

# Perceptions about the impacts of Ramadan month and Iftar program at AUT Mosque on holistic health

Abduraouf Ibrahim

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## **Abstract**

Ramadan is the ninth month of the lunar calendar. Muslims in Ramadan refrain from eating, drinking, smoking and intercourse from dawn to sunset. Each Ramadan, there is a free Iftar meal program at sunset for the Muslim community at the Auckland University of Technology (AUT) Mosque. This program feeds between 200 to 300 people every night. The Iftar program is funded by charities and local businesses. The study aimed: firstly, to gather the perceptions of AUT Mosque members on the impacts of Ramadan on holistic health. Secondly, to gather the perceptions of members of AUT Mosque specifically on the Iftar program.

In this qualitative study, two focus groups were held during, and after, Ramadan 2017 at the AUT Mosque. The total number of participants were 10 males and 8 females from different age groups from various cultures. The focus group recordings were transcribed and analysed using thematic analysis.

The key findings of this study related to the improvement of spirituality, physical health and nutrition during Ramadan. Results were separated into two sections, one for the male participants and the other for women. Female participants showed a greater interest in nutrition. During Ramadan, participants noted reasonable improvement in their physical health through a loss of weight and more regulated sleeping cycle. Female participants reported improvements in their spiritual health during Ramadan. Men revealed an improvement in their spiritual health due to worship, voluntary work and community feeling during Ramadan. Male participants were focused on the type, quantity and the taste of food. The participants provided suggestions for food in future Iftar programs, related to healthiness, cultural variation and taste.

This study suggests that Ramadan has a positive impact on the holistic health of Muslims. The Iftar program played a role in improving the wellbeing of participants. In addition, spirituality of male and female participants was impacted and improved during the month of Ramadan. Both male and female participants were satisfied with the Iftar program and offered suggestions to improve the program. In terms of nutritional expertise, female participants showed a better understanding of nutritional value of the served meals. Therefore, it is recommended that female participants be involved in the decision-making for the Iftar program at AUT Mosque.

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## **Attestation of authorship**

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signed

A handwritten signature in black ink, appearing to be 'J. L.', written over a horizontal line.

Date: 05/02/2018

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## **Ethics Approval**

Auckland University of Technology ethics committee approved the project on 15 May 2017 under the code of **17/75**.

## Dedication

I would like to dedicate this research to the AUT Muslim community from the cooperation and collaboration I received from them to continue this wonderful Iftar program.

I would also like to dedicate this thesis to the public health family at AUT. They were helpful and supportive during my research.

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“ رَبِّ اشْرَحْ لِي صَدْرِي وَيَسِّرْ لِي أَمْرِي وَاخْلُكْ عُنُقَهُ مِّن لِّسَانِي يَفْقَهُوا قَوْلِي ”

*"O my Lord"! expand me my breast; "Ease my task for me; "And remove the impediment from my speech, "So they may understand what I say"*

“ وَقُلْ رَبِّ زِدْنِي عِلْمًا ”

*"O my Lord! advance me in knowledge".*

## Glossary

<b>Allah:</b>	God
<b>Aser</b>	The prayer at afternoon
<b>Duhr</b>	The prayer at noon time
<b>Ebadat:</b>	Worshipping
<b>Etikaf:</b>	Setting in the Mosque for worshipping and doing good deeds
<b>Fajr</b>	The prayer at dawn time
<b>Halal food:</b>	Food selected according to Islamic principles
<b>Hathith</b>	The words of the prophet Muhammed (peace be upon him)
<b>Iftar:</b>	First meal after fasting (breakfast)
<b>Imam</b>	Program Leader
<b>Isha</b>	The prayer after dark
<b>Maghrib</b>	The prayer at sunset
<b>Masha Allah:</b>	An Islamic phrase used when you are impressed with something
<b>Masjid:</b>	Mosque
<b>Muessin</b>	The person who makes the call for prayer
<b>Rakka:</b>	A section of prayer
<b>Suhoor:</b>	Pre-dawn meal
<b>Sunna:</b>	Teachings of the prophet Muhammed [peace be upon him]
<b>Taraweeh</b>	Special night prayer during Ramadan
<b>Zakat:</b>	Compulsory donation
<b>Zakat ul fitra</b>	Charity given to the poor at the end of Ramadan

## 1 Introduction

Islam is the second largest religion worldwide, with about a billion followers (Esposito, 1999). The 2013 census recorded 46,149 Muslims in New Zealand (Statistics New Zealand, 2014). Muslims believe in one God (Allah) and the prophet Mohammed (peace be upon him) the messenger of Allah. The religion of Islam is established on five essential pillars.

The top pillar of Islam is faith. Faith is outlined in two recognitions, “There is no God but Allah, Mohammed is His messenger.” (Abuznaid, 2006, p. 127). Thus, the Muslims must believe in one God who is the Creator of this universe and the Prophet Muhammed [Peace Be Upon Him] is the messenger of Allah (Abuznaid, 2006).

The second pillar of Islam is the prayer. There are five compulsory prayers for Muslims during the day and at night. The first prayer at dawn is called Fajir, followed by Duhar prayer at noon, Aser in the afternoon then Maghrib prayer at the sunset and Isha prayer after dark (Abuznaid, 2006).

Zakat is the third pillar of Islam. It is a compulsory tax that is collected from the rich and distributed among the poor, and is part of Islamic law. On the other hand, personal charity is optional but giving charity is encouraged according to the principals of Islam (Abuznaid, 2006).

The forth pillar of Islam is compulsory fasting which is only imposed during the month of Ramadan. During this holy month, Muslims refrain from any forms of eating, drinking, sexual intercourse and smoking. The fasting period extends from dawn to sunset. Exceptions extend to the sick, children, pregnant women and travellers (Abuznaid, 2006).

Hajj or Pilgrimage is the last pillar of Islam. Muslims are required to perform Hajj at least once in their lifetime, if they are able to afford the expense and are of sound mind. During the Hajj period, Muslims are prohibited from sexual intercourse, wearing ornaments, applying perfumes, cutting their hair or hunting (Abuznaid, 2006).

In the Islamic calendar, Ramadan is the ninth month of the lunar year. According to (Al-Jibouri, 2000) the arrangement of the 12 Islamic months in the lunar calendar are as follows: Muharram, Safar, Rabi' I, Rabi' II, Jumada I, Jumada II, Rajab, Sha'ban, Ramadan, Shawwal, Thul-Qi'da, Thul-Hijja.

## 1.1 Iftar program

AUT Mosque hosts a free Iftar program during Ramadan. AUT plays an essential role in gathering the Muslim community, through providing a prayer hall in the city campus. This place for worship provides the Muslim students a place to pray and commune with other Muslims.

Since 2006 the Muslim community at AUT Mosque have been conducting a Iftar program during Ramadan. This study was conducted in AUT Mosque, which is a multi-cultural place where the majority of the members are students. The goals of this research are to gather perceptions of the impacts of Ramadan on holistic health and to gather perceptions of members of AUT Mosque on the Iftar program. The Iftar program aims to gather the Muslim community at AUT to break their fast together and to provide a sense of community. AUT Mosque is one of the few Mosques in Auckland that welcomes women and children to attend and pray.

The Iftar program feeds from 200 to 300 participants every night of Ramadan. Most of the costs of this program are covered by donations from Mosque members and local businesses.

In 2017 the Iftar program adopted some healthier measures such as including fruits to the Iftar meals. The type of fruits added this year in the program were bananas, oranges and apples with different fruits distributed every night (Figure 2). To avoid waste, fruits were cut into smaller pieces and distributed in small dishes along with water and dates. Participants were allowed to eat as much fruits as they wanted. On the other hand, the quantity of vegetables was low. Only two small containers were placed between six to seven participants (Figure 6).

### 1.1.1 The steps of breaking fast in the Iftar program at AUT Mosque

During the organization of the Iftar program, the voluntary team is the first to arrive at the Mosque to prepare the place for the worshippers. (Figure 1)



Figure 1. Volunteers preparing the Mosque for the breakfast. (Photo: Researcher)

Volunteers start off by laying out sheets of paper on the floor to prevent any food from spilling onto the carpet. After placing the sheets, dates, fruits and water are distributed around the prepared area. (Figure 2)



Figure 2. The amount of fruits, water. people are waiting the call of prayer. (Photo: Researcher)

Once the participants arrive they sit in the pre-arranged area waiting for the call of prayer to break their fast. (Figure 3)



Figure 3. People sitting in the Mosque waiting for the prayer call. (Photo: Researcher)

At the start of the call to prayer, the participants break their fast with the fruits, dates and water provided. This can take up to 10 minutes. Then the volunteers start collecting all the empty plates and prepare the area for Maghrib prayer. The Maghrib prayer takes about 10 to 20 minutes. (Figure 4). The Maghrib prayer is one of compulsory daily prayers and includes 3 sections. Each section is called a Rakka.

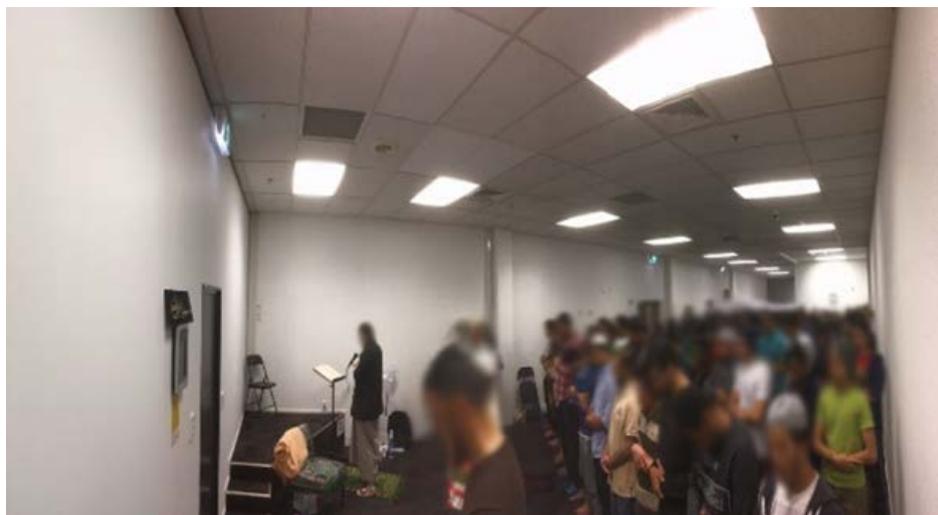


Figure 4. Maghrib prayer in group. (Photo: Researcher)

After completing the prayer, volunteers place new sheets in preparation for the main meal. The volunteers also gather the participants into groups of 6 or 7 to a plate to distribute the main meal. (Figure 5)



Figure 5. Distributing the main meal and people eating in groups. (Photo: Researcher)

The main meals are served, either consisting of rice with lamb or rice with chicken. Each night, Iftar program provides a different meal with salad served alongside. (Figure 6 & Figure 7)



Figure 6. The quantity of salad is two containers for six or seven people with the main meal. (Photo: Researcher)



Figure 7. The amount of rice with meat/ chicken for six or seven people. (Photo: Researcher)

Participants begin to consume the main meal. This can take from 30 minutes to 1 hour depending on the number of people attending that night. (Figure 8)



*Figure 8. People having the main meal in the Iftar sharing one big dish. (Photo: Researcher)*

Once the participants have finished, volunteers begin the process of cleaning and clearing up the prayer hall and preparing it for the Isha and Taraweeh prayers. Leftover food is packaged and distributed to any participants who would like to take some food home.

Food must be Halal according to the Islamic principles. Halal food is the food permitted or lawful for Muslims according to Quran, Sunna and practice of the prophet Muhammed (peace be upon him) and governs the preparation of animal for eating (Regenstein, Chaudry, & Regenstein, 2003). Halal food is available in New Zealand but the price is generally more expensive than non-Halal food.

## **1.2 Five compulsory day prayers**

Allah has imposed on Muslims to pray 5 times a day, this is compulsory on every Muslim of age, male or female, those of whom want to be closer to Allah. Each prayer has a certain number of sections (Rakka). Fajr prayer (2 Rakka), Duhur prayer (4 Rakka), Aser prayer (4 Rakka), Maghrib prayer (3 Rakka), Isha prayer (4 Rakka).

In contrast, there are other optional prayers during Ramadan called Taraweeh. This prayer is only conducted in the month of Ramadan during the night. Muslims are encouraged to pray Taraweeh in a group at the AUT Mosque.

## **1.3 The significance of the research**

The idea for this study came about as I was studying nutritional health promotion. While studying nutritional health the I recognized that the Iftar program was a good point of research. Through my experience of attending previous Iftar programs, I found that meals in the Iftar program needed nutritional strengthening. Before conducting any

improvements in the program, I needed to gather more information about the program and the participants that attended.

A small number of studies have been conducted about the Muslim community in New Zealand but none on the impacts of Ramadan on holistic health. Therefore, I found an opportunity in the Iftar program to help educate non-Muslims in the wider public. This study aims to improve the health of the Muslim community during Ramadan and it may be used to develop health policies at the AUT Mosque to improve the Iftar program.

The results of this study can be used to improve Iftar programs at other Mosques around New Zealand. This in turn may have beneficial results on the public health of the wider Muslim community in New Zealand.

## **1.4 Summary**

The chapter outlines the pillars of Islam, which are the faith, prayer, alms/zakat, fasting and pilgrimage\ hajj. Also, it included the names and the order of the months in the Islamic calendar, where Ramadan is the focus of this study. In this chapter, I described the Iftar program at AUT Mosque which needs a high level of organization, starting from preparation of the Mosque for receiving people, breaking the fast, praying Maghrib in congregation, organizing people to have the main meal, distributing food, and finally cleaning and preparing the Mosque for the Isha and Taraweeh prayers. This program is funded by charity and feeds between 200 and 300 people every night during Ramadan. At the AUT Mosque, Muslims break their fast on dates, water and fruits as the first food after the sunset, followed by praying Maghrib in a group. Also, they eat the main meal which includes rice with lamb or chicken along with salad. This study is significant in providing an opportunity to learn more about the community associated with the AUT Mosque, in informing the design of public health interventions and in supporting Muslim communities to take control over their holistic health and wellbeing, both at the AUT Mosque and all over New Zealand.

## 2 Literature review

This chapter includes the literature review of some studies related to the impacts of Ramadan on holistic health. The main outline in this literature review are related to spirituality of Ramadan, mental health in Ramadan, physical health in Ramadan, health risk related to fasting during Ramadan and psychosomatic alterations during Ramadan. Ramadan is particularly important to Muslims as mentioned in the Quran.

قال تعالى "يَا أَيُّهَا الَّذِينَ آمَنُوا كُتِبَ عَلَيْكُمُ الصِّيَامُ كَمَا كُتِبَ عَلَى الَّذِينَ مِن قَبْلِكُمْ لَعَلَّكُمْ تَتَّقُونَ".

**"O you who believe! Fast is prescribed for you as it was prescribed for those before you so that you may ward off (evil). (Fast) a certain number of days..."**  
(Qur'an Surah Baqarah)

Fasting is not a new concept to humans, many throughout history practiced fasting for various reasons such as spiritual uplifting and self-control over one's desires. It was practiced by the Romans, the Egyptians and the Chinese. Fasting persists today by religions such as Islam, Judaism, Christianity and some secular people. It is believed that Moses (peace be upon him) fasted for a period of forty days while on Mount Sinai, during which the ten commandments were revealed to him (Al-Jibouri, 2000).

Fasting is not limited to Islam. Allah commanded Jews to fast the tenth of seventh month and the ninth of eighth month. Other types of fasting observed among Jews is fasting when exposed to danger or in times of mourning and grief. Some Christians believe that Jesus (peace be upon him) and his mother were practicing fasting, with the virgin Mary fasting on the day of atonement and the forty days observed and fasted by Moses. Abstaining from eating meat, fish and eggs is also another form of fasting observed in certain parts of Christianity (Al-Jibouri, 2000).

قال تعالى "شَهْرُ رَمَضَانَ الَّذِي أُنزِلَ فِيهِ الْقُرْآنُ هُدًى لِّلنَّاسِ وَبَيِّنَاتٍ مِّنَ الْهُدَىٰ وَالْفُرْقَانِ فَمَن شَهِدَ مِنْكُمُ الشَّهْرَ فَلْيَصُمْهُ".

**"The month of Ramadan is that in which the Quran was revealed, a guidance to men/women and clear proofs of the guidance and the distinction; therefore, whoever of you is present in the month, he shall fast therein "**(Qur'an Surah Baqarah)

Globally, around 1 billion Muslims observe the month of Ramadan every year. They refrain from eating, drinking, smoking and sexual activity (Trepanowski & Bloomer, 2010). The sick, weak and the elderly as well as pregnant women, breastfeeding

women and travelers are allowed to skip fasting during those times (Bernieh, Mohamed, & Wafa, 1994).

The start of the lunar year in the Islamic calendar advances about 11 days every year compared to the seasonal/solar year, therefore, over a 33 year cycle, Ramadan occurs during different seasons over the cycle period (Sakr, 1975). This change is associated with the occurrence of Ramadan in different seasons. In addition, the time of sunset and sunrise leads to variations in the length of the fasting period. Also, the location in terms of the distance from the equator also influences the daily fasting period. The fasting period is estimated at 12 hours near the equator and around 22 hours at latitude ( $64^{\circ}$ ) such as Norway, Sweden and Finland in the summer (Malhotra, Scott, Scott, Gee, & Wharton, 1989; Trepanowski & Bloomer, 2010). Those living in such areas are given special consideration and are able to fast along with Mecca in Saudi Arabia or with the nearest temperate climate country (Trepanowski & Bloomer, 2010). In Auckland, New Zealand, the period of fasting in Ramadan 2017 is approximately 11 hours, with the sunrise on the first day of Ramadan at 7.35am and sunset at 5.10pm (Timeanddate, 2016).

## **2.1 Fasting and holistic health**

Fasting in Ramadan is multi-dimensional, catering to physical and spiritual upliftment, as well as being a social phenomenon, bringing communities together during this Holy month (Jawad & Kalra, 2016). Even those exempted from fasting, such as diabetics, often insist on observing Ramadan, despite the health risks. This further emphasizes the importance of psychospiritual considerations and have even directed pre-Ramadan counselling and risk stratifications (Hodge, Zidan & Husain, 2015). Since an individual's mindset plays an important role during the Ramadan fasts, people's perceptions on impacts of fasting on holistic health during this holy month can shed some light on how fasting influences their psychological, spiritual and physical spheres of life.

