Obesity, Acculturation, and Perceived Stress in Meskhetian Turk (Ahiska) Immigrants in the United States[*]

Amerika Birleşik Devletleri'ndeki Ahıska Türk Göçmenlerinde Obezite, Kültürleşme ve Algılanan Stres

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Abstract

Acculturation is defined as adaptation within a new and different society. Acculturation has effects on both physical and mental health of immigrants. The aim of the study is to examine the acculturation, perceived stress, and obesity behaviors of Meskhetian immigrants living in America. In the study conducted with the participation of 109 Ahıska Turkish participants, the predictive factors of obesity, acculturation and perceived stress were measured. Obtained data were analyzed with SPSS program using independent sample t-test, ANOVA, Pearson correlation and regression tests. As a result of the analyzes, it was found that there was no statistically significant relationship between obesity and age, gender, socio-economic status, physical activity, acculturation, and perceived stress. However, the findings revealed a significant relationship between daily consumption of vegetables, fruits and hamburgers, cheeseburgers or meatballs and obesity. In addition, weekly vegetable consumption, monthly hamburger, cheeseburger, or meat consumption were found to be significantly associated with moderate/morbid obesity. The findings are discussed in terms of their contribution to understanding the psychological disorders and eating habits that affect the health of minority and immigrant groups in the USA because of acculturation.

Keywords: Acculturation, obesity, perceived stress, nutrition, Meskhetian Turk immigrants

Paper Type: Research

Öz

Kültürleşme, yeni ve farklı bir toplum içinde adaptasyon sağlama olarak tanımlanır. Kültürleşmenin göçmenlerin hem fiziksel hem de ruhsal sağlığı üzerinde etkileri bulunmaktadır. Çalışmanın amacı Amerika'da yaşayan Ahıska göçmenlerinin kültürleşme, algıladıkları stress ve obezite davranışlarını incelemektir. 109 Ahıska Türk katılımcının katılımı ile gerçekleştirilen çalışmada, katılımcılarda obezitenin yordayıcı faktörleri ile kültürleşme ve algıladıkları stress ölçülmüştür. Elde edilen veriler bagımsız örneklem t-test, ANOVA, Pearson korelasyon ve regresyon testleri kullanılarak SPSS programı ile analiz edilmiştir. Analizlerin sonucunda obezite ile yaş, cinsiyet, sosyo-ekonomik durum, fiziksel aktivite, kültürleşme ve algılanan stres arasında istatistiksel olarak anlamlı ilişkiler olmadığı bulunmuştur. Ancak bulgular günlük sebze, meyve ve hamburger, çizburger veya köfte tüketimi ile obezite arasında anlamlı ilişki ortaya koymuştur. Bunun yanında haftalık sebze tüketiminin, aylık hamburger, çizburger veya et tüketiminin orta/morbid obezite ile anlamlı bir ilişkisi olduğu görülmüştür. Bulgular, kültürleşmenin sonucu olarak ABD'deki azınlık ve göçmen grupların sağlığını etkileyen psikolojik rahatsızlıkların ve yeme alışkanlıklarının anlaşılmasına yönelik katkıları bakımından tartışılmıştır.

Anahtar Kelimeler: Kültürleşme, obezite, algılanan stress, beslenme, Ahıska Türk göçmenleri.

Makale Türü: Araştırma

Introduction

Obesity is a chronic disease among ethnic minorities and a major health concern for adult immigrants in the United States (Albrecht & Gordon-Larsen, 2013). Obesity rates have increased rapidly from 14% to 34% over the past three decades among adults in the United States (Obisesan, 2015). The prevalence of obesity has been linked to chronic health problems and consequences such as heart diseases, diabetes, hypertension, stroke, and cancer, which cancer was the leading cause of death (Ade, Rohrer, & Rea, 2011). The immigrant population in the United States has significantly increased in last three decades (Obesisan, 2015). The United States Census Bureau data showed that the number of ethnic groups in the United States continues to increase rapidly and will reach 14.8% of the total U.S. population by 2030 (Obesisan, 2015). The prevalence of obesity is higher among different ethnic groups after residing in the United States than their native counterparts who did not immigrate (Fitzgerald, 2006). Past studies have indicated the relationships between migration, cultural change, and perceived stress. For example, perceived stress due to acculturation has been associated with health outcomes such as increased body mass index (BMI), obesity (Sundquist & Winkleby 2000) and chronic diseases (Brown & James 2000; Duboz et al. 2012; Agyei et al. 2014). Fitzgerald (2006), examining aspects of obesity after migration among ethnic groups, found that there was a greater frequency of BMI and obesity among Mexican immigrant women in United States.

