

Food Consumption Trends and Associated Factors in an Agricultural Community in Morocco

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ABSTRACT

Introduction: Morocco is currently experiencing a change in dietary habits, in particular that related to food preparation methods and eating location. The objective of this research was to study the factors associated with food consumption trends in an agricultural community from the province of El Jadida in Morocco.

Methods: A survey was carried out in 2017 on 118 households using a structured questionnaire. We collected information about food practices that are concerning the culinary methods, the time devoted to cooking, the regularity and the location of having meals.

Results: The majority of the study participants are aged of 30 years old and over (86.4%), live in rural area (66.1%) and belong to nuclear families (61.9%). The study data revealed that age is associated with the use of frying foods ($p = 0.01$), the number of meals taken per day ($p = 0.04$) and the out-of-home meals ($p = 0.02$). The area of residence was associated with the use of frying as food preparation method ($p = 0.01$), the time spent in cooking ($p = 0.02$), the number of meals taken per day ($p = 0.01$) and the out-of-home meals ($p = <0.01$). In addition, the family type was associated with out-of-home meals ($p = 0.01$). Finally, the family as a source of information about food is associated with the reduction of time spent in cooking ($p = 0.05$) while the media is associated with both the reduction of this time ($p = 0.04$) and the reduced number of meals taken per day ($p = 0.01$).

Conclusion and outlook: This research revealed a significant association of food trends with certain factors reported in the literature. The reported data shows the importance of taking steps to promote healthy eating practices, with a particular focus on educating young people.

KEYWORDS: Food consumption trends; Culinary practices; Time spent in food preparation; Eating location; Morocco

Quick Response Code:



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Received: March 12, 2020 **Published:** April 02, 2020

How to cite this article: Barakat I, Kalili A, Moustakim R, Elouafi R, El Mahri N, Belahsen R, et al. Food Consumption Trends and Associated Factors in an Agricultural Community in Morocco. 2020 - 2(2) OAJBS.ID.000160. DOI: [10.38125/OAJBS.000160](https://doi.org/10.38125/OAJBS.000160)

INTRODUCTION

The demographic and epidemiological transition ongoing worldwide in the recent decades has been accompanied by changes in the of populations way of life, particularly the dietary pattern [1]. These changes are associated with nutrition transition that occurred in parallel to the combined effects of urbanization and globalization [2-5]. The latter is favored by the development of the free exchange of goods but also of cultures as well as the information conveyed by the media [6]. The shift from the traditional dietary model to a so-called "Western" diet is characterized by intake of foods rich in refined carbohydrates, sugars, salt, saturated fat, trans fat and animal proteins as well as food additives [7]. Unlike the Western diet, the traditional diet in Mediterranean areas characterized by a combination of dietary habits and socio-cultural elements of the populations in Mediterranean countries [7,8], is recognized with beneficial effects for health and a respect of environment. Indeed, the Mediterranean diet (MED) is a model that promotes the consumption of plant foods, rich in dietary fibre, essential fatty acids, and a low intake of red meat and processed foods. In addition, the Mediterranean model advocates intake of adequate food portion avoiding food waste as well as physical activity [8]. However, these multiple advantages of this pattern are no more sustainable today. One of the causes is that in most of the Mediterranean countries the traditional diet is not respected anymore by the young generations [9].

In Morocco as in other countries, there is a marked increase in the consumption of processed foods and out-of-home catering, that become increasingly common, particularly in urban areas, favouring an intake of foods rich in sugar and fat [3]. The strength of the habit and the generation effect to which one belongs is a determining factor of eating behaviours [10]. Adequate eating behaviours are often implemented within an entire family from an early age. In addition, it appears that food choices and dietary habits are conditioned by the way the parent's function and by their eating habits inherited from their own families [11]. Among the dietary practices that can be influenced by modernization, we can cite the methods of food preparation and intake. In this context, several studies have reported that spending more time in cooking is associated with both a lower Body Mass Index, particularly in women, and better nutritional quality of food preparations. This is due to less use of processed foods known for their high calorie, fat and salt content [12-14]. Among the advices to avoid weight gain as well as a risk of developing diabetes and cardiovascular disease, regular eating is highly recommended [15]. Also, having three main meals is recommended while snacks are not necessary [16]. Finally, having meals away from home has been associated with harmful health effects because of their obesogenic effect linked to the richness of the served meals in fat and high portion sizes of food in continuous increase that is perceived by the consumer as an indicator of better value for their money [17].

