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Experiences of migration and the determinants of obesity among recent Iranian immigrants in Victoria, Australia

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Objectives. There is evidence to suggest that immigrant groups from low- or medium-human development index countries show a significant adoption of obesogenic behaviors and experience weight gain following migration to Australia. The objective of this study is to understand the changes that Iranian immigrants experience in relation to the determinants of obesity after migration to Victoria, Australia.

Design. We conducted five focus group discussions with 33 recent Iranian immigrants. This study took an interpretive qualitative approach to data analysis using the constant comparative method.

Results. Participants discussed individual level acculturation (e.g., in diet, body size, attitudes), as well as environmental level changes (e.g., physical/structural and sociocultural) that occurred after immigration. Stress during the initial immigration transition, which affected diet and physical activity habits, was a common experience among participants. Gender and the effect of political/religious changes were also important factors. Participants’ discourse largely focused on their ability and willingness to adopt positive health behaviors after migration.

Conclusion. This study provides insight into the effect of migration on the determinants of obesity among Iranian immigrants in Victoria, Australia, and offers a contrast with the existing evidence by considering the experience of a group that is generally well educated, often emigrates for reasons related to personal freedom as opposed to material deprivation, and has rates of obesity similar to high-income countries.

Keywords: exercise/physical activity; health behavior; immigrants/migrants; Iran; qualitative analysis

Introduction

A rapid increase in the total overweight population (BMI ≥ 25) has been observed in Australia (Australian Bureau of Statistics 2009), and current trends suggest that by 2022, 65% of the population will be overweight or obese (Schneider et al. 2010). In addition, Australia is a multi-ethnic country where immigrants are the fastest
growing segment of the population (Immigration Museum Of Victoria 2008). Immigrants undergo health checks in order to be eligible for migration, and as a result they tend to be healthier and have lower rates of certain lifestyle-related obesity risk factors than native Australians and those who remain in their countries of origin (Renzaho 2007).

This observation is known as the healthy migrant effect, and is likely to contribute to these cohorts being able to cope with pressures associated with moving from one country to another (Arnold et al. 2010). However, the healthy migrant effect appears to wane with increasing length of stay in the country (Australian Bureau of Statistics 2004–2005). Over time, the lifestyle and nutritional patterns of immigrants converge toward that of the host population. Many migrant groups show a significant adoption of obesogenic behaviors (e.g., consumption of more energy-dense and nutrient-poor foods, as well as less physical activity), experience weight gain following migration, and record higher body weights than their host country counterparts (Daryani et al. 2005, Gadd et al. 2005, Renzaho et al. 2008). In addition, studies have found that immigrants from countries with a low- or medium-human developmental index (HDI) to countries with a high-HDI experience weight gain following migration (Dijkshoorn et al. 2008).

This experience, however, is not uniform across all migrant groups and may differ as a result of factors such as ethnicity and degree of acculturation. A Canadian report found that, among immigrants, black women were more likely to be overweight compared with white women regardless of when they immigrated (Statistics Canada 2005). Similarly, data from a health survey in South Australia showed significant differences between migrant groups in the prevalence of overweight and obesity. Among people born in non-English speaking countries as a whole, people born in Italy, Greece or Cyprus, former Yugoslavia, Germany, the Netherlands, Poland, and other Eastern European countries tended to be more overweight/obese than people born in Malaysia, Vietnam or Cambodia, the Philippines, and China (Taylor et al. 1997).

Acculturation refers to changes in attitude and behavioral patterns that occur when immigrants to a new country come into continuous contact with the host population (Redfield et al. 1936, Rissel et al. 1998, Calzada and Anderson-Worts 2009, Kaushal 2009). Dietary and physical activity acculturation, including behaviors and beliefs, constitute one component of acculturation that has only recently been explored (Hunt et al. 2004). The evidence that exists suggests that maintenance of an element of traditional culture may be protective against obesity (Renzaho et al. 2008).