Acculturation is the process of cultural adjustment or change that a group or individual experiences when previously separate cultures interact with one another (Salsberry & Reagan, 2009). It often occurs when a minority culture interacts with a host culture. Perceived stress may impact on minority groups through acculturation processes that influence eating behaviours (e.g. diet, activity) and lifestyle. While greater acculturation process has been associated with increased BMI, obesity, perceived stress among minority groups in the United States (Winham 2012; O'Brien et al. 2014; Luecken et al. 2017), there is also evidence that high acculturation, along with maintenance of heritage culture, has been associated with lower levels of stress and depression and higher levels of self-esteem (Padilla 2006; Vasquez et al. 2011; Nguyen & Benet-Martınez 2013). This dichotomy has also been seen in studies examining acculturation and obesity in African-American populations (Adedoyin et al., 2010). For example, high acculturation has been found to be a protective factor in African- American men, but a risk factor in African American women (Song et al. 2004), while low acculturation has been associated with psychological issues such as perceived stress and depression Hispanic population (CDC, 2014).

The acculturation process can have an important impact on psychological adjustment and eating behavior. The changes to behaviours, beliefs, or identity that groups or individuals undergo are influenced by variety factors (Fox et al. 2017). One such factor is eating habits, which could either increase BMI and obesity risk by encouraging an individual to eat fast-food, unhealthy, and cheap food in the host culture. For example, a study of Middle Eastern immigrants in the United States found that indiviudals who exposed to eat unhealthy and cheap food in the host culture had a high prevalence of being overweight (56.8%) which it was above the average of other immigrant groups. This high overweight prevalence among Middle Eastern could be attributed in part to the changes in lifestyle such as diet, physical activity, and smoking (Shafeek, 2022).

Also, acculturation may have an important impact on Middle Eastern Americans' health overall. Middle Eastern Americans experience discrimination in the US due to different events that occured in the past which lead them to perceive stress more. One study reported that a lack of assimilation in Arabic individuals who immigrated to the US predicted stress, depression, and diabetes (Jaber et al. 2003). Another found that Arabic Americans who were integrated in the host culture, meaning that they reported moderate ethnic identity to both Arabic and American cultures, had better self-perceived physical health and less psychological, whereas individuals who had higher host orientation and, therefore, were considered as assimilated, reported better

mental health (Jadalla & Lee 2012). At the minority group level, acculturation often results in changes to culture, religious practices, health care, and other social institutions.

There are also significant ramifications on the food and language of those becoming introduced to the overarching culture. A study by Lesser et al. (2014) reported that Asian immigrants who immigrated to the US speaks English better in the US performed better assimilation, participated intercultural activities and gain identification with dominant society. These people seem to have healthy lifestyle and eating habits than those who do not speaks English in the US. Also, people who have language proficiency among minority groups show a greater level of self-esteem, lower levels of perceived stress and psychological issues as compared to low language proficiency counters (Obesisan, 2015). There is also evidence that these people stay healthy, physically, and mentally active due to high level of acculturation in the host culture where the language proficiency provided better opportunities. This result indicates that language proficiency is associated with assimilation process, eating habits, psychological issues, and acculturation process among minority groups. Also, perceived stress is a variable that most of the immigrants' experience in their inner feeling during acculturatin period (Isasi et al., 2015). Perceived stress is associated with environmental, cultural, social, and socioeconomic factors that directly influence individuals' experiences, feelings, and perceptions of stress (Duboz et al., 2012). Many studies showed that stressful situations influence the persons' eating behaviors which is associated with obesity and overweight (Blundell & Gillett, 2001; Drewnowski & Specter, 2004). Most of the immigrants (60.5%) perceived stress during their journey to the US and 31.7% of them experienced anxiety and depression because of a stressful migration event (Potochnick & Perreira, 2010).

