Analysis of sociodemographic characteristics and nutritional profile: Study of Dietary habits in the region of Rabat-Salé-Kénitra, Morocco

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Abstract

The aim of this study was to identify the various dietary habits among individuals residing in the Rabat-Salé-Kénitra region This is a prospective cross-sectional observational study. A questionnaire was used, consisting of two phases. The first phase focused on sociodemographic and anthropometric information, while the second phase dealt with dietary habits. The data was presented in an Excel® spreadsheet, and data processing and statistical analysis were performed using the Statistical Package for the Social Sciences (SPSS) software (version 22). To assess the association between consumption categories and gender, the Chi-squared test was used. For the statistical analysis, a probability threshold was set at a p-value of <0.05. A total of 1,012 individuals were included, with the most common age group ranging from 18 to 30 years. A significant correlation was established between Body Mass Index (BMI) and gender. Cereals ranked first in the population's dietary choices, with approximately 89.9% consuming bread almost daily, while vegetables and fruits came in second place, with 60.2% consuming them 4 to 5 times a week. The consumption of meat, poultry, dairy products, and sweet products remains moderate; however, the consumption of fish and snack foods is very low. This study indicates that the diet of our study population is predominantly composed of carbohydrates rather than protein-rich foods. It recommend that the study population incorporate more protein and vitamin-rich foods into their diet.

Keywords: Dietary habits; sociodemographic characteristics; Body Mass Index

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1. Introduction

Adapted and balanced nutrition that meets the needs of the body accompanied by regular physical activity helps maintain good health (WHO). It plays a crucial role in health, and is considered one of the main determinants of our well-being. In the context of public health, it encompasses both our eating habits and our level of physical activity. Maintaining a healthy diet at every stage of life helps maintain optimal health. On the other hand, an inappropriate diet, that is, one that does not comply with the recommendations established by experts in nutrition science, represents a major risk factor for the main chronic diseases affecting the French population at the beginning of the 21st century[1]. Thus, food is central to the concerns of our society, and its close link with health has been well established for many years. We are constantly and insistently encouraged to adopt a healthy diet and maintain a level of physical activity in accordance with the guidelines of the National Health Nutrition Program (PNNS))[2, 3].Similarly, numerous epidemiological studies highlight the links between food consumption and population health worldwide[4].However each pay and social group develops its own food model in response to factors such as economic, cultural conditions, food availability, rituals and beliefs [5].

Rapid changes in eating habits and lifestyles, resulting from industrialization, urbanization, economic growth and globalization of markets, have intensified over the past decade. This has a significant impact on the health and nutritional status of populations, particularly in developing nations and countries with economies in transition. While living standards have increased, the food supply has expanded and diversified, and access to services has improved, it is also important to note the negative consequences that result. These include inappropriate eating habits, decreased physical activity, and increased tobacco use, resulting in a corresponding increase in diet-related chronic diseases, particularly among disadvantaged populations. This has contributed to the increased prevalence of chronic non-communicable diseases, including obesity,

diabetes, cardiovascular disease, hypertension, stroke and certain types of cancer[6, 7]

Disease is the leading cause of death. Indeed, among the 57 million deaths recorded worldwide, NCDs are responsible for 41 million, or 71% of the total. In addition, of these NCD-related deaths, 15 million are premature deaths occurring in individuals aged 30 to 70 years (WHO)[8]. Nutrition knowledge encompasses an individual's cognitive ability to assimilate information related to diet and nutrition, including factors that influence dietary decisions and the effectiveness of dietary interventions in preventing non-communicable diseases[9, 10]. In addition to a proper understanding of nutrition, individuals are more likely to change their eating behaviours, which decreases the risk of developing non-communicable diseases while promoting the consumption of nutritious foods. These diseases, which contribute significantly to global mortality, can be effectively prevented through the adoption of a healthy lifestyle and a balanced diet[11, 12]. Also Comprehensive knowledge of nutrition is crucial for individuals to be able to understand and meet their nutritional requirements, allowing them to make informed food choices[13, 14].