In addition, the experience of acculturative stress is well documented, and is often associated with outcomes such as lowered mental health status (specifically depression and anxiety), feelings of marginality, and identity confusion (Berry et al. 1987). These factors can significantly affect one’s food habits and physical activity patterns (Stunkard et al. 2003, Sarlio-Lähteenkorva et al. 2004, Yancey et al. 2004). Social, demographic and psychological characteristics of individuals, the extent of difference between host and home country, as well as the reason for migration may play an important role in the feeling of acculturative stress. For example, Minde identified that ‘the greater the differences score between host and the home country the greater the experience of stress’ (cited in Berry et al. 1987). In addition, Murphy suggested that those people who are forced to leave their home country
may experience feelings of resentment, which in turn can lead to high stress (cited in Berry et al. 1987).

Theories and models that describe the effect of migration on increasing BMI are largely based on migrant groups who move from countries with low incomes, education and obesity prevalence to countries with high income, education, and obesity prevalence. There is little understanding of the effect of migration on the BMI of immigrant communities with high educational attainment and who come from countries with high overweight/obesity prevalence. In addition, there is a scarcity of data about the effect of environmental changes, which directly and/or indirectly influence communities’ attitudes, values, and behaviors (Booth and Samdal 1997), regarding obesity and its determinants among migrants. Though there is evidence that diet and physical activity behaviors are greatly influenced by environmental factors (Stafford et al. 2007, Harrington and Elliot 2009, Feng et al. 2010), there has been less investigation into those sociocultural factors that surround obesity and related dietary and physical activity behaviors.

Iranians represent a unique and emerging migrant group in Australia. They are generally well educated (Department of Immigration and Citizenship 2008), come from a medium HDI country that has an obesity pattern similar to high HDI countries (including Australia) (Kopelman 2000, Bakhshi et al. 2008), tend to immigrate for reasons related to personal freedom as opposed to economic and material disadvantages, and emigrate from a complex religious/political environment (Salehi-Isfahani 2008). These characteristics make it difficult to predict the changes that Iranian migrants experience between home and host country environment.

It is not clear what pattern the relationship between migration and obesity will follow for Iranian migrants. An understanding of this pattern could help inform public health efforts to prevent obesity and its associated negative health impacts among potentially vulnerable populations. This is especially critical for countries like Australia that rely on immigration for population growth and productivity. The objective of this study is to understand the changes that Iranian immigrants experience after migration to Victoria, Australia in relation to the determinants of obesity at both the individual level (i.e., changes in attitude, beliefs, values, and behavior) and environmental level (i.e., physical, economic, and cultural environments) after migration to Victoria, Australia.

Methods
The culturally sensitive nature of the study led us to take an interpretive qualitative approach framed within the critical theory perspective (Denzin et al. 2008) in order to answer the question: what individual and environmental level changes do Iranian immigrants experience after migration to Victoria, Australia in relation to the determinants of obesity? The interpretive approach was needed to seek an understanding of the meaning and intentions related to lifestyle changes and the influence of social rules and the host culture (Orlikowski and Baroudi 1991). The interpretive approach is complemented by the critical theory perspective, which focuses on individuals’ interaction with their environment, including engaging with and challenging established social practices and community assumptions, as well as interpreting the complex relationships between individuals’ interests, knowledge,
power and forms of social control (Hinton and Earnest 2010), as is the case of Iranian migrants.

We felt that focus groups would be an appropriate format to elicit participants’ perspectives on changes in social norms and rules post migration. Through group interaction participants are able to synthesize and validate others’ ideas and provide insight that would not otherwise be accessible through individual interviews (Halcomb et al. 2005). In addition, Halcomb et al. (2005) found focus groups to be suitable among culturally homogeneous groups who share a common experience (i.e., immigration to Australia).

Using both interpretive and critical approaches, we obtained data on 33 participants through five focus group discussions in two local government areas—cities of Whitehorse and Manningham—of the greater metropolitan area of Melbourne, Australia, from March to August 2010. The cities are situated in the Eastern metropolitan region of Melbourne and have the largest segment of the Iranian immigrant population in Victoria (Immigration Museum Of Victoria 2008).

Recruitment and data collection

We employed a snowball sampling method by recruiting participants through Iranian community associations in Victoria, namely the Iranian society of Victoria (ISOV), Iranian Students of Victoria Alumni (ISVA), and the Iranian language weekend school in Melbourne. We completed a round of consultations with these associations, all of whom endorsed the study. These organizations posted invitations to the study in community magazines, facility rooms, and online sites. Inclusion criteria stated that participants had to be new migrants who had lived in Australia for less than five years (we chose this time frame to ensure that participants could accurately recollect their lifestyle in Iran and the changes that followed).

