Nutrition Transition: An Intergenerational Comparison of Dietary Habits among Women of Shiraz

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Abstract

Background: There is a shift worldwide towards a diet that is high in processed foods and low in fiber, leading to a corresponding increase in degenerative diseases. These diseases are interrelated with lifestyles and especially with diets. The aim of this study was to investigate the eating habit differences between two generations of mothers and daughters and their tendency towards modern foods**.**

Methods: In this cross-sectional survey, the data were gathered using structured questionnaires. The sample of the study includes 618 women in Shiraz City (309 mothers and 309 daughters) selected through stratified random sampling. Data analysis was carried out using the SPSS software **.**

Results: In the mothers' generation, around 80% showed a traditional nutritional pattern while in the young generation more than 50% had a modern or close to modern pattern of nutrition ($P \leq 0.05$). The findings confirmed a significant difference in dietary habits among the two generations. For both generations, nutrition pattern was significantly different in terms of social class, weight control, education, using mass communication, and physical activities ($P \leq 0.05$).

Conclusion: Iran is currently experiencing a nutrition transition. The current inappropriate habits in the lifestyles of the girls' in Shiraz are a health threat for them, and it will increase the risk of non-communicable diseases. Therefore, policy makers have to set new agenda to increase the nutritional knowledge of the population**.**

Keywords: Nutrition transition, Dietary habits, Iran

Introduction

The "nutrition transition" explains the recent rapid rise of overweight and obesity in 'middle-income' developing countries undergoing rapid social, economic, and technological changes (1). This concept indicates a shift from traditional diet towards a modern one, including excessive consumption of foods, high in animal and partially hydrogenated fats and sugar content, processed foods, packaged snacks, artificially sweetened drinks, and foods low in fiber (2, 3). Diets in nutrition transition settings tend to be energy-dense, containing a relatively high amount of calories per gram, but they are nutrient-poor, lacking essential micronutrients and dietary fiber (4, 5). The trend in urban areas is more significant; the general shift in their diets is towards increasing energy and fat density, and leads to a great potential for chronic disease-related health problems (6).

According to the current population increase rate and the age structure in Iran, we are experiencing population transition, a situation in which mortality and fertility are decreasing. Therefore, age transition along with epidemiological transition - conditions in which infectious, communicable and

acute diseases decrease and chronic diseases increase (7) - will change the health status of the society (8). These changes are rooted in lifestyle, including poor diet and sedentary lifestyle.

The incidence of chronic disease increases with age (7). Since one of the ways to enhance health status of population is healthy nutrition (9), study of dietary habits can both increase public knowledge and be helpful for those in charge of disease control. This way, we can identify the causes of disease especially chronic conditions and, we will be able to manage them where possible (8). In recent years, an increase in the number of restaurants and fast foods has caused bad eating habits (10).

Many studies on the nutrition transition have been done in different communities (11-15). Results of these studies indicate the influence of lifestyle changes, especially urban lifestyle, on nutrition transition (15). There are obvious differences in dietary patterns and food intake, and there is an inverse relationship between age and the consumption of modern and unhealthy foods (16, 17). Studies also confirm the correlation between economic status and modern nutrition (18, 19). The studies show a relationship between education and food habits. This means that people with higher educational level have healthier dietary habits (19, 20). The relationship between nutrition and the use of mass media has attracted the attention of researchers. Studies show that those who spend more hours on watching TV use more fast-foods (21, 22) and tend to consume more calories, fat (23), and soft drinks (24).

The theoretical framework based on Popkin's theory of nutrition transition believes that communities are passing through a nutritional transition (25, 26). As the nutrition transition is in process, the level of non-communicable diet-related diseases including diabetes, hypertension, obesity, and stroke increases (27).

Conducting research on nutrition and related issues in urban communities, especially in developing countries such as Iran, is of great importance because of the current epidemiological, demographic, health, and age transitions that is associated with the nutrition transition.

The aim of this study was to investigate intergenerational differences in dietary habits among women of Shiraz city and find the most important relevant factors in each generation.

Material and Methods

The current study was a cross-sectional survey including a sample of 618 women (309 mothers and their daughters, 15 to 59 years old), carried out in Shiraz, southwest of Iran. The survey was conducted in 2013. Data collecting was conducted via self-administered questionnaires.