Physical changes during intermittent fasting have been shown to reduce inflammation, stimulate detoxification, improve memory and learning, produce weight loss and improve biomarkers for several conditions including cardiovascular disease and type 2 diabetes in animal models (Mattson & Wan, 2005; Harvie et al., 2011). These physiological changes have been attributed to 10-16 hours of fasting. Fasting is believed to stress cells into utilizing alternative sources for energy production and has been

theorized to stimulate cells to produce anti-oxidants which fight against aging (Catterson et al., 2018). In addition to physiological changes, fasting has also been hypothesized as a means of spiritual uplifting.

## **2.2 Spirituality of Ramadan**

Ramadan is the fasting month for Muslims, following the wisdom of self-restraint and compassion towards others. The holy month of Ramadan is the month in which the Quran was revealed as a guidance for mankind. Thus, the Qur'an contains "clear signs of guidance and a criterion (between right and wrong)" (Ünal, 2006, p. 10).

Fasting is the only hidden and unseen act of worship. It is considered the embodiment of equality and unity of the Islamic world, in which the poor or rich and healthy or sick lead a similar life (Ghazzali, 2005). Those who observe fasting should abstain from eating, drinking, smoking and intercourse from dawn until the sunset. This means that you decide to observe fasting in obedience to the command of Allah. Basically, fasting enhances subservience to Allah and it helps in submission to him. If his servants are breaking their fast during the day light hours, they are considered to be sinning (Ghazzali, 2005).

In addition, fasting enforces the process of training the spirit of piety in everyday life. Having a strong impact on the human body and soul, fasting has the power to strengthen our willpower and bolster our patience. Thus, fasting is often associated with patience, while Ramadan is called by many the month of patience (Ghazzali, 2005).

### **2.2.1 Impact of serious leisure time on spirituality**

Although fasting has a strong effect on soul and improves spirituality, some other acts such as voluntary work may have similar functions in strengthening our willpower and improve spirituality. Stebbins (1996) provides some interesting insights into different viewpoints on serious leisure and volunteer work, varying perspectives on what motivates an individual to volunteer and how volunteers are viewed in general by organizations and employers. Serious leisure is "the systematic pursuit of an amateur, hobbyist or volunteer activity, sufficiently substantial and interesting in nature for the participant to find a career there by acquiring and expressing a combination of its special skills, knowledge, and experience"(Green & Jones, 2005, p. 166). Serious leisure is associated with greater wellbeing and improved mental health (Stebbins, 1996).

Baker (2003) mentioned a woman, aged eighty, who participated in volunteer work. She worked for 3 hours every Sunday in a gift shop. It was reported that the lady had a very good quality of life. Baker (2003) speculates that the positive feeling of spirituality and well-being were attributed to the voluntary work which enabled her to contribute to society, within her own capacity, improving her sense of value and self-worth.

Aligned with the previous study, Heo, Lee, McCormick, and Pedersen (2010) conducted a study on 22 participants, all over the age of 50 to investigate the link between serious leisure and wellbeing in a midwestern city in the United States of America (USA). The participants were involved in many activities, among those activities was voluntary work. The study showed a positive impact of voluntary work on the participants wellbeing by gaining personal satisfaction and social rewards. Therefore, voluntary work could improve the spirituality and well being.

### **2.2.2 Socio-cultural impacts of Ramadan**

Culture is considered the source of an individual's development. It involves the shared values, principles, beliefs and practices of a certain community (Lott, 2009). Ramadan may positively influence the socio-cultural life where Muslims become more social (Foucault, 1977). Thus, religious practices can change people's social and cultural behaviour in ways which can impact the entire community.

The month of Ramadan has become a part of the Muslim culture where certain rules and cultural behavior are observed during the fasting time. Ozturk (2014) in his book, investigating the Impact of Culture and Society on the Entertainment Industry, explains that there are certain threats which may turn the month of Ramadan into an entertainment show that does not correspond to the original goal of this "ritual". For instance, in Indonesia it is becoming popular to celebrate Ramadan with firecrackers, while the local television broadcasts those celebrations and television programs become rich with the Islamic themes (Ozturk, 2014).

Family relations and the overall bonds between Muslims are strengthened during Ramadan. Considering the spiritual aspect of Ramadan fasting, Muslims can contemplate the higher purpose and deeper meaning of their lives, trying to live meaningfully and balancing physicality with spirituality (Ozturk, 2014). The increased level of spiritual consciousness and spirituality should be modelled to children by their parents. Internally, it goes along with the purification of the self from evil intention, deceit, selfishness, cowardice, arrogance, and prejudice (Ozturk, 2014).

Bowen and Early (2002) in their book 'Everyday Life in the Muslim Middle East' described the month of Ramadan as a time to demonstrate personal piety and a time to socialize and, in recent years, to watch special Ramadan programs and documentaries. In the Middle East, the muessin sounds the call to prayer at sunset and the majority of television screens freeze on a scene of a minaret, as Muslims get together to break their fasts (Bowen & Early, 2002). Traditionally Iftars can be taken at home, with friends, in a restaurant, or in a hotel. The major idea here is to proceed with the special prayers called Taraweeh, while in the evening the Muslims need to go to the Mosque for evening prayers. This is a part of the ritual aiming at the spiritual purification (Bowen & Early, 2002).

Sheikh Mohammed bin Rashid Centre for Cultural Understanding in the United Arab Emirates issues a brochure with Ramadan etiquette rules each year as a reminder to every Muslim about the upcoming event (Sheikh Mohammed bin Rashid Centre for Cultural Understanding, 2015). During the month of Ramadan, there are multiple social interactions between friends and family and they should be based on the principles of spirituality. Muslims are encouraged to visit relatives, friends as well as those with whom they lost contact (Sheikh Mohammed bin Rashid Centre for Cultural Understanding, 2015).

Ramadan is the month of sharing with others, consequently Muslim communities often give gifts of food to neighbors during the month-long observance. During Ramadan, Muslims prefer to break their fast with dates and water, following in the tradition of the prophet Mohammed (Peace be upon him). The process of fasting in times of the daylight hours is a crucial spiritual act that has its major objective to increase consciousness of Allah (Leaman, 1982).

For those Muslims who are abstaining from food and drink, there is a deeper gratitude for such vital gifts sent from Allah. At the same time, this is also a reminder to everyone not to be wasteful. The Prophet Mohammed cautions us about overindulgence by saying that one third of human stomach is for food, one third for drink, and the rest should be left empty. Thus, fasting turns out to be a totally manageable process, which requires stronger spiritual basis rather than physical ones (Sheikh Mohammed bin Rashid Centre for Cultural Understanding, 2015).

In the book 'Science and Islam' written by Muzaffar Iqbal, the Taraweeh prayers are described as daily night prayers arranged after Isha prayer in Ramadan. Even though

Taraweeh does not belong to the compulsory prayers it is still widely practiced in the Islamic world (Iqbal, 2007). In addition, Subhani (2014) says that the night prayer of Ramadan (Taraweeh) should be devoted to the spiritual rewards awaiting the observers of this prayer. Ideally every worshipper should attend Taraweeh prayers at the Mosque.

The Prophet Muhammad encourages women to go to the Mosques where they pray in an area separate to the males. Zalatimo (1991a) interviewed a Palestinian house wife to observe Muslim life during Ramadan. The participant of this study confirmed that she used to regularly walk with her neighbor to the Mosque and attend Taraweeh prayer. Also, her children would attend the Mosque and then play outside. Furthermore, it creates an opportunity for people to get together during Ramadan every evening on the way to strengthening physical benefits through meditation and movement of the body (Shu'aib, 1991).

According to the author of the book 'Essentials of Ramadan the Fasting Month', the merits of the Holy month are related to the reward from Allah and self-benefits. During this month, the gates of Paradise are opened, meaning that the people are literally walking under Allah's blessing (Shu'aib, 1991).

### **2.2.3 Muslims living away from home**

During Ramadan, the social life of Muslims who are living in another country is impacted according to the new environment and atmosphere. Zalatimo (1991a) observed the life of a Muslim family living in a foreign country during the month of Ramadan. This family was living in Kuwait for 15 years before moving to the USA during the Iraq-Kuwait war. The family noticed a dramatic difference between Ramadan in a Muslim country and a non-Muslim country. For example, the mother of this family said, "it was so depressing not to hear the words 'Allahu Akbar' over the loud speakers throughout the city, not having my relatives and friends nearby, or a Mosque across the street from my house"(Zalatimo, 1991a, p. 1). The mother also stated other impacts of living in non-Muslim country such as, her children found it harder to fast while attending school where in Kuwait schools would finish early to accommodate the fasting students. In addition, not many Muslim families live in the surrounding area, she said "The most important aspect of Ramadan, the collective atmosphere where everybody is fasting, practicing self-control and restraint, and thinking of God and the poor, is lost here"(Zalatimo, 1991a, p. 1).

There are few studies of homesickness for international Muslims students. Ahmed (2016) conducted a study of 6 Saudi female students who had left their homes to study abroad in Canada. During the interview, all the participants in the study experienced the feeling of homesickness and expressed this feeling through crying and avoiding calls with the family. One of the participants of the study confirmed that she lived in a building with other Saudi families to avoid the feeling of homesickness. Despite living amongst other Saudi families, the participant could not overcome the feeling of wistfulness. Ramadan was an especially difficult time for those participants due to their Islamic heritage, in which, sharing the breakfast meal (Iftar) with family and friends is a much anticipated and celebrated experience.

Zalatimo (1991b) investigated the traditions of Ramadan which are important for children. An Egyptian mother residing in Washington with her family was interviewed. This mother confirmed that she felt that her children are deprived of some Islamic traditions such as the celebrations during Ramadan and the sound of the Azan because they were currently living in a non-Muslim country. She said, "Ramadan is also cultural and traditional, it is a parent's job to instill these customs in their children, who are growing up in non-Muslim societies, and to make them proud of their backgrounds" (Zalatimo, 1991b, p. 2).

In another study Zalatimo (1991a) observed the impact of Ramadan on a Syrian family living in the United States for 22 years. The family stated that the Mosque played a pivotal role during Ramadan, where Muslim families support single residents and college students by offering them free meals to break their fast.

### **2.3 Mental health in Ramadan**

The existing literature explores a few of the impacts of Ramadan on serious mental health issues such as stress and depression. Stress is a negative condition experienced by people from different ages and cultures, commonly associated with headache, poor workforce performance, childhood tantrums, eating disorder, high blood pressure, premenstrual tension, back pain, substances abuse, marital discord, road rage, some types of cancer, heart disease etc. (Jones, 2001).

Depression is defined as a health condition. The primary clinical symptoms include, sadness, reduction of mental productivity, despairing mood, retardation in motor behavior and a decrease of drive. The secondary symptoms include weight loss, sleep

disturbances, somatic preoccupation, suicidal ruminations and the feeling of depersonalization (Lorr, Sonn, & Katz, 1967).

Kazemi et al. (2006) conducted a study in 2006 of 161 university students in Iran to evaluate their psychological health and depression during Ramadan. Using the standard Beck depression test, the students were tested 10 days before Ramadan and 10 days after Ramadan. The study concluded that Ramadan could have a positive impact on mental health and depression rates in university students.

Daradkeh (1992) conducted a Jordanian study of all recorded attempted suicides (parasuicides) before, during and after the month of Ramadan from the police registry, in the period between 1986 and 1991. The results show a decrease in the number of recorded parasuicide during Ramadan. The study recorded 38 parasuicide cases before Ramadan, 21 during and after Ramadan the cases tripled to reach 60 recorded cases. The author observed that during religious events, such as the month of Ramadan, the rates of parasuicides decrease.

Koushali, Hajiamini, Ebadi, Bayat, and Khamseh (2013) conducted a study in Tehran Iran with 313 nurses randomly selected from two hospitals to evaluate their mental health during Ramadan fasting. A questionnaire was handed out 1 or 2 weeks before and after Ramadan to evaluate mental health, mainly depression, stress and anxiety rates, while caring for patients. The study reported that 30.8% of the nurses suffered from depression before Ramadan. After Ramadan, this figure dropped to 24.3%. Anxiety levels before Ramadan were recorded at 33.9% and decreased by 3.2% after Ramadan. Stress level were recorded at 33% before Ramadan and 22.3% after Ramadan. This led to the conclusion that fasting during the month of Ramadan helps in reducing stress and depression levels among nurses.

## **2.4 Physical health in Ramadan**

### **2.4.1 The health benefits of Ramadan**

Although fasting for religious purposes is often aimed at improving spiritual growth, it can be a good time to improve physical health and lose weight. During Ramadan, the lifestyles of many Muslim communities around the world change, which include food consumption, dietary habits and meal frequency compared with the other months of the year. Azizi (2010) reviewed 113 articles relevant to the health and safety of fasting in Ramadan. The author concluded that Ramadan fasting does not have any adverse

impacts on human body functions or neuropsychiatric functions in healthy individuals. On the other hand, the literature covered some health risks during Ramadan which will be discussed later in the literature.

#### **2.4.2 Lifestyle changes during Ramadan**

During Ramadan, the introduction of Taraweeh, earlier waking time to eat the Suhoor and subsequent changes in sleep patterns affect the lifestyles of Muslims participating in the Ramadan fasting (Bahammam, Almushailhi, Pandi-Perumal, & Sharif, 2014). In some Islamic countries malls and shops remain open until the early hours of dawn.

Afifi (1997) conducted a study to evaluate the daily practices such as watching TV, listening to the radio, drinking beverages and sports before and during the month of Ramadan. The study included 289 fasting university students (163 male and 102 female) aged 20 - 27 years old. Before Ramadan, watching television was recorded at 67% and listening to the radio at 45%. However, during Ramadan, these proportions increased to 76%,58% respectively. Drinking beverages and sports activity were recorded at 54% and 58% before Ramadan. However, during Ramadan, these declined to 42% and 37% respectively. Moreover, some religious activities recorded positive results. For example, 32% of the participants were attending Taraweeh every night during Ramadan and 47% of the participants confirmed that they read the whole Quran during Ramadan.

During Ramadan, Muslims become less active compared to the rest of the year. Soh, Soh, Ruby, and Salimah (2010) conducted a study on 54 female Muslim staff at University Putra Malaysia. This study evaluated physical activity levels and the factors impacting this activity during the month of Ramadan. The participants wore a pedometer (Yamex-Digi walker CW700) five sequential days before, during and after Ramadan. The results showed a significant reduction in the steps during the month of Ramadan compared with before or after Ramadan. The study suggested that the main reason for reducing the physical activity during Ramadan was lack of self-motivation. Therefore, the month of Ramadan may influence and connect with many changes in a Muslim's lifestyle.

On the other hand, During Taraweeh Muslims attend the Mosque to perform prayers, which take over an hour to perform, and these are performed while standing (Ibrahim, Ahmad, Woo, & Abas, 2012). This indicates more time in prayer and more physical activity during the prayer.

### 2.4.3 Dietary patterns during Ramadan

During Ramadan, Muslims typically consume only two meals each night: Suhoor and another following sunset, Iftar (Rafie & Sohail, 2016). Although there are typically no limitations on the number of meals that Muslims could have at night between sunset and dawn, the limited time available before sleep often means that there is no time to include a third meal, which may lead to eating a lot of food in a short space of time.

Beltaifa et al. (2001) conducted a study in Tunisia on 20 fasting individuals to investigate the effects of dietary patterns during Ramadan. The author observed an increase in energy intake during Ramadan compared to the rest of year. The findings showed that the sunset meal was the most important contributor to lipids 74%, proteins 71%, calories 65% and carbohydrates 56% daily. Therefore, in their study, the dietary intake, anthropometrical, clinical and biological parameters were not affected by fasting during Ramadan.

During Ramadan, Baig, Baig, Ghoto, and Baloch (2014) speculated that most people seemed to not pay attention to consuming a healthy diet and sometimes consumed fats excessively. In their study Baig et al surveyed 130 participants, across a diverse age range, to assess the diet and health problems faced during Ramadan in Pakistan. The authors found 80% (104 people) of the participants “did not know about a balanced diet at all” while 20% (26 people) “had awareness of a balanced diet plan in Ramadan” (Baig et al., 2014, p. 16)

Srilakshmi (2003) defined balanced diet as “one which contains different types of food in such quantities and proportions so that the need for calories, portions, fats, minerals and vitamin is adequately met”. However, any deficiency of these nutrients may lead to an imbalanced diet(Srilakshmi, 2003, p. 4)

Baig et al (2014) said that, out of the 130 surveyed people, 20% were partly following a balanced diet while the proportion of the followers of imbalanced diet were 80%. Moreover, the common health problems faced by the 130 healthy participants were constipation 62%, dehydration 49%, weakness 35% and acidity 21% respectively. Therefore, Baig et al recommended choosing a balanced and healthy diet, especially during Ramadan (Baig et al., 2014).

Ramadan can have a negative effect in terms of weight gain. Bakhotmah (2011) found that body weight had increased during the month of Ramadan. This study included 173 Saudi Arabian families who participated in a cross-section study to evaluate weight gain

through food expenditure and dietary habits of participants. The study found that 60% of participants noticed an increase in weight at the end of Ramadan. Of those who gained weight, 40% attributed this increase in weight to fat and carbohydrates such as rice during the dawn meal and dates during breakfast, 31% to lack of physical activity, and 14 % to an increase in food consumption.

Frost and Pirani (1987) carried out a study of 15 young adult pilots from Saudi Arabia to assess meal frequency and nutritional intake during Ramadan. The study compared the meal pattern and nutritional intake during and after the month of fasting, and recorded a considerable increase in carbohydrates, protein and fat consumption during Ramadan. The number of meals taken outside the home during Ramadan decreased, possibly due to meals being eaten in the night hours when people are more likely to eat with family. The authors noted that although meals frequency was decreased, there was an increase in body weight recorded during the month of Ramadan, which they suggested may be due to certain foods (e.g. fried snacks) being consumed in higher quantities during Ramadan.

Bigard, Boussif, Chalabi, and Guezennec (1998) conducted a study to assess the effect of fasting on 11 senior fighter pilots. These pilots were tested three times, the first week of Ramadan, the fourth week of Ramadan and after Ramadan to assess endurance and strength of the knee extensors and elbow flexors. This study found that during Ramadan the body weight decreased by 3% compared to the rest of the year. The strength and endurance of elbow flexor muscles recorded a dramatic decrease. Hence, in this study Ramadan fasting was associated with weakness in muscular performances in these pilots. In this context, Leiper and Molla (2003) suggested that, any loss of body mass is often comparatively small and might have been caused by a moderate degree of dehydration with small loss of body tissue.