In this perspective the aim of the present research was to study the factors associated with food trends in particular, culinary practices, the time devoted to cooking, the regularity of having meals and having meals away from home, in a sample of households from an agricultural community in the province of El Jadida in Morocco.

MATERIALS AND METHODS

Study Setting and Sampling

This cross-sectional study aimed to examine the dietary trend and associated factors in an agricultural population from El Jadi-

da province in Morocco. The survey was carried out in 2017 using a structured questionnaire completed at 118 households' level. The sampling method adopted was cluster sampling. Households were drawn randomly within each of the eleven localities, selected from urban and rural areas. The questionnaires were administered to one respondent per household. The member who has the most knowledge of the eating practices adopted within the household, in this case women completed the questionnaire. There was a final number of 118 women of 18 to 60yrs old included in this study who responded to the questionnaires.

Data Collection

Data collection was carried out from March to August 2017 by a team of investigators trained beforehand to complete the questionnaires. The data collected using the questionnaire correspond to information on : 1- socio-demographic characteristics including age, place of residence and family type; 2- the sources of information about the diet and dietary practices, namely culinary methods, time spent in cooking each day, the regularity of having meals and meals taken away-from-home.

The data collected include independent variables that are categorized into two or more classes. These are [18 to 30 years old] and [30 years to 60 years old] for age; urban vs rural areas for the place of residence and the family type as "extended family" vs. "nuclear family", knowing that the extended family includes in addition to the married couple and children, other family members, including grandparents, aunts, uncles, etc ...while the nuclear family is made up of the father, the mother and the children of the couple. The "sources of information about diet" variable was categorized into three classes that are "health professionals", "media" and "family".

The data collected include also dependent variables corresponding to information on the culinary practices categorized by type of cooking preparation ("stew", in "tagine", in "steam", in the "oven", "frying" and in "grill"). The time per day variable devoted to cooking is classified into two categories: ("maximum one hour" and "more than an hour"), the regularity of eating was categorized as "less than three meals" and "three meal or more". Finally, the variable "having out -of-home meals " was categorized into "certain meals" and "no meals".

Statistical Analysis

The statistical analysis is carried out using SPSS software for Windows (statistical software package for social sciences) version 18.6. Descriptive analysis was used to describe the socio-demographic, the sources of information on foods and the dietary practices variables of study population. Univariate analysis was used to examine associations between the independent and the dependent variables.

Ethical Considerations

The fundamental ethical principles governing the ethical conduct of research have been respected. The study women are volunteers, they were informed about the study subject, their right to confidentiality and the protection of their private life and their right to discontinue their participation at any time if they wish. All participants gave their free and informed consent.

RESULTS

Sociodemographic Characteristics

The study was conducted on 118 households in 11 urban and rural localities in the province of El Jadida. The Table 1 shows that

among the 118 women surveyed from these households, 86.4% were aged 30 and over; 66.1% live in rural areas and that 61.9% of their families are nuclear.

Sources of Food Information

The results show that overall, 57.6% of the women surveyed

had as their only source of information on food and nutrition either health professionals (17.8%), the media (27.9%) or the family (11.9%) while 42.4% of them had two or three of these sources of information combined (Table 1).

Table 1: Sociodemographic and dietary characteristics of the study households.

