



## Towards a Holistic Approach to Healthy Diet: Evidence from Iranian Health Perception Study

*\*Jila SADIGHI<sup>1</sup>, Ali MONTAZERI<sup>2</sup>, Katayoun JAHANGIRI<sup>1</sup>*

1. Family Health Research Group, Health Metrics Research Center, Institute for Health Sciences Research, ACECR, Tebran, Iran
2. Mental Health Research Group, Health Metrics Research Center, Institute for Health Sciences Research, ACECR, Tebran, Iran

**Corresponding Author:** Email: sadighi@acecr.ac.ir

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### Abstract

**Background:** The aim of present study was to investigate the relation between the perception of population on healthy diet and lifestyle related behaviors.

**Methods:** As part of national study on Iranian Health Perception, a cross-sectional study was carried out in Iran, 2010. A multistage sampling approach was applied to include a representative sample of population aged between 18 and 65 in the study. To collect data a designed questionnaire was administered.

**Results:** In all 27,883 individuals (50.4% women, 48.8% men) were included in the study. The mean age of participants was 34.6 years (SD = 12.8) and most were married (61%). The findings indicated that Iranian population often pay attention to healthy diet (39.5%), never smoke (74.9%), sometimes were doing exercise (29.5%), felt happy to some extent (39.5%), often care about themselves (47.1%) and rated their health as good (54.5%). Further analysis of the data showed that increased paying attention to healthy diet was associated with reduced smoking, more exercise, more self-care and happiness, and a better self-rated health status.

**Conclusion:** The findings suggest that a healthy diet and other determinants of lifestyle are very integrated into each other. The efforts for changing any components of lifestyle can potentially change all individual related lifestyle behaviors. Indeed, one of effective strategies in fostering healthy diet is fostering other healthy lifestyles. This holistic approach might help decision-makers to design appropriate interventions in order to influence diet behaviors of people.

**Keywords:** Nutrition, Lifestyle, Smoking, Exercise, Healthy choices

### Introduction

Health is basically a biological phenomenon that interacts with factors of behavior, environment, health care system and lifestyle (1). The main components of a healthy lifestyle are healthy nutrition, adequate physical activity, avoiding smoking and preventing drug and alcohol abuse. Epidemiological studies have shown that dietary behavior, managing weight, exercise and not smoking may reduce risk of many diseases (2-6). Cardiovascular disease that is responsible for al-

most half of all deaths in industrialized countries can be prevented or delayed as much as seventy percent by dietary choices and lifestyle modifications (7). Obesity is related to increased risk of coronary heart disease and consequent deaths. For instance, a body mass index greater than 30 might increase the risk of sudden deaths by two times compared to normal weight population (8, 9). Healthy lifestyle may also be beneficial in preventing ischemic strokes (10-12). Furthermore the dif-

ferences in cancer rates among countries indicate that some aspect of lifestyle such as diet may influence the risk (13, 14).

Almost similar to other countries lifestyle in Iran is changing due to several reasons including social and economic changes. Lifestyle changes might cause considerable health problems. Studies from Iran showed that chronic diseases increased over time and are linked to changes in lifestyle such as decrease in physical activity and changing pattern in diet (15).

However, although a healthy lifestyle is a leading factor for reducing the prevalence and incidence of health problems, convincing people that lifestyle is valuable factor for a good health is a complex process. The World Health Organization states 'Lifestyle is a way of living based on identifiable patterns of behavior which are determined by the interplay between an individual's personal characteristics, social interactions, and socioeconomic and environmental living conditions' (16). Usually people do not choose the healthy diet, or the cultural, economical or social conditions do not let them to change their dietary behaviors. In this situation, defining specific interventions to change other components of lifestyles might be better and more realistic approach than change people's diet behaviors directly.

The aim of present study was to investigate relation between the perception of population on healthy diet and lifestyle related behaviors. Our hypothesis was that the components of all lifestyle behaviors are integrated and we can implement appropriate interventions to influence more intuitive health determinants in order to change other factors that are seem far too complicated.

