

## Consumption Pattern of Oils and Related Factors in Tehran West Families

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**Inappropriate use of fat in diet is one of the significant risk factors for cardiovascular and other diseases. This is a cross-sectional descriptive study in randomly selected 840 west Tehran residents to determine the fat consumption pattern. Data were collected by a researcher-made questionnaire and analyzed with SPSS software, Correlation, Mann Whitney and Kruskal-wallis tests. The mean age of samples was  $31.56 \pm 6.88$ . The family average members were  $3.68 \pm 1.21$ . The highest and lowest mean of oil consumption was liquid ( $3.5 \pm 2.7$  per week) and animal oil ( $0.6 \pm 1.3$  per week). Frying and solid oils consumption's frequency was declined with increasing of mothers' education level ( $p < 0.05$ ). Frequency of solid oil consumption ( $p < 0.001$ ) and butter ( $p = 0.04$ ) were higher in housewife. Also, with increasing of age, consumption of liquid and fried oils was increased and solid oil was declined ( $p < 0.005$ ). Consumption of butter per serving were higher in larger families ( $p < 0.001$ ). It seems to be necessary to organize proper training programs for increasing of public awareness about hazards of solid saturated fats. A decrease in liquid oil's price, total ban of solid oil advertising in television and media and other measures are effective to reform the fat consumption pattern and increase the people's health level.**

**Key words:** Oil, Consumption pattern, Frequency, Family, Tehran.

Nutrition is one of the key factors in individuals' health. This has a very important place in Iranian traditional medicine as Persian polymath, Razi said: 'Avoid drugs when you can treat with food; and avoid combined drugs when you can medicate with simple drugs.' However, our modern world lives are so infiltrated by poor eating habits that we tend to overlook the fact that it is one of

the contributing factors in many illnesses and that many of them could be prevented with a healthy diet<sup>1</sup>. Based on some surveys, cooking methods correction can decrease oil consumption until 40%<sup>2</sup>. Fat is one of the major components of a diet and is one of the main items in the shopping basket of Iranian households. The sensible consumption of fats can prevent some certain diseases. On the other hand, fats and oils are vital for the body as they provide it with essential fatty acids as well as aiding the body's absorption of fat-soluble vitamins. This substance is high in calorie, highly filling and has a pleasant taste and therefore is popular with many people<sup>1</sup>.

Unhealthy eating habits, especially excessive use of trans fatty acids are considered

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as one of the lifestyle factors that besides genetic could contribute to an increase in cholesterol level in the blood<sup>3</sup>, consequent build-up of plaques in the arteries as a result of a pre-inflammatory response in endothelial cells<sup>4</sup>, gradually narrows the body's arteries and causes transient visual loss, calf pain, mini-strokes, intestinal angina as well as myocardial infarction<sup>5,6</sup>. The consumption of these fatty acids by pregnant and nursing mothers could increase their babies' future susceptibility to obesity as well as metabolic syndrome<sup>7</sup>. The pernicious effects of trans fatty acids on cardiovascular disease has been particularly proven<sup>8</sup>. In addition with cardiovascular diseases, unequal consumption of oil can cause liver and kidney problems, insulin resistance and diabetes, obesity as well as different type of cancer in later life<sup>1,9,10</sup>.

Previous years' statistics show that 84% of cooking consumed oil in our country and 71% of frying oil usage were vegetable oils, therefore 55% of the people requested oil coupon was for their solid oil; and normal and frying liquid oil were only requested by 24 and 20 percent of people respectively<sup>11</sup>. However, at the present thanks to the programs that have been done to educate people and raise their awareness as well as a change in their taste, a reduction of 5% in of this oil usage has been achieved compared to previous years<sup>12</sup>. Pattern of oil usage in our country is lower than developed countries. In addition, since the implementation of the plans to decrease the amount of the trans fatty acids by 10% in edible oils, there has been a significant decline (from 28.8% in 2001 to 5.62% in 2006) in the amount of trans fatty acids in edible oils in Iran<sup>13</sup>. However, yet hydrogenated solid oil utilizations is more than 50 percent of the consumed oil in our country and the rest is for liquid oil ones. According to the Askari and his colleagues' report, unfortunately, the percentage of trans fat acid in these oils exceeds the limit<sup>14</sup>. This ratio should be change in favor of liquid oils. In other words, liquid vegetable oils should make up for 90% of consumed oil and the hydrogenated solid oil should comprise the rest until they are replaced with other oils altogether<sup>15</sup>. In this study we aimed to determine fat consumption patterns of the residents of west Tehran. Since these kinds of studies are one of the targets of the ministry of health, treatment and medical education and are required by health authorities in the country<sup>16</sup>, it is

hoped these studies provide those in authority with the necessary information about citizens' eating habits.

