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Analysis of food intake profile among women from the oasis of southeastern Morocco

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ABSTRACT

Nutritional status is the best indicator of the global well-being of women and food intake is known to reflect a healthy diet. The aim of this study was to assess the influence of socioeconomic status on the food intake in women living in the southeastern oasis of Morocco by exploring their nutritional intake through 24-h dietary recall ($n = 387$). Analysis of the relationship between food intake and the socioeconomic characteristics in women showed a positive correlation between daily vegetable, cereals, red and white meat intake and region of residence ($p < 0.001$, $p = 0.005$, $p = 0.001$ and $p = 0.04$ respectively). The number of persons living at home showed a positive significant correlation with the daily intake of vegetables ($p = 0.01$) and beverage ($p = 0.004$). For fish and cereals, a positive significant correlation with the occupation variable has been shown ($p = 0.04$ and $p < 0.001$ respectively). In addition, a positive correlation has been noticed between the daily intake of vegetables, cereals, white meat, and dairy product and family status in housing ($p = 0.03$, $p = 0.02$, $p = 0.03$ and $p = 0.04$ respectively). In conclusion, the level of education, family size and occupation influence the daily intake of food in this region.

1. Introduction

Household food security is considered as an important measure of health and well-being and is universally used to design nutrition interventions (Hoddinot & Yohannes, 2002). On the other hand socioeconomic disparities in nutrition have been documented in numerous countries, and have been linked to health inequalities (Dowler, 2001; Mancino et al., 2004). In developing countries, a particular nutritional risk is a result of a lifetime of poverty and deprivation, poor access to health care, and a diet that has often been inadequate in quantity and quality (Hatløy et al., 2000). For example, a positive association has been reported between dietary diversity and anthropometric measurements in children in Mali (Hatløy et al., 2000). Few studies have specifically addressed the association between food intake and household socioeconomic characteristics in both urban and rural areas (Hatløy et al., 2000; Hoddinot & Yohannes, 2002; Savy et al., 2005, 2006; Torheim et al., 2004). In Morocco, few studies have revealed the relationship between the socioeconomic status and the nutritional status and only food variety has been assessed (Anzid et al., 2009). In addition, there is a lack of data related to the correlation between the food intake and the socioeconomic parameters especially in geographically isolated areas with the lowest socioeconomic level. The aim of this study was to examine the food intake profile and its relationship with the main socioeconomic variables among women in the southeastern oasis of Morocco.

2. Subjects and data collection

The study was conducted in health centers of Errachidia province. The survey was conducted in 404 healthy mothers with an average age of 28.16 ± 6.45 years frequenting the health centers in the province of Errachidia. The main reason for consultation was obstetrics control. The sample was drawn in accordance with the population distribution and aimed to represent 1% of the target population in this age category. This study has been realized in the province of Errachidia. The population is about 565,000 inhabitants and about 209,000 inhabitants are living in urban area. Informed consent was obtained from each participant before interviewing and examinations. The study was approved by the local health authority. Interviewers received practical training in completing the questionnaire and data collection. The response rate for this study was 99.95% and 11 incomplete questionnaires have been excluded. The dietary part of the questionnaire included a 24-hour food recall. The food intake data of the women were collected by individual 24-h recall. In this section participants were asked what they had eaten the day before. Dietary diversity is a qualitative measure of food consumption, which accounts for the variety of food that households have access; it is at the individual level an approximate measure of the nutritional adequacy of the diet. Amounts were indicated in terms

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of number of pieces, slices or portions eaten, and standard weights were attributed in order to quantify intake (Kristyansdottir et al., 2006). The total food intake was calculated by summarizing all of the answers about foods. For known measures (yogurt pot, unit biscuit or cheese) we are contented the net weight on the packaging. In the laboratory, after making a list of all the food consumed by mothers, we took samples of each food (each size) and weighed. Indeed, each food sample was weighed several times before and after cooking in the manner described by the mothers. We also viewed standard values for each household measure each food. In this study 387 mothers have responded to 24 h recall section. The analyses were performed taking into account the following variables: age, place of birth, level of education, occupation, family size, number of children, standard living and the monthly family income.

The questions focused on obtaining socioeconomic and demographic data related to the woman and her household. In this study, common measures of socioeconomic status were obtained according to a previous study (Macintyre et al., 2003). The questionnaire included questions on: 1) the education of women was classified into four categories: illiterate, primary, secondary and university education, 2) birthplace (urban or rural), 3) place of residence (urban or rural), 4) the number of children per household: none (0), 1 to 3 children and 4 to 6 children; 5) the family size: small, average and large family; 6) type of housing into 3 categories: rent, government and private; 7) monthly income of household: Income was recorded as a class variable with the following categories: <2000 MAD (Moroccan dirham) which is the minimal salary in Morocco, 2000 to 4999 MAD, and ≥5000 MAD.

