were food insecure, of them 27.9% in mild insecurity, 11.9% in moderate insecurity and 3.0% in severe insecurity (ICBF, 2010). By region, households on the Atlantic Coast had a prevalence of food insecurity of 58.5%, which is greater than the national 47.2% (ICBF, 2010). From the 30 municipalities, 66% (20 municipalities) are classified in the most vulnerable categories according to the Mapping and Analysis of Vulnerability to Food and Nutritional Insecurity (VAM), carried out in May 2014 by the World Program (PMA), among them the Municipality of sitionuevo (WFP (World Food Program), 2015). This department presents in most of the indicators in health and nutrition a delay that determines the food insecurity of the population. Access to food is linked to natural and man-made

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threats. The changes in the Consumer Price Index (CPI) compared food costs from 2009 to 2010 and they indicated that the prices went from 3.6 to 4.4%, affecting the food supply of people from the lower strata. In the municipality of Sitionuevo, the presence of irregular periods related to winter (mainly rain) and drought affects access to food and influences the nutritional status of the population (PNUD, 2012). Similarly, according to the National Nutrition Situation Survey, the Department of Magdalena presents a high prevalence of chronic malnutrition in children aged 0 to 4 years, in children (18.0%) and adolescents (13.8%) from 5 to 17 years (ICBF, 2010).

On the other hand, the Government of Magdalena presented the departmental Plan for achieving the food and nutritional security of the Magdalena (2009-2017), aimed at a community social development, which is operative insofar as the principle of inter-institutionally is applied and efforts are made to achieve the single objective of hunger eradication (Governance of Magdalena, 2015). Therefore, the central objective of this study was to determine the food security and nutritional status of the SISBEN 1 families in the Municipality of Sitionuevo (Magdalena) during the year 2016.

MATERIALS AND METHODS

Type of study: The study was carried out starting from the quantitative paradigm at the level of a descriptive cross-sectional study, which evaluated the sociodemographic characteristics of the population studied, food insecurity through the ELCSA scale and the evaluation of the nutritional status of the family members.

Studied population: The study population consisted of the families belonging to SISBEN 1, living in the urban area of the Municipality of Sitionuevo, Magdalena. People from stages 1 and 2, met the Inclusion Criteria: Municipality of Sitionuevo with more than 5 years of age, located in the neighborhood Simón Bolívar, with children and adolescents from 2 to 18 years of age, who manifested their willing to participate in the study through informed consent. Exclusion Criteria were: Difficulty of oral and/or written communication, refusal to sign informed consent and mental disorders.

Sample size: The statistical program Epidat® version 3.1 was used to calculate the sample, taking as reference the number of eligible families 105, located in the Simón Bolívar District of the Municipality of Sitionuevo (Magdalena) and registered with the Secretary of Planning Municipality in 2015, with a confidence interval of 95%, an error rate of 3% and a prevalence of food insecurity 61.4%, in the Department of Magdalena taken from the results published by the National Survey of Nutrition Status in Colombia (ICBF, 2010). Thus, a sample of 82 families was obtained by the simple probabilistic random technique, the sampling unit was constituted by the households and in them, the units of analysis corresponded to the people that constitute the families. The selection of the households was randomly made previously to the census.

Instruments: The Latin American and Caribbean Food Security Scale (ELCSA) was used as the instrument for data collection. The ELCSA was designed by FAO and the National Institute of Public Health of Mexico and linguistically adapted for Colombia in 2008 by the School of Nutrition of the University of Antioquia, National Department and the Colombian Family Welfare Institute. This instrument was validated in Risaralda in 150 homes of adolescent pregnant women from poor and vulnerable populations, showing excellent reliability in both adult-only households (Cronbach = 0.927) and in homes with adults, (Cronbach = 0.953), which consists of 15 questions (P), divided into two sections: a first one with 8 questions (P1 to P8) referring to various situations that lead to food insecurity experienced by Households and adults in those households; and a second section (P9 to P15) with questions regarding conditions affecting children under the age of 18 in the household. Each question is directed to inquire about a different situation, so they are exclusive questions and each one of them tries to capture different issues related to the theoretical construct that supports the ELCSA. To classify the food security or food insecurity grade of each household, each positive response was assigned one score and each negative answer 0. The sum of the positive points (scores) constituted the total score of the household. For classification, the following Table 1 was used.