#### **2.4.4 Eating habits in Ramadan**

According to Shadman et al. (2014) lifestyle and eating habits are subject to major changes during Ramadan among the Muslim community in Tehran, Iran. Studying 600 respondents aged between 18 and 65, with body mass indices ranging between 18.5 and 40, the author observed that both the quantity and quality of diets changed during the month. The findings from the study established four distinct dietary patterns. The first pattern consisted of Western-style food such as salty snacks, potatoes, nuts, chocolates and fish. The second pattern focused on foods high in sweetness and cholesterol which

included butter, cream, visceral meats, eggs, canned fish, sweets and condiments. The third pattern mainly consisted of Mediterranean like foods such as, dates, olive oil, dried fruits, tea and red meats. The final pattern was Ramadan-style pattern, which included a large consumption of soups, legumes and whole grains, porridge, soft drinks and okra. It was concluded by the study that Mediterranean like foods were the healthiest.

During Ramadan food consumption and energy intake vary with ages. Shalaei et al. (2013) conducted a study in Tehran, Iran of 335 individuals aged 15 years or over to evaluate if the change in diet could influence the supply of micronutrients and nutritional requirements during the month of Ramadan and compared the results before and after Ramadan. The result of this study showed a significant increase in micronutrients and energy intake for both genders under the age of 35, before and after Ramadan, while those over 35 showed no significant change.

#### **2.4.5 Cultural factors for changing lifestyle during Ramadan**

In a report on the lifestyle and dietary patterns of the Pakistani community in Nottingham, Shaw and Hussain (2013) noted that Ramadan and other religious events influenced the food choices of Muslims. They observed that during Ramadan, binge eating and the consumption of fried foods increased. The study was conducted on 20 participants, 10 males and 10 females living in Nottingham, aged between 33 and 79 years. Both groups were asked about eating habits during the month of Ramadan. It was concluded that the food being consumed was high in fats and calories. Comparing first and second generation Pakistani communities who are living in Nottingham, it was noted that the second generation consumed more fast food. The authors also noted that many Pakistani people migrated to Nottingham in the 1950's (Shaw & Hussain, 2013). The first generation, being born in Pakistan, showed that the cultural aspect may have been a strong influence in their food choices, while consumption of fast food among second generation residents may reflect an influence of the western lifestyle on them. It was also noted that regional background, cost and income was not a factor in food choices. This matches with the findings above (Shadman et al, 2014), where age influenced food intake.

This observation matches the findings of Hassan Wassef (2004) that Ramadan involved dietary traditions that influenced the consumption of foods and drinks rich in sugar and fat. Khaled and Belbraouet (2009) stated that, the breakfast meal (“at sun set” meal) at the end of the day are typically high in calories and sugar. Additionally, Leiper and

Molla (2003) concurred that the Ramadan period significantly alters the amounts and types of food that Muslims consume at night.

Writing for *The Washington Post*, Constable (2015, p. 2) in an interview conducted with Asma Uddin, a housewife, mentioned that Ramadan meals are typically extremely heavy and unhealthy, featuring sugar and oil-soaked foods (Constable, 2015). Touzani and Hirschman (2008) observe that the tendency among some Muslims to overeat food is part of a consumption rite in which the rules and values of meal behavior acquire tremendous significance, especially to symbolize love, affection, and a celebratory mood.

Touzani and Hirschman (2008) conducted a qualitative study in Tunisia relating to food consumption of Muslims observing Ramadan. This study included 27 Muslims participants aged 20 years or more from different genders and regions who were responsible for purchasing the food for their household. The authors observed that the presence of, or adherence to, certain consumption acts and patterns, including preparing and sharing sweet foods such as cakes and eating banquets, are vital elements of observing Ramadan. They suggested that multi-sensory stimulation, abundance of food, and community during Ramadan might influence the consumption of heavy and unhealthy meals among Muslims.

Agreeing with this assessment is Karaosmanoglu (2010), who observed that the period of Ramadan influences a carnival atmosphere in Muslim societies. While this atmosphere is reflected in all aspects of life in these societies, the effects on food and drink are prominent. The season influences culinary festivals in which tables at home and in public spaces become food and drink ‘spectacles; for communal consumption. According to Karaosmanoglu (2010) these foods are typically ‘unique’ foods and drinks with high-calorie contents. These assessments imply that Ramadan influences the collective and large-scale consumption of foods high in fat, sugar and calories.

## **2.5 Health risk related to fasting during Ramadan**

Iftikhar, Albar, and Qadi (2016) during a systemic review found that the primary determinants of diabetes, stroke and cardiovascular disease and disorders are environmental factors, primarily lifestyle and diet patterns, rather than genetic influences. Foods such as cakes, fast foods, and foods with artificial flavors and spices typically have little nutritional value (Willett et al., 2006). Through high and longer-term consumption of these kinds of food which are popular during Ramadan, Muslims

may increase their susceptibility to disorders and diseases such as diabetes, stroke and cardiovascular disease, which are typically chronic in nature, and hence threaten their health and wellbeing (Akbari et al., 2005).

### **2.5.1 Bodily responses during the fasting period**

Rafie and Sohail (2016) observed that changes in the body as a response to fasting is dependent on the duration of the continuous fast. Technically, the body enters a state of fasting about 8 hours following the last meal once the gut completes the absorption of nutrients from ingested food. During this state, the body starts using up the store of glucose in muscles and the liver before converting fat into energy. Prolonged fasts for many days and weeks influences and increases the use of protein as a source of energy. In addition, dawn-sunset fast during Ramadan allows a mild and normal transition to the body's use of fats and glycogen for energy without the need to break down proteins (Rafie & Sohail, 2016).

### **2.5.2 Physiological changes during the fasting period**

Fasting during Ramadan is largely partial since the abstention from food and drink is only between sunrise (dawn) and sunset (Leiper & Molla, 2003). However, Schmahl, Metzler, Born, and Elmadfa (1988) measured metabolic changes due to this fasting in a study conducted on 32 male factory workers (laborers), originally from Turkey, carrying out light to moderate workload while fasting an 18-hour day. The study results indicated that workers lost an average of 3.4kgs over the month of Ramadan, while some of the factory workers recorded high levels of dehydration, five of them could not complete their fasting while working due to health problems (Schmahl et al., 1988).

Ziaee et al. (2006) conducted a study in Tehran of 81 students in Tehran University of Medical Science between the ages of 20 and 35. The aim of this study was to evaluate body mass index (BMI), glucose levels, body weight, cholesterol, triglyceride (TG), high density lipoprotein (HDL), low density lipoprotein (LDL), very low-density lipoprotein (VLDL) before and after the month of fasting. This study reported a decrease in BMI and body weight in both genders during Ramadan. Also, glucose and HDL levels decreased, however, LDL recorded a significant increase. In addition, levels of triglycerides increased in students who have normal BMI while decreased in students who are overweight. The authors suggested the reasons for this change in serum lipid levels during Ramadan fasting maybe associated with the biochemical response of

starvation or alteration nutrients consumed during the Ramadan period (Ziaee et al., 2006).

Hunger and thirst are two factors that may impact Muslims during the month of Ramadan. A study conducted in Reading, England, included a group of Muslims of 15 males and 26 females. In this study, they assessed the rate of hunger, thirst and the food and drink intake recorded before, during and after Ramadan. They found that hunger levels were higher during the fasting period; females were experiencing hunger more than males at the beginning of Ramadan. Later, the rate of hunger during the fasting period was similar in both genders. The thirst level was the same in both genders. The authors have attributed this increase of hunger levels among females to preparation of food for the family, due to their immediate exposure to food and cooking smells (Finch, Day, Welch, & Rogers, 1998).

In the Muslim tradition, housewives and females are often responsible for cooking and preparing food for their families. Ahmed (2016) said “the tradition of Ramadan in Saudi Arabia includes gathering in the family house in the afternoon where the women work together to prepare the meal that the family will share after the evening Maghrib prayer, the fourth prayer in the typical Muslim day” (Ahmed, 2016, p. 45). Therefore, holding the responsibility of preparing food for their families on a daily basis has an influence on the experience and knowledge of Muslim women about food and nutrition. Also, daily cooking of food in Ramadan shows that Muslims women have expertise in preparing food as their families gather together and consume these foods.

Beardsworth et al. (2002) conducted a qualitative analysis on 471 participants aged between 18 to 74, in the United Kingdom. The study was conducted to find out the significance of gender towards nutritional attitudes and options. The main finding of this study was that the female participants were more knowledgeable about healthy food and nutrition than male. The participants were asked if they knew the healthy eating guidelines. The author observed that 60% of female participants felt familiar with the guidelines. However, only 39% of male participants were aware of them. A key observation of this study was that women’s attitude towards food was termed ‘more virtuous’ as they gave preference to the ethical and nutritional value of the meals while the male attitude was termed ‘robust’.

Another physiological change in the human body for some participants in Ramadan is gastric acidity. Gastric acidity causes an uncomfortable feeling of burning pain in the

stomach or chest during the fasting period. Also, regurgitation is another symptom which is reflux of food from the stomach to mouth or throat (DeVault, 2016). Gastric acidity may cause an uncomfortable feeling of burning pain in stomach or chest during fasting time.

Iraki et al. (1996) conducted a study to evaluate the effects of gastric acidity during the fasting period. This study measured the pH levels of gastric acidity of nine participants over four periods, a week before Ramadan, on the 10<sup>th</sup> day of Ramadan, 24<sup>th</sup> of Ramadan and a month after Ramadan respectively. The concentrations of gastric acidity were higher during the month of Ramadan compared to before and after Ramadan. The authors suggest that the variation of food and eating habits during Ramadan may be associated with gastric acidity during this month (Iraki et al., 1996).

Although breastfeeding women are excused from fasting, it remains the choice of the mother whether to fast or not. Fasting while breastfeeding could affect the productivity of breast milk among lactating mothers. A study conducted in an impoverished city area in Turkey of 129 breastfeeding fasting mothers surveyed found that 28 mothers noticed a decrease in the breast milk volume during Ramadan and 30 mothers said they gave their children more solid supplements during Ramadan (Ertem, Kaynak, Kaynak, Ulukol, & Gulnar, 2001). In addition, Prentice, Lamb, Prentice, and Coward (1984) conducted a study to assess the amount of breast milk in ten lactating Gambian females who were fasting in Ramadan. The study concluded that there is no difference in the amount of milk produced by fasting mothers. Also, the weight of these women decreased by 2kg during the fasting month. However, fasting is associated with the change in milk osmolality and the concentrations of potassium and lactose which suggests there may be a disorder in milk synthesis (Prentice et al., 1984). The change in milk osmolality and potassium concentrations showed some negative impacts on holistic health during fasting in Ramadan.

### **2.5.3 Fasting and diabetes**

Diabetics or pre-diabetic people are at an elevated risk during Ramadan (Al-Arouj et al., 2010; Chamsi-Pasha & Chamsi-Pasha, 2016). Some of the risks associated with fasting during Ramadan for diabetics include thrombosis, dehydration, hyperglycemia, and hypoglycemia (Al-Arouj et al., 2010). Dehydration, which is a result of restricted fluid intake during the fast, could influence a decrease in endogenous anticoagulants, raise the viscosity of blood, and increase the risk of thrombosis (blood clotting). Restricted

ingestion of food could reduce the levels of blood sugar among diabetics, leading to hypoglycemia (Al-Arouj et al., 2010). On the other hand, individuals who have a deficiency of insulin could suffer from increased breakdown of glycogen in their bodies, leading to hyperglycemia because of reduced intake of glucose by body cells (Jebel Ali International Hospital, 2013).

#### **2.5.4 Fasting and pregnancy**

Akbani et al. (2005) suggest that while fasting is relatively safe for all healthy individuals, people with various conditions or vulnerabilities may increase their health risk if they participate in the practice. These people include patients of type 1 diabetes, pregnant women, people who perform heavy physical work or exercise, and patients of various diseases. Mazumder and Almond (2011) in Census data from Uganda, Iraq and Michigan between periods 1989 and 2006 observed that fasting by pregnant women carried the risk of giving birth to smaller babies who could have significant learning disabilities in their adulthood. The study recorded low birth weights among women of Arab descent who are pregnant while fasting. For example, for women who were fasting during first trimester of pregnancy the birth weight decreased by about 18 grams, while fasting during second and third trimesters reduced the babies' weight by about 20 to 50 grams. Hence, The authors recommended mothers avoid fasting while pregnant (Mazumder & Almond, 2011).

Pregnant women and their fetus may suffer negative impacts through fasting Ramadan. This risk which may face any pregnant women provide an opportunity for public health people to do some health interventions. The health interventions help to maintain the health of mother and their fetus which is one of the main principles of public health. Prentice, Prentice, Lamb, Lunn, and Austin (1983) conducted a study in a rural West African village. This study included 22 pregnant, 10 non-pregnant and 10 lactating women, to measure levels of free fatty acids, beta-hydroxybutyrate, insulin, triglyceride, triiodothyronine (T3) and glucagon in Ramadan. The study results suggested that women in late stages of pregnancy can suffer from "accelerated starvation" during the month of Ramadan. In addition, (Prentice et al., 1984) suggested that the occurrence of metabolic stress may increase health risks among pregnant and lactating women during fasting.

Malhotra et al. (1989) designed a quantitative study to determine the metabolic changes of 11 Asian pregnant women during Ramadan. The study compared it with another group of mothers who are fasting at nighttime. The result of this study showed a considerable decrease in insulin, carnitine, glucose and lactate, and increasing the levels of non-esterified fatty acid, triglyceride, triglyceride in pregnant women who fasted during Ramadan. In addition, at the end of the fasting day, none of fasting women had normal biochemical values. The authors were worried about these metabolic changes and recommended pregnant women to avoid Ramadan fasting during the gestation period.

The effects of fasting on pregnant women may be associated with low-birthweight. Opaneye, Villegas, and Abdel Azeim (1990) stated that during 1985 and 1987, King Khaled hospital in Saudi Arabia recorded 5280 new babies. Out of this number of newborns, the weight of 345 babies was less than 2500g. Out of this figure of low weight children, 21% were born during Ramadan or Hajj period. The authors recommended more awareness in the care of pregnant women and low weight birth during Ramadan and Hajj period.

Cross, Eminson, and Wharton (1990) conducted a study from 1964 to 1984 in British hospitals in Birmingham of 13,351 deliveries from Asian Muslim mothers. This study was conducted to measure the impacts of Ramadan fasting on maternal biochemical profiles of any clinical relevance. Then they compared it with Caucasian and non-Muslim Asian infants. In this study, they found there is no impact of Ramadan on the average birth weight at any stage of pregnancy. However, there was an increase in low birth weight by 4.5% to 8% especially if the second trimester of pregnancy was during Ramadan.

Most of the studies related to the impacts of Ramadan on pregnant women agreed about the possible negative impacts of Ramadan on the fasting mothers and their babies. Herein, Ramadan represents an important time for health interventions, by reminding pregnant and breastfeed women of these risks.

## 2.6 Psychosomatic alterations

Some studies have focused on the impacts of Ramadan fasting on irritability and mood at an individual level. Kadri et al. (2000) conducted a study to evaluate irritability in 100 Moroccan volunteers during Ramadan for two years in 1994 and 1995. All the participants were male aged between 26 and 38 years with 51% smokers and 49% nonsmokers. The study assessed irritability, duration of sleep, visual analog scale and anxiety level before, during and after Ramadan. The study found that smokers recorded a considerable increase of irritability compared to nonsmokers before Ramadan. During Ramadan, both groups recorded high levels of irritability, especially at the end of Ramadan. Anxiety and consumption of coffee and tea were recorded to be at the same levels for both. Other factors that might also contribute to this general irritable feeling include restrictions on the consumption of caffeine and energy intake as well as restrictions on smoking (Leiper & Molla, 2003).

In addition, cognitive function can be reduced during the fasting period (Ali & Amir, 1989) due to changes in the circadian rhythm, since they become more active during the night and lose valuable sleep time, causing sleep deprivation (Bogdan, Bouchareb, & Touitou, 2001; Roky, Chapotot, Hakkou, Benchekroun, & Buguet, 2001; Taoudi, Roky, Toufiq, Benaji, & Hakkou, 1998).

A frequently occurring problem during the month of Ramadan is an increase in cases relating to headaches (Awada & Jumah, 1999). Guidetti, Faedda, and Siniatchkin (2016) classified headache as a psychological alteration in health condition. The authors said, "It is well documented that headache is a multifactorial disorder which includes not only genetic, biological, medical and neuropsychological factor but also psychological and personality traits" (Guidetti et al., 2016, p. 3).

According to Awada and Jumah (1999), in Saudi Arabia 116 hospital staff were examined. Out of the 116, 91 staff were reported to have fasted the month. About 41% of the respondents reported having headaches frequently, while out of 25 staff that did not fast only 8% reported headaches with tension headache accounting for 78% of cases recorded. It is suggested that the attributing factors of these headaches might be associated with hyperglycemia, dehydration and lack of sleep. Progressive decrease in consumption of coffee before Ramadan and drinking a cup of strong coffee before the start of fasting might help in reducing the occurrence of a headache during Ramadan (Awada & Jumah, 1999).

Another study was conducted on 2982 patients that attended clinics in the Kashmir Valley, recorded complaints of cranial neuralgia and headaches. The prime precipitating factor of the migraines was found to be fasting during the Ramadan month. In addition, handicrafts profession and militancy related stress were other factors associated with headaches (Shah & Nafee, 1999). The authors suggested that exacerbation of existing migraine may be due to hypoglycemia which can be more marked in the late afternoon of fasting.

### **2.6.1 Medical incidents during Ramadan**

It was reported that in some parts of England, during the month of Ramadan, the number of urgent admissions by Muslim patients increased compared to that of other months of the year (Langford, Ishaque, Fothergill, & Touquet, 1994). The computer system in Mary's hospital in London recorded around 55,000 patients attending the emergency department each year. A higher proportion of Muslims compared to non-Muslims were found attending the emergency department during the month of Ramadan in 1993. This proportion had increased from 3.6 % before and after Ramadan to reach 5 % during Ramadan.

The number of accident cases in 15 days before Ramadan was 68 which almost doubled in the first 15 days of Ramadan to 106 cases. During the last 15 days of Ramadan, the number of new accident cases continued to increase, to reach 127 cases. Two weeks after Ramadan the number was reduced to 90 cases. The sense of well-being and general exhaustion is associated with the high number of accidents during Ramadan which may explain an increase in accident injury in this study (Langford et al., 1994).

### **2.6.2 Road accident during Ramadan**

According to Bener, Absood, Achan, and Sankaran-Kutty (1992) road accidents were reported to dramatically increase during the month of Ramadan in United Arab Emirates (Bener et al., 1992). This study suggests that high speed was the main factor for this increase of traffic accidents during Ramadan. The majority of accidents occurred between 8 am and 2 pm. However, the time that the accidents occurred might be related to the changing of sleeping habits during Ramadan, where people became more active at night (Bahammam, 2006) which may influence their reactions during the day.