Characteristics		N	%
Age			
- [18 à 30 ans [16	13.6
- >= 30 ans		102	86.4
Area of Residence			
-Urbain		40	33.9
-Rural		78	66.1
Type of Family			
-Extended		45	38.1
-Nuclar		73	61.9
Sources of Food Informations			
-Health Professionals (1)		21	17.8
-Medias (2)		33	27,9
-Familly (3)		14	11.9
-More than 2 sources:		50	42.4
-13		18	36
-23		22	44
- (1), (2) & (3)		10	20
Food Preparation Methods			
-Ragout	< 1/ week	4	3,4
	≥1 / week	114	96,6
-Tagine	< 1/ week	60	50,8
	≥1 / week	58	49,2
-Steam	< 1/ week	104	88,1
	≥1 / week	14	11,9
-Oven	< 1/ week	88	74,6
	≥1 / week	30	25,4
-Frying	< 1/ week	44	37,3
	≥1 / week	74	62,7
-Gril	< 1/ week	108	91,5
	≥1 / week	10	8,5
Time Spent in Food Preparation/Day			
-<1 hour		47	39,8
-] 1 à 3 hours]		65	55
-> 3 hours		6	5,2
Number of Meals Taken/Day			
-< 3 meals		27	23
-= 3 meals		86	73
->3 meals		5	4
Out-of-Home Meals			
-Yes		39	33
-No		79	67

Food preparation methods and meal location

Food preparation methods

Cooking in a casserole is the most frequently used culinary method by the households studied, followed by frying. In fact, a large proportion of households use them more than once a week (96.6% for stews and 62.7% for frying) (Table 1).

Time spent in food preparation

The Table 1 shows also that 39.8% of the households spend a maximum of one hour while 60.2% of them devote more than one hour to food preparation.

Factors Associated with Preparing and Having Meals

Factors associated with food preparation methods

Table 2: Factors associated with dietary trends.

Characteristics	Using frying method at least once a week			Reduced time devoted to cooking			Reduced number of meals taken (<3/day)			Out-of-Home Meals		
	OR	CI 95%	P*	OR	CI 95%	P*	OR	CI 95%	P*	OR	CI 95%	P*
Age (years)												
- ≥ 30	-	-	-	-	-	-	-	-	-	-	-	-
- [18 – 29[4,77	[3,29- 6,80]	0,01**	1.88	[0.55-6.44]	0.21 ns	2,29	[1,97 -5,42]	0,04**	1,05	[1,03-1,07]	0,02**
Area of residence												
- Rural	-	-	-	-	-	-	-	-	-	-	-	-
- Urban	2,61	[1,39- 4,87]	<0,01**	2.35	[1.13-10.42]	0.02**	3,05	[1,23-7.29]	0.01**	4,47	[2,24- 8,92]	<0,01**
Type of Family												
- Extended	-	-	-	-	-	-	-	-	-	-	-	-
- Nuclear	1,01	[0,98-1,05]	0,41ns	1.12	[0.85-1.48]	0.06 ns	1,11	[0,66-1,91]	0,68 ns	1,45	[1,09-1,93]	0,01**
Sources of Information												
-Health Professionals	-	-	-	-	-	-	-	-	-	-	-	-
- Family	1,04	[0,68- 1,59]	0,82 ns	0.2	[0.13-0.52]	0.05 ns	1,19	[0,93- 5,42]	0,06 ns	1,12	[0,80-1,57]	0,49 ns
- Media	3.12	[0,45- 5,59]	0.65 ns	1.5	[1.14- 5.26]	0.04**	3,31	[1,23; 7,29]	0,01**	1,38	[0,71-2,68]	0,33 ns

OR= Odds Ratio; CI= Confidence Interval; *= Test of univariate analysis: significance level set at p<0,05, ns= not significant.

Diversification of culinary methods to preparing food is recommended, except for frying, of which the frequency of use must be limited. In the present study we investigate the factors associated with the frequency of using frying foods as a misadvised culinary method. The data analysis presented in the Table 2, show that the factors associated with using frying method at least once a week are: age (OR: 4.77, CI [3.29- 6.80], p = 0.01) and the urban living environment (OR: 2.61, CI [1.39- 4.87], p = <0.01).

Factors associated with time spent in food preparation

The Table 2 shows that the factors associated with the reduced time devoted to cooking per day (duration <1 hour), are the residence in urban environment (OR: 2.35, IC [1.13-10.42], p = 0.02) and the media and family as sources of food information (the media : (OR: 1.5, IC [1.14- 5.26], p = 0.04) ; the family : (OR: 0.2, IC [0.13-0.52], p = 0.05).