Obesity research on ethnic minorities provides evidence that immigrants in the host culture are particularly vulnerable to obesity; 49% of the non-Hispanic African American population, 44.5% of the Hispanic population, 32.6% of the non-Hispanic white population, and nearly 11% of the non- Hispanic Asian population were identified as overweight and obese in the United States after migration (CDC, 2014). The factor could be discrimination, which could either increase acculturation processes by encouraging an individual to become more like the host culture, or conversely decrease acculturative processes by discouraging participation in host cultural norms because of an unwelcoming and hostile environment (Fox et al. 2017). Thus, immigrants encounter different psychological issues such as high level of perceived stress, depression, and anxiety (Nobles & Sciarra, 2000). For example, a study of Hispanic immigrants in the United States found that individuals retained their heritage cultural orientation when there were higher levels of perceived discrimination, and increased host cultural orientation when there was less perceived discrimination (Ibrahim & Case, 2011). Given the demonstrated acculturative and health impacts of discrimination (Ogden et al., 2014), it is important to consider how discrimination may moderate the impact of acculturation on human psychological adjustment, eating behavior, and overall health. Hispanic immigrants have higher rate of perceived stress (36.3%) and psychological disturbances (22.8%) in the host culture due to acculturation process as compared to African American (29.2%) and Asian immigrants (10.75) (Rodriguez & Morrobel, 2004).

It is possible to predict the rates of obesity based on the certain risk factors including different levels of acculturation, perceived stress, diet, lack of physical activity, access to health care, socioeconomic status (SES), and duration of the residency in the host culture. The prevalence of obesity has been associated with these risk factors, which trigger serious diseases including diabetes, high blood pressure, cholesterol, heart diseases, stroke, and cancer in immigrant groups (Isasi et al., 2015). Evidence shows that acculturation risk factors, socioeconomic status (SES), and environmental and cultural factors have been identified as contributing factors to obesity among immigrant groups (Ade et al., 2011). These obesity-contributing factors have been examined among different immigrant groups including Latinos, African Americans, Asians, and Pacific Islanders. Ethnic minorities are at higher risk for being

overweight and obese after residing in the United States (Ade et al., 2011; Krueger et al., 2014). In addition, the prevalence of obesity in immigrant populations is a complex issue, with significant influences from lifestyle, behavioral, cultural, and economic factors (Kirby et al., 2012).

Meskhetian Turk (Ahiska) immigrants in the United States are one of the growing immigrant populations in the United States (Bilge, 2012). They were densely populated around the Mekheti area in present-day Georgia so they were named "Meskhetian. In the past century, the Meskhetian Turks (Ahiska) experienced two major forced relocations, discrimination, and oppression. This was because they are different in their ethnicity, culture, lifestyle, and beliefs than others in the region. It is of crucial significance to elucidate that the Meskhetian Turks (Ahiska) have not relocated due to their own choice or desire; unfortunately, they had no option as they were forced to leave their homeland utilizing oppression, discrimination, violence, and inequity (Tan, 2014). It has been 17 years since their first arrival to the United States and it is uncertain how much stress, emotional discomfort, and psychological disturbance these individuals go through in their day to day lives in a foreign country where the language, culture, lifestyle, beliefs, and ethnicities are so diverse. Many studies have been focused on Hispanic, African-American, Asian, European, and Pacific Islander immigrants, but to date, there have been no specific attempts to identify obesity as a chronic disease in Meskhetian Turk (Ahiska) immigrants in the United States. In this study, the researcher identified the acculturation, perceived stress, and other potential predictors of obesity among Meskhetian Turk (Ahiska) immigrants in the United States. There is a gap in knowledge about the potential risks of obesity among this group, including the roles of diet, SES, physical activity, acculturation, and perceived stress, which are predictors of obesity among other immigrant groups (Gele & Mbalilaki, 2013; Kirby et al., 2012).