In Morocco, demographic transition and epidemiological transition are generally associated with changes in lifestyle, including eating habits and physical activity levels. The food transition generally characterized by the transition from a traditional diet focused on cereals and pulses to a diet including an increasing proportion of products of animal origin, sometimes exceeding the energy requirements of a sedentary lifestyle [15]. This transition results in a significant increase in the prevalence of non-communicable diseases (NCDs), including cancer, diabetes, cardiovascular disease, chronic respiratory disease and chronic kidney failure. NCDs are the leading cause of death, estimated at 80% according to the WHO, with an estimated 12% premature mortality. This statistic exceeds the global average of 70% of deaths attributed to NCDs, placing Morocco among the countries of the Eastern Mediterranean region with a high mortality due to these diseases[16]. In the same context, malnutrition is a major public health concern, manifested by a relative or absolute deficit or excess of one or more essential nutrients (WHO)[17] .Malnutrition from nutrient deficiency, particularly micronutrients such as iron and vitamin A, poses a significant public health challenge, especially in developing countries. The risks of these deficiencies vary throughout the life cycle and become of particular concern when nutritional needs increase[18]

Consequently, micronutrient deficiencies represent a significant public health issue, with serious consequences, particularly for vulnerable groups such as pregnant and lactating women, adolescent girls, infants and young children[19]. Therefore severe and persistent nutritional deficiency can lead to deficiency disorders, such as goiter (hypertrophy of the thyroid gland due to lack of iodine), rickets (bone deformity due to vitamin D deficiency), or pernicious anemia (a form of anemia accompanied by neurological disorders due to vitamin B12 deficiency)[20]. Globally, iodine deficiency affects more than 700 million people, largely in the least developed countries (WHO/UNICEF/International Council for the Fight against Iodine Deficiency Disorders. Progress towards the elimination of iodine deficiency disorders[21]. In addition, more than 2 billion people suffer from iron deficiency anemia

(WHO/UNICEF/UN University. Evaluation, prevention and control of iron deficiency anemia: a guide for program managers[22].

Vitamin A deficiency remains the leading cause of preventable and unjustified blindness in children, as well as an increased risk factor for premature infant mortality due to infectious diseases; it affects approximately 250 million children under five years of age in a subclinical form (WHO/UNICEF)[23]. So diet and nutrition play an essential role in maintaining good health throughout life. Their influence as key factors in the development of chronic non-communicable diseases is well established which places them at the forefront of prevention [24]. The objective of this study is to identify the food system in Morocco, in particular the inhabitants of the region of Rabat _ Salé-Kneitra, which focuses on describing the nutritional characteristics and habits of the inhabitants of the region and their relationship with obesity among the inhabitants.

The objective of our work is to study the sociodemographic characteristics within the population of the Rabat-Salé-Kénitra region, with a focus on describing the dietary habits of the residents in this area.

2. Materials and Methods
2.1. Study area

Rabat-Salé-Kenitra is a region located in the northwestern part of Morocco. The region is situated between the longitude 5° 37' W and 7° 34' W and latitude 33° 08' N and 35° 03' N (Figure 1). It is one of the twelve regions of Morocco since the territorial division of 2015 with total area of 18 194 km², it is supervised by several regions of Morocco: it shares its limits in the north with the region of Tanger-Tetouan-Al Hoceima, in the east with the region of Fès-Meknès, in the south with the regions of Beni Mellal-Khénifra and Casablanca-Settat, and in the west, it is bordered by the Atlantic Ocean, the number of municipalities is 114 including 23 urban and 91 rural. Based on 2014 Census of Population data, the region had a total population of 4,580,866. In a few decades, the region of Rabat-Salé-Kénitra has become a major attraction, especially along its coast. It is the main point of convergence of demographic, economic, administrative and cultural flows in Morocco. This transformation is mainly due to the importance of the city of Rabat as the country's capital, its academic role and its key position in the communication network[25–27].