Consenting participants were able to sign up to one focus group from a choice of five offered over consecutive Saturdays at different locales. We attempted to allocate an equal number of men and women to each group as consultations with Iranian community association leaders reported preferences from potential participants for this format. Mixed gender focus group interviews have been conducted among Iranian youth in Sydney previously (Adibi 2003).

Fifty participants were recruited into the study, but 17 did not attend the scheduled focus group. Therefore, the total sample size was 33 participants. In total, five focus group interviews were included in the study, with three groups having six participants, one group with seven and one with eight participants.

Focus groups were conducted in Farsi (Persian) and facilitated by an Iranian member of the research team (MD). We recorded all interviews and took written notes. The open-ended discussion guide for the interviews was developed in consultation with research staff with experience in this discipline. In addition, we tested the discussion guide with Iranian community leaders (from the previously mentioned organizations) for cultural sensitivity, and a pilot focus group interview was conducted to allow the interviewer to trial the process. Questions focused on the participants’ immigration experience with regard to changes in health behavior such as diet and physical activity habits, and body image perception. The facilitator began with broader questions about the changes participant experienced after migrating from Iran and guided discussions to cover more specific issues such as changes in...

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physical activity/food habits and participants’ perceptions of these changes. The facilitator used prompts to bring the discussion back to the research questions when the conversation steered off topic, as well as to solicit the opinions of quieter group members.

Focus group sessions ran for approximately 90 minutes and participants received a cinema ticket for their participation.

**Ethics approval**

The Deakin University Ethics Committee granted ethical approval for this study (HEAG-H 189/09). All participants gave informed consent.

**Data analysis**

One member of the research staff who is fluent in Farsi transcribed the interviews and a professional bilingual translator translated the transcripts into English. We analyzed the data in the following four steps: data immersion, coding, creating categories, and identifying themes (Green *et al.* 2007). We initially read all interview transcripts to gain a general sense of the data. We then annotated the transcripts and generated initial codes to describe the data. From these codes we created categories in an iterative process, where categories were validated using the constant comparative method (Sarker *et al.* 2000). Two members of the team (AF and MD) undertook analysis of the transcripts independently until this point. From these initial categories, they then came together to produce a final set of themes that best represented the data. Inconsistencies in the categories identified between the two reviewers were re-evaluated and then refined by the reviewers or discarded if they were not sufficiently supported by the data.

The challenges of translating words for which there is no English equivalent made it difficult at times to capture the true meaning of what participants were expressing. For example, participants’ often used words to describe body shape and composition that were colloquial, and as such the English translation did not always capture the connotations surrounding these words (e.g., describing someone as ‘puffy’). The research team attempted to overcome this problem by having the bilingual researcher who conducted the focus groups available to the translator whenever questions arose. Interpretation of the meaning was arrived at through discussion and a review of the original Farsi transcripts and audio-tapes.

**Results**

Characteristics of the participants are presented in Table 1. All participants had tertiary qualifications (diploma level or higher). The time since immigration (at the time of interview) ranged from two months to five years.

Several overlapping central themes were identified from the interviews. Participants mainly discussed the changes in their environment (i.e., physical surroundings/infrastructure, sociocultural, and also political/religious) as well as changes in personal attitudes and behavior that have affected their physical activity, food habits, body image perception, and weight status after immigration. Two main categories will be presented, with each category containing three to five themes. A model that
establishes the links between the emerging themes and the study objectives is presented in Figure 1.

**Category 1: environmental changes**

*Changes in the physical environment*

Participants listed changes in their physical environment (from Iran to Australia) that have affected their activity and/or food habits. Participants tended to state that their physical activity levels increased after immigrating to Australia.

Factors that have increased participants’ ability to engage in physical activity include less air pollution in Australia, more parks (leading to ability to exercise outdoors), more open spaces, and more easily accessible exercise facilities. For example, one participant stated ‘[the] greeneries [parks] here and people who are freely doing exercise in groups are very inspiring’ (Session 3 Participant 4, Female, 31 years old, 1 year in Australia).