The purpose of this study was to identify the associations of acculturation, perceived stress, age, gender, diet, SES, and level of physical activity with obesity in the Meskhetian Turk (Ahiska) immigrant population in the Western United States.

2. Methods

2.1. Participants

Participants were over the age of 18 and were living in the California, Utah, and Idaho states areas. They were Mesketian Turk (Ahiska) immigrants who migrated to the US. Complete data were collected from 109 participants, 56% of male and 44% of female. The age breakdown of participants, twenty-six (23.9%) were aged between 18 to 30 years, thirty-one (28.4%) were aged between 31 to 45 years, thirty-one (28.4%) were aged between 46 to 65 years, and twenty-one (19.3%) were aged above 65 years. Most of the participants reported living in the US between 6 to 8 years (30.3%) and income category between $15.001 to less than $20,000 (37.65) (Table 1).

Among the participants, 21 (19.3%) were normal weight, 25 (22.9%) were overweight, 29 (26.6%) were obese, 23 (21.1%) were moderately obese, and 11 (10.1%) were morbidly obese. Obese and not obese category of participants, 45 participants (41.3%) were not obese while 64 participants (58.7%) were obese. When categorized as not moderate/morbid obese and moderate/morbid obese, 72 participants (66.1%) were not moderate/morbid obese while 37 participants (33.9%) were moderate/morbid obese. Acculturation was measured by its subfactor such as food, language, SES, and length of stay. For each subfactor mean, median, standard deviation, variance, skewness, and kurtosis were calculated. Among participants, food (M=1.37, SD= 0.48), language (M=1.67, SD=0.46), SES (M=2.53, SD=1.37), and length of stay (M=2.55, SD=2.55). 98 participants reported their perceived stress level (M=26.14, SD=4.24). PSS was missing in 11 cases. The consent form was signed by the participants and the participation was voluntary.

Table 1. Demographic chacracteristics of the participants

		n	%
Gender	Men	61	56
	Women	48	44
Age	18 to 30	26	23.9
	31 to 45	31	28.4
	46 to 65	31	28.4
	Above 65	21	19.3
Socio-economic status (SES)	$10-15.000	25	22.9
	$15001-20.000	41	37.6
	$20001-25.000	20	18.3
	$25001-35.000	12	11.0
	$35001-50.000	5	4.6
	$50001-75.000	6	5.6
Years in the USA	1 to 3 years	30	27.5
	4 to 5 years	17	15.6
	6 to 8 years	33	30.3
	9 and more	29	2.6

2.2. Measures

Using a quantitative, cross-sectional survey design, a volunteer sample of Meskhetian Turk (Ahiska) immigrants were provided demographic information and they completed a series of measures related to the Behavioral Risk Factor Surveillance Survey questionnaire (BRFSS) to measure gender, age, SES, diet, and exercise, (Obisesan, 2015), the Stephenson Multigroup Acculturation Scale (SMAS) to measure the level of acculturation (Stephenson, 2000), and the Perceived Stress Scale (PSS) to measure perceived stress (Cohen, 1988). The participants' height and weight from Body Mass Index (BMI) and that was calculated for the dependent variable was gathered in the BRFSS. The participant's BMI was gathered from the existing BRFSS survey questionnaires. BMI was calculated by using the WHO's recommendation, the BMI formula was expressed as a weight (kg) / [height (m)]^2. With the metric system, the formula for BMI as weight in kilograms divided by height in meters squared. BMI was categorized as BMI < 25 (normal weight), BMI between 25 and 29.99 (overweight), BMI between 30 and 34.99 (obese), BMI between 35 and 39.99 (moderately obese), and BMI ≥ 40 (morbidly obese).

2.2.1. Behavioral Risk Factor Surveillance System (BRFSS)

The BRFSS questionnaire contains questions about demographics, dietary, lifestyle, health risk behaviors, diseases prevention, and social context (CDC, 2012). The BRFSS questionnaire contains questions about demographics, dietary, lifestyle, health risk behaviors, diseases prevention, and social context (CDC, 2012). There is evidence that supports the BRFSS validity and reliability in collecting health data (Obisesan, 2015) with high reliability and validity indices, with reported Cronbach's alphas of .95 and .72. In this study, Cronbach's alpha was found of .92 and .71 for the BRFSS.