2.2. Participants

The total number of participants in our study was 1,012, and it survey spanned a period of 9 months from October 2021 to June 2022. Inclusion criteria included individuals over 18 years of age residing in the study area. This was an observational prospective cross-sectional study conducted through face-to-face interviews with participants at a subsidiary of DAXEN Morocco (NaturAloé) located in the province of Kénitra. Additionally, another part of the survey was conducted through data collection using Google Forms or an online questionnaire, which was created and distributed through several social media channels, including WhatsApp and Telegram

2.3. Study Design

The questionnaire was divided into two phases. The first phase focused on sociodemographic information (age,

level of education, employment status, and family situation), as well as anthropometric data (weight and height for BMI calculation). Body Mass Index (BMI) was determined based on self-reported information from individuals and was not established using biometric measurements. The second phase centered on dietary habits, including the number of meals per day and the weekly consumption frequency of the following food categories: Bread/Whole Wheat Bread and Pastries, Meat and Poultry (beef, chicken, turkey, etc.), Fruits and Vegetables, Fish/Seafood, Snack Foods (Pizza, Paninis, Hamburgers, Tacos, etc.), Dairy, Dairy Products (Cheese, Yogurt), Eggs, Pasta, Rice, Cereals, Legumes, and Sweet Products (Chocolate, Sweets, Cakes, Sweet Biscuits, Pastries).

2.4. Statistical Analysis

The database was organized in an Excel® spreadsheet, and data processing and statistical analysis were carried out using the Statistical Package for the Social Sciences (SPSS) software (version 22). Incomplete information and data from participants not meeting predefined criteria were excluded. The Chi-squared test was utilized to assess the association between food category consumption and gender. For statistical analysis, a probability threshold was set at a p-value of <0.05.

3. Results
3.1. Socio-demographic and Anthropometric

Table 1 shows data on the socio-demographic characteristics of the participants in our study. A total of 1,012 individuals responded, of whom 60.4% were women and 39.6% men. The most common age bracket is between 18 and 30, representing (45.4%) of the sample, with a significant difference between the sexes, $p<0.05$ ($\chi^2=32.86$; $p=0.0005$). The majority of participants have a high level of education, with 85.9% being university graduates. The professional status of the sample studied is characterized by a predominance of civil servants with a percentage of (52.9%), followed by the self-employed with around (20.7%), and finally students who present a low proportion of (14.3%), with a significant difference between women and men ($\chi^2=96.13$; $p=0.0005$). In terms of marital status, married individuals make up a majority share of over half (54.9%). Body mass index (BMI) was divided into six categories in accordance with the 1998 National Institute of Health (NIH) guidelines. Group 1 represents individuals who are underweight (BMI < 18.5), Group 2 includes those of normal weight (BMI 18.5 to 24.9), Group 1 represents underweight individuals (BMI < 18.5), Group 2 includes those of normal weight (BMI 18.5 to 24.9), Group 3 includes overweight individuals (BMI 25 to 29.9), and Group 4 concerns obesity, which is subdivided into three categories: grade 1 obesity (BMI 30 to 34.9), which is moderate obesity, grade 2 obesity (BMI 35 to 39.9), which is severe obesity, and grade 3 obesity (BMI ≥ 40), which describes massive obesity.

According to the analysis of the results obtained, these body mass indices are present in all BMI categories, with a dominance of these two groups [18.5<BMI>24.9] and [18.5<BMI>24.9] with almost similar percentages, (38.9%) and (30.6%).

3.2. Diet quality scores

Table 2 shows the weekly frequency of consumption of each food category in the study population. The results show that 80.7% of individuals eat whole meal bread and pastries every day. The consumption of meats and poultry (beef, chicken, turkey, etc.) is more frequent than that of fish and seafood. Meats and poultry are consumed four to five times a week, representing (45.0%) of the consumption frequency, while fish and seafood are only consumed once a week by (82.6%) of the individuals in the population. Indeed, the frequency of consumption of fruits and vegetables (salad, fruit juice, etc.) is significant as they are consumed four to five times a week, accounting for (60.2%). As for the category of milk, dairy products (cheese, yogurt, etc.), and eggs, consumption is relatively low, occurring two to three times a week with a proportion of (67.8%), and only 17.7% of individuals consume them daily. Regarding cereals (pasta, rice, etc.) and legumes (white beans, chickpeas, lentils), nearly half (48.3%) consume them two to three times a week, while only (15.6%) incorporate them into their daily diet. Consumption of snack-type foods (Pizza, Paninis, Hamburgers, Tacos, etc.) is very low, at (0.4%) every day. Lastly, the sweet products category (chocolates, confectionery, cakes, sweet cookies and pastries...) has a notable consumption of (46.8%) every day.