In addition, 28 participants reported greater variety in their diet after immigrating to Australia. However, apart from exploring the diversity of foods in Australia, no pattern emerged from participants’ responses in terms of changes in reported food behaviors. For example, one participant stated ‘Because of the bigger variety in food here, we eat more seafood and vegetables’ (S4P5, Female, 37 years old, 5 years in Australia). Whereas another participant stated ‘I have been here for two months and have put on weight because the food here is greasier and seafood is more expensive than back home’ (S1P1, Male, 34 years old, 3 months in Australia).

Participants held mixed opinions about the quality of food available in Australia compared to Iran. Though participants acknowledged that a greater diversity of food is available in Australia, they raised concerns about its quality. Participants commented that food in Australia is ‘full of hormones’ and ‘greasy’ which makes it difficult to select nutritious foods. Two participants conversed:

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Table 1. Characteristics of participants.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$N = 33$</th>
<th>Percent ($n$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>48.5 (16)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>51.5 (17)</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>27.3 (9)</td>
<td></td>
</tr>
<tr>
<td>Part-time</td>
<td>6.1 (2)</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>57.6 (19)</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>9.1 (3)</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>60.6 (20)</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>6.1 (2)</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>33.3 (11)</td>
<td></td>
</tr>
<tr>
<td>Time since immigration (years)</td>
<td>2.33 (1.6), 0.17–5.0</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>32.2 (4.9), 23–43</td>
<td></td>
</tr>
</tbody>
</table>
Figure 1. Socio-ecological factors related to diet, physical activity and body image of Iranian migrants, application of the acculturation theory.
S1P5: You literally don’t get anything but grease at the KFC in Australia, so I try my best to avoid fast food. In Iran, if I had to get fast food, it was much healthier than the one I get here. (Male, 32 years old, 3 years in Australia)

S1P6: I have had a more negative attitude towards fast food here; I used to eat more fast food back in Iran since there is a lot of diversity in terms of herbs, and vegetarian food. (Female, 33 years old, 3 years in Australia)

Changes in the political/religious environment
Participants commented on the increased presence of government sponsored health messages and campaigns promoting a healthy diet and exercise regimen in Australia. For example, one participant commented ‘Healthy eating campaigns are far more numerous and more reliable and convincing’ (S3P3, Male, 33 years old, 1 year in Australia) and another stated:

A significant difference lies in how sports and exercise are considered important and hence is reflected in [government] planning and policies; here sport receives more attention from the government. In Iran the government wouldn’t care less whether the sidewalks were suitable enough for walking, let alone thinking of building bicycle lanes. (S3P6, Female, 26 years old, 2 years in Australia)

In addition, the positive impact of no longer having legal restrictions relating to dress and public behavior in Australia was one of the most commonly endorsed themes (18 participants discussed this explicitly). Female participants acknowledged that the legal restrictions that forced them to wear a hijab covering their head and body in Iran made it almost impossible to engage in physical activity in a public space. One participant stated that:

[while exercising] the scarf might slip off your head and one should often stop to fix it or one should be conscious that your head or calf is not revealed so that you would not be arrested...there is much stress.... (S2P4, Female, 23 years old, 2 years in Australia)

Changes in the sociocultural environment
Fourteen participants stated that since coming to Australia they have been able to achieve a better work life balance. They expressed that since their work hours are reduced in Australia compared to Iran they now have time to think about nutrition and physical activity. For example, one participated stated:

If I have to work 12 hours in a day I can never have a healthy lifestyle. But, if I work only 6–7 hours a day I may make healthy food for myself or, if I want, I can do exercise or whatever which can lead to a better health level. (S2P2, Female, 29 years old, 3 years in Australia)

Participants said they found it initially surprising, yet encouraging, seeing men and women being physically active in a public setting. Twenty-one participants stated that there seemed to be a ‘culture of exercise’ in Australia, which was absent in Iran. For example, one participant stated ‘If you exercised once a week in Iran, you
would be considered sporty, while...in Australia, everybody does sports regularly’ (S4P5, Female, 37 years old, 5 years in Australia).