## MATERIALS AND METHODS

This study is a descriptive and cross-sectional study. According to Sample Size Formulas with confident level of 95% and margin of error of 5%, sample size of 384 people was reached. However, for universalization of the study 840 families were selected randomly. This study was conducted in a few areas of west Tehran. The criteria for participating in this study were being female, a resident of west Tehran, married as well as having children. Those who did not reside in Tehran and were reluctant to answer the questions were excluded from the research. The needed data were built in a questionnaire consisted of 23 questions. Besides participants' demographic data such as age, sex, occupation, the mother's and the head of the household's education and the number of the household's members, it was consisted of questions regarding to the frequency of weekly consumption of oil, the amount of used oil at each meal, oil consumption patterns in each age group, the education of the mother and the one of the head of the household and the number of the family members.

To build the questionnaire, as well as a study on scientific references, the suggestions of experienced professors were also utilized; and through a pilot study its aptness were confirmed and to determine the reliability of the questionnaire, a retest test was done on 30 samples of families in west Tehran. After making necessary adjustment, Alpha Cronbach of 0.76 was reached. Data was analyzed with SPSS software and correlation, Man Whitney and Kruskal-Wallis tests.

## RESULTS

The age of subjects ranged from 18 to 26 with an average age of  $6.88 \pm 31.56$  and the number of family members varied from 2 to 10 people with a mean number of  $1.21 \pm 3.68$ . The education of the subjects was also asked in this study which revealed that 52.9% of mothers had high school diploma or very basic education. In terms of participants' occupation, according to the findings of the study

67.9% of the mothers were housewives and the rest were employed and 56.3 of the fathers had state jobs and the rest (43.7%) were employed by private sectors (table 1).

**Table 1.** The demographic data of the subjects

		Abundance	Abundance Percentage
Education	High school diploma or less	444	52.9%
	Further education	396	47.1%
Mother's employment	Housewife	570	67.9%
	employed	270	32.1%
Weight status	Thin	60	7.1%
	Normal	344	41%
	Overweight	314	37.4%
Marital status	Obese	122	14.5%
	Married	788	93.8%
	Divorced	50	6%
	Widowed	2	0.2%

From all oils, liquid oils with 470 people (56%) had the largest proportion of consumers and animals' oil with 30 people (3.5%) had the lowest proportion. The average frequency of oil consumption was  $6.6 \pm 15.4$  times a week. 32.9 of subjects did not use vegetable oil at all and 20.4% of households consumed oil more than seven times a week. Liquid oil with a mean consumption of

$2.7 \pm 3.5$  ranged from 1 to 7 times a week had the highest frequency; solid vegetable oil with an average consumption of  $2.7 \pm 3.2$  (1 to 7 times a week) took the second place. This study suggested that nearly 25-30% of families did consume neither liquid oil nor solid oil. While in some household the consumption of the liquid and solid oil was more than seven times a week (table2).

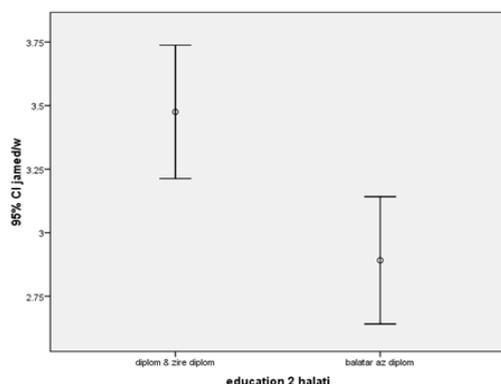
**Table 2.** The average of weekly oil consumption in west Tehran households