An observational study was conducted in 2006 in Ankara city, Turkey, to evaluate the behaviors of drivers, focusing on the use of seat belts, horn honking and speeding during Ramadan compared to the the rest of the year. The data of this study was collected from observing 1885 speed cases, 2106 cases of using seat belt and viewing 720 minutes of video recording of the vehicle warning horn. This study observed that drivers were more committed to speed limits, seat belt use was lower and warning horns were used more widely during Ramadan (Yıldırım-Yenier, Lajunen, & Özkan, 2016). An increase in using the vehicles warning horn may reflect the irritability of the drivers.

## **2.7 Summary**

This literature review gathered relevant research on the impacts of Ramadan on holistic health using a broad public health approach. The literature review was able to identify some impacts Ramadan can have on holistic health.

Spiritual needs in Ramadan differ from other regular days. Evidence suggested that spirituality in Ramadan increases in terms of self-restraint and sympathy and empathy for others. It is stated that family ties during the month of Ramadan reach higher levels in the year through family visits and celebrating the month as a family.

Evidence in the literature showed that the improvements in psychology were clearly noticed from the decrease of some health conditions such as stress and depression during Ramadan. According to the literature, the social life of Muslims during Ramadan is characterized by coexistence and social cohesion. The process of gathering to break the fast at home and at Mosques for worship strengthens the social bonds in the Muslim community.

The health benefits of Ramadan on physical health can be noticed in terms of weight loss and changing in the frequency of meals consumed. However, in Muslim countries, Muslims tend to become more active during the night which can have a negative effect on sleeping patterns. Another negative impact of Ramadan can be associated with eating patterns, such as overeating and binge eating. Eating patterns can also be influenced by Ramadan as Muslims tend to consume more special foods during Ramadan.

The literature suggested that there are some health risks related to fasting in Ramadan, such as an increased health risks for diabetics and pregnant women. Psychosomatic alterations recorded some changes during Ramadan such as increased headaches in individuals and general exhaustion.

### **3 Methodology**

The goal of this research was to develop a better understanding of the Muslim mindset on Ramadan and to explore the impact of such beliefs and practices on holistic health. The researcher also analysed how the information and suggestions provided by the subjects can be used to improve the breakfast (Iftar) program at AUT mosque.

A qualitative analysis has been conducted here which allows for the use of both positivist and interpretive methodologies. In the positivist approach the experiences and philosophies shared by the participants would be reduced to descriptive observations, looking only for “the Truth” derived from the experience and leaving no room for differing perspectives. This research deals with human perceptions and so by definition requires the methodology to focus on human experiences and opinions. Both social and spiritual aspects of Ramadan fasting have been analysed, and as the data is subjective it would be difficult to fully appreciate using a positivist approach. The interpretivist methodology enables the researcher to delve deeper into the core values of the study subjects and derive meaning from the participants experiences. Thus, an interpretive framework, which allows conclusions to be drawn based on observation and study of those experiences and values, has been applied here (Patton, 2002).

This chapter describes the research method applied to this study which was thematic analysis (Braun & Clarke, 2006). This chapter starts with the personal background of the researcher along with the aim of the study. The process of collecting and analyzing data collection will be outlined in this chapter.

#### **3.1 Personal background**

The researcher is a Muslim man following the Sunni school. He is from Libya and has been a member of the AUT Mosque since 2014, where he is fortunate to now be teaching the Quran to beginners.

The researcher grew up in a conservative and religious family. His parents were keen to teach him the Quran from an early age. They sent him to Quran school in the afternoon time when he finished his regular school day. He received his Quran and religious education from his Sheikhs until he finished memorizing the whole Quran. He then became qualified as a Quran teacher. His parents and his Sheikhs had a great role in encouraging him to complete his academic education. After he finished his Bachelor in

Public Health at Tripoli University, he decided to move to New Zealand with his small family to study Masters in Public Health. His family, which consists of his wife and two daughters, gave him the motivation and strong support in his journey as a researcher. He loved this field which was built on helping others, cooperating and improving the well-being of his fellow man.

### **3.2 Rationale**

Due to my postgraduate experience studying nutrition and public health, together with my attendance at previous Iftar programs, I realized that the Muslim community at AUT Mosque was consuming large quantities of white rice and meat, and low amounts of vegetables in the Iftar program meals. Therefore, this motivated me to think and work towards improving this program. The Iftar program is a key point for many Muslims attending Mosques during Ramadan. At the beginning of this study, the goal was to improve the Iftar program to meet New Zealand Ministry of Health nutritional standards. However, it was discovered there was no information available about this program, for example, there was no nutritional information available about the meals being served or the opinions of the participants about this program. It was decided to gather perceptions and information about the program using a holistic approach which evaluates the public health subject from different aspects such as nutritional health, spiritual health and physical health.

Through assessing the program, it is possible to establish a base and have a more accurate understanding of how the program runs, who make decisions in the Mosque and what the participants think about the Iftar program. This can also be a base for future improvements of the Iftar program. This basis could be used to evaluate other Iftar programs, in other Mosques.

A qualitative method, focus groups, was used as it is considered important to gather the original attitudes, thoughts, opinions, experiences, concerns and suggestions of the participants. Thematic analysis was selected to analyze the data from the focus groups to identify patterns and themes which contribute to the research question being answered.

Participants in this study were treated as two groups, male and female. This division of genders is recommended by Islamic principles and traditions. A male Muslim researcher interacted and conducted the focus groups for the male participants while a

female Muslim researcher performed the same role with the female participants. The wife of the researcher agreed to be a volunteer and conducting the female focus group. Also, she signed a confidentiality agreement and received training in conducting focus groups for this project (Appendix C). Without giving significance to gender the researcher may not be able to conduct this study as a male interacting with female participants, or vice versa, could cause discomfort for participants and make gathering the data harder. Also, direct interaction between male and female is not recommended by the religion of Islam. The researchers experience of Muslim religious knowledge and academic research, helped in acquiring relevant data from the participants.

In addition, if the researcher and his wife were non-Muslims the participants may face discomfort or difficulties in explaining how they felt during Ramadan and may have difficulty relaying the information to the researcher. Therefore, Similarly, a non-Muslim researcher may also have difficulty understanding and interpreting the themes of the participants, which may lead to a misunderstanding and unreliable outcome.

AUT Mosque has been selected as a study location because it was accessible for the researcher, is a multicultural Mosque and had support from the program Leader who has an interest in improving Muslim community health at the Mosque. Most of those that attend the Mosque are students and staff at AUT and they speak their own languages and English (bilingual). Thus, the study was able to be conducted in the English language. The AUT Mosque is the place for Muslims to meet in the month of Ramadan and the rest of the year. There are many programs that are provided in this Mosque that characterize love, friendship and cooperation. Although there is a variety of ethnicities, cultures and languages, all coexist in an environment of friendship and love. AUT Mosque welcomes all Muslims from different backgrounds and cultures without exception. This harmony, coexistence and cooperation between ethnicities and cultures provides a good opportunity for public health officials to do an intervention to improve the wellbeing of Muslims.

In Islam, the place of worship should include two separate areas. According to Islamic principles, male and female worshippers are recommended to not mix during prayer, to conserve the privacy of each other and avoid any discomfort that may occur (Bano & Kalmbach, 2011). For this reason, the majority of Mosques in many Muslims country provide a separate prayer hall for female worshipers as part of respecting their privacy.

Therefore, the AUT Mosque setting allows the experience of the Iftar program to be explored from both the male and female perspectives.

### **3.3 Aims**

The aim of this research: -

1. To gather the perceptions of AUT Mosque members on the impacts of Ramadan on holistic health.
2. To gather the perceptions of members of AUT Mosque on the Iftar program.

### **3.4 Community Engagement**

The research commenced in 2017 where the researcher started consultation through arranging two meetings with the program leader of AUT Mosque (sheikh Raft). The program leader responded to the researcher through inviting the members of AUT Mosque congregation for a meeting, he consulted with them and this research was accepted and supported.

### **3.5 Recruitment**

At the start of Ramadan in June 2017, the researcher began recruiting volunteers from AUT Mosque to participate in the study.

The study was advertised by a poster in AUT Mosque with the Participant Information Sheet (Appendix B) available underneath for participants to pick up, inviting male and female participants to participate in focus groups. Participants needed to be Muslims who fast during Ramadan, 16 years or older and attended the Iftar program at AUT Mosque.

Those who were interested in participating in the focus groups contacted the male primary researcher and female research assistant by means of direct face to face contact, email and phone. The female research assistant was Muslim, a member of the AUT Mosque, and is married to the primary researcher. She signed a confidentiality agreement and received training in conducting focus groups for this project.

Four focus groups were held, two for males and the other two for females. In week 3 of Ramadan, the first focus groups of males and females was completed. The first male focus group discussion took place between 9.00 pm to 10.00 pm, while, the female focus group convened from 1.00 pm to 2.00 pm at the AUT Mosque. The other two

focus groups were held in the week following Ramadan. The second male focus group discussion was held in the Mosque at 5.00pm, while, the female focus group meeting was held 2 hours earlier on the same day.

The first five male participants responded to the advertisement after 20 minutes of putting up the posters. They approached the primary researcher directly while he was still in the Mosque, however, the female participants took about 3 days to arrange the right time and place for them to meet. Recruiting female participants for the first group discussion was enabled as most of the students were available in New Zealand due to exams. However, recruiting the participants for the second group discussion was difficult because the majority of the students were on holiday.

About half of male participants were volunteers, serving food in the Iftar program. One of those participants was the supervisor of food services and he took the responsibility to regulate the entire program for one week.

### **3.6 Ethical consultation**

Participants were informed about the study through the participant's information sheet which outlined the following points:

- Study overview including aims
- The decision to participate in the study and the right of withdrawing at any time.
- The approximate time for the focus group, and when and where it would be conducted.
- Who would be conducting the focus group.
- Confidentiality
- Contact details of the male researcher, female researcher and supervisors

In consideration of confidentiality, the participants were informed that only initials would be used in the research. Prior to each focus group, the participants signed the consent form.

Auckland University of Technology ethics committee approved the project on 15 May 2017 under the code of **17/75**.

### **3.7 Focus groups**

The data of this research was gathered through 4 focus groups. The selection of a focus group is more appropriate in terms of this study as a plethora of ideas and insights can

be garnered from an animated interactive and interpersonal discussion (Agar & MacDonald, 1995). In the case of views on Ramadan and its impact on holistic health. Since the participants are all actively involved in the Iftar program at the AUT mosque and some are not fluent in English, a group discussion conveys the information more coherently and accurately. One-on-one interviews was not strictly necessary, as the nature of the information was not sensitive or personal as is the case for studies such as by Kaplowitz (2000) and Muslims are encouraged to strengthen their bonds during Iftar in Ramadan. Group discussions would also make this community feel at ease and be more communicative about their shared experiences at the AUT mosque Iftar program. The groups were set in the AUT Mosque, for male participants it was conducted in the male section of the Mosque. Female focus groups were conducted in the female section of the Mosque. Five male participants of each focus group met at a time that was agreed upon. Five female participants attended the first focus group, while only three attended the second group. The participants were from different nationalities.

Female participants:-

- F.A, R.A from Bangladesh.
- N.A, S.A from Saudi Arabia.
- O.S from Jordan.
- L.Y from Indonesia.
- F.A from Malaysia.
- M.A from Pakistan.

Male participants: -

- A.B from New Zealand.
- A.B 1, M.O, I.Z, A.D from Malaysia.
- S.A from Libya.
- A.H from India.
- H.A from Saudi Arabia.
- N.A from Bangladesh.
- A.G from Sri Lanka.

The participants signed the consent form before the recording device was turned on. At the focus group, participants discussed Ramadan and their thoughts on the AUT Mosque Iftar program during Ramadan this year. The participants were asked some indicative questions related to Ramadan and the Iftar program. The questions were about the meaning of Ramadan and the effect of Ramadan on holistic health. The other

questions were about the most satisfactory thing about the Iftar program and what the program needed for further improvement. Finally, what would make the participants healthier during Ramadan (Appendix E) was also discussed.

### **3.8 Data analysis**

Data analysis was carried out using thematic analysis (Braun & Clarke, 2006). This method enables analysis of patterns which emerge while examining the responses to specific questions in the data or recordings. Thematic analysis has been a widely applied technique for qualitative research dealing with people's perceptions. An inductive approach to coding and theme development was used, whereby, the collected data was used to derive the various themes and reach conclusions.

The steps taken to conduct the thematic analysis were as follows:

After the initial selection and organisation of the focus groups the data from discussions were collected by recording using electronic devices. The researcher then listened to the recordings multiple times and transcribed the data generated from the different focus groups into Word documents accordingly. He then proceeded to read through the data rigorously for content familiarization and analysis.

The process of analysis involved the coding of key points which provided structure to the data. Along with the researcher notes, these codes were grouped. Following the recording, the researcher identified each group member and assigned them a code to be identified on the transcription. Initial codes such as spirituality, physical health and nutrients were also assigned.

The researcher then identified important themes relating to the research and selected the most common codes mentioned by the group participants. The codes were compiled so that similar codes were grouped together into themes. The perspectives of the participants on specific themes were grouped together, which enabled the comparison of similarities and differences between and within the male and female focus groups and aided in deriving insights from the varying viewpoints.

Then the themes were reviewed and analysed based on their relevance to the research question. The researcher named each theme and classified the most repeated themes for the male and female groups and arranged them according to the most recurring themes in each gender. He then revised the themes and consulted with the research supervisors to include any suggestions which may improve the gathered themes. Finally, the report was written up as final findings of male and female participants.

### **3.9 Limitation Reflection**

Transcribing the female recording of the focus groups was particularly difficult for the researcher as the primary researcher did not attend female focus group. Although the female focus group was rich with ideas and members contributed greatly, female members tended to talk over each other, and unexpectedly changed from one idea to another. This created some difficulty for the researcher in transcribing the data of this research.

Although the interpretive frame work maintains the context and complexity of data through qualitative analysis, certain weaknesses of the approach need to be acknowledged. The fact that the researcher was a Muslim himself enabled him to empathize and obtain a better understanding of the subject perspectives, but the possibility always remains of bias being introduced through the researchers own beliefs. Moreover, actual readings of certain variables such as changes in weight or sleeping and eating habits were not recorded which makes it difficult to verify the claims made by the various study subjects. Finally, it will be difficult to attribute the findings of the research to other Mosques or the wider Muslim community in New Zealand as many of the participants were students and young adults and no statistical tests were conducted to affirm the significance of the findings.

### **3.10 Summary**

The research was conducted at AUT Mosque in Auckland to gather the perceptions of Muslims about Ramadan and the Iftar program. The study started by consulting the program leader and the members of the congregation of AUT Mosque where they accepted this study.

Data for this study was collected through four focus groups, two for each gender. Gender significance has taken a priority in this study. In accordance with Islamic tradition, segregation between genders in this study is used to avoid any discomfort that might occur to the participants during the focus group. Data were analysed using thematic analysis (Braun & Clarke, 2006). Codes were compiled into themes according to importance in each gender group. The next chapter of the research focuses on the female findings.

## 4 Female findings

This chapter describes the primary findings from the female participants in this research. This data was gathered from two female focus groups comprising five participants in the first focus group and three in the second.

After transcribing the recordings of these focus groups to a written transcript, the data was analyzed using thematic analysis (Braun & Clarke, 2006). The core topics found are related to nutrition and food perceptions, spirituality as source of welling and physical health improvements.

### 4.1 Nutrition and food perceptions

A large part of the female responses emphasized the importance of a nutritional and healthy diet, especially during Ramadan. The significance of the nutritional value of food consumed was discussed, followed by suggestions on improving the Iftar program at AUT Mosque. Both are indicative of the interest of female participants with respect to healthy eating habits during this sacred month and the rest of the year.

#### 4.1.1 Food and health

The female focus group voiced their opinions on health and nutrition. Women were keen to be healthy during Ramadan. M.U observed that *“People feel more enthusiastic in this month to become healthier.”*

- Rice consumption

Many female participants mentioned rice was a staple food consumed in their native countries. For example, O.S. said, *“Rice is an international and popular meal,”* many female participants agreed with this statement. Rice is prepared in many cultures in a plethora of ways. For instance, the inhabitants of South Asian countries consume rice with fruit and vegetables. L.Y. said *“In Indonesia we consume more vegetables with rice because the meat is expensive.”* Participants also talked about having rice not solely as a complement to savory dishes such as meat or vegetable curries or soups, but also in sweet dishes, as M.S. put it, *“For Suhoor, I normally use rice with milk and banana. It’s really light”*.

Conversely, O.S added, *“In my country we do not consume rice every day”* and continued, saying that pasta was often their choice as the principal meal of the day. This was also corroborated by N.A. saying, *“The breakfast sometimes contained macaroni, spaghetti”*.

Female participants took care of what they ate, and avoided consuming high amounts of rice during Ramadan, which is exemplified by R.A. who noted, *“Most of us are not taking rice twice a day”*. N.A. added *“Too much rice is not healthy”*.

The reason for avoiding rice daily is because participants believed it leads to weight gain. N.A. mentioned that *“If I eat rice daily, I notice it, I get fat”*. Consequently, some participants did not attend the AUT Mosque Iftar program regularly to avoid eating rice. When asked about what would aid in remaining healthy during Ramadan N. A. remarked, *“Not eat too much rice, that’s why I’m not coming here every day”*

Female participants preferred healthy food choices such as fruits if they felt hungry at home. They avoided eating food high in carbohydrates, for instance, R.A. stated, *“We are just having rice for Iftar here and then back home I have something lighter... If I get really hungry I would have, maybe fruits, like apples or persimmons, maybe something light.”*

- Eating habits

With respect to eating habits during Ramadan, the female focus group made a couple of useful suggestions. The first was to replace sugary drinks with water or fresh juice. For example, R.A. said *“Too much sugar in your drinks is not good so you can start just with some water, that’s my opinion”*. In addition, N.A. described drinking water as *“important”*, she said *“An important thing in the breakfast program is we drink water, normal water”*. Also, drinking water gave a good feeling for participants. F.A. said *“I start with water that gives me a good, best feeling that I had”*.