There were differing views on the effect of being away from family and friends (in Iran) while in Australia. Six participants stated that by being removed from friends and family they came to care less about their body size/shape and activity habits. Three participants mentioned that because they had no social ties here they seldom engaged in physical activity. To some exercise was seen as a communal activity in Iran, whereas in Australia it seemed to be more individualized. In addition, one participant also stated that ‘In contrast to Iran, since you are away from friends and family and you are alone here and are less likely to be invited to parties or celebrations, you pay less attention to your figure’ (S4P2, Female, 38 years old, 4 years in Australia).

However, 11 participants (all female) noted that they felt greater social pressure in Iran to be slim, and that since coming to Australia, and being removed from these social ties, they have felt better about their body. Four (female) participants felt that since moving to Australia there was less social pressure surrounding maintaining weight status, which could actually lead to better physical activity habits. According to one participant:

You are generally happier with who you are [following migration], therefore you do more to improve your figure, though with less stress and in a less fastidious way as compared to in Iran, in other words, you do it for the sake of your own joy, not to please others. I pay more attention to my figure and body image here, and try to shape up without using harmful slim-fast medicines and formulae, which is something very common in Iran. (S1P8, Female, 33 years old, 3 years in Australia)

Participants noted that the diet and exercise norms between Australia and Iran were very different. They acknowledged that there appears to be differences in terms of what is considered a healthy and attractive figure between the two countries. Specifically, they felt that in Australia attractiveness and health were often tied to fitness, whereas in Iran being healthy and attractive meant being slim. Two participants discussed:

S5P2: Iranians might be more watchful; they want to make sure they stay slim, but people here care more about being fit. (Male, 28 years old, 3 years in Australia)

S5P3: You’re right. Doing exercise for Australians is more for staying fit rather than for only losing weight, so almost everybody does exercises and also eat[s] more. You tend to be more cautious of your weight here, while, being good-looking in Iran means to be as slim as possible; having a built body may not be ideal. (Female, 26 years old, 1 year in Australia)

Three participants stated that as a result of this Iranians (most often women) often undertake starvation diets and consume diet pills to lose weight, and seldom use exercise to achieve this goal in their home country.

One participant intimated the relative importance of a person’s peer environment on weight loss behavior and motivation, stating, ‘When everyone else around you is overweight it won’t matter if you are slightly overweight, but when everybody is good-looking and svelte you will also try to lose weight’ (S4P2, Female, 38 years old, 4 years in Australia).
**Category 2: individual acculturation experience**

Almost all (29) participants stated that since moving to Australia their attitudes and beliefs about healthy eating, exercise, body image perception, and their definitions of health have changed.

**Diet and exercise acculturation**

Participants reported large variability in diet-related behaviors after immigrating to Australia. Many participants acknowledged that they took great interest in trying the new foods available to them in Australia, and that this often led to weight gain in the initial stages of immigration.

However, 24 participants expressed that they have become more self-aware of their eating and exercise habits after immigration, and have begun to take their health more seriously. One participant commented ‘To me a healthy person was someone who would do exercise on a daily basis. I never thought that a healthy diet was important as well, and that for example I [should] better avoid chips and cheese snacks’ (S2P3, Female, 33 years old, 4 years in Australia).

These participants attributed this change to their observations of Australians being active and healthy, as these observations had a motivating effect. For example, one participant stated ‘By looking at the Australian community where, for instance, older women do exercise as well, I was encouraged to improve my health by getting more physical’ (S2P6, Male, 30 years old, 2 years in Australia).

**Body perception acculturation**

However, these changes in attitudes and beliefs did not always carry positive connotations, particularly when it came to body image. Seventeen participants (both men and women) acknowledged that they felt extremely conscious about their weight after migrating to Australia. For example, one participant commented:

> I am very conscious about my weight now, in Iran, [a] hijab would cover the body ['s] flaws, but it is different here because people dress differently...I check myself in the mirror every day, and I am really concerned about gaining weight. (S2P4, Female, 23 years old, 2 years in Australia)

Other participants endorsed this viewpoint, and added that the hijab served to cover a person’s body flaws in Iran, whereas in Australia a person’s body shape and size is more obvious. Five participants said that this made them more self-conscious about their body, and commented that seeing others (Australians) who are obese but not wearing a hijab, ‘Acted as a wakeup call for not wanting to get obese’ (S1P5, Male, 32 years old, 3 years in Australia).