## Materials & Methods

### *Design and participants*

As part of national study on Iranian Health Perception, a cross sectional study was carried out in order to investigate about healthy diet and lifestyle. The study population was consisted of all Iranians aged between 18 and 65 yr. Respondents were contacted at their home and were asked to respond to a short questionnaire.

### *The study questionnaire*

To collect data a designed questionnaire was administered. The questionnaire contained items on demographic and lifestyle information. Demographic information included recording of age, gender, education, marital status, occupation and income. Lifestyle information included recording of smoking, exercise, happiness, self-rated health and self-care. The dependent variable was an item on 'paying attention to healthy diet'. Each item was rated on a 5-point scale ranging from 1 (never) to 5 (always). Response categories for self-rated health with different wording also ranged from 1 (very poor) to 5 (very good).

### *Sampling*

The study sample was recruited through a multi-stage approach. At first stage, the population of Iran was stratified into separate geographical regions (Provinces). Then a cluster sampling method was applied. To obtain the greatest possible sample size, we set dependent variable at 50% proportion giving an estimate of 400 individuals for each province. A total sample of 24000 individuals was thought considering a design effect of 2, and that Iran had 30 provinces at the study commence. However, the actual sample included in the study was 27883 people.

### *Statistical analysis*

Descriptive statistics were used to explore the data. The association between dependent variable (paying attention to healthy diet) and other lifestyle factors (smoking, exercise, happiness, self-care and self-rated health) was performed using the Pearson correlation and one-way analysis of variance. *P*-values of <0.05 were considered to be statistically significant. Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, USA) version 18 was used for statistical analyses.

### *Ethics*

The Institutional Review Board of Iranian Institute for Health Sciences Research approved the study. All participants gave oral consent.

## Results

In all 27883 Iranian people aged between 18 and 65 were studied. The mean age of participants was 34.5 (SD = 10.1) years. Demographic characteristics of the respondents are shown in Table 1. The mean score of "paying attention to healthy diet" in female and male were 3.51 (SD=0.93) and 3.52 (SD=0.95), respectively. There was no significant difference between male and female ( $P= 0.8$ ). There were a significant relationship between 'paying attention to healthy diet' and occupation, marital status, income and age ( $P < 0.01$ ) (Table 1).

The descriptive findings of the study are shown in Table 2.

The results showed that 13.4 % (n =3735) of the respondents reported that they always pay attention to their nutrition while 2.8% (n =784) stated that they never did. A high proportion of the respondents (74. 9%, n = 20779) reported that they never smoked, sometimes were doing exercise (29.5%, n=8190), felt happy to some extent (39.5%, n=10952), often care about themselves (47.1% n=13061) and rated their health as good (54.5%, n=15055).

**Table 1:** Demographic characteristics and 'paying attention to healthy diet', Iran

Characteristic	Paying attention to healthy diet		
	n. (%) *	Mean (SD)	P-value
Gender			
Female	14009 (50.8%)	3.51 (0.93)	0.8
Male	13575 (49.2%)	3.52 (0.95)	
Occupation			
Housewife	7156 (26.2%)	3.47 (0.91)	< 0.01
Student	6057 (22.2%)	3.59 (0.94)	
Employed	10538 (38.6%)	3.55 (0.93)	
Unemployed	2446 (9.0%)	3.32 (0.98)	
Retired	1074 (4%)	3.50 (0.93)	
Marital status			
Single	9963 (36.2%)	3.55 (0.95)	< 0.01
Married	16805 (61.0%)	3.51 (0.92)	
Divorced	269 (1.0%)	3.07 (1.01)	
Widowed	502 (1.8%)	3.15 (0.97)	
Income			
Very high	2775 (10.4%)	3.27 (1.10)	< 0.01
High	3953 (14.8%)	3.28 (0.95)	
Intermediate	11565 (43.2%)	3.50 (0.88)	
Low	7565 (28.2%)	3.69 (0.87)	
Very low	927 (3.4%)	3.98 (1.01)	
Age group			
18-25	10040 (36.1%)	3.57 (0.93)	< 0.01
26-35	8099 (29.1%)	3.54 (0.93)	
36-45	4996 (18.0%)	3.50 (0.91)	
46-55	3221 (11.6%)	3.38 (0.96)	
56-65	1441 (5.2%)	3.34 (0.92)	

\* Differences in total numbers of study population (n=27883) are due to missing data

The correlation between 'paying attention to healthy diet' and lifestyle behaviors are presented in Table 3. There was a significant positive correlation between paying attention to healthy diet and exercise, happiness, self-care and self-rated health ( $P < 0.001$ ). A significant negative correlation was

found between paying attention to healthy diet and smoking ( $P < 0.001$ ). To explore the data further showed that increased paying attention to healthy diet was associated with reduced smoking, more exercise, more self-care and happiness, and a better self-rated health status (Fig. 1).