4. Discussions

This study explored the eating habits of the target population, whose diet is varied and includes all food groups. Regarding BMI (20.1%), of women and (18.9%) of men had a normal BMI. Regarding BMI, (20.1%) of women and (18.9%) of men had a normal BMI. Indeed, (20.5%) of women and (10.2%) of men in the population studied were overweight. Around (9.7%) of women (5.9%) of men are moderately obese. On the other hand, women are severely obese, with a percentage of (6.5%), compared with (1.0%) of men. Finally, fewer men (0.3%) are massively obese than women (1.9%). Consequently, a significant difference in BMI between the two sexes was observed with $p<0.05$ ($\chi^2=61.27$; $p=0.0005$). Initially, attention was focused on the first category (wholemeal bread and pastries). This work revealed that women (48.8%) and men (31.8%) have a high consumption of bread with a frequency of every day, in this case the result is not significant with $p>0.05$ ($\chi^2=0.599$; $p=0.897$), so there is no difference in consumption of this category between the two sexes. This high consumption is in line with the statement from the AFO (2011), [28].

The consumer model of Center Morocco remains strongly on cereals, the main color of the tendrils. Ent Progressive is a replication of traditional generations like light and barley, particularly in the production of pain. Pain is an impractical analgesic, so it serves as the main platform, with the label, a composition of legumes and/or uses of legumes, with or without bran. The consumption of couscous is now less frequent, while the consumption of food is increasing [29]. The IMC is based on six categories of conformity auxiliary guidelines of the National Institute of Health (NIH) of 1998.
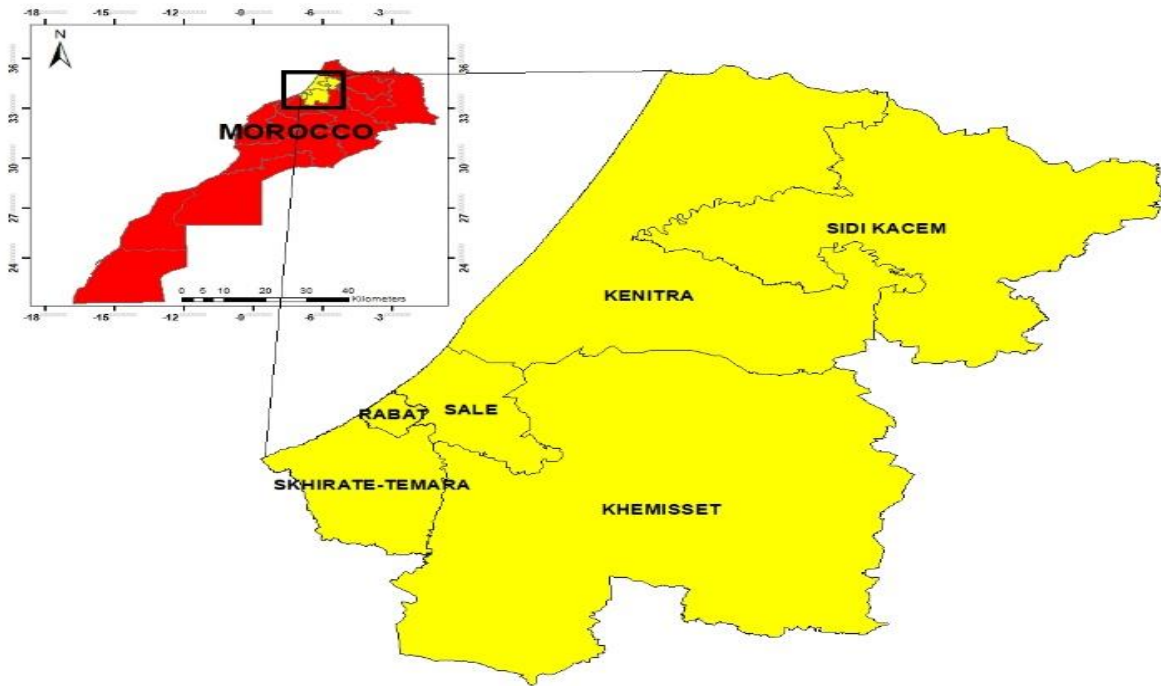
Figure 1: Study area