Eating a balanced diet was also mentioned R.A added, *“Just balance the carbohydrates with the protein and fiber content.”*

A female participant mentioned healthy eating habits, particularly slow eating. R.A. indicated that *“Even if you are very hungry you should eat slowly, so that your stomach has the time to process and digest the food rather than just gulping down food without properly chewing it and filling your stomach.”*

#### **4.1.2 Suggestions for future Iftar programs**

Female participants suggested adding healthier options to the Iftar program menu. Some of their recommendations included, increasing the quantity of fruit and vegetables, and incorporating brown rice and sea food. Some of their input is elaborated as follows:

- Increase fruits and vegetables in the menu

Going through the female focus group’s recordings, fruits and vegetables were mentioned many times. For example, fruit was clearly suggested by R.A. *“I think it’s*

*possible to add more fruits. This is encouraging and it's good for us.*" The majority of the female participants noticed that more fruits had been added this year which they said was a definite improvement and thought that the range could be expanded. In addition, vegetables as salads, curries or in soups were strongly alluded to as the most important thing to enrich the Iftar program. R.A. indicated that *"Providing vegetables is actually the most important thing."* Another participant, F.A. said *"We need more salad"* while L.Y. was more specific by saying *"I like salad, you know in the future we can include more salad in the meals. It will be good like more lettuce, more tomato."* Therefore, fruits and vegetables were healthy suggestions from the female participants.

- Add seafood to the menu

Seafood was not available in the Iftar program and only lamb and chicken were provided. Females suggested adding seafood, such as fish to improve the program and make it healthier. N.A. said *"We can include fish in one day and people like fish."* Female participants discussed adding seafood to the Iftar menu at length. The variety of fish available in New Zealand and the price ranges were reflected upon in their discussion. For instance, F.A. believed that fish could be viable protein substitute even in terms of pricing, as she believed, *"Terakihi here is quite cheap, less than \$10 for one fish"*. This insight of adding sea food to the diet, seems to stem from the native culture of many of the participants, such as Bangladesh and Malaysia, where fish is readily available in daily meals. R.A., who is from Bangladesh, mentioned that *"I like fish from my country, where it is a staple for lunch alongside rice .... personally, for me, I enjoy fish"*.

- Add dairy products

Female participants also proposed adding some milk as a healthy choice, N.A. believed *"It is a good idea to add butter milk and light yogurt to the breakfast program"*. F.A. also mentioned that *"Butter milk is good for digestion"*, while all the other participants agreed with this.

- Substitute with brown rice

White rice was served every day and represented the bulk of the meal in the Iftar program. This kind of rice includes a high quantity of refined carbohydrates. N.A. said *"Rice has a lot of carbohydrates"*. Some participants suggested shifting to brown rice which is healthier. This is clear from the words of F.A. *"I would eat brown rice because it's a much more healthier option"*.

The speculated reason for the AUT Mosque inability to provide brown rice during Ramadan program was the price. N.A. *“Brown rice is more expensive than white rice, so AUT masjid, they can’t offer it.”* Female participants demonstrate familiarity with food prices. This was clearly observed when the participants indicated the price of brown rice in the market. F.A. mentioned *“Brown rice is more expensive. I think its \$3 per Kg”*.

- Reduce spiciness of meals

Of the Iftar program, some female participants commented on the spiciness of the food. For instance, N.A. said *“I don’t like spicy food”*. On the contrary, some other participants like spicy food but in a moderate quantity, for example, R.A. *“When we reduce the spices, the rice becomes a little dry so you should have that in consideration as well. So be moderate, do not overdo it, and keep it somewhere in the middle”*.

This variation of accepting spicy food, is likely associated with the cultural background of the participants. N.A. said *“Middle eastern people like less spices but Indian people like spicy food.”* Despite enjoying spicy food, R.A. and M.A, who were from Bangladesh, admitted that too much spice is unhealthy for a fasting body and agreed that lowering the spice level would make the food easier to digest and more palatable for all participants.

## **4.2 Spirituality as a source of wellbeing**

The month of Ramadan represents a good chance for female participants to enhance their spirituality. N.A. mentioned *“It’s a month for your soul to take a rest from a lot of bad feelings and behaviors.”* Worship and the feeling of belonging are the key contributors to improving spirituality of the female participants.

### **4.2.1 Worship Allah**

Worship has a positive effect on the spiritual health. Many forms of worship have been described in the female focus groups, such as reading of the Quran, praying and giving donations. R.A. said, *“During Ramadan, we do a lot more acts of worship like reading the Quran, more prayers and giving charity, and at least, we try to hold on to some of the good things even after Ramadan.”*

Good deeds such as helping others in general with food, money or even attention is considered a form of worship in Islam. Special consideration is given to this form of worship as well, since Muslims believe that the reward of good deeds is multiplied during Ramadan. R.A. mentioned *“During Ramadan rewards will be multiplied many*

*times over. So, this is the month we focus our efforts on the most,*” all female participants in first focus group agreed with this position.

Muslims who are financially able are required to pay a set level of charity as mandated by Allah, and many choose this month of Ramadan to fulfill this obligation in hopes of rewards in later life. R.A brought up this matter stating, *“People also plan their year in a manner in which they can give the compulsory charity during Ramadan...as we get the most rewards,”* which was agreed upon O.S and N.A. F.A also noted that, special charity (Zakaat ul fitra), which amounts to \$10 in New Zealand per month, and is obligatory on every fasting and able Muslim, in this month of Ramadan.

Another kind of worship is Etikaf cited by one participant. This kind of worship can be done only during Ramadan where the person can stay in the Mosque over a period of at least one day and one night to worship Allah as much as possible. O.S. said *“Some people do Etikaf, which is Sunna, at least from night until Taraweeh of next day which is very nice, it’s better than doing something else.”* This form of worship purifies the person.

#### **4.2.2 Self-monitoring**

Ramadan provides a good opportunity for female participants to review themselves and rejuvenate their faith. For example, F.A. mentioned that, *“It’s like stopping my whole year. I think about what I did in the whole year and I prepare my Iman (faith in Allah) very well in my heart.”* Ramadan is also the time for reflecting upon ones’ activities and behavior. O.S. termed it as, *“It’s the time to look and investigate what you did last year and what you will do better next year.”*

#### **4.2.3 Instilling Islamic principals in children**

During the first focus group, female participants discussed how principles of Islam such prayer and fasting are taught to their children and how it is the role of the Mosque to instill these principles. O.S. stated that, *“Some sister told me that her children like to fast when the community are fasting, so the kids are encouraged to fast.”* M.A. mentioned another idea saying, *“They will see how prayer is done and they will learn automatically.”* Interestingly, positive impacts have been noticed on the behavior of children who attend the Iftar program N.A. said *“Our children will start behaving like how others behave because they respect this month. They read Quran a lot and listen to*

*hadith*,” meaning that the children will try and emulate the positive behavior which they observe in adults.

#### **4.2.4 More time for worship**

Attending the Iftar program saved the female participants time. O.S., from Jordan, revealed that, *“We spend too much time preparing food at our home country (Jordan) but here [Masha Allah], we save time and effort”*. M.A. agreed, saying *“Yes, it’s the same in our country.”*

Thus, with the burden of preparing food for the breaking fast meal being lifted, the female participants could attend the Mosque more frequently and partake in more acts of worship. O.S. said with appreciation, *“We have more time to read Quran and pray. I like Ramadan here in AUT Masjid, I like the sense of reward.”*

The daily schedule of female participants was changed during Ramadan. F.A. *“I think Ramadan teaches you to balance your daily schedule.”* The entire day is organized around prayer timings. R.A. clearly said, *“We reschedule our life based on our prayer times”*.

### **4.3 Feeling of community and belonging**

The feeling of community is another positive impact of the Iftar program. This feeling increases when the participants meet each other in the Mosque to have a meal together. R.A. explained *“It’s very encouraging. You see other people who are fasting around you and you break your fast with them. It’s great! It’s a different kind of feel all together.”* Attending the Iftar program strengthens the bonds between the participants. M.A. said, *“the community at the Mosque becomes like our family.”*

The Iftar program gave female participants the time to relax and reduce the daily stress especially when participants meet each other to have a chat or catch up. N.A. indicated that *“During the breakfast program I reduce my stress, after studying and meeting the supervisors, so I can get a good time to have joke with sisters and make fun and laughing, sharing and forgetting my stress.”*

Many of the Muslim female participants moved to New Zealand as international students and found it difficult to integrate into the local New Zealand culture. Attending the Mosque and participating in the Iftar program allowed them to meet other Muslim women, who played a significant role in facilitating their assimilation into this new society.

Some female participants indicated that they were not meeting other Muslims females frequently, however, AUT Mosque provided an opportunity for Muslim females to meet and connect with each other. For example, O.S. said *“When you go to the city or any other place here you cannot see a lot of Muslim sisters but when you came to AUT Mosque [Masha Allah], you can see a lot of Muslim sisters like one family”*.

N.A had the same opinion *“if anyone is new in this country and feels alone because it’s not a Muslim country or whatever, so they come to the masjid and have Iftar with all other Muslims, it’s a very satisfying thing and they will not feel alone.”*

Female participants could bring their children with them without any problems. M.A. said *“It’s good that women can bring their kids. They do not want to worry about them. When any sister brings a baby here and this baby starts crying others say it’s okay no worries.”*

Overwhelmingly, participants also indicated that some countries don’t allow children to attend the Mosque, for example, F.A. said *“In my country (Bangladesh) the children in the masjid are not allowed at all because they annoy other people.”* In addition, in some cases women were not allowed to attend the Mosque. R.A. said, *“In my country we have a Mosque on every street, but few are accommodating women, a lot of men go to the Mosque but not many women do so.”* Another advantage of attending the Mosque is to get advice and help for daily needs. This is clearly specified by N.A. who said, *“they can get help if they want, so everyone, if they are struggling with anything, immediately come to the masjid and discuss with others and get ideas and sharing.”* Therefore, the Mosque is not only a place of worship for the women and children, it’s also a place for receiving support and guidance, which helps members of the community to deal with their problems.

#### **4.4 Physical health improvements**

The research found that female participants talked about physical health. The women reported having more time for worship and doing good deeds rather than any designated physical activity or exercise. N.A. said *“Unfortunately, in Ramadan it’s hard. I couldn’t do exercise; I couldn’t go to the gym because there is no time.”* This was followed by the comment from M.U. *“But you do more prayers!”* while all the participants in the first focus group agreed with her. However, physically, female participants noticed positive impacts in terms of losing weight and healthy sleeping habits during Ramadan.

It was also noted that despite maintaining their fast from dawn to dusk the participants did not feel lethargic but were enthusiastic. They also spoke of being active throughout the day. Engaging in regular worship, such as the prayers, ensured that the time spent was productive. R.A. confirmed this saying that, *“We don’t lead a sedentary life style during Ramadan, especially due to the extra prayers.”* M.A also noted that, *“It seems that people would feel very drowsy and sick, but it doesn’t happen during this month... people feel more enthusiastic...”* All participants believed that any effort on their part would be greatly rewarded during this month. This optimistic attitude is a prime contributor to positive impacts on holistic health.

#### **4.4.1 Losing weight**

Five participants mentioned losing weight as a positive outcome for Ramadan. This is clear from the researcher assistant’s question to the participants, *“Do you usually lose weight in Ramadan?”* R.A. answered, *“Here, in New Zealand, yes, back home no.”* According to the participants, the reasons for losing weight might be related to geography and the life style of Auckland city. F.A. indicated *“When I came to New Zealand I had to walk a lot. I have to walk to everywhere”*. Living in the city encourages the participants to walk and use public transport, rather than cars for commuting.

The geography of Auckland city includes many uphill and downhill areas which makes walking a bit harder. F.A. said *“I live in a hilly area, from my house to the Mosque I have to climb the hill, it’s not easy and here I have to walk and I am energetic to walk”*. Another point of view from R.A. is *“Here in Auckland you go up hill and downhill, so, you do lose a lot of weight”*. *“I wear an overcoat which weighs 2.5 kilos, it’s like, I’m always lifting weights.”*

#### **4.4.2 Sleeping habits**

Female participants noticed a change in their sleep cycles during Ramadan. O.S. said *“The time to wake and sleep its totally different from the other months”*.

Some participants considered Ramadan a positive impact on their sleeping habits, for instance, L.Y. said *“During Ramadan, waking up in the morning is quite healthy. I feel more refreshed”*. R.A. mentioned that *“I think I sleep much more during Ramadan,”* and M.A explained that *“Normally after having Suhoor we get a few more hours of sleep,”* but admits that it would be difficult for students to maintain that schedule.

A short nap before mid-day prayer was also mentioned by female participants. The participants maintained this nap as one of the teachings of Prophet Muhammed (Peace be upon Him) F.A. said *“My suggestion for sleeping is sleeping 1 hour before Dhur time, which is a Sunna of the Prophet Muhammed (Peace be upon Him).”*

## **4.5 Summary**

Female participants focused on three major themes, food and nutrition, spiritual health, feeling of community and belonging and physical health.

The focus of female participants was food and nutrition as participants were health conscious. This was illustrated in their eating and drinking habits, such as, eating at a slower pace to aid in the digestion process, avoiding sugary drinks and hydrating during the non-fasting hours. Rice was included in the discussion as it was the main dish served in the program. Most female participants tried to avoid consuming rice twice daily and only consumed rice for the main meal.

Focusing on food and nutrition, female participants gave some valuable suggestions to further improve the Iftar program. The focus of female participants was mainly on adding more fruits and vegetables to the program. Including seafood as part of the main Iftar was also proposed. Another recommendation, with respect to moderating the spiciness of the food, was also made. Substituting brown rice for white rice as the major carbohydrate source and adding a dairy product such as milk or yoghurt were also suggested as nutritious alternatives.

The women felt their spirituality was improved through worship, and participants could devote more of their time in the acts of worshipping Allah during Ramadan. Female participants also showed greater attention through Ramadan in teaching the principals of Islam to their children. Furthermore, by attending the Iftar program, female participants saved time usually spent in preparing food and allocated this time for worship and other good deeds. They reported this in turn had a positive impact on their spiritual health.

Attending the Iftar program had a multi-faceted effect on the female participants. A stronger bond within the community was built during this time spent together. The participants shared their daily life experiences and supported each other and in doing so felt less alienated. Weight loss and improved sleeping habits both had a positive impact on their physical health. The Iftar program was much appreciated by participants and had a positive holistic health impact on the women at the AUT Mosque.

## 5 Male findings

This chapter covers the main findings from the male participants in this research. These findings were gathered from two male focus groups and the participants were from different nationalities.

After transcribing the recordings of these focus groups to written transcript, the data was analysed using thematic analysis (Braun & Clarke, 2006). The main topics found related spirituality with sources of wellbeing, physical health improvements and perceptions of nutrition and food.

### 5.1 Spirituality as a source of wellbeing

Spirituality was one of the main findings where many of the male participants discussed spirituality directly or indirectly. For example, A.B1. said *“Ramadan is basically to do worship to recharge our spirit, spiritually we need to be, like, closer to our God, Allah.”* The spirituality of the male participants was expressed through four different aspects namely: worship, feeling of community, voluntary work and psychological health.

#### 5.1.1 Worshipping Allah

The word worship in English, or Ebadat in Arabic, was repeated many times in the focus group. When the participants were asked, “What does Ramadan mean to you?” A.S. replied, *“Balance myself in spiritual life which I have to do Ebadat while doing my study.”* Through worship, the participants felt closer and more connected to Allah. Participant A.H. also responded in a similar fashion saying, *“Spiritually, I feel more connected with Allah... and do more Ebadat and give more time towards Allah.”*

Donation in Ramadan represents a facet of spiritual development. Many of the participants made donations to the masjid to facilitate the Iftar program. This was indicated by M.H. stating, *“Most of them, they donate something for the masjid, in order for the masjid to provide food.”* In addition, A.B1. said that, *“The breakfast program shows how generous people are, we see a lot of people donating money.”*

In a collaborative effort, people from different ethnic backgrounds came together to cover the costs of the Iftar program, for specific days at the masjid. For instance, N.A. indicated that *“Like students from my country, from Bangladesh, they donate last year*

*for two days Iftar like \$3,000. Also, brothers from Oman they donated for 3 days or something, like, some community are sponsoring for one day.”*

Leftover food is given and distributed which can be used for Suhoor. N.A. said *“Sometimes we have extra food, usually we give it away in a takeaway box after Iftar and after a couple of hours we have Suhoor again.”* Every attempt is made to ensure that no food is wasted, and some extra food was also donated to homeless people.

Serving meals in this program is done through voluntary work where the volunteers are giving/donating part of their time to serve this program. N.A. spoke about his experience as a volunteer saying, *“2 hours of voluntary work every day is not easy.”*

The prayers, such as five-times obligatory prayers and Taraweeh have a priority in the life of the participants. Praying in the Mosque in a group helps the participants feel closer to God and purifies them, having a positive impact on their spirit, A.G. said *“We pray 5 times a day but, in this month,, we are more attached to the masjid and more attached to Allah, and our hearts are purer.”* Praying in congregation promotes a strong sense of unity and equality for male participants.

Night prayer was mentioned many times as an important form of worship in Ramadan, for example, A.B1. said *“You will set your mind to do more Ebadat (worship) such as Taraweeh.”*

Fasting is one of the main forms of worship in Ramadan. The male participants discussed fasting as a means of worship and of expiation of ones’ sins, as A. B1. put it, *“Ramadan is a month of prayers and a month of Quran, the month of celebration and the month of fasting.”* A.B1. continued saying, *“Whoever fasts in Ramadan with full belief and full commitment to Allah, Allah will forgive all his sins.”* Through this kind of worship, the spirituality of the participants is improved.

## **5.2 Community feeling**

A bond of friendship and brotherhood was created during Ramadan as the participants engaged in various religious and faith related tasks, in unison. Sharing a meal together, especially during this Holy month was looked forward to by many and this Iftar program allowed people, hailing from different nationalities but sharing a common faith, to come together and build a stronger community. H.I said, *“I came to AUT Mosque to see my friends because I have not seen some of them for a while... also, I enjoy eating from the same plate with other Muslims in the Mosque.”*

- Feeling of belonging

Feeling of belonging is another finding in the male focus group. The participants indicated they went to the Mosque to meet other people from the same faith, and to find some form of connection to their religion. The Iftar program in the AUT Mosque gave participants the feeling of belonging and provided free Iftar for all participants during Ramadan. For instance, participant H.I., in the first focus group, clearly mentioned, *“I like eating with many Muslim people so we feel like one nation.”*

This feeling of community had a positive impact on the participants and helped them to enjoy eating their meals together. Some of participants such as H.I. said *“I do not like eating alone, when I eat alone I don’t enjoy the meal.... but at AUT masjid in Ramadan I come here to enjoy eating together”*.