3. Data analysis

After coding, data were entered using Excel and SPSS software (Statistical Package for Social Sciences) version 17.0 for Windows. To ensure quality control, a double entry and internal consistency checks were performed for all questionnaires. The descriptive analysis consisted of calculation of means, standard error and frequencies. We used χ^2 test for categorical data. ANOVA analysis was applied, using the data from the 24 h recall part of the questionnaires in order to estimate the association between food groups and socioeconomic characteristics. A p value of <0.05 was considered statistically significant.

4. Results

4.1. Socioeconomic characteristics

The socioeconomic characteristics of the women ($n = 404$) included in this study are given in table 1. The average age of the questioned women was 28.16 ± 6.45 years. On average, about half of women were between 27 and 32 years old while only 16.3% had an age range between 17 and 21 years. Regarding the location habit, 92.5% of the women were living in the urban and periurban area. In addition, 19.3% of the women were illiterate, while 80.7% had an educational level, the highest percentage (40.6%) was found for mothers with a secondary education. Only 14.4% of the sample was classified into higher education. 92.6% of the women were housewives, and 76% lived in households with a family size of four individuals. The analysis of household size shows that the number of people per household varies from 1 to 9, with an average of 3.6 ± 1.4 persons/household. Concerning the family status in housing, 59.7% lived in rented houses. The proportion of participants owning less than 2000 MAD/month is 39.6%.

4.2. Correlation between food groups and socioeconomic variables

Table 2 describes the association between food groups and the socioeconomic characteristics. Results showed that daily vegetables, cereals, red and white meat intake were positively correlated with the region of residence variable ($p < 0.001$, $p < 0.01$, $p < 0.01$ and $p < 0.05$ respectively) (Table 2). The number of persons living at home showed a significant correlation with the daily intake of vegetables ($p < 0.05$) and beverage ($p < 0.01$). For fish and cereals, a significant correlation with occupation variable has been shown ($p < 0.05$ and $p < 0.001$ respectively). In addition, a correlation has been noticed between the daily intake of vegetables, cereals, white meat, and dairy product and family status in housing ($p < 0.05$ respectively). Place of birth shows a positive significant correlation with the daily intake of vegetables ($p < 0.05$) and the daily intake of cereals ($p < 0.05$). Age shows significant association with the mothers' daily fruit intake ($p < 0.05$). For white meat, the daily intake demonstrated significant association with the educational level ($p < 0.01$). Mothers belonging to a low educational level showed higher daily white meat intake when compared to those with a higher educational level. Otherwise, families with low average income have significant low consumption of dairy products ($p \leq 0.01$) (Table 2).

Table 1
Socioeconomic characteristics in women consulting the health centers in the province of Errachidia, Morocco ($n = 404$). Number may not be total to 100% due to missing data.

Characteristics	Number of participants n (%)[a]
Age (years)	
17–21	66 (16.3)
22–26	114 (28.2)
27–31	111 (27.5)
32+	113 (28.0)
Commune	
Urban	358 (92.5)
Rural	29 (7.5)
Level of education	
University	58 (14.4)
Secondary	164 (40.6)
Primary	104 (25.7)
Illiterate	78 (19.3)
Occupation	
Employed	30 (7.4)
Unemployed	374 (92.6)
Place of birth	
Urban	286 (70.8)
Rural	118 (29.2)
Family size	
2 to 4 people (small family)	307 (76.0)
5 to 6 people (average family)	69 (17.1)
7 or more (large family)	28 (6.9)
Family status in housing	
Private	79 (19.6)
Rent	241 (59.7)
Government	12 (3.0)
Other	72 (17.8)
Number of children	
None (0)	255 (63.12)
Children 1–3	19 (4.7)
Children 4–6	130 (32.18)
Monthly family income	
Low (<2000)	160 (39.6)
Medium (2000–4999)	204 (50.5)
High (>5000)	40 (9.9)

5. Discussion

This study focused on a population of women at reproductive age, whose age ranged from 17 to 48 years, with a mean of 28.16 ± 6.45 years. Women were mostly housewives (92.6%) while 7.4% had a profession. These results are similar to those mentioned in the preliminary report of the Ministry of Health in 2011 (HM, 2011). All women had at