**Experience of stress**

Ten participants noted that they had gained weight after arriving in Australia, and attributed this to the stress they experienced as a result of immigration. Three participants acknowledged that they felt lonely and isolated initially, and that their life lacked routine or stability. Two participants explicitly stated that
they coped with this feeling by over eating and/or eating non-nutritious foods. One woman stated ‘I used to eat a lot and I was not very active, because I felt homesick’ (S5P6, Female, 26 years old, 1 year in Australia).

However, participants identified that this was a transitory experience. Participants stated that once they began to socialize (especially with other Iranian immigrants) and settle down they felt less stress, felt healthier and lost any weight that they had gained. One participant explained ‘when you settle and socialize with your other Iranian friends and you have generally more peace of mind here, you pay more attention to your figure and body image, therefore you do more to improve your figure, though with less stress...as compared to in Iran’ (S1P7, Female, 33 years old, 4 years in Australia).

**Other individual level factors**

Participants identified several other characteristics such as individual personality, age at the time of migration and gender, which affected a person’s immigration experience to Australia. A few participants (two females, seven males) expressed the opinion that one’s environment plays a minor role in determining health behavior, and that personality and individual determination are much more relevant. For example, one participant commented, ‘It’s about personality. If you want to exercise you can always find a way’ (S4P5, Female, 37 years old, 5 years in Australia). In addition, participants identified age as an important factor in an immigrant’s interaction with their new environment, stating for example ‘an immigrant in his mid-thirties is so accustomed to not doing exercise as part of his culture that [he] would still not get physical despite the availability of all these sport facilities and motivating factors here’ (S1P4, Male, 32 years old, 4 years in Australia).

**The influence of gender on acculturation experience**

Participants identified gender as a significant determinant of the acculturation experience as it relates to diet, exercise, and body image. Women in Iran face a great number of restrictions that make it difficult to engage in physical activity in a public setting. Participants identified that moving to Australia represented a great change in access and ability to exercise. Thirteen female participants stated that upon moving to Australia they felt safer and less fearful (of the moral police and also of strangers questioning them or approaching them) about exercising in public and felt like they were better able to express their identity and pursue their interests. For example, three female participants conversed:

S5P6: In Iran, if you decide to do exercises (outdoor) you can’t. The authorities stop you. In Iran doing sports is not easily possible. Riding a bike (for women) in public is banned and running or jogging [in public] is not easy; there is so much pressure from the society and the government that makes you prefer to stay at home. (Female, 26 years old, 1 year in Australia)

S5P3: Going to the gym is also not an option all the time since there are few gyms compliant with Islamic code (i.e., indoors and covered) and those few might be far from you. (Female, 26 years old, 1 year in Australia)
S5P1: I agree...It’s either that the air is too polluted or the authorities stop you.
(Female, 30 years old, 1 year in Australia)

Another female participant stated regarding conditions in Australia:

But there is no constraints to do exercise you can go for a run or ride your bike at any time day and night and you can wear what you would like. It is not frowned upon or there are no governmental restrictions. Doing sports is more an innate habit that acquired from your surrounding and society. You can join a gym and use all the facilities. It is very affordable and provided by the community. (S1P1, Male, 34 years old, 3 months in Australia)

Furthermore, both male and female participants (13 males, 11 females) commented that having the opportunity to engage in physical activity with a spouse or family member of the opposite sex in a public space has also made engaging in physical activity easier and more pleasant (in Iran there are strict restrictions on being in public with members of the opposite sex and exercise facilities are segregated). For example, one participant stated ‘skiing and swimming [for] men and women are segregated; it kills the joy. You enjoy doing sports or exercises while you are with your family or someone from the opposite sex’ (S3P3, Male, 33 years old, 1 year in Australia). Some participants, especially those who are married, felt that they no longer had to choose between spending time with their family and exercising.

Discussion

This study has identified two general, and partly overlapping, categories that provide insight into the changes that new Iranian immigrants experience. First, there are changes in the environment that occur. For example, there were changes in participants’ physical surroundings (less air pollution, more green space, and more exercise facilities) post migration. For the participants in this study, these aspects of their new physical environment encouraged them to be more physically active. These results are consistent with findings reported in an analysis of national sport policy and strategy for Iran, where in Nahid (2008) argued that physical barriers such as air pollution, high costs at fitness facilities, and lack of facilities are all important factors that contribute to low physical activity levels in Iran.