The participants were selected through random cluster sampling. Participants received a two-sectioned questionnaire. Part I, contained questions to determine the socio-demographic characteristics of the participants and part II, contained questions to reveal mothers' and daughters' food preferences and dietary habits. The questionnaire's validity was assured using face validity. Furthermore, a pilot study was conducted in order to gain the internal validity of the questionnaire and to determine whether the participants fully understood the questions or not. Determining the reliability of questionnaire, Cronbach's alpha technique was calculated that resulted in an alpha of 0.83 for the mothers' questionnaire, and 0.75 for the daughters' one.

Individuals were asked about variables including age, number of children, marital status, living expenditures, occupation status, mass media use, level of education, checklist of disease history, physical activity, weight and height (to calculate BMI), ethnicity, self stated social class, body image and weight control.

Statistical analysis was run on SPSS version 18. The descriptive statistic analysis provides detailed characteristics of the sample. In order to determine the rate of traditional and modern dietary habits in two generations of mothers and daughters, the amount of consumption of different type of foods – such as fast foods, semi-prepared and processed foods, fried and canned foods, and traditional foods – was inquired. To analyze nutrition

data and making index dietary habits, Factor Analysis was used.

In inferential and explanatory analysis, a use of Linear Regression Test and One-Way ANOVA was made, to determine the relationship between independent variables and dietary habits. Finally, a Multiple Regression Model was run to assess the importance of each variable in explaining the dependent variable.

Results

The mean age of the mothers and daughters were 48.82 ± 7.17 yrs. 21± 5.46 yrs, respectively. The Number of children per mother averaged 3.28 children. In general, 55.34% of the respondents were unmarried. In the mothers and daughters' generation, 17.2% and 25.1% were employed, respectively.

Mothers with high school diploma had the highest frequency (38.5%). For daughters, the highest frequency (38.8%) belonged to high school students, and the lowest frequency belonged to those with elementary and middle school educations (1.9%). Mothers with a low level of physical activity showed the highest frequency (34.3%), and those with a very high level of physical activity indicated the least frequency (9.4%). This was approximately the same for daughters (36.3% with low level of physical activity, and 9.5% with high level of activity). In terms of Body Mass Index (BMI), the lowest proportion of mothers were thin (1.4%) and highest were overweight (42.1%). These proportions for the daughters were obese (1.7%) and normal BMI (66.2%), respectively. Comparing different sub-measures of dietary habits (Table 1) the highest frequency was specified to mothers having a very traditional diet (52.9%).

Table 1: Types of dietary habits in both generations

Type of food habits	Mothers		Daughters		Total	
	Frequency	*Percentage*	Frequency	*Percentage*	Frequency	*Percentage*
Very traditional	157	52.9	47	15.5	204	34
Traditional	87	29.3	104	34.3	191	31.83
Both Traditional and modern	43	14.5	110	36.3	153	25.5
Relatively modern	7	2.4	33	10.9	40	6.67
Modern	3	1	9	3	12	2
Total	297	100	303	100	600	100

For daughters, the dietary habits of mixed or moderate (both traditional and modern), showed the highest frequency (36.3%). Around 80% of mothers showed a traditional nutrition pattern (very traditional and traditional), while the corresponding figure for a daughter was less than 50% ($P \leq 0.05$). Average score of dietary habits in an interval scale is 11.54 for the daughters and 8.86 for the mothers. This indicates that daughters have a greater tendency to a modern dietary habit. Table 2 indicates that the variables including age, marital status, living expenditures, use of mass media, level of education, and physical activity, have a significant relationship with dietary habits.

The One-way ANOVA test (Table 3) shows that dietary habits are significantly different among different groups of social status and weight control ($P \leq 0.05$). The results of linear multiple regression (Table 4), indicate the effect of each variable controlling for other explanatory variables. In mothers' model, living expenditures showed the highest effect on this generation's dietary habits ($\beta = 0.375$) while for daughters, physical activity showed the highest effect ($\beta = -0.369$). Determination coefficient for both models ($R^2 = 0.42$) shows that 42 percent of variance in dietary habits was explained by the variables examined.