Table 1: Socio-demographic and Anthropometric Characteristics of the Participants (n= 1012)

	Women (n=611)	Men (n=401)	Total	Chi-square P valu
Age				32,863
Between 18 and 30 years old	283 (28,0%)	176 (17,4%)	459 (45,4%)	P=0,0005
Between 31 and 40 years old	194 (19,2%)	181 (17,9%)	375 (37,1%)	
Between 41 and 50 years old	64 (6,3%)	30 (3,0%)	94 (9,3%)	
>50 years	70 (6,9%)	14 (1,4%)	84 (8,3%)	
Level of study				1,940
Primary	6 (0,6%)	7 (0,7%)	13 (1,3%)	P=0,379
Secondary	74 (7,3%)	56 (5,5%)	130 (12,8%)	
University	531 (52,5%)	338 (33,4%)	869 (85,9%)	
professional situation				96,132
Student)	82 (8,1%)	63 (6,2%)	145 (14,3%)	P=0 ,0005
Official	304 (30,0%)	231 (22,8%)	535 (52,9%)	
Liberal	102 (10,1%)	107 (10,6%)	209 (20,7%)	
Without	123 (12,2%)	-	123 (12,2%)	
Marital status				0,102
Single	253 *(25,0%)*	165 *(16,3%)*	418 *(41,3%)*	P=0,950
Married	336 *(33,2%)*	220 *(21,7%)*	556 *(54,9%)*	
Divorced	22 *(2,2%)*	16 *(1,6%)*	38 *(3,8%)*	
IMC Group				61,279
BMI<18.5	18 (1,8%)	34 (3,4%)	52 (5,1%)	P=0,0005
18.5<BMI>24.9	203 (20,1%)	191 (18,9%)	394 (38,9%)	
25<BMI>29.9	207 (20,5%)	103 (10,2%)	310 (30,6%)	
30<BMI>34.9	98 (9,7%)	60 (5,9%)	158 (15,6%)	
35<BMI>39.9	66 (6,5%)	10 (1,0%)	76 (7,5%)	
BMI>40	19 (1,9%)	3 (0,3%)	22 (2,2%)	

Table 2: Association between diet quality scores and Sex (n=1012)