Factors associated with regularity of meal intake

The results analysis presented in Table2 demonstrate that the factors associated with the reduced number (<3) of meals taken per

Regularity of Eating

Regarding the number of meals taken per day, the results show that 73% of the women surveyed said that they regularly eat 3 meals a day compared to 23% who said that they eat fewer than three meals a day (Table 1).

Out-of-Home Meals

As shown in the (Table 1), the study data report that 33% of the respondents declared that they used to eat certain meals away from home, while 67% never had meals away-from- home food.

day, are: the age group 18-29 years (OR: 2.29, CI [1 , 97 - 5.42], p = 0.04), the urban environment (OR: 3.05, CI [1.23-7.29], p = 0.01), and the media as a source of food information (OR: 3.31, CI [1.23; 7.29], p = 0.01).

Factors associated with out-of-home meals

The factors favoring eating meals away-from-home, are: age (OR: 1.05, CI [1.03-1.07], p = 0, 02), the urban environment (OR: 4.47, CI [2.24-8.92], p = <0.01) and the nuclear family type (OR: 1.45, CI [1, 09-1.93], p = 0.01) (Table 2).

DISCUSSION

The present research focused on the description of the trends of the eating practices of 118 households in an agricultural community belonging to urban and rural localities in the province of El Jaida in Morocco. The study data showed a significant association of young age (18 to 29 years) with the reduced number of meals taken per day (<3) (p = 0.04), with out-of- home meals (p = 0.02) and with the use of frying as a culinary method (p = 0.01). These results are consistent with a study on consumption and lifestyles reporting

that it is rather young people, aged 18 to 29, who are motivated to adopt such modern eating behaviours [18]. One of the explanations to these behaviours by the young people is that they grew up in a context of globalization and modernization. A high frequent consumption of out-of-home meals by young people [19,20] associated with sensitivity and predisposition to eating disorders was also reported in the literature [21]. These disorders could be the cause of serious physical and psychosocial problems [22]. Residence in urban environment is also found to be significantly associated with the four eating practices examined in the present study, in particular, the use of frying as a culinary method ($p = <0.01$), the reduced time spent on cooking ($p = 0.02$), the reduced number of meals taken ($p = 0.01$) and out of home meals taken ($p = <0.01$). This result could be explained by urbanization which constitutes the most important vector of modernization induced by globalization [23]. In reference to urbanization the city remains furthermore, the place for the evolvement of dietary styles towards the adoption of modern or Western dietary practices [6]. Another factor significantly associated with out-of-home meals was the family type. Numerous investigations have been interested in studying the family and have clarified its primordial role in the transmission of good eating practices and healthy lifestyles to their offspring [24-28]. Other findings have pointed out that involving young people in meal preparation improves their eating practices [29-31]. Indeed, this involvement offers an opportunity for parents to share healthy eating habits with their children and to develop an interest in healthy eating at home [30].

Our study data found also that both the family and the media as sources of information on food are associated with the reduction of the daily time spent in the kitchen and, the media are also associated with taking fewer meals per day. This results could be due to the fact that instead of having precise information on what should be healthy dietary practices and of quality food products for consumers, there are uncontrolled information circulating via the media that could be scientifically unsubstantiated and therefore erroneous [31].

Another explanation is that, in addition to the correlation of the food act with the socio-demographic factors, it is also strongly linked to societies' socio-cultural specificities. The latter let them having their proper definition of what are good eating practices according to their culture [32]; especially since the differences in the consumption patterns between social groups express differences in dietary styles, themselves, linked to these groups dietary habits [33]. The diet is therefore involved in shaping identity, particularly the social identity [32].

CONCLUSION AND PERSPECTIVE

The data reported here describe the trends in food consumption in relation with some factor's determinants of the effects of the globalization and modernization of dietary practices that are age, urbanization, family type and media. Thus, the food practices studied are the culinary methods, the time spent in food preparation, the regularity and the diet location. Based on the descriptive and correlational results obtained, it would be wise to carry out actions with a view to promoting healthy eating practices, in particular by developing educational materials that include good eating practices in young people.

ACKNOWLEDGMENT

The authors wish to thank the participants to this study, the Local Authorities at the El Jadida Province for their cooperation and

support. The survey was supported by the Moroccan Ministry of Higher Education and Research.

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