- Reduce homesickness

Home sickness was another interesting finding and most of the participants in the male focus group experienced this in some form or other. It is a common problem facing people when they are studying overseas, and living alone, away from their families. The Iftar program at the AUT Mosque helped alleviate people’s loneliness, especially during Ramadan, and created new bonds between people. H.I. said *“I come to AUT masjid to meet my friends and to eat together, this helps reduce the feeling of home sickness”*.

### **5.2.1 Voluntary work of Muslim community**

The Iftar program fed hundreds of participants every night during Ramadan. The food was served over a period of approximately an hour and a half, and required highly organized team of volunteers. This voluntary work became a means for the volunteers to work on their self-confidence, language skills and fellowship.

The Iftar program offered a good opportunity for volunteer work. M.H (from Malaysia) said, *“I could say that AUT masjid and breakfast program gave me the opportunity to become a volunteer and help others. It pushed my confidence level higher to work with other people... It’s a nice feeling”*.

Sometimes the volunteers are exposed to certain difficulties in terms of dealing with members, for example, A.B. (from New Zealand) said *“we face a lot of problems such as, everybody expects this certain amount of meat and if we do not put enough, people will say this guy doesn’t like me.”* Working through the various issues and maintaining good relations with the participants, helped volunteers improve communication and problem-solving skills and, in turn, boosted their self-confidence.

During volunteer work, the participants found themselves in a position where they had to speak in English with those attending the Iftar program [for the majority of them English is a second language]. This situation provided a lot of practice and encouraged them to improve their languages skills as M.H. indicated *“The most difficult part is communicating with the people, because I don’t really speak English in my home country (Malaysia). But being volunteer pushed me to improve language skills.”*

The feeling of being an outsider is common among people who move or migrate to a new place or country. New students/people face this when they come to New Zealand. Most of them start looking for a place or community to join and make friends as a solution, for instance, N.A said, *“My wife, when she came here, she was completely alone, but now she came to know the whole community, so she is not alone”*

Muslim students who are attending the Iftar program had opportunity to meet new people. This was illustrated by M.H saying, *“By attending this Iftar, I got to know so many people, so many friends from all over the world.”*

### **5.2.2 Improve psychological health**

Some male participants admitted to having anger management issues due to daily stresses, as A.B specified, *“I’m usually an angry person, especially when I’m driving, you know, get out of my way and using the vehicle horn.”* However, during Ramadan, the participant felt in better control of his temper. A.B. explained, *“During Ramadan, I feel too hungry to be angry so I do not have time for it, so I feel like my stress level is lower, my anger under control, as we said before, we do not control our fasting and eating, we control our emotion, our desire and our need.”*

### **5.3 Physical health improvements**

Physically, the participants noticed some positive impacts on their health. Some participants reported better management of certain chronic conditions such as type 2 diabetes mellitus, high blood pressure and psoriasis. Weight loss, lowering of stress levels and development of better sleeping habits were also cited as positive impacts of fasting in Ramadan. However, certain participants complained of an exacerbation in headaches, which is a common for some in Ramadan.

### 5.3.1 Impact on health conditions

During Ramadan, participants reported, on one hand, a positive impact on chronic health conditions, and conversely, a negative impact with certain short-term health conditions.

One participant confirmed that his mother suffers from diabetes and high blood pressure. These conditions were alleviated during Ramadan. H.I. said *“My mum has diabetes and high blood pressure and in Ramadan, when she is fasting, her health becomes much better because the diabetes become lower and her health situation became better and better.”*

Interestingly, one participant A.S. in the second focus group has psoriasis – a skin condition which is often affected by stress. He noted, *“Every Ramadan I feel like the psoriasis becomes less and less, so it’s reduced from my body.”* A.S. continued saying, *“...some doctors said to me this is because of the food [during Ramadan] .... I can feel the difference ... it makes me healthier.”*

During Ramadan, a few participants reported that headaches were common. For instance, I.Z. noticed that one of his friends suffers from headaches in Ramadan *“I have a friend, who, every Ramadan, has headache, especially in the first 3 days.”* Another participant connected the headache in Ramadan with unhealthy eating habits such overeating where A.B. speculated, *“Sometimes I do over eat and when I eat so much I get a headache, especially with the meat.”*

### 5.3.2 Improvements in well being

Most of the participants agreed that the sleeping habits became healthier in Ramadan. The sleep patterns changed due to Ramadan lifestyle such as Taraweeh and waking up for the Suhoor meal. The participants slept early after Taraweeh and woke up early to have Suhoor. A.B1. said *“I have a better sleep in night like after Taraweeh I feel quite tired and I sleep early and I wake up early for Suhoor which makes me a better person in Ramadan.”*

Three participants in the second focus group reported losing weight during Ramadan with some variation. The participants estimated the weight loss between 2 and 3 kilograms. For instance, A.S said, *“I lose from 2 to 3 Kg every Ramadan with no exercise, nothing, because of the fasting.”*

During Ramadan, the participants observed that they could appoint more time to their studies and reduce stress related to studies. M.H. said *“Ramadan really gave me ample*

*time to study.*” In addition, the participants used time, otherwise allotted for preparing and eating meals, to study or work, which centered their focus and helped in achieving better results, I.Z. said *“If you have work, just focus on work, you do not want to focus on your lunch and breakfast. Just focus on work [study].”*

## **5.4 Nutrition and food**

During Ramadan, the research revealed that the male participants were more concerned with how the food tasted, rather than its nutritional values. Also, lack of fruits and vegetables as well as some similarity of food between cultures were observed.

### **5.4.1 Food variety and taste**

Male participants focused on the variety and the taste of food. A.B. said *“Oh nice meat..”* and I.Z. said *“the meat is very tender, very soft, they cooked it very good.”* M.U. also added, *“In the breakfast program we were served biryani rice, we have chicken and salad which is well balanced.”* Participants did not discuss the nutritional value of the meal, they only mentioned the taste and the types of food which were served.

Islamic principles encourage Muslims to eat moderately. This is clear from the words of N.A. *“The Sheikh mentioned many times in the Friday sermons, like, if you are going to eat, one third of your stomach for food, one third for drink, one third for air (breath).”*

However, some participants ignore this advice and eat until they feel full, as A.B. joked, *“To be honest, as a student there is no one third there is full stomach. Hahaha.”*

In addition, participants sometimes over ate. This can be related to some health conditions such as headaches according to A.B., *“Yes sometimes I do over eat and when I eat so much I get a headache specially with the meat.”*

### **5.4.2 Changes suggested by male participants**

Although some healthier changes were suggested by male participants to improve the Iftar Program, these suggestions were not the focus of male participants. A male participant recommended replacement of meat with fish in the Iftar program. This was mentioned by A.S., when he wondered aloud, *“Why they do not put fish.”*

Four participants suggested adding more fruits, vegetables and milk to improve the nutritional value of meals, for example, A.H. indicated that *“Adding fruit like watermelon or Babayan or pineapples or grapes, apples and oranges, it will be very good.”*

The main meal of the Iftar program includes meat and rice; however, there was a lack of vegetables. Only N.A [who was working as a supervisor in the Iftar program] said “*We asked the provider of the food to add more vegetables in the main meal but they do not add.*”

The participants in these focus groups are from different nationalities and most of them confirm that rice and meat are prevalent food choices in Muslims countries. A.B. believed the choice of rice and meat was not arbitrary, but due to widespread acceptability of these items, as he reasoned, “*Every culture has different types of dishes with the exact ingredients, so give them meat and rice*”.

## **5.5 Summary**

Spirituality, feeling of community, physical health and food formed the basis of discussion within the male focus groups.

During Ramadan, men reported their spirituality improved through worship and partaking in more good deeds. Many forms of worship were noticed in this research, such as, giving donations, prayer in the Mosque and fasting. Attending the Iftar program contributed to a feeling of belonging to the participants and helped alleviate home sickness. Moreover, the voluntary work also had positive impacts on the spirituality of participants. The benefits of voluntary work, including improvements in self-confidence, language skills as well as building new friendships with other members of the community was central to the Iftar program experience at the AUT Mosque during Ramadan.

The general wellbeing of the men was improved in Ramadan. These improvements include weight loss, better sleep cycles and lower stress levels. An increase in headaches during Ramadan was observed, however, which can either be attributed to overeating or lack of proper hydration.

Nutrition wise, male participants concentrated more on the taste of food rather than the nutritional value. Some Islamic principles such as eating moderately and avoiding overeating were mentioned by the participants but unfortunately not all participants practiced these teachings diligently. In terms of future improvements, males suggested adding seafood and including more fruits and vegetables to the meal of the Iftar program.

## 6 Discussion

This chapter positions the findings of this study in a public health context with other studies to address the research questions. Three main themes emerged from the study which were: strengthened spirituality, physical health, nutrition, and a sense of community. These concepts will be elaborated in this chapter.

Ramadan is a month of abstinence and self-reflection. Fasting in this month has been prescribed by Allah (our creator), with a billion and a half Muslims around the world observing this Holy month to please the Almighty. Muslims abstain from food and drink, and all forms of sexual contact with their spouse from dawn to dusk. In addition to curbing their hunger, Muslims are recommended to abstain from immoral behavior such as lying, slandering or back-biting, to control their anger and to be more compassionate in general. They also engage in increased acts of worship such as more prayers, reciting the Quran and intensifying their focus in following the ways of the Prophet (peace be upon him). This month brings about the realization that, if Muslims can control their baser urges such as hunger or sexual desires, then amending petty behavior and leading more upright lives are achievable goals. The participants of this study touched upon many of these points when describing their Ramadan experience.

The Iftar program at AUT Mosque plays a vital role as it acts as a medium enabling people to be more compassionate and charitable and, in doing so, build a stronger sense of community and belonging. This provides a great opportunity for public health officials to conduct studies and suggest a health intervention as is needed. It also provides an opportunity to learn more about this community and help the wider public understand the needs of this community.

The health of the Muslim community is important, as they are part of a wider New Zealand community. This community is a minority population group, characterized by fast growth and multi-cultural backgrounds. The Muslim community is centered around the family, where the family has an essential role in regulating community life.

According to the literature review of this study, no studies have been conducted to evaluate the impact of Ramadan on Muslim health in New Zealand. There is currently little information about the health needs of this minority from a public health perspective. The lack of information and studies about the impact of Ramadan on holistic health represent a gap in academic knowledge. Owing to a lack of appropriate studies about Ramadan, public health officials may not be able to understand and work

to improve the wellbeing of the Muslim community. This lack of information and studies may lead to a weakness in health policies among the Muslim community, that could affect service delivery from the public health sector.

The month of Ramadan is important for the Muslim community because a lot of Muslims attend and gather in the Mosque, which may not occur in the other months of the year. In this study, gatherings have been shown to have a positive impact in terms of raising spirituality and improving the overall wellbeing of those attending the Iftar program and Mosque during Ramadan. Also, during Ramadan and the Iftar program, Muslims feel a strong sense of religious affiliation and belonging. For this reason, Mosques present a powerful place to conduct health interventions. Thus, Ramadan is most likely to be an advantageous time to conduct a public health intervention, as its likely to reach a greater number of Muslims to achieve the highest possible level of health benefits for the Muslim community. An intervention may be given through health advice and guidance for the Muslims attending the Mosque in Ramadan. For instance, an intervention can be incorporated to improve Muslim awareness about healthy food during Ramadan and throughout the year and to educate leaders about the role of Mosques in improving wellbeing of their community. Using Ramadan to educate Muslims and provide advice, tips and information on nutrition and health would be beneficial and effective in improving the health behaviors of Muslims during Ramadan and may also serve as a sustainable improvement in their making healthier choices in the long-run. To develop a long-term strategy during Ramadan, local government and Mosques can coordinate their efforts to develop a health strategy to benefit and improve the wellbeing of the Muslim community. Also, during Ramadan Mosques can work on developing health strategies using the large number of multi-cultural participants, who can provide a wide range of suggestions and over views.

Including female participants in developing a food policy and making decisions in food selection would be an effective and systematic approach, as females are more knowledgeable about food and nutrition. Also, including female participants in designing or implementing a public health intervention would be beneficial as females in this study demonstrated their interest in, and knowledge of, food and nutrition.

Interconnection of the community is considered an important concept in the public health sector, which can be observed in the Muslim community. For example, in some other communities, for a public health intervention, the elders must be engaged to

achieve any level of success. This is reflected in the Muslim community, as the spiritual leaders (sheikh) have influence over their communities which could contribute significantly to the success of a public health intervention. This intervention can be done through the cooperation between public health advisors and spiritual leaders of the Mosques. As most Mosque leaders speak English, they can communicate well with the Muslim community. In some cases, if an individual does not speak English, the leader can seek help from another member of the community to translate. Therefore, public health advisors can provide advice for spiritual leaders, who in turn can present this advice to the Muslim community during Friday sermon from an Islamic perspective. Also, the major challenge of any intervention would be to build and sustain a connection with the Muslim community beyond Ramadan.

## **6.1 Spirituality as a source of wellbeing**

Spiritual health was one of the main themes in this research. Both genders reported their spirituality was improved during the month of Ramadan. They felt their spirituality increased through two forms of worship: fasting and prayer. Illustrating this are the two following quotes by the participants:

- 1) *“Whoever fasts in Ramadan with full belief and full commitment to Allah, Allah will forgive all his sins,” stated by A.B1.*
- 2) *“We pray 5 times a day, but in this month, we are more attached to the masjid and more attached to Allah, and our hearts are purer,” stated by A.G.*

The distinguishing features included voluntary work for males and the instillation of Islamic principles in their children for females, however, both male and female participants achieved self-reflection and soul-searching. Ghazzali (2005) said fasting is training the spirit of piety in everyday life, fasting has a strong impact on the human body and soul. Also, it has the power to strengthen willpower and bolster patience. The findings of this study and Ghazzali (2005) agreed about the contribution of fasting to increase spirituality and improve Muslim wellbeing through the feeling of being closer to Allah. Hence, it might be significant for Muslims to provide more attention to Ramadan, to achieve greater health benefits and improve spiritual wellbeing.

Iftar program involved participants sharing a meal together as well as performing the evening and night prayers in congregation at the Mosque. Prayer took a priority in the daily life of participants during Ramadan. The participants reported that prayers,

especially those performed in congregation at the Mosque, acted as a means of feeling closer and more connected to Allah. During the fasting, participants became calmer and more patient, tended to engage in more good deeds, and were also more helpful in general. This kind of worship helped participants reach higher levels of spirituality. Therefore, Iftar programs at Mosques in Ramadan seem to be effective in improving spirituality and wellbeing of the Muslim community.

The concept of stronger community connection was repeated many times by both genders as a positive impact of the Iftar program during Ramadan. This was achieved amongst male participants through voluntary work and serving the Muslim community in the AUT Mosque. In the females, however, this was achieved by attending the Iftar program and breaking the fast with other Muslim females, which helped increase spirituality.

Primarily, voluntary work for the males involved organizing and serving the food and directing people to places in the prayer hall. As fewer females attended the program there were no designated volunteers appointed, on the female side, with all participants contributing to and managing the activities and distribution of food. With this volunteer work, the Iftar program achieved success in building a connection and gathering the community together during Ramadan. However, without any volunteers the program would struggle to organize and distribute food to hundreds of people each night. Stebbins (1996) has similar outcomes with his study and has provided some interesting insights on volunteer work related to serious leisure and wellbeing, including the varying perspectives on what motivates an individual to volunteer and how volunteers are viewed in general by organizations and employers.

A boost in English language proficiency was noted by some of the volunteering participants, who benefitted immensely from this experience. As most of the participants hail from different nationalities, English is their second or third language, leading to difficulties in communication with some New Zealanders. Volunteer work during the Iftar program pushed many male participants into overcoming their inhibitions and becoming more vocal through practice with their peers. Male participants felt more confident with their language abilities, which would certainly help them in their respective academic fields. The benefits were thus revealed to be an improvement in self-confidence and language skills, overcoming home-sickness and, in the process, building a stronger sense of community.

Voluntary work as a means of improving self-worth and gaining personal satisfaction or social rewards have been reported in earlier studies, such as those conducted by Baker (2003) and Heo et al. (2010). Thus, Muslim students who face difficulties with the English language or lack self-confidence may volunteer at such a program, which may help to resolve these issues and improve their wellbeing.

Similarly, in a study which investigated the link between serious leisure and wellbeing, Heo et al. (2010) conducted a study on 22 elderly participants, all of whom were over 50 years of age, where participants attended various activities. Among those activities were volunteer opportunities. The author stated that voluntary work recorded a positive impact on participants wellbeing by gaining personal satisfaction and social rewards. There are similarities between these former studies and the current findings, however this study was comprised of a younger age group, where the male participants were the main volunteers in the program. However, the males in this study received a greater opportunity for volunteer work compared to the females, fewer of whom attended the Mosque.

Also, Muslim culture restricts the mixing between male and females by providing separate worship areas for each gender in the Mosque. As for the female participants, the opportunity for volunteer work was less due to the smaller number of females attending the AUT Mosque, but in other Mosques with a larger number of female participants, there could be a better opportunity for volunteer work. This work may help female participants improve their language skills, self-confidence and reduce homesickness.

The sense of belonging in females stemmed from eating together in one place and gathering together in the Mosque during a specific period (sunset time). Female participants found a comfortable environment where they met other like-minded females that belong to the same religion. The sense of sisterhood developed throughout the month as females were sharing meals together and looking after each other. The advice and knowledge gained from each other also helped in strengthening the bond of sisterhood. Some female participants were delighted to be able to bring their children along to the Iftar program and share in this cultural experience. They were quite gratified as most Mosques do not accommodate children. This opportunity of involving children in the Mosque reduces stress on the parents during the Iftar meal and helps the children connect with their community. This illustrates the importance of the Iftar

program in gathering Muslims together and improving their wellbeing. Including children in such programs may have a long-term effect on future Muslim generations.

Homesickness was a major theme from both male and female participants. Ahmed (2016) conducted a study of six Saudi female students who had left their homes to study abroad in Canada. During the interview, all the participants in the study recalled experiencing the feeling of homesickness and expressed this feeling through crying and avoiding calls with the family. One of the participants of the study confirmed that she lived in a building with other Saudi families to avoid the feeling of homesickness. However, despite living amongst other Saudi families, this participant could not overcome the feeling of homesickness. Therefore, Ramadan at AUT Mosque has a powerful impact in building connections and strengthening the social bonds between the Muslim community, which might be a significant impact in reducing homesickness. The study of Ahmed (2016) shared some common elements with the current findings, as the latter also included responses from females who were living in a non-Muslim country away from their families.

