

## Migraine risk factors in Qashqai migrating nomads: An adjusted multiple correspondence analysis approach

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### ABSTRACT

**Objectives:** To determine the migraine risk factors in Qashqai migrating nomads using an adjusted multiple correspondence analysis approach.

**Methodology:** In summer 2006, 750 Qashqai migrating nomads aged 25 years or older in Fars Province, Southern Iran were enrolled using a multiple-stage cluster random sampling. A questionnaire consisting of demographic characteristics, lifestyle and migraine diagnosis was used for each subject. The association of each risk factor was assessed using an adjusted multiple correspondence analysis.

**Results:** The prevalence of migraine was 18% in males and 28% in females. It was higher in overweight and obese subjects, those who consumed roasted foods, widows, female gender and in the age group of 35-50 years old.

**Conclusion:** Multiple correspondence analyses were suitable choices to determine detailed results of complex categorical data in migraine risk factors.

**KEY WORDS:** Headache, Migraine, Risk factor, Correspondence analysis, Nomad.

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### INTRODUCTION

The risk factors of migraine headache have been studied frequently but still several aspects are not fully clarified. Some of risk factors are person and place dependent, in fact, epidemiological patterns of migraine have been different in various world regions which is of public health importance and can play an important role in prevention of migraine and promotion of patients' quality of life. Headache is a complication that many physicians may face it.<sup>1</sup> More than 90% of people, at least, have experienced headache attacks during a one year period.<sup>2</sup> So it is of health importance and interventions.<sup>3,4</sup> Migraine is the most common type of a chronic headache and with recurrent attacks.<sup>2</sup> The prevalence of attacks in women was shown to be 18% and in men 6%,<sup>5</sup> while among all disability disorders, it ranks 19<sup>th</sup>.<sup>2</sup>

Headache is not life threatening, but may disrupt the patient's quality of life. Its destructive effects is reflected in the family, care of children, loss of useful

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timework schedule, cost of treatment and has many physical complications.<sup>3-5</sup> Numerous assumptions have been expressed on etiology of migraine, but many factors are not still determined.<sup>5,6</sup> Physicians believe that migraine is due to a dilation and narrowing of blood vessels in the head but now the role of genes in this relation were also described.<sup>7</sup> Migraine headache is often a throbbing or pulsing pain in one side of the head that may be mild or severe and may be associated with gastrointestinal and neurological changes and in all cases is accompanied by anorexia, nausea and sometimes vomiting.<sup>6</sup> The headache may often last for hours or days.<sup>7</sup> The risk factors of migraine headache were frequently studied but still many of them are not fully known.<sup>8</sup> The prevalence of migraine was demonstrated to be related to age, income, race, rural and urban residence and lifestyle.<sup>9,10</sup>

Studies on migraine in Iran were limited to Aya-tollahi and Sahebi's study.<sup>4</sup> Migrating nomads in Fars Province, Southern Iran are a group of tribes who migrate about 500 kilometers from summer to winter quarters that are divided into three groups of Lor, Qashqai and Arabs. Their lifestyle and nutrition is different from urban population while living in tents with their domestic animals with less social and environmental stresses. They do not have an easy access to health centers too. Qasqai tribes are Turkish who live in the Fars Province.<sup>11</sup>

Chi-square, Fisher Exact and Likelihood ratio tests were used to determine the association between Migrain headache and its risk factors.<sup>12,13</sup> Another suitable method with no assumption for large number of variables is correspondence analysis<sup>14</sup> which is applicable for analyses of large contingency tables and a tool to analyze the association between two or more categorical variables by representing the categories of the variables as points in a low-dimensional space.

Categories with similar distributions will be represented as points that are close in space, and categories that have very dissimilar distributions will be positioned far apart.<sup>15</sup> For more than two variables, the adjusted multiple correspondence analysis was shown to be a suitable method. In this method, we assume that rows and columns of data matrix are points in Euclidean space with high dimensions and purpose of this technique redefines dimensions that retains most variability of data with minimum of dimensions.<sup>16</sup> So this method can summarize the calculations and give a better understanding than usual analyses and interpretations.

Due to lack of data in tribes with an specific lifestyle, this cross-sectionals study was undertaken to investigate the relationship between migraine headache and its risk factors using an adjusted multiple correspondence analysis in Qashqai migrating nomads.