Frequency of consumption	Average	Standard deviation	Do not eat	1-3 times	4-6 times	more than 7
Type of oil						
Solid vegetable	3.2	2.7	32.9%	18.9%	27.8%	20.4%
Liquid oil	3.5	2.7	26%	25%	18.7%	30.3%
Animals oil	0.6	1.3	76.3%	17.9%	5.3%	0.5%
Olive oil	0.7	1.4	69.2%	26%	2.7%	2.3%
Butter	2.9	2.5	28.9%	33.1%	20.8%	17.1%
Frying oil	0.9	1.5	68.7%	24/9%	5.1%	1.3%

It is also revealed that 68.7% of the people did not use oils that specially produced for frying. 69.2 of these families did not consume olive oil either. With Spearman's correlation test, it was found that there was a significant association with the number of the family members and the frequency of butter consumption. In other words, butter is used in big families more frequently ( $p=0.01$ ). With Kruskal-Wallis test, it was shown that there was a strong correlation between the

level of mother's education and the frequency of frying and solid oils consumption ( $p<0.05$ ). That is to say, the more educated the mothers were, the less frequent these kinds of oils were used by them. In other words, the higher the head of the household's education was the more frequently the liquid, frying and olive oil and the less solid oil and butter were weekly consumed. Therefore, the frequency of solid oil among people with very basic education is considerably higher than among

those with higher education ( $p < 0.001$ ) (graph1). With Man Whitney test, it was reported that the frequent usage of liquid oil ( $p < 0.001$ ) and butter ( $p = 0.04$ ) among stay-at-home mothers but animal oils ( $p < 0.001$ ) among working ones were higher weekly.



**Graph 1.** Overall frequency of the solid oil consumption according to the education of the mother in west Tehran households

The largest proportion of oil consumed at each meal was liquid oil with a mean amount of  $2.36 \pm 3.08$  spoon at each meal and the smallest proportion was olive oil with an average amount of  $0.47 \pm 0.94$  spoon at each meal. With Spearman's correlation test, it was seen that the older the mothers are the more liquid oils and frying oils and the less solid oil are used ( $p = 0.005$ ). With this test, it was also found out that the usage of butter at each meal in larger families was higher ( $p < 0.001$ ). With Kruskal-Wallis test, it was revealed that in the group whose head of the household had very basic education, the consumption of the solid and animal oils as well as butter was higher at each meal and the usage of liquid, frying and olive oil was lower among those with higher education ( $p = 0.007$ ). With Man Whitney test, the usage of solid oil ( $p = 0.001$ ) and butter ( $p = 0.04$ ) was considerably higher among housewives than working women.

## DISCUSSION

Oils are one of the most common substances consumed by people in our country. According to this study on people's eating habits, fried food satisfies many people's taste and therefore people tend to use hydrogenated solid

oil<sup>11</sup>. Considering the ill effects of excessive use of solid oil<sup>6-8</sup> on people's health and the need for the latest information on healthy nutritional programs, the constant change in people food programs is highly crucial. A study led by Majdi in 85 showed that more than 80% of the consumed oils were solid vegetable oils, in the second place was liquid oil and animal oils came last. This contrast between the findings may be due to the fact that in the recent years the liquid oils have become more available to people.

In Klishadi's<sup>17</sup> study, 80 percent of people in the province of Isfahan and Markazi used solid oil which could be owing to the fact that they are cheaper and more available to people. It is mentioned in Kavusi's study that regarding to the more availability of solid oil in the society, producing less amounts and encouraging people to substitute other oil products can be effective<sup>18</sup>. In a study conducted by Agheli<sup>19</sup>, more than half of the people consumed solid oil and only a very small percentage of them used other kinds of oils. Other studies also confirmed this, namely the study of Khosravi<sup>18</sup>, Razanamahefa<sup>20</sup> and Kimiagar<sup>21</sup>. However, the study led by Rafiei<sup>22</sup> suggested the higher percentage of liquid oil usage. In our study, all in all, a large number of consumers tend to use liquid oils; solid oils and frying oils came after. A small number of consumers also consumed animal oils. In the recent years television and media have played a major role in raising public awareness; television programs which promote healthy lifestyle are broadcast on a daily basis. But the reason why liquid oils are used more in other provinces than Tehran is that there is more choice of healthy oil products (such as different type of liquid oil) in these places than in Tehran. According to Hazavei, designing and performance of educational plans to reduce the solid oil consumption have the significant effect<sup>23</sup>. Also Rasti survey stated that training people about nutrition substances such as solid oil substitution with liquid ones can be beneficial<sup>24</sup>.