Food category		Women (n=611)	Men (n=401)	Total	Chi-square
Bread/wholemeal bread and pastries	Never	14 (1,4%)	7 (0,7%)	21(2,1%)	0,599 P=0,897
	1 time/week	-	-	-	
	2 to 3 times/week	47 (4,7%)	34 (3,4%)	81 (8,0%)	
	4 to 5 times/week	55 (5,5%)	38 (3,8%)	93 (9,2%)	
	Every day	492 (48,8%)	321 (31,8%)	813 (80,7%)	
Meat and poultry (beef, chicken, turkey, etc.)	**Never**	94 (9,3%)	70 (6,9%)	164 (16,2%)	1,741 P=0,783
	1 time/week	14 (1,4%)	6 (0,6%)	20 (2,0%)	
	2 to 3 times/week	212 (20,9%)	143 (14,1%)	355 (35,1%)	
	4 to 5 times/week	280 (27,7%)	175 (17,3%)	455 (45,0%)	
	Every day	11 (1,1%)	7 (0,7%)	18 (1,8%)	
Fish/seafood	Never	21 (2,1%)	18$_a$ (1,8%)	39 (3,9%)	0,875 P=0,646
	1 time/week	509 (50,3%)	327 (32,3%)	836 (82,6%)	
	2 to 3 times/week	81 (8,0%)	56 (5,5%)	137 (13,5%)	
	4 to 5 times/week	-	-	-	
	Every day	-	-	-	
Fruits and Vegetables (Salad, fruit, fruit juice, etc.)	**Never**	16 (1,6%)	3 (1,3%)	29 (2,9%)	2,682 P=0,443
	1 time/week	-	-	-	
	2 to 3 times/week	83 (8,2%)	58$_a$ (5,7%)	141 (13,9%)	
	4 to 5 times/week	361 (35,7%)	248 (24,5%)	609 (60,2%)	
	Every day	151 (14,9%)	82 (8,1%)	233 (23,0%)	
Milk, milk-derived products (Cheese, Yogurt, etc.) and eggs	Never	52 (5,1%)	34 (3,4%)	86 (8,5%)	1,910 P=0,752
	1 time/week	9 (0,9%)	7 (0,7%)	16 (1,6%)	
	2 to 3 times/week	408 (40,3%)	278 (27,5%)	686 (67,8%)	
	4 to 5 times/week	31 (3,1%)	14 (1,4%)	45 (4,4%)	
	Every day	111 (11,0%)	68 (6,7%)	179 (17,7%)	
Cereals (pasta, rice, etc.) and legumes (white beans, chickpeas, lentils, etc.)	Never	55 (5,4%)	27 (2,7%)	82 (8,1%)	7,079 P=0,132
	1 time/week	146 (14,4%)	108 (10,7%)	254 (25,1%)	
	2 to 3 times/week	295 (29,2%)	194 (19,2%)	489 (48,3%)	
	4 to 5 times/week	23 (2,3%)	6 (0,6%)	29 (2,9%)	
	Every day	92 (9,1%)	66 (6,5%)	158 (15,6%)	
Snack type foods (Pizza, Paninis, Hamburgers, Tacos, etc.)	Never	17 (1,7%)	19 (1,9%)	36 (3,6%)	2,969 P=0,563
	1 time/week	411 (40,6%)	268 (26,5%)	679 (67,1%)	
	2 to 3 times/week	143 (14,1%)	90 (8,9%)	233 (23,0%)	
	4 to 5 times/week	38 (3,8%)	22 (2,2%)	60 (5,9%)	
	Every day	2 (0,2%)	2 (0,2%)	4 (0,4%)	
Sweet products (Chocolates, sweets, cakes, sweet biscuits, pastries, etc.)	Never	29 (2,9%)	12 (1,2%)	41 (4,1%)	2,341 P=0,673
	1 time/week	17 (1,7%)	10 (1,0%)	27 (2,7%)	
	2 to 3 times/week	42 (4,2%)	29 (2,9%)	71 (7,0%)	
	4 to 5 times/week	243 (24,0%)	156 (15,4%)	399 (39,4%)	
	Every day	280 (27,7%)	194 (19,2%)	474 (46,8%)	

Group 1 responds to individual weight (BMI < 18.5), and group 2 compares that these weights are normal. (BMI from 18.5 to 24.9), Group 3 brings together overweight people (BMI from 25 to 29.9), and Group 4 concerns the object, which is subdivided into three categories: the object of Grade 1 (BMI 30 to 34.9) which has a modified object, Grade 2 (BMI 35 to 39.9) which is an appropriate object and Grade 3 object (BMI ≥ 40) which creates a massive object. In this study, individuals had a normal BMI in (20.1%) women and (18.9%) men. In fact (20.5%) of women and (10.2%) of men in our study population are overweight. And about (9.7%) women (5.9%) men have moderate obesity. Furthermore, the female sex presents severe obesity with a percentage of (6.5%) compared to the male sex which is 10 (1.0%). And finally, fewer men (0.3%) have massive obesity than women (1.9%). As a result we observed a significant difference in BMI between the two sexes (chi2= 61.27; p=0.0005).