2.2.2. Stephenson Multigroup Acculturation Scale (SMAS)

The SMAS (Stephenson, 2000) is a 32-item questionnaire that assesses the extent to which respondents are immersed in the nondominant and dominant cultures. The dominant culture scale has 15 items, and the nondominant culture scale has 17 items. The wording of SMAS items varies by scale, but each scale measures the same domains: language, interaction, media, and food. Within each domain, the items reflect knowledge, behaviors, and attitudes (e.g., language knowledge, language behavior, and language attitude). Individuals who scored above the mid-point (i.e. mean is higher than 2.5 on a 4 point scale) for were coded as acculturated. The SMAS items are rated on a 4-point Likerttype scale, ranging from 1 (false) to

4 (true). The SMAS has strong inter-item reliability where Cronbach's alphas of .80s in the high and .90s in the low. In this study, Cronbach's alphas were found of .83 in the high and .92 in the low.

2.2.3. The Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS) has 10-item survey questionnaire to measure the degree of life situations as stressful and perception of stress (Cohen, 1988). The PSS questionnaires is based on a 5-point Likert type response such as 0- Never, 1= Almost Never, 2=Sometimes, 3= Fairly Often, and 4= Very Often (Cohen, 1988). The total score could range from 0 to 40, with higher scores indicating greater perceived stress and low scores indicating lower perceived stress among the participants (Cohen, 1988). The reliability of Cronbach's alpha for the PSS is .84, .85, and .86. In this study, Cronbach's alpha for the PSS was found .85.

2.3. Procedure

The participants were recruited from the Western United States including California, Utah, and Idaho among Meskhetian Turk (Ahiska) immigrants, ages 18 years and older, and who had migrated to the United States. The study was carried out between April 2017 to August 2017. The sample size calculated by using G* power analysis and the participants were selected randomly among Meskhetian Turk (Ahiska) immigrants from California, Utah, and Idaho States. In consideration of the variables, setting the effect size set at medium, f^2=0.15, power (1-β err prob) set at 0.80, the probability level set at p< 0.05 and 109 sample size was needed for this study. The participants were recruited through flyers and online invitation. In this study, all ethical considerations and procedures were followed to meet the requirement of confidentiality rights of participants. Since this study was on human subjects, permission was obtained from the Internal Review Board (IRB) of Walden University (approval number 03-22-17-0458660) before the research data collection. The consent form from the participants was obtained from each participant and a BRFSS, the SMAS, and the PSS questionnaire were used after the Walden University IRB approval. The participation was voluntary, and the participants had a right to withdraw anytime without any consequences.

Descriptive statistics were used to determine the mean and standard deviation for perceived stress, acculturation, and obesity scores. Perceived stress and acculturation scores were non-normally distributed so were log-transformed. Acculturation scores for nondominant and dominant cultures were used to sort individuals into acculturation categories, and the prevalence of each category was assessed. Perceived stress calculated based on the participants' respond from the ranged of 0 to 40 where the higher scores indicating greater perceived stress and low scores indicating lower perceived stress.

Given that only nondomaninant (integrated) and dominant (assimilated) groups were represented, independent t-tests and a one-way ANOVA were performed to test if there were differences in average perceived stress and obesity between these groups. Spearman correlations were run to determine if there was a relationship between nonobese/obese and modarete/morbid obese scores with variables such as age, gender, SES, lengthy of stay, physical activity, vegetable consumption, acculturation total score and perceived stress total score. Also, univariate and bivariate analyses were used between BMI, acculturation, percieved stress and independent variables. Finally, multiple logistic regressions to examine the relationship that exists between possible predictors of obesity (acculturation, perceived stress, diet, age, gender, SES, and level of physical activity) and obesity outcomes. These analyses adjusted for BMI, acculturation, perceived stress and independent confounding variables with multiple logistic regression. The p<.05 value was used to indicate statistical significance and all statistics were run in SPSS, version. 24.