Ramadan is an especially difficult time for the participants due to their Islamic heritage, in which, sharing the Iftar meal with family and friends is a much anticipated and celebrated experience. However, in the current findings, female participants found a feeling of belonging, by attending the Mosque, whereas the female participant in the above-mentioned study was living with other Saudi families in the same building but could not overcome the feeling of homesickness. Therefore, it is evident that attending the AUT Mosque and meeting other Muslims gave the participants a taste of their beloved Ramadan experience from back home, consequently having a positive impact on their general wellbeing.

The improvements of spirituality reflect the positive impacts of Ramadan on holistic health. Also, the findings can provide a positive impression for those members who did not attend the Iftar program at AUT Mosque. The program leader can encourage and present the benefits of the program to people who did not attend the Iftar program through Friday sermons and during the nightly speech in Ramadan.

## 6.2 Physical health improvements

It has been noticed from the findings of this study that the physical health of participants has improved. Both genders related positive impacts of Ramadan in terms of reducing weight and improving sleeping patterns by getting enough hours of sleep during the night.

According to the current findings, both genders reported reduced body mass during Ramadan which is on par with studies conducted by Bigard et al. (1998), and Sweileh et al. (1992). On the other hand, contradictory findings, showing weight gain during Ramadan, were recorded by Bakhotmah (2011) and Frost & Pirani (1987). A possible reason for weight loss recordings in New Zealand may be that people use vehicles less, as most students prefer accommodations close to the campus and Mosque. Also, the topography of Auckland city encourages weight loss, necessitating uphill and downhill walks at regular intervals while commuting.

Bahammam et al. (2014) conducted a study to examine the differences in sleep patterns during Ramadan, due to changes in activities and lifestyle, such as Taraweeh prayer and, waking up to have the Suhoor. His study recorded no significant changes to sleep patterns, however, gaining enough hours of sleep during the night was observed in the current study, through affirmation by both male and female participants. This may be explained by occurrence of Ramadan in winter this year in New Zealand. Ramadan in winter is characterized by short hours of fasting [typically 6am to 6pm], as the days are shorter, and nights are longer. Also, the malls and shops in New Zealand close early, which means people stay home and sleep earlier. Whereas in many Muslims countries, shops tend to stay open overnight, along with malls and restaurants. Additionally, people tend to go out and shop more during the night as they have already broken their fast and regained their energy. Thus, in the findings of this research, features inherent to the New Zealand lifestyle might explain the improvements in sleep cycle. The occurrence of Ramadan during winter and New Zealand lifestyle might be more effective in improving the physical health of Muslims. Improving physical health represents one of the main principles of public health

It's interesting that only one participant mentioned "headache" in the current study, whereas, there have been many studies conducted on this topic, such as by Awada and Jumah (1999), who recorded headaches and related symptoms in their study subjects. Caffeine withdrawal was cited as the primary attributing factor associated with these headaches. Other factors ascribed to it included hypoglycemia, dehydration and lack of

sleep. In the present study, it may be surmised that the occurrence of Ramadan during winter may have reduced the risk of dehydration, due to the cold weather and short hours of fasting. Low rate of headache occurrence among the participants might be associated with occurrence of Ramadan in winter and the improvement in the physical health of participants.

### **6.3 Nutritional aspect**

Nutrition was one of the main findings of this research. Beardsworth et al. (2002) designed a qualitative analysis to judge the differing food habits between the sexes. A key observation of this study was that women's attitude towards food was more 'virtuous' as they gave preference to the ethical and nutritional value of the meals more than men. The current study recorded diverse findings with respect to both male and female approaches towards meals. Female participants were more health conscious in general, which was reflected through certain practices, such as, eating slowly, avoiding sweet drinks and hydrating properly during Ramadan.

Finch et al. (1998) noted that in the Islamic culture, females are frequently responsible for cooking and preparing food for their families, which was consequently associated with their food knowledge. Based on the current findings, female participants were more knowledgeable about healthy food options as well as related food prices. This broader knowledge of female participants could be used to improve the Iftar program at AUT during Ramadan. Therefore, it may be beneficial for AUT Mosque members if females were consulted and given an opportunity to contribute to the decision-making process of food served in the Iftar program.

Another finding in this research, suggested adding more fruits and vegetables to the Iftar program at the AUT Mosque. This suggestion was made by both male and female participants; however, female participants were more vocal about it, and were wanting to improve the program from a nutritional aspect.

Fruits and vegetables contain many essential nutrients which are important to the human body, such as minerals, fiber and vitamins. Adding more fruits, vegetables and plant-based proteins such as legumes could have a positive impact on the overall health of the Muslim community. Also, the need for a balanced diet is imperative, especially while Muslims are fasting the whole day during Ramadan. In addition, incorporating more fruits and vegetables into the diet might improve nutritional status and reduce the consumption of unhealthy foods.

AUT Mosque is a multi-cultural place of worship, with people attending this program coming from different backgrounds. Each culture or background has its traditions when it comes to breaking the fast in Ramadan. According to the findings of this research, females suggested variation in types of protein, such as seafood and more vegetables to be added, while the male participants suggested the Iftar program become more culture-oriented, with different cuisines every week. This suggestion gives the Muslim community an opportunity to try different types of cuisine and discover new, healthier and potentially cheaper options. In addition, through a culture-oriented program, the participants might be able to improve their understanding of other ethnic cultures using the provided meals. This in turn may help strengthen the connection between the community at the AUT Mosque.

#### **6.4 Summary**

This chapter discusses the main findings of this study, including spirituality, physical health and nutrition. The findings of this research agreed with some other studies in terms of increased spirituality during Ramadan. The increase of spirituality was through acts of worship such as praying and fasting which brought participants to feel closer to Allah. Herein, it can be noticed the positive impacts of Ramadan on spirituality which can improve the public health outcomes of the Muslim community.

The Iftar program provided an opportunity for people to come together and reduce homesickness which helps increase spirituality. In addition, it provided an opportunity for the male participants to do voluntary work which helps improve self-confidence and language skills. These positive outcomes raise the awareness on the importance of this program. An improvement in health and wellbeing represents priority from the public health perspective.

Physical health findings include some positive impacts such as losing weight and a better sleeping pattern. The possible reason for weight loss can be attributed to the topography of Auckland city, while, Ramadan occurring during the New Zealand winter may explain the improvements in sleeping pattern through longer night hours.

Therefore, an improvement of physical health reflects the positive impacts of Ramadan on holistic health.

There were varied views about nutrition between males and females. Female participants were more experienced with healthy food options and related food prices. It

is likely to be beneficial if female participants were consulted in the future selection of food for the Iftar program at AUT Mosque.

Future improvements of Iftar program at AUT Mosque suggested by participants included replacing meat with seafood and increasing the vegetable quantity in meals, participants also suggested including more culture-oriented foods, with different cuisines used every week. Hence, there is the potential for the Iftar program to be improved in terms of both taste and nutritional value. This in turn may help improve the holistic health of Muslims during Ramadan.

## 7 Conclusion

This chapter concludes this thesis, and includes the importance and significance of this study, the limitations faced as well as recommendations for further study. It also presents the positive impacts of Ramadan on holistic health and the benefits of the Iftar program on the Muslim community at AUT Mosque. The impact on holistic health includes spirituality, physical health and nutritional aspect. Although this study includes a small sample of participants, the findings are significant to the AUT Mosque and wider Muslim community as, to date, there has been little research conducted on this unique population. Recommendations for further studies includes a larger number of participants, use of qualitative and quantitative methodologies for further studies to provide relevant data to inform future public health interventions, and to conduct a larger study that includes other Mosques in Auckland. This future research will improve understanding about the Muslim community in New Zealand, their health needs and opportunities for public health interventions.

The present study was designed to determine the impacts of Ramadan on holistic health and to gather the perceptions of participants about the Iftar program at the AUT Mosque. This study has clearly answered the research question and showed that Ramadan has positive impacts on holistic health. Additionally, the Iftar program also has positive impacts in improving the wellbeing of the Muslim community.

As this study was conducted in a Muslim setting, the findings were divided into male and female perspectives in accordance with Islamic tradition. Spirituality, physical health and nutrition were the main themes found for both genders.

An improvement in spirituality was noticed through different acts which are fasting, volunteer work and attending the program. The researcher observed this during the focus group sessions. Therefore, it may be beneficial for the program leaders to provide more opportunities for voluntary work at the Mosques as it has positive impact on both genders.

Participants were also able to allocate more time and effort to worship with their families by attending the Iftar program, which would have otherwise have been spent on preparing food. The program provides an opportunity for people from many cultures to come together and share food and conversation, which may strengthen the bonds of friendship among participants in the Mosque. Also, by attending the Mosque, members learn more about other cultures during the interaction with each other during the Iftar

program. Furthermore, Ramadan provides an opportunity to strengthen relationships between members inside and outside the Mosque. Participants could strengthen their friendship through casual conversation over the Iftar meal, before or after daily prayer, which may lead to further social interactions such as meeting over coffee or dinner outside the Mosque. In addition, as so many AUT participants have recently arrived in New Zealand and are away from their families, AUT Mosque members could benefit from similar programs that aim to gather Muslims in one place to share lunch or dinner in weekly or monthly meeting formats.

Health conditions affected by Ramadan reported previously in the literature were not discussed among the focus group participants. This may be due to short hours of fasting, sufficient sleeping hours during Ramadan, as winter has longer nights, and the limited number of participants who were of a young age who took part in this study. Both sets of participants reported weight loss and improved sleeping habits. However, further research is needed to investigate the possible impacts of Ramadan fasting on these lifestyle patterns of AUT Mosque participants.

This investigation demonstrated that female participants were better acquainted with food and health related issues. Additionally, they made many healthy suggestions to improve the Iftar program. Involving and consulting female members during the menu selection process and selection of the food provider is recommended. The Iftar menu could be assessed by nutritional experts. The nutritionist could also suggest any changes which may help improve the Iftar program to meet healthier nutritional standards.

This relatively small study included 18 participants out of a total of 300 AUT Mosque members, and an unvarying menu of lamb or chicken, rice and salad served at the Iftar program were the reality of this study. Some useful suggestions were made by participants to improve the Iftar program. The participants proposed an increase in fruit and vegetable content in the Iftar meal. Before deciding which fruits or vegetables may be included in the Iftar, a survey or questionnaire could be conducted at the Mosque to gather information on what members prefer. As a survey or questionnaire can be anonymous, it is relatively easy to conduct and can include the perceptions and preferences of larger number of community members.

Also, AUT Mosque members could be consulted about serving a vegetarian meal at least once a week during the program. This vegetarian option can then be offered alongside the current meal to assess the acceptability of vegetarian food among the

members. Some male participants also recommended exploring different cuisines every week for a variation in taste. It is recommended to the leader, that different groups in the Mosque have a meeting, to find out which cuisines they prefer to include for future years in the Iftar program that fit with the budget of the Iftar program. The effects of variation in meals offered on holistic health might also be compared by future research. Future studies could be expanded to include a comparison of the Iftar programs in different Islamic centers and Mosques in Auckland to examine the benefits of such programs during Ramadan.

The benefits and drawbacks from each Iftar program can be assessed and the positive findings incorporated into the AUT program. For a more comprehensive investigation of the impacts on health, actual readings of changes in weight, sleeping and eating, and psychosocial wellbeing of the members of the AUT Mosque can also be recorded and investigated. Through assessing the program, it is possible to establish a base and have a more accurate understanding of how the program runs and what the participants think about the Iftar. This can also be a base for future improvements of the Iftar program. AUT Mosque is one of the few Mosques in Auckland that has a dedicated space for females to attend and pray during Ramadan and hold regular prayer times outside Ramadan. Therefore, the findings of this study are not generalizable to all Mosques. Although most ethnic groups were included in the focus group, other members which were not included might have a different opinion, or concern, to what was recorded in this study or the effect of Ramadan on their holistic health.

Due to the location of the Mosque, in association with the university, many of the participants were students and young adults as well as participants who have recently arrived in New Zealand. Therefore, the findings cannot not be generalized and a further larger study in Auckland or other countries might have a different outcome. Future studies could also include older adults and children practicing to fast, to gather their perceptions about Ramadan. In addition, Auckland is one of the largest cities in New Zealand and has many Mosques, this study only covered AUT Mosque and did not include other Mosques in Auckland and rural areas in New Zealand.

A majority of Muslims attend the Mosque in Ramadan either to break their fast or for prayer and are of all age groups. Therefore, Ramadan provides a good opportunity for public health advisors to co-operate with program leaders to implement a public health intervention, and conduct policy developments on Iftar programs, to improve the health

of Muslims. As a minority ethnic group in New Zealand, consisting of around 40,000 Muslims, this study provides important information about the tradition of this community during Ramadan.

The findings of this research provide a positive impression about Ramadan and the traditions of Muslims during this month. This image can contribute to policy development at AUT Mosque and other Mosques across New Zealand. These policies may help improve wellbeing and holistic health of Muslims in Ramadan. Moreover, the Iftar program and the results of this study opens the door for non-Muslims to have a better understanding about Ramadan and Muslims. Furthermore, the study findings provide the trustees of Islamic centers and Mosque with insights to expand opportunities to increase health outcomes for a significant cohort of Muslim people across New Zealand.

Finally, this study provides a baseline for further studies about the impacts of Ramadan on holistic health in the Muslim community. Future studies can include a larger sample of participants and include more Mosques around New Zealand, to investigate the impacts and perception of Ramadan on holistic health.

## 8 References

- Abuznaid, S. (2006). Islam and management: What can be learned? *Thunderbird International Business Review*, 48(1), 125-139.
- Afifi, Z. (1997). Daily practices, study performance and health during the Ramadan fast. *Journal of the Royal Society of Health*, 117(4), 231-235.
- Agar, M., & MacDonald, J. (1995) Focus groups and ethnography. *Human Organization*, 54, 78–86.
- Ahmed, N. A. (2016). *Saudi Women's Experiences Studying At Canadian Universities Through The King Abdullah Scholarship Program* (Unpublished master's thesis). The University of Western Ontario.
- Akbani, M., Saleem, M., Gadit, W., Ahmed, M., Basit, A., & Malik, R. (2005). Fasting and feasting safely during Ramadan in the patient with diabetes. *Practical Diabetes International*, 22(3), 100-104.
- Al-Arouj, M., Assaad-Khalil, S., Buse, J., Fahdil, I., Fahmy, M., Hafez, S., . . . Thomas, A. (2010). Recommendations for Management of Diabetes During Ramadan. *Update 2010*, 33(8), 1895-1902.
- Al-Jibouri, Y. T. (2000). Fast of the Month of Ramadan: Philosophy and Ahkam. *Qum: Ansariyan Publications*.
- Ali, M., & Amir, T. (1989). Effects of fasting on visual flicker fusion. *Perceptual and motor skills*, 69(2), 627-631.
- Angel, J., & Schwartz, N. (1975). Metabolic changes resulting from decreased meal frequency in adult male Muslims during the Ramadan fast. *Nutrition reports international*.
- Awada, A., & Jumah, M. A. (1999). The First-of-Ramadan Headache. *Headache: The Journal of Head and Face Pain*, 39(7), 490-493.
- Azizi, F. (2010). Islamic fasting and health. *Annals of nutrition and metabolism*, 56(4), 273-282.
- Bahammam. (2006). Does Ramadan fasting affect sleep? *International journal of clinical practice*, 60(12), 1631-1637.
- Bahammam, Almushailhi, K., Pandi-Perumal, S., & Sharif, M. (2014). Intermittent fasting during Ramadan: does it affect sleep? *Journal of sleep research*, 23(1), 35-43.
- Baig, A., Baig, S., Ghoto, M. A., & Baloch, M. A. (2014). Dietary Intake During Fasting In The Month Of Ramadan. *New York Science*, 7, 15-18.
- Baker, D. C. (2003). Studies of the inner life: The impact of spirituality on quality of life. *Quality of Life Research*, 12, 51-57.
- Bakhotmah, B. A. (2011). The puzzle of self-reported weight gain in a month of fasting (Ramadan) among a cohort of Saudi families in Jeddah, Western Saudi Arabia. *Nutrition Journal*, 10(1), 84.
- Bano, M., & Kalmbach, H. (2011). *Women, leadership, and Mosques: Changes in contemporary Islamic authority* (Vol. 11): Brill.
- Beardsworth, A., Bryman, A., Keil, T., Goode, J., Haslam, C., & Lancashire, E. (2002). Women, men and food: the significance of gender for nutritional attitudes and choices. *British Food Journal*, 104(7), 470-491.
- Beltaifa, L., Bouguerra, R., Ben, S. C., Jabrane, H., El-Khadhi, A., Ben, R. M., & Doghri, T. (2001). Food intake, and anthropometrical and biological parameters in adult Tunisians during fasting at Ramadan. *Eastern Mediterranean health journal= La revue de sante de la Mediterranee orientale= al-Majallah al-sihhiyah li-sharq al-mutawassit*, 8(4-5), 603-611.