**Table 2:** Frequencies of paying attention to healthy diet and other components of lifestyle, Iran

Variables	Never	Rarely	Sometimes	Often	Always	Total*
Paying attention to healthy diet (%)	784 (2.8)	2582 (9.3)	9726 (35)	10970 (39.5)	3735 (13.4)	27797 (100)
Smoking (%)	20779 (74.9)	2918 (10.5)	2344 (8.5)	1285 (4.6)	420 (1.5)	27746 (100)
Exercise (%)	6947 (25)	8013 (28.8)	8190 (29.5)	3529 (12.7)	1123 (4)	27802 (100)
Happiness (%)	832 (3)	2767 (9.9)	10952 (39.5)	9858 (35.4)	3404 (12.2)	27813 (100)
Self-care (%)	359 (1.3)	1257 (4.5)	6690 (24.2)	13061 (47.1)	6355 (22.9)	27722 (100)
Self-rated health (%)**	226 (0.8)	1247 (4.5)	6227 (22.5)	15055 (54.5)	4889 (17.7)	27644 (100)

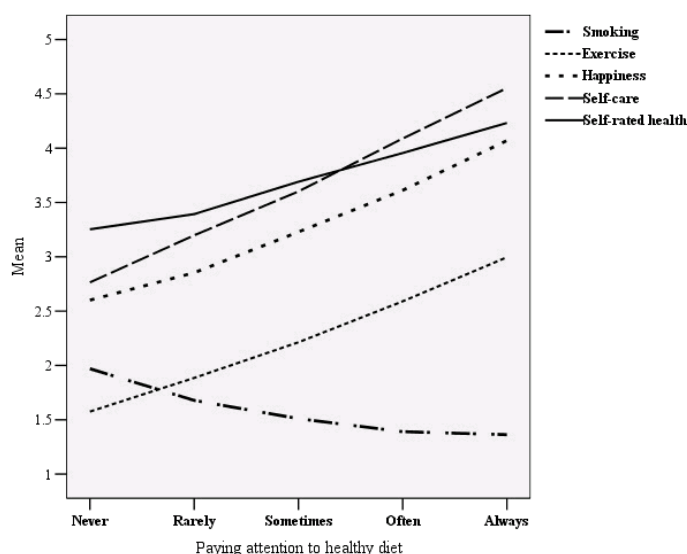
\* Differences in Total are due to missing data.

\*\* Scale ranging for Self-rated health is Very poor, Poor, Fair, Good and Very good

**Table 3:** Correlation between paying attention to healthy diet and other components of lifestyle, Iran

Variables	Paying attention to healthy diet	Smoking	Exercise	Happiness	Self-care	Self-rated health
Paying attention to healthy diet	1	- 0.123*	0.302*	0.383*	0.491*	0.304*
Smoking	-	1	- 0.012*	- 0.078*	- 0.171*	- 0.135*
Exercise	-	-	1	0.300*	0.235*	0.246*
Happiness	-	-	-	1	0.371*	0.373*
Self-care	-	-	-	-	1	0.434*
Self-rated health	-	-	-	-	-	1

\* Correlation is significant at the 0.01 level (2-tailed)



**Fig. 1:** Relationship between 'paying attention to healthy diet' and other lifestyle components, Iran

## Discussion

This was a nationwide study and the findings showed that paying attention to healthy diet among Iranians was poor and a relatively high proportion of the population never did exercise. We also found that the prevalence of smoking was not low. These findings are considerable given the importance of association of dietary patterns and other lifestyle factors with the mortality from all causes, cardiovascular diseases, and some cancers (17).