A questionnaire was prepared for the sociodemographic data collection, taking into account study variables such as gender, age, marital status, educational level, main economic activity, family size, number of members, head of household, average monthly expenditure on food, amount of people who contribute, money, place of purchase of food, frequency, housing characteristics and nutritional status. The questionnaire was validated through a pilot test in 10% according to the size of the sample with the families located in the district of October 12th in the Municipality of Sitionuevo Magdalena, which retain the same characteristics of the sample selected (82 Families of Simón Bolívar neighborhood, Sitionuevo Magdalena Municipality). The ELCSA scale was applied to 9 families in this neighborhood, taking into account the results of the pilot test, relevant adjustments were done

Table 1: Type of food security score scale in homes with adults and children under 18

Types of food security	Score scale
Food security	0
Light food insecurity	From 1 to 6
Moderate food insecurity	From 7 to 11
Severe food insecurity	From 12 to 15

ENSIN (2010)

to the instruments and the definition of the application time of instruments was set according to the pilot test.

Data collection: The research was done with the assistance of the Mayor's Office and the Secretaries of Planning, SISBEN, the local Health Public Service and Local Government. The local eligible families of the Simón Bolívar (stage 1 and 2) were active participants of the study.

The selection of the study population in the field was done through the simple random probabilistic technique, by means of a census of the families that were considered as eligible and that fulfilled the inclusion criteria at the study.

Ethical aspects: The present study is characterized as a minimum risk research (Colombia, 1993). Each person who participated in the study had full knowledge of the implications, as well as the possibility of not participating in the fulfillment of the instrument or even withdrawing after the start of the interview. Those who agreed to participate in the study signed an informed consent.

Standardization of the team that participated in the data collection: The standardization of auxiliary research team made up of students of Nutrition and Dietetics, Social Work and Economics residents of the Municipality, who showed their interest in being part of this research was done. This was done through a theoretical workshop that dealt with aspects such as: socialization of the whole project, analysis of the sociodemographic questionnaire with examples of possible situations to be solved at the time of data collection, analysis of the 15 questions of the ELCSA, according to the workshop of the Manual of uses and applications of the same.

The observation and interviewing technique were used as a data collection technique, using the sociodemographic and ELCSA scale as the primary instruments, applied to all families that were eligible to meet the different inclusion criteria selected according to simple random sampling.

The nutritional status evaluation was done according to anthropometric indicators (weight and height), the weight was taken with a portable digital balance (SECA® model EF541) with a capacity of 150 kg and an accuracy of 100 g and a mechanical stadiometer for children (SECA®) and adults for height with a capacity of measuring up to 2 m, with a sensitivity of 1 mm. The anthropometric evaluation was carried out by properly trained and standardized professionals, in order to ensure the decrease of information biases and a greater reliability of the data.

The data obtained from the anthropometric evaluation of nutritional status was analyzed using software ANTHROPLUS® v. 3.2.2. From the anthropometric data, a diagnosis of the nutritional status was obtained using the Z score according to the indicators for height, weight for height and BMI for age in children from 2 to 5 years and height for the Age and BMI for children aged 6 to 18 years. The 2007 NCHS/WHO international reference growth benchmark data and adopted by the Ministry of Social Protection of Colombia, in June 2010, was used as a reference by resolution 2121.

Tabulation and data processing plan: The obtained data was classified, the questionnaires were enumerated and the verification of the quality of the requested information was performed during the fieldwork before the information was tabulated. Then, the obtained data was classified into categories of the studied variables and these were coded and tabulated in an EXCEL® database.