## METHODOLOGY

In a cross-sectionals study from September to December 2007 using a multistage cluster sampling method, 750 Qashqai migrating nomads in Fars Province, Southern Iran aged 25 years and older were enrolled. Data were collected using a questionnaire consisting demographic characteristics, lifestyle and food habits. Migraine headache was diagnosed by a trained physician. All subjects were asked about any history of migraine headache (pulse headaches on one side of the head, fear of light, any nausea or vomiting, sleeplessness, etc.). A control group was used to compare the results. The risk factors used in the analysis were consumption of any fried foods (everyday, 1-3 times per week, 1-3 times per month, never), consumption of vegetables (everyday, 1-3 times per week, 1-3 times per month, never), marriage status (single, married, widow, divorced), BMI (underweight, normal, overweight, obese), age (25-35, 36-50, 51-70, >70) and gender.

In this analysis, SPSS software (Version 17, Chicago, IL, USA) was used for statistical analysis using the adjusted multiple correspondence analysis. A p value less than 0.05 was considered significant.

## RESULTS

Among the 750 Qashqai nomads, 295 (39%) were male and 455 (61%) were female. The prevalence of migraine headache was 18% in men and 28% in

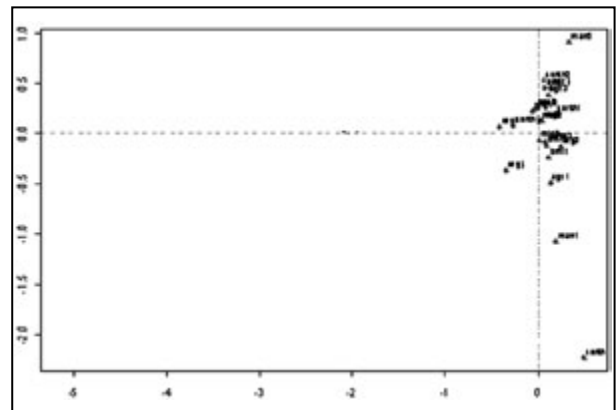


Fig.1: Symmetric map from relationship between migraine and risk factors.

women Age range of 25-85 years, 43.1±14.2 years). Using adjusted multiple correspondence analysis method, the total variability (total inertia) or total information were described in 8 dimensions. The variability of data in two dimensions was 60% of the data's total variability. First dimension in analysis of data, the horizontal axis, had the most variability. The second dimension, vertical axis, had the maximum value of the total data variability. Each level of variable was determined as a point in a two dimensional space and the points with a closer distance was shown to have more relationship. In Table-I, information about inertia (variability) of points is presented. If the percentage of explained variability for a point was very small, it was deleted from the analysis. In the present study, all points were remained in the model.

### DISCUSSION

Our findings showed that consumption of fried food had a significant correlation with migraine headache. In one study in 2006,<sup>2</sup> the relationship between migraine headache and consumption of fatty meals was significant identical to our results. Regarding age, this study showed that in 35-50 years age group, the prevalence of migraine headache was higher similar to other studies.<sup>17-19</sup>

BMI in the present study was significantly correlated with migraine headache. The overweight and obese individuals had more migraine headaches. These findings were in accordance with the results in Germany,<sup>13</sup> and United States.<sup>20</sup> In Our study, the marriage status had a significant relationship with migraine headache (more in divorced and widows). In a study in Turkey in 2003, it was shown that the prevalence of migraine was higher in married individuals.<sup>21</sup> In another study in Shiraz, Iran<sup>4</sup> in 2007, no correlation was noticed between marriage status and migraine headache.

Using adjusted multiple correspondence analyses; there was a relationship between categorical variables especially in a large number of variables with more details and migraine headache.<sup>12</sup> Therefore, multiple correspondence analyses were suitable choices to determine detailed results of complex categorical data in migraine risk factors.

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Table-I: Summary information of adjusted multiple correspondence analysis.

Variable	Subset variable	Label	Inertia	Inertia %
Migraine	Yes	Mig1	0.001	3
	no	Mig2	0.000	0.9
Married	single	Marr1	0.005	15
	Married	Marr2	0.001	3
	Other	Marr3	0.002	6
Consumption of roasted food	Every	Fried1	0.001	3
	1-3 per week	Fried2	0.001	3
	1-3 per month	Fried3	0.001	3
	Never	Fried4	0.002	6
Consumption of vegetables	Every	Veg1	0.002	6
	1-3 per week	Veg2	0.001	3
	1-3 per month	Veg3	0.000	0.9
	never	Veg4	0.002	6
BMI	Underweight	Bmi1	0.001	3
	Normal	Bmi2	0.001	3
	Overweight	Bmi3	0.001	3
	Fat	Bmi4	0.001	3
Age	<35	Age1	0.004	12
	35-50	Age2	0.001	3
	50-70	Age3	0.002	6
	>70	Age4	0.002	6
Gender	Male	Sex1	0.001	3
	Female	Sex2	0.001	3

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