Results

There were no significant differences in any of the perceived stress level or acculturation measures based on sex. Also, there were no statistically significant difference between not obese BMI category and gender (t=2.96, p=.128) and obese category BMI and gender (t=1.85, p=.246). The result also showed that female participants' mean score (X=25.18) for not obese BMI category and obese BMI category (X=36.17) was higher than male participants' mean score for both categories (Table 1). It can be concluded that gender does not have impact on the BMI among the participants.

Table 2. Independent groups t-test results of participants' BMI categories by gender

Factors	Gender	n	M	SD	t	p
Not Obese BMI<30	Male	19	22.36	4.35	2.96	.128
	Female	26	25.18	6.47		
Obese BMI≥30	Male	31	34.52	5.38	1.85	.246
	Female	33	36.17	3.85		

BMI: Body mass index

ANOVA test results indicated that there was no significant difference between the perceived stres score (F=8.2; p=.214) and BMI status, nondominant cultures-integrated (F=5.7; p=.085) and BMI status, and dominant cultures-assimilated (F=9.3; p=.147) and BMI status.

Table 3 indicates the results of Spearman's correlation between variables of age, gender, SES, vegetable consumption, physical activity, obesity, acculturation, and perceived stress among participants. There was no significant difference between variables based on the Spearman's correlation test results.

Table 3. Spearman's correlations of between the study variables

	1	2	3	4	5	6	7	8
1-Age	.138**							
2-Gender	.312**	-.786**						
3-SES	.436**	.772**	.191**					
4-Vegetable consumption	.164**	.783**	.283**	.175**				
5-Physical activity	.650**	.133**	.553**	.533**	.650**			
6-Obesity	.357**	.287**	.627**	.642**	.884**	.547**		
7-Acculturation	.160**	.068**	.284**	.328**	.697**	.664**	.294**	
8-Perceived Stress	.487**	.827**	.117**	.374**	.308**	.709**	.211**	.368**

*p<0.05, **p<0.01 (two-tailed)

A multivariate logistic regression model was tested the effects of age, gender, SES, diet (daily, weekly, and monthly vegetable consumption), physical activity (exercise 20 minutes, moderate and vigorous level of physical activity), acculturation, and perceived stress on moderate/morbid obesity in Meskhetian Turk (Ahiska) immigrant population (N= 109). The results showed no statistically significant difference between seven predictors and moderate/morbid obesity; however, it was demonstrated for vegetable consumption weekly and moderate/morbid obesity, OR. 2.250 (95% CI= 1.132, 5.744), p= .014 (Table 4).

Table 4. Results of the multivariate logistic regression analysis for the predictors of moderate/morbid obesity

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I for Exp(B)	
Dependent Variable: Moderate Obesity								
							Lower	Upper
Gender	-0.555	0.616	0.811	1	0.368	0.574	0.172	1.920
Age	-0.369	0.310	1.412	1	0.235	0.692	0.377	1.271
Veg_Daily	0.779	0.379	4.213	1	0.013	2.178	1.036	4.581
Acculturation	-0.851	0.647	2.227	1	0.572	1.927	0.536	2.523
Perceived Stress	0.522	0.184	1.808	1	0.387	0.638	1.982	3.173
Dependent Variable: Morbid Obesity								
Gender	-1.049	0.754	1.935	1	0.164	0.350	0.082	1.536
Age	0.441	0.404	1.189	1	0.275	1.554	0.704	3.433
Veg_Weekly	0.936	0.414	5.101	1	0.014	2.550	1.132	5.744
Acculturation	0.588	0.967	3.837	1	0.274	2.108	0.371	3.274
Perceived Stress	0.174	0.672	1.228	1	0.493	0.771	0.552	4.523

Discusssion and Conclusion

In this study, the associations between independent variables (age, gender, SES, diet, physical activity, acculturation, and perceived stress) and dependent variable (obesity) were examined in a sample of Meskhetian Turk (Ahiska) immigrant population in the Western United States. This research revealed findings about obesity, acculturation, and perceived stress in the immigrant populations in the Western United States. The Meskhetian Turk (Ahiska) immigrant population was specifically chosen yet it has never been studied before although there has been given attention to other immigrant groups (Ike-Chinaka, 2013).