Table 2: Association between dietary habits and demographic and lifestyle factors

Variables	Mothers generation		Daughters generation	
	Beta	*P*-value	Beta	*P* value
Age	-0.252	0.000	-0.221	0.000
Number of children	-0.255	0.000		
Marital status			-0.141	0.013
expences	0.141	0.036	0.204	0.002
Use of mass media	0.233	0.001	0.234	0.000
Level of education	0.289	0.000	-0.136	0.018
Disease history	-0.062	0.287	-0.023	0.695
Physical Activity	-0.342	0.000	-0.297	0.000
BMI	0.011	0.669	-0.086	0.137

Table 3: One-way ANOVA test of differences in dietary habits

Variables	Mothers generation		Daughters generation	
	F	*P*-value	F	*P* value
Ethnicity	0.197	0.459	0.639	0.301
Social status	10.021	0.000	6.355	0.000
Occupation status			2.65	0.049
Body image	0.256	0.918	1.074	0.369
Weight changes control	4.354	0.002	2.446	0.047

Table 4: The linear multiple regression for dietary habits as dependent variable

Variables	Mothers			Daughters		
	Beta	T-test	P -value	Beta	T-test	P -value
Individual costs	-0.013	-0.155	0.877	0.375	3.79	0.000
Social status	0.329	3.81	0.000	0.231	2.75	0.007
Use of mass media	0.189	2.422	0.017	0.214	2.774	0.006
Physical Activity	-0.369	-4.679	0.000	-0.172	-2.203	0.03
Age	-0.079	-0.807	0.421	-0.22	-1.602	0.112
Body image	-0.005	-0.066	0.947	0.119	1.547	0.125
Weight control	0.012	0.155	0.877	0.11	1.409	0.162
BMI	-0.018	-0.234	0.815	0.12	1.397	0.166
Disease history	-0.049	-0.651	0.516	0.088	1.094	0.276
Ethnicity	-0.056	-0.72	0.473	0.074	0.984	0.327
Married				-0.045	-0.498	0.62
Level of education	0.074	0.779	0.437	-0.05	-0.36	0.719
Employed	-0.017	-0.209	0.835	-0.008	-0.074	0.941
No. of children	-0.115	-1.056	0.293			
	R = 0.648 - R² = 0.420			R = 0.648 - R² = 0.420		

Discussion

According to single variable regression results, in generations, age and tendency to modern diet have a reverse relationship, which is in accordance with the result of previous studies (16, 28). In the present research, modern eating habits rate increase in both generations when living expenditures are increased. The studies of Para (16) and Padrão (19) showed the same results.

The number of children affects family diet as well; because by an increase in the family size, the economic power of family to buy modern foods decreases.

Although Coulit et al. (17) shows no relation between marital status and nutrition, in this research, it was one of the effective variables for daughters. Married people eat less modern food than the single ones. As regards to employment status, we see an increase in eating modern foods among those who are employed. Mothers who are employed enjoy a modern dietary habit. Social status shows a positive association with modern eating habits too. In Iran, confirmation of the existence of this relation between social status and diet can be derived from the fact that the families of higher social classes have better economic status and more access to modern kinds of foods. Along with, an increase in using media, eating modern foods increases (23). An increase in educational level of mothers is associated with more eating of modern foods. In contrast, for daughters, eating modern foods is decreased as the educational level increases. This might be due to the greater awareness of daughters with higher education compared to their mothers. This relation has been shown in a number of studies (16-19, 20), indicating that unhealthy eating unhealthy among those with higher level of education is less common.

An increase in physical activity in both generations leads to a decrease in eating modern foods. Neumark and Hannan (29) have found the same result. Weight control has a negative relationship with modern diet. As people exert more control over their weight, the amount of processed food consumed decreases. The relation between variables of body conception, and the diet being traditional or modern was not confirmed (30). Optimum body conception, satisfaction with the body, and BMI lead to positive self-conception in the person. Therefore, dissatisfaction with body image and body conception would lead to the nutritional disorders (30, 31).

Among the mentioned variables, the relation between age and activity rate was negative for both generations. This means that as the daughters and mothers age and activity rate increase, their tendency to eat modern foods decreases. The direction of the relation between education and eating modern foods is positive for mothers and negative for daughters. This fact is probably due to the relation between education and increase in nutritional knowledge. Based on Popkin's theory of nutrition transition, a change in dietary habits from traditional towards modern, is an element of nutrition transition. This study, indicates an increase in prevalence of modern dietary habits among young girls, refers to this transition in population of the current study.

Conclusion

Modern nutritional habits among daughters have increased. In addition, the population age structure is getting older, and fertility is on a low level, representing the fact that, the population under study is experiencing nutrition transition. Current undesired diet in young generation's lifestyle, not only has been recognized as a health threat for these age groups, but also exposes our country to an epidemic of chronic diseases during the next two decades.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Acknowledgments

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