The tabulated data was imported into EPIINFO® v.7 (statistical software). The database was randomly reviewed in order to avoid missing errors, which could affect the results of the study.

RESULTS AND DISCUSSION

Socio-demographic characteristics of household members: From the studied population (represented by 82 families), 386 members of the household were characterized. Results showed that 53.6% were male and the rest female; 58% had a predominant age between 2 to 21 years, with an average of 22 years. Moreover, 256 members of the household were asked about their marital status resulting in a free union (38.3%) and only 22.3% were married. Regarding the level of schooling consulted in 249 members of the household, 62.6% did not complete their studies and 25.6% completed them, 36.1% did incomplete primary education and only 0.8% reached a professional level. In addition, 45.1% of the members are dedicated to studying as a main activity, while 28.8% devote their time to household tasks, while 21.5% to work mostly in informal activities.

Socioeconomic characteristics of families: The monthly income of 85.4% families is less than the Colombian legal minimum wage (SMMLV). The income is obtained by the head of household (80.5%), the monthly expenditure of money used to buy food ranges from $ 200,001 and 85.4% buy their food in the local shops. Moreover, 91.5% of the households receive

food aid from some of the government program, such as the Families in Action program (Economic Assistance Program).

Characteristics of the house: Most of the families live in their own home (76.8%) while the rest live in leases. The 82.9% of the predominant material of the houses walls is brick, 14.6% the rough wood, 1.2% bareque (mud based material) and waste. The roof material is mainly asbestos/cement (95.1%), the floor is predominant cement (58.8%), followed by the ground floor (20.7%) and Plank/Brick (1.2%). As far as the distribution of the areas in the house is concerned, 75.6% of households have a living room and akitchen, 85.4% have between 1 and 2 rooms, with bathroom (85.4%) and 14.6% between 3 and 4, with has a small yard (100%).

Moreover, the overcrowding index was considered in the analysis of results. The overcrowding index is the ratio of the number of people living together over the number of bedrooms available, with values accepted up to 2.4 without overcrowding, 2.5 to 4.9 average overcrowding and over 5.0 in critical overcrowding. This research showed that there are 4 or more people per room (60.1%) and 1 to 3 people/room (39%). Therefore, 42.7% of households presented an average overcrowding, 22% had a critical overcrowding and 35.4% had no overcrowding. On the other hand, the potable water is provided by the municipal aqueduct. Only a basic treatment is done. There is no sewage service.

Nutritional status of household members: Results showed that 37.7% of the girls had an adequate weight for their age, while 9.8% were at risk of low weight for height. The boys (3.2%) were in low weight for height.

The group of children (from 6 to 18 years) showed a risk to the thinness (9.8%), while 6% of the girls were in overweight. The results of the nutritional analysis in adults aged 19 to over 64 according to BMI indicated that 27.8% were normal, 20% were overweight. Regarding obesity, 9.7% of the women were in this stage, while men were normal (20.6%) and only 10.9% were overweight.

Level of food and nutritional security of households: Only 2.4% of the families were found in food security, reflecting a high prevalence of food insecurity due to limited distribution, with an almost equal distribution between severe food insecurity (35.3%) and mild food insecurity (34.2%), followed by moderate food insecurity (28.1%).

Level of food and nutritional security according to sociodemographic characteristics: Women presented a moderately food insecurity (37%), while men were mildly insecure (34%). In the age group of 2 to 21 years old there was a predominance of mild food insecurity (37%), followed by severe food insecurity (33.5%). Moreover, 34.5% of the household members living in a free union are in mild food insecurity, 33.7% are in severe food insecurity and 26.5% in moderate food insecurity; 40.4% of singles were found to be severely food insecure.