Researchers are interested in understanding how the processes of acculturation and migration affect individual's psychological adjustment, perceived stress, well-being, eating behavior, and other vital situation for their life. Studies about migration and acculturation process have impact on physical as well as mental health of the individual (Castro et al., 2010). Studies specifically on acculturation have found an association between BMI, obesity, negative eating habits and chronic diseases among Latino (Rodriguez & Morrobel, 2004), African Americans (Zeigler-Johnson et al., 2013), and Asian (Kandula et al., 2007) immigrants. The present study found no association between acculturation and obesity. However, results of this study highlight some important implications for future studies focusing on how cultural change impacts Meskhetian Turk (Ahıska) immigrants eating behaviors towards obesity status who are becoming increasingly more dominant in the host culture.

As it is expected that acculturation outcomes are not the same for every culture as well as individuals. Surprisingly, integrated individuals had, on average, higher levels of stress than their integrated counterparts in the host culture (Schwartz et al., 2006). Several factors could have influenced this relationship, such as host and heritage cultural values, socio-economic status, language profiency, and the length of stay which the present study results did not test any relationship among these variables and obesity. This relationship has been reported in some previous research on acculturation and obesity (Lin & Morrison, 2002). There are differences in cultural values between American and Meskhetian Turk (Ahiska) cultures. As American culture tends to emphasise the individual and individual rights, Meskhetian (Turk) Ahıska immigrants have Middle Eastern cultures which emphasise family relationships and duties (Nguyen & Benet-Martınez, 2013). These differences in cultural values may influence a person's behavior in the host culture, eating habits, and physical activity depending on which cultural values are adopted.

Socio-economic status, language profiency, and length of stay are important acculturation values as they have impact on assimilation, acculturation process, and cultural interaction. This relationship has been reported in some previous research on SES,

acculturation, and perceived stress in in Mexican American and Caucasian women (Salsberry & Reagan, 2009). On the other hand, language profiencies found related variables with acculturative stress in Middle Eastern immigrants (Shammas, 2017), European immigrants (Kandula et al., 2008), Korean immigrants (Eamranond et al., 2009). While SES, language profiencies, and leghth of stay could have an impact on acculturation and perceived stress, the present study did not find a relationship for these variables in Meskhetian Turk (Ahiska) immigrants. The lack of a relationship is likely be related with the under-reporting of acculturation and limited findings in the literature about the sample group.

This study examined not only the relationship between acculturation and perceived stress, but also the relationship between these variables and obesity. Obesity measures, such as not obese, obese, moderate/morbid obese likely to address where a person migrated in the host culture. During acculturation process, a person prefers different food which may impact on their health, such as body mass index. Many studies demonstrated the relationship of acculturation process and obesity due to fast food, cheap food, false dietary information, and cultural intimation (Winham, 2012). Results of the present study highlight important implication regarding daily and weekly consumption of vegetables, fruits, hamburger and meatloaf and obesity. This result was consistent with Lin and Morrison's (2002) study, in which the researchers found that there was an association between fruit and vegetable consumption and obesity among adult men and women aged 19 years and older in the United States. The study findings showed that overweight and obese men and women consumed significantly fewer fruits and vegetables than healthy weight men and women (Lin & Morrison, 2002). Ludwing et al. (2001) found similar results on the associations between less consumption of fruits and vegetables in men and children in the United States. The results of the study showed that healthy men and children consumed significantly more fruits and vegetables than either overweight or obese individuals (Ludwing et al., 2001). These results were also consistent with the results of Lesser et al. (2014), which showed that decreased consumption of fruits and vegetables and increased consumption of high fat/fried food, hamburger, and meatloaf were associated with obesity in South Asian immigrants.