This study indicated that older people tend to use more liquid oil than younger people. This could result from their fear of the consequences of using solid and animal oils that are stressed by their doctors. Majdi's study (1) also confirms that In larger families the frequency of butter consumption was higher which could be due to

its reasonable price as well as its pleasant taste when accompanied with other food such as milk, honey, etc. for breakfast as large families cannot afford to purchase expensive items. According to this study, the higher the education of the head of the household was the more frequent was the usage of frying oil, olive oil as well as liquid oil, as opposed to the frequency of solid oil and butter consumption. In the Saeedi study<sup>25</sup> also those with lower education used more animal oils, animal fat and butter. Klishadi's study<sup>17</sup> also indicated that higher education have correlation with using fewer amounts of solid oil.

The Studies led by Czernichow<sup>26</sup>, Lopez<sup>27</sup> and Kvaavik<sup>28</sup> also revealed that there was a strong opposite relation between the level of the education and the consumption of oils such as butter, margarine and animal fats. The frequency of solid oil consumption among housewives was higher than employed women which could be either owing to the fact that housewives do more cooking or because of their ignorance of the consequences of using this kinds of oils. Frying oils with larger number of consumed spoons took the first place and liquid oil was the second and solid oil came the last. For the reason why frying oils are the most popular according to this study, we can mention three reasons: firstly, people eat more fried food. Secondly a spoon of liquid oil such as frying oil contains less fat than a spoon of solid oil (7 gm comparing to 15 gm in each spoon), therefore it is assumed that they are used more. And finally regarding to these oil usages and considering that this kinds of oils only used for frying, it is obvious that frying requires more oil than cooking at each meal.

Khosravi's study<sup>18</sup> that was conducted in 10 provinces of the country, the usage of the liquid oil was considerably lower compared to solid oil. The study of Kimiagar<sup>21</sup> and Razanamahefa<sup>20</sup> also confirmed this. Our study revealed that besides the frequency of consumption, the amount of usage of all solid animal oils and butter at each meal was among the group with very basic education one and a half times more than those with further education; nonetheless, the consumption of all kinds of liquid oil, frying oil and olive oil was significantly lower. This could be because of their higher awareness and consequently their better food choices compared to those with lower level of education.

Czernichow<sup>26</sup> also mentioned in his research that there was an opposite relation between the amount of consumed animal fats and margarine and the level of education. Nevertheless, there was a strong connection between the usage of unsaturated fatty acids like olive oil and their level of education. According to his findings, the frequency of consumption and the amount of the usage of each kind of solid oils, animal oils and butter at each meal are considerably higher among housewives than among working women, but, in contrast, the consumption of liquid oils and frying oils were noticeably lower than employed women.

It seems that the rapid expansion of urbanization and the increase in number of women entering the workforce have had a great impact on people's eating habits. Moreover, because the female subjects who had a job had also a better level of education compared with housewives, they may have a better understanding about this field than those with lower level of education. Furthermore, employed women are more exposed to the latest information and thus they are more likely to replace modern methods with the traditional ones. In contrast with this study, the research carried out by Hupkens<sup>29</sup> suggested an increase in the percentage of women, the consumption of trans fatty acids also went up. But the subjects of his study were working class women who probably had lower financial and social status.

## CONCLUSION

The results of this study shows that even though the higher proportion of subjects stated that they consumed liquid oil, yet the usage of solid oil compared with other kinds of oils is higher. Considering that this study has been conducted in few areas of west Tehran, to achieve a more accurate result, a study on a larger number of the population from the whole areas of the country must be conducted or this study should be carried out with a questionnaire consisted of food record.

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