In addition, sociocultural changes occur, and political and religious surroundings are altered, and new ones take their place. Female participants identified that having few legal restrictions surrounding appropriate dress and public behavior significantly improved their ability to participate in physical activity. Legal restrictions for women was also mentioned by Nahid (2008) as another important factor contributing to low rates of physical activity for Iranians, in addition to physical barriers. However, this new freedom was important for men as well, as participants agreed that having the ability to engage in physical activity with family members and friends of the opposite sex made them happier, as participants emphasized that sport and exercise not only functioned as a means to improve fitness, but as a vehicle of socialization as well.

Changes in the social and peer environment of Iranian immigrants appear to have had positive and negative effects. It is clear that the participants faced significant social pressure from family and friends to adhere to a body ideal in Iran,
and that by being away from these ties participants often felt less pressure to maintain that ideal and thus engaged in fewer health promoting behaviors with regard to diet and exercise. In addition, some found that by being removed from their social ties they were less likely to engage in activities that were communally based such as exercise. Thus removal from peer groups, through two different mechanisms, resulted in participants engaging in potentially obesity promoting behaviors. However, this trend was not ubiquitous as some participants identified that being removed from these social ties and the accompanying pressure had a positive impact on their self-esteem and body perception, which led to better eating and exercise habits.

Changes in one’s attitudes, beliefs and subsequent behaviors, appear to be a significant part of the acculturation experience as new immigrants must navigate a new cultural environment complete with a different set of societal rules and preferences. Participants found that their attitudes towards a healthy diet, the importance of exercise and their attitudes towards their bodies changed after immigration. Many participants’ responses indicated a complex relationship between their body image pre- and post-migration.

Differences that exist between ethnic groups in body image attitudes and beliefs may be an important factor in the experience of acculturation. Obesity as a state is differently understood across cultures. For example, in sub-Saharan Africa, overweight and obesity have historically been considered a sign of wealth and good health (Renzaho and Mellor 2010). In addition, a recent study from the Netherlands identified that Moroccan migrants held a traditional preference for large body sizes. Weight loss was viewed as a sign of psychological, economic, and social problems (Nicolaou 2009). These findings are in contrast to the results of our study as participants identified cultural preferences in Iran for extreme slimness in females that are similar to western high-income countries.

An article by Abdollahi and Mann (2001), which looked at the prevalence of disordered eating habits in Iranian women in Tehran and Los Angeles, found that Iranians in Tehran had similar rates of body image concerns as Iranians in Los Angeles. Given the complexity of behaviors and beliefs identified by participants in focus group discussions when it came to diet and exercise, this finding is not surprising. Body image concerns and the desire to be thin is a feature of both Iranian and Australian culture, particularly among young women and girls. Though some participants did state that their hijab served to cover a body’s flaws, more endorsed the viewpoint that being extremely slim was ideal and being overweight was undesirable (of note, participants stated that for young people hijabs are often only worn in public, and that in private gatherings there is greater sartorial freedom).

One notable finding from this study is the change in the ways through which these desires (to be slim) are realized. Participants stated that in Iran it is common for women to go on extreme diets or undergo cosmetic surgery to lose weight and look slim. However, participants commented that in Australia there appeared to be more of a focus on fitness, using exercise to lose weight, and that not only being slender, but being fit, was important. The latter finding is not unexpected when considering the barriers that women face in Iran when it comes to physical activity. Hence, though there may be greater opportunity and access to public space and activities, social pressure to maintain particular body ideal persists and Iranian
immigrants are forced to navigate a new environment (i.e., the removal of clothing restrictions) that may result in new distress and concern over body image. What is clear from this discussion and from other related themes is that gender plays a role in the acculturation experience for Iranian immigrants when it comes to diet, physical activity and body image.

Stress during the initial immigration transition, characterized by feelings of loneliness and isolation, and resulting in unhealthy diet behaviors and lack of physical activity, was a common experience among participants. Similar themes were also identified by Agne et al. (2011) among Latina immigrants to the USA in focus group discussions. Participants reported overeating as a way of coping with the stress of immigration, and that the loss of social ties led to greater sedentary behavior due to lack of motivation and feelings of isolation. Similar sentiments were reported by participants in this study.