The result of weekly consumption of meat and poultry (beef, chicken, turkey, etc.) between the two sexes does not show a significant difference with P>0.05 (chi2= 1.74; p =0.783). They are consumed four to five times a week with approximately (27.7%) for women and (17.3%) for men. In fact, fish and seafood are consumed at a very low frequency which is only once a week and which presents approximately (82.6%) of which (50.3%) are women and (32.3%) %) are men, statistically there is no significant difference in consumption > 0.05 (chi2=0.87; p=0.646). Therefore, according to our study, the consumption of fish and seafood is very limited, which is compatible with other studies (FAO, FIGIS) on fish consumption in Morocco, which shows that per capita availability of fish still remains very high. low, even if the country has considerable fisheries resources, they nevertheless remain limited[30].

According to the Moroccan Ministry of Fisheries on 2022, the consumption of fish in Morocco is low, with only 10 to 12 kilograms per person each year, while the world average is 17 kilograms. This quantity remains considerably lower even if the country's coastal and artisanal fishing landings exceed one million tonnes. As well as regular consumption of fish (1 or 2 dishes per week) protects against coronary heart disease and ischemic stroke and is recommended. One serving should provide the equivalent of 200 mg to 500 mg of eicosatetraenoic acid and docosahexaenoic acid. Vegetarians are recommended to ensure a satisfactory intake of Ị-linoleic acid from plant sources[31]. Subsequently, fruits and vegetables (salad, fruit, fruit juice, etc.) are consumed four to five times a week with approximately (35.7%) for women and (24.5%), no significant difference. was noticed in the consumption of this category, p is greater than 0.05 (chi2 = 2.68; p0.443). According to an epidemiological survey carried out by the Moroccan Ministry of Health in collaboration with the WHO, although vegetable consumption remains constant, the Moroccan population consumes on average only one fruit per day. Therefore, fruit consumption averages 4.2 days per week, while vegetable consumption reaches 2.5 servings per day. Fruits and vegetables make a beneficial contribution to cardiovascular health due to the diversity of phytonutrients, potassium and fiber they contain. It is recommended to consume an adequate amount of fresh fruits and vegetables daily, including berries, green leafy and cruciferous vegetables, and legumes (approximately 400 to 500 g per day), to reduce the risk coronary heart disease, stroke and high blood pressure. Concerning milk, products derived from milk (Cheese, Yogurt, etc.) and eggs (40.3%) of women and (27.5%) consume them four to five times a week, and only (11.0%) of women and (6.7%) of men consume them with daily frequency, which indicates low consumption.

It noticed an absence of significant difference in consumption between women and men (p>0.05) (chi2 = 2.68; p=0.752). Likewise, according to the World Health Organization (WHO), milk consumption in Morocco is approximately 40% lower than the world average and recommendations in this area. Subsequently, the category of Cereals (pasta, rice, etc.) and legumes (white beans, chickpeas, lentils, etc.) are consumed 2 to 3 times/week with approximately (29.2%) of the female sex and (19.2%)) of the male sex, no significant difference in consumption between women and men was observed (p>0.05) (chi2 = 7.07; p= 0.132).

Snack type foods (Pizza, Paninis, Hamburgers, Tacos, etc.) individuals consume them with a very low frequency which is only once a week with a percentage of (40.6%) among women and (26. 5%) in men. However, the observed difference in consumption between the two sexes was not significant (p>0.05) (chi2 = 2.96; p = 0.563). Finally the snack food group (sweet products) the participants had a high consumption of this category with a frequency every day of which (27.7%) were women while (19.2%) it were men. The difference in consumption between the two was not significant (p>0.05).

5. Conclusions

This study aims to identify the diet and eating habits of residents of the Rabat-Kenitra-Salé region in Morocco.Eight categories were identified, namely the whole grain bread/bread and pastry category belonging to the cereal family, the meat and poultry category, the fish and seafood category, the fruit and vegetable category, and the derived milk category. Products and eggs category, grains and legumes category, snack foods category, and sweet products category. Participants consumed large quantities of flour-making grains to prepare breads that were frequently consumed. Fruits and vegetables occupy second place in the diet, so they occupy an important place in a good diet, and to a lesser extent meat, poultry, dairy products and eggs. Consumption of legumes was moderate. The proportions showed a significant reduction in consumption of snack foods, fish and seafood. This study found that the diet of the sample included in the study contains foods that contain more carbohydrates than foods rich in proteins.

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