One explanation for the findings from this study might be related to the word 'healthy diet'. We did not define healthy diet for the respondents and rather relied on their own definitions. Perhaps healthy diet for some people meant controlling weight and following a specific diet while for some others it meant following a diet recommended by health professionals. It is well known that major approaches to a healthy diet include reduced caloric intake, total fat, saturated fat, trans fat, and cholesterol with proportional increases in mono-saturated, n-3 (omega-3), and n-6 fatty acids; increased dietary fiber, fruit, and vegetables; increased micronutrients; increased plant protein instead of animal protein; and reduced portions of highly processed foods (18). Nevertheless, we be-

lieve that implementing any intervention that aims to enhance health of population should make people aware of what healthy behavior is and what is not or making healthy choices easy choices (19). Present study showed no differences between female and male in terms of paying attention to healthy diet. However, studies showed female gender was positively associated with healthy dietary habits (18, 20). One explanation for such an observation might be related to the fact that perhaps women had more expectations than standard definition of healthy diet, or men thought to have a healthy diet more than they actually have. The present study also showed old age group, divorced, unemployed, and low-income people were in high risk groups because they paid least attention to healthy diet. It is obvious that the groups with fewer resources or facilities, or fewer social support paid lower attention to healthy diet.

The findings showed that young age groups paid more attention than elderly people to healthy diet. This result was inconsistent with findings from other studies where it was shown less optimal eating habits in young people with high consumption rates of Western-style or processed food (18, 20-22). These data provide evidence that Iranian young people perhaps did not believe or did not care that processed food to be low in nutritional qualities. These contrary findings warrant further investigations in order to determine knowledge and attitude of Iranian population about healthy diet.

The findings of present study confirmed the results of a cohort study in the United States that showed dietary patterns are influenced by demographic, socio-cultural, and other lifestyle factors (23). The findings of present study showed that those who pay more attention to healthy diet are those who do more exercise and are happier. They cared about themselves more and they rated their health better. Interestingly when paying attention to healthy diet increased, the amount of smoking reduced. However, due to cross sectional nature of the study, one should be careful in interpreting the results. For instance one might argue that those who were happier, paid more attention to healthy diet, smoked less and did exercise more,



or those who did exercise more, paid more attention to healthy diet, were happier and smoked less. The findings of the present study showed that the components of lifestyle have close relationship together and each component affected by the changes of other components. We believe that one of the barriers to implementing healthy diet include missing the concept of integration between lifestyle behaviors. Indeed, one of effective strategies in fostering healthy diet is fostering other healthy lifestyles. The holistic approach for changing any components of lifestyle can potentially change all individual related lifestyle behaviors. On the other hand, the efforts to improve healthy diet by enabling people to change their diet habits must be directed not only at the individual's diet, but also at the other living conditions which contribute to other components of lifestyle like change their exercise activities, make their happier life or improve their other healthy behaviors.

## Conclusion

Holistic nutritional interventions are typically correlated by other aspects of health determinants as well as by lifestyle behaviors. Indeed this holistic approach might help policy and decision-makers to design alternative interventions to influence people's diet and target those who are at risk.