The studies found that keeping a physically active life may help people to stay healthy and physical activity lowered the risk of obesity (Gordon-Larsen et al., 2003). It can also lower the risk of chronic diseases including cardiovascular diseases, stroke, high blood pressure, diabetes, and certain cancers (Ladabaum et al., 2014). The study's findings support that staying active could more likely keep the weight steady while a sedentary lifestyle could trigger weight gain over time (Castellanos et al., 2011). Vigorous and moderate exercise can help promote weight loss, but it works best when combined with healthy eating habits. Moreover, the study showed no statistical association between acculturation and obesity in this population. The concept of acculturation has been analyzed differently by many researchers in African-American, Hispanic, Arab, and Nigerian immigrant populations (Obisesan, 2015). The results of this study are consistent with a study (Castellanos et al., 2011) about Hispanic young adults, which showed no significant association between acculturation and obesity. However, Ahluwalia (2007) found that there was a positive relationship between the degree of acculturation and obesity in Mexican- American adults living in the United States. This result was consistent with Nigerian immigrants in the US (Ike- Chinaka, 2013). This study showed no statistical association between perceived stress and obesity. Similar results were found by Afable et al. (2015) that there was no association between perceived stress and obesity in young immigrants in the suburbs of central Virginia. Tseng and Fang (2011) found that migration-related perceived stress did not associate with energy intake and total grams and obesity in Chinese immigrant women in Philadelphia. However, Isasi et al. (2015) examined the association of psychosocial stress with obesity and found that there was an association between stress and obesity in Hispanic/Latino adults. In summary, this study found no statistically significant association between age, gender, SES, physical activity, acculturation, perceived stress, and obesity in the Meskhetian Turk immigrant group.

Nevertheless, this study has found a statistically significant association between diet and obesity in this sample group. The study findings showed that obesity is a significant health problem, and its prevalence is higher in minority immigrant populations in the United States. While this study has several strengths, including of being a first quantitative study to analyses acculturation, perceived stress, and obesity among Mesketian Turk (Ahiska) immigrants, there are also several important limitations. For one, this is a cross-sectional survey, so we were unable to assess causality in our demonstrated associations. A second important limitation is the small sample size, which also likely contributed to acculturation, perceived stress, and obesity categories being sufficiently represented and may not be representative of Mesketian Turk (Ahiska) as a whole. Although the present study results highlight some important implications for future studies interested in how cultural changes impacts migrants' health, eating habits, and psychological outcomes, more research should be needed to investigate the factors that may influence these relationships. A third, the data was collected only from three States, and it does not represent as a whole group. Finally, the researcher only collected self-reported survey data on obesity, perceived stress, and acculturation, which are subjective and could be influenced by cultural values of health (Kandula et al. 2007).

In sum, the US is becoming diverse and multicultural environment. The process of acculturation will, therefore, continue to be of interest to researchers studying how cultural context influences eating habits and psychological outcomes. The findings in this study suggest that it would also be useful to collect qualitative data on which effects the heritage and host cultures' opinions, or views are on the psychological measures being tested. This study brings into question how acculturation, perceived stress, and obesity among Meskhetian Turk (Ahiska) immigrants and future studies on acculturation should look at discrimination, other psychological factors, and demographic contests of the population and how these could be related. These results, therefore, promote many future avenues of research. These findings can help to improve understanding of the psychological disturbances, eating habits through which acculturation impact the health of minority and immigrant groups throughout the US. The positive social change implication, therefore, is that public health professionals may use this information to determine the types of intervention programs that need to reduce obesity risk factors and predictors in the Meskhetian Turk (Ahiska) immigrant populations. Interventions for positive social change may include a community-based educational program that needs to increase awareness about predictors of obesity and obesity-related diseases.

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Bu çalışmanın tüm hazırlanma süreçlerinde etik kurallara ve bilimsel atıf gösterme ilkelerine riayet edildiğini yazar(lar) beyan eder. Aksi bir durumun tespiti halinde Afyon Kocatepe Üniversitesi Sosyal Bilimler Dergisi'nin hiçbir sorumluluğu olmayıp, tüm sorumluluk makale yazarlarına aittir. Yazarlar etik kurul izni gerektiren çalışmalarda, izinle ilgili bilgileri (kurul adı, tarih ve sayı no) yöntem bölümünde ve ayrıca burada belirtmişlerdir.

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