In this study, participants reported significant differences regarding attitudes towards physical activity, availability, and quality of food, and the impact of the removal of government restrictions on public behavior and dress. It is possible that the extent of these differences partially explains the stress experiences felt by migrants. However, it is likely that the socioeconomic characteristics of Iranians (and the similarities between the two countries) may explain its transitory nature. Evidence from Berry et al. (1987) supports this hypothesis; the author identified more education as a consistent predictor of low acculturative stress among Asian immigrants to Canada. In addition, given our sample was new migrants between 2 months and 5 years in Australia, it is possible that stress was more a function of their pre-contact experiences in Iran and was less influenced by their evolving situation in Australia.

Our findings differ from a study by Renzaho and Mellor (2010) that evaluated parenting and lifestyle behaviors of African migrants to Australia. Participants identified that they were substantially more sedentary in Australia compared to their home country and that their community environment was inhibiting young people from being active because of security concerns and high rise apartment living. These differences highlight the potential importance of socioeconomic status and resources in moderating the acculturation experience. It is likely that migrant groups such as Iranians, who are generally educated and have high incomes, may be better able to take advantage of the greater diversity of food, better exercise facilities, greater open green space (which are likely features of suburban living, compared to urban high rise apartment living) and may have more leisure time than immigrants who are economically disadvantaged, have suffered great trauma, and tend to need to retain their cultural heritage in response to this.

**Limitations**

One limitation of this study is the narrow socio-demographic range of participants included in the sample. Students and medical doctors were overrepresented among participants, and the oldest participant in the study was 43. As a result, our findings may miss out on the perspectives of other groups of Iranians of differing socioeconomic backgrounds and ages. A more purposive sampling strategy may have been useful in recruiting a more diverse range of participants, but it may not have yielded the same number of participants recruited through a snowball strategy. In addition, due to convenience of schedules, medical doctors tended to be in the
same focus group with each other. We had hoped for a broader sample and more stratification, but this was not possible.

In addition, a noted drawback of focus group discussions is the tendency of dominant group members to overtake the conversation. We observed some members taking on this role, and others being very quiet. However, the focus group facilitator actively tried to solicit the opinions of quieter members and encouraged opposing viewpoints to dominating discourses.

Initial consultations with the Iranian community associations revealed that potential participants preferred to have mixed gender focus groups. It is possible that some participants would have felt more comfortable speaking or sharing their experiences in a male or female only group, however, given the large majority of participants who indicated that mixed groups was their modality of choice this is unlikely to have significantly affected the results.

**Conclusion**

This study provides insight into the effect of migration on the determinants of obesity among Iranian immigrants in Victoria, Australia. Immigrants’ individual acculturation experience and the impact of environmental level changes appear to be moderated by several factors, such as socioeconomic status and gender. In addition, the participants’ discourse largely focused on their ability and willingness to adopt positive health behaviors after migration.

Most studies examining the relationship between acculturation and obesity have focused on migrants from low-HDI countries and with low obesity rates. This qualitative evidence offers a contrast with the existing evidence by considering the migration experience of a group that is generally well educated, often emigrates for reasons related to personal freedom as opposed to material deprivation, and has rates of obesity similar to high-income countries. The current literature suggests that many immigrant groups show a significant adoption of obesogenic behaviors after migrating to high-HDI countries, however, this study raises questions about the extent of this pattern. Further work should include quantitative assessment of BMI status and its determinants pre- and post-migration among this ethnic group in order to explore the effect of the potential and possibly opposing influences identified in this study, and to determine the extent to which this group experiences changes in weight status, food consumption, and physical activity habits.

**Key messages**

1. Participants often focused on their ability and willingness to adopt positive health behaviors post-migration. However, stress during the immigration transition among other factors often resulted in the uptake of unhealthy diet behaviors and lack of physical activity.

2. Our findings highlight the importance of socioeconomic status and resources in moderating the acculturation experience for participants.

3. Gender appears to play a large role in the immigration experience when it comes to diet, physical activity and body image among this group.
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