## 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.

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## References

- Owen AL, Splett PL, Owen GM, Frankle RT (1999). *Nutrition in the Community: The Art and Science of Delivering Services*. 4th ed. New York: WCB McGraw-Hill.
- Pala V, Sieri S, Masala G et al. (2006). Associations between dietary pattern and lifestyle, anthropometry and other health indicators in the elderly participants of the EPIC-Italy cohort. *Nutr Metab Cardiovasc Dis*,16:186-201.
- Chiuve SE, McCullough ML, Sacks FM, Rimm EB (2006). Healthy lifestyle factors in the primary prevention of coronary heart disease among men: benefits among users and nonusers of lipid-lowering and antihypertensive medications. *Circulation*, 114:160-167.
- Trichopoulou ACT, Bamia C, Trichopoulos D (2003). Adherence to a Mediterranean diet and survival in a Greek population. *N Engl J Med* , 348:2599-2608.
- Hu FB, Manson JE, Stampfer MJ, Colditz G, Liu S, Solomon CG, Willett WC (2001). Diet, lifestyle, and the risk of type 2 diabetes mellitus in women. *N Engl J Med*, 345:790-797.
- Platz EA, Willett WC, Colditz GA, Rimm EB, Spiegelman D, Giovannucci E (2000). Proportion of colon cancer risk that might be preventable in a cohort of middle-aged US men. *Cancer Causes and Control*, 11:579-588.
- Forman D, Bulwer BE (2004). Cardiovascular disease: optimal approaches to risk factor modification of diet and lifestyle. *Curr Treat Options Cardiovasc Med*, 8:47-57.
- Gohlke H (2004). Lifestyle modification - is it worth it? *Herz*, 29:139-44.
- Stampfer MJ, Hu FB, Manson JE, Rimm EB, Willett WC (2000). Primary prevention of coronary heart disease in women through diet and lifestyle. *N Engl J Med*, 343:16-22.
- Galimanis A, Mono ML, Arnold M, Nedeltchev K, Mattle HP (2009). Lifestyle and stroke risk: a review. *Curr Opin Neurol*, 22:60-8.

11. Chiuve SE, Rexrode KM, Spiegelman D, Logroscino G, Manson JE, Rimm EB (2008). Primary prevention of stroke by healthy lifestyle. *Circulation*, 118:947-54.
12. Kurth T, Moore SC, Gaziano JM, Kase CS, Stampfer MJ, Berger K, Buring JE (2006). Healthy lifestyle and the risk of stroke in women. *Arch Intern Med*, 166:1403-9.
13. Rohan TE, Soskolne CL, Carroll KK, Kreiger N (2007). The Canadian Study of Diet, Lifestyle, and Health: design and characteristics of a new cohort study of cancer risk. *Cancer Detect Prev*, 31:12-7.
14. Willett WC (2001). Diet and cancer: one view at the start of the millennium. *Cancer Epidemiol Biomarkers Prev*, 10:3-8.
15. Ghassemi H, Harrison G, Mohammad K (2002). An accelerated nutrition transition in Iran. *Public Health Nutr*, 5:149-55.
16. The WHO Health Promotion Glossary, 1998 version. Available: <http://www.who.int/healthpromotion/about/HPG/en/> (Accessed October 2012).
17. Knoop KT, de Groot LC, Kromhout D, Perrin AE, Moreiras-Varela O, Menotti A, van Staveren WA (2004). Mediterranean diet, lifestyle factors, and 10-year mortality in elderly European men and women: the HALE project. *JAMA*, 292:1433-1439.
18. Hosseini-Esfahani F, Jazayeri A, Mirmiran P, Mehrabi Y, Azizi F (2008). Dietary patterns and their association with socio-demographic and lifestyle factors among Tehranian adults: Tehran Lipid and Glucose Study. *Journal of School of Public Health and Institute of Public Health Research*, 6:23-36.
19. World Health Organization. Nutrition. Available: <http://www.who.int/nutrition/topics/obesity/en/> (Accessed June 2013).
20. Johansson L, Thelle DS, Solvoll K, Bjørneboe GE, Drevon CA (1999). Healthy dietary habits in relation to social determinants and lifestyle factors. *Br J Nutr*, 81:211-20.
21. Sánchez-Villegas A, Delgado-Rodríguez M, Martínez-González MA, De Irala-Estévez J (2003). Gender, age, socio-demographic and lifestyle factors associated with major dietary patterns in the Spanish Project SUN. *Eur J Clin Nutr*, 57: 285-92.
22. Phongsavan P, Olatunbosun-Alakija A, Havea D, Bauman A, Smith BJ, Galea G, Chen J (2005). Health behaviour and lifestyle of Pacific youth surveys: a resource for capacity building. *Health Promot Int*, 20: 238-248.
23. Park SY, Murphy SP, Wilkens LR, Yamamoto JF, Sharma S, Hankin JH, Henderson BE, Kolonel LN (2005). Dietary patterns using the food guide pyramid groups are associated with sociodemographic and lifestyle factors: The Multiethnic Cohort Study. *J Nutr*, 135:843-9.