On the other hand, 38% of household members who completed their primary studies were found in severe food insecurity, followed by 34.4% in mild food insecurity, 55% of household members who did not have any type of study were found in severe food insecurity. Thirty six point one percent of the household members whose main activity was to study were found in mild food insecurity and 31% in severe food insecurity; 40.4% of household members were found in severe food insecurity.

The results obtained in this research can be compared with those obtained in the study on food security and nutritional status of families in a situation of forced displacement, in Malambo (Atlantico, Colombia) done in 2011, where their main findings were the prevalence of food insecurity in all households, as well as severe insecurity prevailing (75%), especially in the population with low level of schooling, living with a high overcrowding index and from them, those with critical overcrowding characteristic presented moderate food insecurity (25%) and severe food insecurity (28.6%), while households with non-critical overcrowding index had severe food insecurity in 49.2% (Soto, 2013).

Level of food and nutritional security according to socioeconomic characteristics: Most of the households (85%) have a monthly income less than a legal minimum wage. From these, 40% had severe food insecurity, 27.1% moderate food insecurity and 30% in mild food insecurity.

As for the amount of money used to buy food, it was found that families that spend between $ 100,0001 COP and $ 200,000 COP are in severe food insecurity (50%), in mild food insecurity (25%) and moderate food insecurity (18.8%). Moreover, Most of the studied families (91.5%) receive support from some government program. From these families, 37.3% are in severe food insecurity, 34.7% in mild and in moderate food insecurity (3%).

Level of food security according to the nutritional status of household members: The relation of the level of food security according to the nutritional status of children, adolescents and adults considering the weight for height and BMI indexes indicated that 43% children, adolescents and adults assessed were overweight, presenting mild food insecurity, 32% moderate and 25% severe; from the boys and girls was observed that they had adequate weight for height; however, they were found to have food insecurity, as follows: slight food insecurity: 39%, moderate food insecurity: 32% and severe food insecurity: 18%.

From the adolescents with adequate weight for age, 36.1% were identified in mild food insecurity, while 31.3% in moderate and severe food insecurity and the

same percentage (31.3%) in severe food insecurity. Finally, 61.5% of thin adults were found to have severe food insecurity and 36% of adults who were classified as normal were found to have severe food insecurity.

Overall, obtained finding of this research are related to the results on the food and nutrition security in the Magdalena Medio (Cesar, Colombia), which shows that the sociodemographic characteristics of the households of the studied municipalities determine the need to improve the families quality of life, related, in greater proportion with the possibility of acquiring food and, consequently, with their food security. Therefore, it is relevant to address determinant factors such as low educational level, insufficient economic income for primary expenses and the number of family members (large families) that hinder its sustainability. In this regard, the food and nutrition security of a population is multifactorial; thus, it is important to consider sociodemographic characteristics of the population for the development of public policy, in order to cover the problem in a multidimensional way (Del Castillo *et al*., 2012).

CONCLUSION

The food insecurity is a problem of considerable severity that affects the Municipality of Sitionuevo, Department of Magdalena. Moreover, this research showed some degree of food insecurity, distributed as follows: food insecurity 35.3%, mild food insecurity 34.2% and moderate food insecurity at 28.1% in the studied individuals. This problem could be related to the lack of stable income or the inability to generate enough income, low academic studies or incomplete studies of the household head. Also, climatic changes and strong winter (mainly as rain) might be listed as factors that affect the family economy and access to sufficient food. In this regard, food insecurity was observed with a higher prevalence in the members of the household with low academic level or incomplete studies and in those that were dedicated to the study or to the home. The more predominant group was the one constituted by young individuals (2-21 years). Therefore, food insecurity coincides with socio-demographic characteristics and household development.

As a final point, the effects of food insecurity on the population that belong to higher socioeconomic level should be studied to better understand the effect of these factors on food security, especially in this municipality, considering the relationship of malnutrition, illness, low school performance and low labor capacity, poverty and hunger.

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CONFLICT OF INTEREST

Authors disclose that there is no conflict of interest.

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