- Bener, A., Absood, G., Achan, N., & Sankaran-Kutty, M. (1992). Road traffic injuries in Al-Ain City, United Arab Emirates. *Journal of the Royal Society of Health*, 112(6), 273-276.
- Bernieh, B. O., Mohamed, A. O., & Wafa, A. M. (1994). Ramadan fasting and renal transplant recipients: clinical and biochemical effects. *Saudi Journal of Kidney Diseases and Transplantation*, 5(4), 470.
- Bigard, A., Boussif, M., Chalabi, H., & Guezennec, C. (1998). Alterations in muscular performance and orthostatic tolerance during Ramadan. *Aviation, space, and environmental medicine*, 69(4), 341-346.
- Bogdan, A., Bouchareb, B., & Touitou, Y. (2001). Ramadan fasting alters endocrine and neuroendocrine circadian patterns. Meal–time as a synchronizer in humans? *Life sciences*, 68(14), 1607-1615.
- Bowen, D. L., & Early, E. A. (2002). *Everyday Life in the Muslim Middle East*. Bloomington; Indianapolis: Indiana University Press.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Catterson, J. H., Khericha, M., Dyson, M. C., Vincent, A. J., Callard, R., Haveron, S. M., ... & Partridge, L. (2018). Short-Term, Intermittent Fasting Induces Long-Lasting Gut Health and TOR-Independent Lifespan Extension. *Current Biology*, 28(11), 1714-1724.
- Chamsi-Pasha, M., & Chamsi-Pasha, H. (2016). The cardiac patient in Ramadan. *Avicenna journal of medicine*, 6(2), 33.
- Constable, P. (2015). Eating Healthy through Ramadan. *The Washington Post*. Retrieved from: [https://www.washingtonpost.com/local/watching-the-waistline-through-Ramadan/2015/06/17/0cc678fe-150f-11e5-9518-f9e0a8959f32\\_story.html?utm\\_term=.7022c8190ef3](https://www.washingtonpost.com/local/watching-the-waistline-through-Ramadan/2015/06/17/0cc678fe-150f-11e5-9518-f9e0a8959f32_story.html?utm_term=.7022c8190ef3)
- Cross, J. H., Eminson, J., & Wharton, B. A. (1990). Ramadan and birth weight at full term in Asian Moslem pregnant women in Birmingham. *Archives of Disease in Childhood*, 65(10 Spec No), 1053-1056. doi:10.1136/adc.65.10\_Spec\_No.1053
- Daradkeh, T. (1992). Parasuicide during Ramadan in Jordan. *Acta Psychiatrica Scandinavica*, 86(3), 253-254.
- DeVault, K. R. (2016). Heartburn, Regurgitation, and Chest Pain. *Practical Gastroenterology and Hepatology Board Review Toolkit*: Wiley, 46.
- Ertem, I. O., Kaynak, G., Kaynak, C., Ulukol, B., & Gulnar, S. B. (2001). Attitudes and practices of breastfeeding mothers regarding fasting in Ramadan. *Child: care, health and development*, 27(6), 545-554.
- Esposito, J. L. (1999). *The Oxford History of Islam*: Oxford University Press.
- Finch, G. M., Day, J. E., Welch, D. A., & Rogers, P. J. (1998). Appetite changes under free-living conditions during Ramadan fasting. *Appetite*, 31(2), 159-170.
- Foucault, M. (1977). *Discipline and Punish: the birth of the prison*. Harmondsworth: Penguin. *Czy władza ekspercka jest władzą*, 123.
- Frost, G., & Pirani, S. (1987). Meal frequency and nutritional intake during Ramadan: a pilot study. *Human nutrition: Applied nutrition*, 41, 47–50.
- Ghazzali. (2005). *Worship in Islam : being a translation with commentary and introduction of Al-Ghazzālī's book of the Ihyá on the workship*. New Delhi: Asian Educational Services.
- Green, B. C., & Jones, I. (2005). Serious leisure, social identity and sport tourism. *Sport in Society*, 8(2), 164-181.
- Guidetti, V., Faedda, N., & Siniatchkin, M. (2016). Migraine in childhood: biobehavioural or psychosomatic disorder? *The journal of headache and pain*, 17(1), 82.

- Harvie, M. N., Pegington, M., Mattson, M. P., Frystyk, J., Dillon, B., Evans, G., ... & Son, T. G. (2011). The effects of intermittent or continuous energy restriction on weight loss and metabolic disease risk markers: a randomized trial in young overweight women. *International journal of obesity*, 35(5), 714.
- Hassan-Wassef, H. (2004). Food habits of the Egyptians: newly emerging trends. *Eastern Mediterranean Health Journal*, 10(6), 898e915. <http://www.emro.who.int/Publications/EMHJ/1006/PDF/25%Food%20habits.pdf>.
- Heo, J., Lee, Y., McCormick, B. P., & Pedersen, P. M. (2010). Daily experience of serious leisure, flow and subjective well-being of older adults. *Leisure Studies*, 29(2), 207-225.
- Hodge, D. R., Zidan, T., & Husain, A. (2015). Validation of the Intrinsic Spirituality Scale (ISS) with Muslims. *Psychological assessment*, 27(4), 1264.
- Ibrahim, F., Ahmad, S. A., Woo, P. J., & Abas, W. A. B. W. (2012). Biomechanical response of the upper body during prostration in Salat and the child's pose: a preliminary study. *Journal of Physical Therapy Science*, 24(10), 1021-1024.
- Iftikhar, R., Albar, M., & Qadi, M. (2016). Obesity and Lifestyle Recommendations in the Light of Islam . *Journal of Family Medicine and Disease Prevention* 2, 034.
- Iraki, L., Abkari, A., Vallot, T., Amrani, N., Khelifa, R., Jellouli, K., & Hakkou, F. (1996). Effect of Ramadan fasting on intragastric pH recorded during 24 hours in healthy subjects. *Gastroenterologie clinique et biologique*, 21(11), 813-819.
- Iqbal, M. (2007). *Science and Islam*. Westport: Greenwood Press.  
[https://archive.org/stream/MuzaffarIqbalScienceAndIslamGreenwoodPress2007/Muzaffar%20Iqbal-Science%20and%20Islam-Greenwood%20Press%20\(2007\)\\_djvu.txt](https://archive.org/stream/MuzaffarIqbalScienceAndIslamGreenwoodPress2007/Muzaffar%20Iqbal-Science%20and%20Islam-Greenwood%20Press%20(2007)_djvu.txt)
- Jawad, F., & Kalra, S. (2016). Ramadan and diabetes: Holistic trial design. *J. Pak Med Assoc*, 66(7), 791-2.
- Jebel Ali International Hospital (JAIH). (2013). Nutrition during Ramadan. *JAIH E-Bulletin*, 51. Retrieved from: <http://www.cedars-jaih.com/images/e-bulletin/pdf/E-Bulletin-Is51-July2013.pdf>
- Jones, T. L. (2001). Definition of stress. *Eating disorders in women and children: Prevention, stress management, and treatment*, 89-100.
- Kadri, N., Tilane, A., El Batal, M., Taltit, Y., Tahiri, S. M., & Moussaoui, D. (2000). Irritability during the month of Ramadan. *Psychosomatic Medicine*, 62(2), 280-285.
- Kaplowitz, M. (2000) Statistical analysis of sensitive topics in group and individual interviews. *Quality & Quantity*, 34, 419-431
- Karaosmanoglu, D. (2010). Nostalgia spaces of consumption and heterotopia: Ramadan festivities in Istanbul. *Culture Unbound: Journal of Current Cultural Research*, 2(2), 283-302.
- Kazemi, M., Karimi, S., Ansari, A., Negahban, T., Hosseini, S., & Vazirinejad, R. (2006). The Effect of Ramadan Fasting on Psychological Health and Depression in Sirjan Azad University Students. *Journal of Rafsanjan University of Medical Sciences*, 5(2), 117-122.
- Khaled, B., & Belbraouet, S. (2009). Effect of Ramadan fasting on anthropometric parameters and food consumption in 276 type 2 diabetic obese women. *International journal of diabetes in developing countries*, 29(2), 62.
- Koushali, A. N., Hajiamini, Z., Ebadi, A., Bayat, N., & Khamseh, F. (2013). Effect of Ramadan fasting on emotional reactions in nurses. *Iranian journal of nursing and midwifery research*, 18(3), 232.

- Langford, E. J., Ishaque, M. A., Fothergill, J., & Touquet, R. (1994). The effect of the fast of Ramadan on accident and emergency attendances. *Journal of the Royal Society of Medicine*, 87(9), 517.
- Leaman, O. (1982). *The Biographical Encyclopedia of Islamic Philosophy*. London: Bloomsbury Academic. 31-32.  
<https://books.google.com.ua/books?id=2wS2CAAQBAJ&pg=PR31&lpg=PR31&dq=Moore,++1982+%22The+Developing+Human:+With+Islamic+Additions,+Jeddah%22:&source=bl&ots=MNpBVUSU0&sig=k9T5FfXKxHUXxUaKJmTnQbVNYo&hl=uk&sa=X&ved=0ahUKEwia9cPLI3UAhWfVxoKHefvB0UQ6AEIJjAA#v=onepage&q=ramadan&f=false>
- Leiper, J., & Molla, A. (2003). Effects on health of fluid restriction during fasting in Ramadan. *European journal of clinical Nutrition*, 57, S30-S38.
- Lorr, M., Sonn, T. M., & Katz, M. M. (1967). Toward a definition of depression. *Archives of general psychiatry*, 17(2), 183-186.
- Lott, B. (2009). *Multiculturalism and diversity: A social psychological perspective*. Oxford, UK: John Wiley & Sons.
- Malhotra, A., Scott, P., Scott, J., Gee, H., & Wharton, B. (1989). Metabolic changes in Asian Muslim pregnant mothers observing the Ramadan fast in Britain. *British Journal of Nutrition*, 61(03), 663-672.
- Mattson, M. P., & Wan, R. (2005). Beneficial effects of intermittent fasting and caloric restriction on the cardiovascular and cerebrovascular systems. *The Journal of nutritional biochemistry*, 16(3), 129-137
- Mazumder, B., & Almond, D. (2011). Health Capital and the Prenatal Environment: The Effect of Maternal Fasting During Pregnancy. *American Economic Journal: Applied Economics*, 3(4), 56-85.
- Ozturk, R. G. (2014). The Integration of Entertainment and Advertising: Advertainment. In R. Ozturk (Ed.), *Handbook of Research on the Impact of Culture and Society on the Entertainment Industry* (pp. 440-460). Hershey, PA: IGI Global. doi:10.4018/978-1-4666-6190-5.ch024
- Opaneye, A., Villegas, D., & Abdel Azeim, A. (1990). Islamic festivals and low birthweight infants. *Journal of the Royal Society of Health*, 110(3), 106-107.
- Patton, M. Q. (2002). Two decades of developments in qualitative inquiry: A personal, experiential perspective. *Qualitative social work*, 1(3), 261-283.
- Prentice, A., Lamb, W. H., Prentice, A., & Coward, W. (1984). The effect of water abstention on milk synthesis in lactating women. *Clinical Science*, 66(3), 291-298.
- Prentice, A., Prentice, A., Lamb, W., Lunn, P., & Austin, S. (1983). Metabolic consequences of fasting during Ramadan in pregnant and lactating women. *Human nutrition: Clinical nutrition*, 37(4), 283-294.
- Rafie, C., & Sohail, M. (2016). Fasting During Ramadan: *Nutrition and Health Impacts and Food Safety Recommendations*, 351.
- Regenstein, J., Chaudry, M., & Regenstein, C. (2003). The kosher and halal food laws. *Comprehensive reviews in food science and food safety*, 2(3), 111-127.
- Roky, R., Chapotot, F., Hakkou, F., Benchekroun, M. T., & Buguet, A. (2001). Sleep during Ramadan intermittent fasting. *Journal of Sleep Research*, 10(4), 319-327.
- Roky, R., Iraki, L., HajKhelifa, R., Ghazal, N. L., & Hakkou, F. (2000). Daytime alertness, mood, psychomotor performances, and oral temperature during Ramadan intermittent fasting. *Annals of Nutrition and Metabolism*, 44(3), 101-107.
- Sakr, A. H. (1975). Fasting in Islam. *Journal of the American Dietetic Association*, 67(1), 17-21.

- Schmahl, F., Metzler, B., Born, M., & Elmadfa, I. (1988). Ramadan, Gesundheitsgefährdung während des Fastenmonats. *Dt. Arztebl*, 85, B-842–B-844.
- Shadman, Z., Poorsoltan, N., Akhoundan, M., Larijani, B., Soleymanzadeh, M., Akhgar Zhand, C., ... Khoshniat Nikoo, M. (2014). Ramadan Major Dietary Patterns. *Iranian Red Crescent Medical Journal*, 16(9), e16801. <http://doi.org/10.5812/ircmj.16801>
- Shah, P., & Nafee, A. (1999). Clinical profile of headache and cranial neuralgias. *The Journal of the Association of Physicians of India*, 47(11), 1072-1075.
- Shalaei, N., Motaghedi Larijani, A., Mohajeri, S. A. R., Norouzy, A., Nematy, M., Sheikhol Vaezin, F., . . . Safarian, M. (2013). Changes in dietary intake during Ramadan in north east of Iran population. *Journal of Fasting and Health*, 1(1), 19-22.
- Shaw, I., & Hussain, B. (2013). *A report into patterns of diet and exercise in the Pakistani community of Nottingham City*. Project Report. Nottingham City Primary Care NHS Trust.
- Sheikh Mohammed bin Rashid Centre for Cultural Understanding. (2015). Elements of Culture. Issue 43. Retrieved 25 May 2017, from [file:///C:/Users/Admin/Downloads/2015July2015Elements%20\(1\).pdf](file:///C:/Users/Admin/Downloads/2015July2015Elements%20(1).pdf)
- Shu'aib, T. B. (1991). *Essentials of Ramadan: The Fasting Month*. Los Angeles: Islamic Book Center.
- Soh, K., Soh, K., Ruby, H., & Salimah, J. (2010). Physical activity of female Malay Muslims before, during and after Ramadan: physical activity. *African Journal for Physical Health Education, Recreation and Dance*, 16(3), 343-349.
- Srilakshmi, B. (2003). *Food science*: New York: New Age International.
- Stats NZ . (2014). Census Quick Stats about culture and identity: Retrived from <http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-culture-identity/religion.aspx?url=/Census/2013-census/profile-and-summary-reports/quickstats-culture-identity/religion.aspx>
- Stebbins, R. A. (1996). Volunteering: A serious leisure perspective. *Nonprofit and voluntary sector quarterly*, 25(2), 211-224.
- Subhani, A.J. (2014). The Message. Retrieved 25 May 2017, from <https://www.al-islam.org/the-message-ayatullah-jafar-subhani/chapter-48-conquest-makkah>
- Sweileh, N., Schnitzler, A., Hunter, G., & Davis, B. (1992). Body composition and energy metabolism in resting and exercising muslims during Ramadan fast. *The Journal of Sports Medicine and Physical Fitness*, 32(2), 156-163.
- Taoudi, B. M., Roky, R., Toufiq, J., Benaji, B., & Hakkou, F. (1998). Epidemiological study: chronotype and daytime sleepiness before and during Ramadan. *Therapie*, 54(5), 567-572.
- Timeanddate . (2017). *Auckland, New Zealand — Sunrise, Sunset, and Daylength*: Retrieved from <https://www.timeanddate.com/sun/new-zealand/auckland?month=6&year=2017>
- Touzani, M., & Hirschman, E. C. (2008). Cultural syncretism and Ramadan observance: Consumer research visits Islam. In *Advances in Consumer Research*. edited by A. Y. Lee and D. Soman. Duluth, M N: Association for Consumer Research, pp. 374-80.
- Trepanowski, J. F., & Bloomer, R. J. (2010). The impact of religious fasting on human health. *Nutrition journal*, 9(1), 57.
- Ünal, A. (2006). *The Qur'an with Annotated Interpretation in Modern English*. New Jersey: The Light.

- Willett, W. C., Koplan, J. P., Nugent, R., Dusenbury, C., Puska, P., & Gaziano, T. A. (2006). Prevention of chronic disease by means of diet and lifestyle changes. in *Disease Control Priorities in Developing Countries*, edited by Jamison, D.T., Breman, J.G., Measham, A.R., Alleyne, G., Glaeson, M., Evans, D.B., Jha, P., Mills, A., Oxford Univ. Press/World Bank, New York, pp. 833–850.
- Yıldırım-Yenier, Z., Lajunen, T., & Özkan, T. (2016). Driving in the fasting month of Ramadan: an observational study on speeding, horn honking, and using seat belts. *Transportation research part F: traffic psychology and behaviour*, 42, 562-568.
- Zalatimo, D. (1991a). Observing Ramadan. *The Washington Report on Middle East Affairs*, 9(11), 69.
- Zalatimo, D. (1991b). Traditions Important for Children. *The Washington Report on Middle East Affairs*, 9(11), 70.
- Ziaee, V., Razaei, M., Ahmadinejad, Z., Shaikh, H., Yousefi, R., Yarmohammadi, L., . . . Behjati, M. (2006). The changes of metabolic profile and weight during Ramadan fasting. *Singapore medical journal*, 47(5), 409.

## **9 Appendix**

### **Appendix A:**

#### **Letter of support from the program leader [sheikh]of AUT Mosque**

14th March 2017

TO WHOM IT MAY CONCERN

Subject: consultation letter of support for the research topic: Improving nutritional value of Breakfast program at AUT Mosque during month of Ramadan

It gives me great pleasure to write this letter of support to one of our Muslim community senior members, Mr. Abduraouf Ibrahim. The research has taken in consideration the cultural needs and aspects of our community on campus.

The research topic is of great importance to our community as it addresses a very vital issue where Muslims need to apply the prophetic nutritional traditions to their food and life style. Such tradition is not only harmonious with modern Science but also more holistic taking other aspects onboard in such regard.

I wish Mr. Ibrahim all success in his thesis and the best in all his endeavors.

Please contact me if you need further information.

Yours sincerely

Sheikh. Rafat Najm

AUT University Imam

## Appendix B: Participant Information Sheet

The logo for AUT (Auckland University of Technology) is displayed in white text on a black background.

TE WĀNANGA ARONUI  
O TĀMAKI MAKĀU RAU

### Participant Information Sheet

#### Date Information Sheet Produced:

5/05/2017

#### Project Title

Perceptions of the impact of Ramadan on holistic health.

#### An Invitation

Hello, my name is Abduraouf Ibrahim. I am doing my masters in Nutrition and Health Promotion. I would like to invite you to participate in my upcoming research. The research will be used to evaluate the current breakfast program served to the Muslim community at AUT Masjid (Muslim prayer hall) during the month of Ramadan.

#### What is the purpose of this research?

The free breakfast program at the AUT Mosque has been run since September 2006. This program provides between 350 to 500 meals daily to male and female participants. The program runs during Ramadan which is the ninth month in the Islamic calendar. The aims of this research are:-

1. To gather perceptions of the impacts of Ramadan in holistic health.
2. To gather perceptions of members of AUT Mosque on the breakfast program.
3. To evaluate the breakfast program meals at AUT Mosque.

The findings may be used for academic publications and presentations.

#### How was I identified and why am I being invited to participate in this research?

This research will be advertised on noticeboards throughout the AUT Mosque. You have been identified as we are looking for 10 males and 10 females who are Muslim, 18 years or older, who fast at Ramadan, and attend the breakfast program at AUT Mosque during the month of Ramadan. We would like to hear your thoughts on the breakfast program offered at AUT Mosque during Ramadan and how you practice healthy eating during Ramadan. You need to be able to commit about 1 hour, either in the middle or at the end of Ramadan, to participate in the male or female focus group held at AUT city campus.

#### How do I agree to participate in this research?

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You are able to withdraw from the study at any time.

This participant information sheet was distributed to you at the beginning of Ramadan to give you enough time to read and understand. If you have any questions you are most welcome to ask the male primary researcher or the female research assistant.

If you think this research sounds interesting, then all you need to do is contact to the primary researcher or research assistant, and clarify any questions you might have. If you still want to participate, then all you have to do is sign the consent form. We will then organise a suitable day/time for you to attend the focus group.

#### What will happen in this research?

The participants will attend a focus group meeting, held at AUT City Campus, which will take 1 hour. The focus group discussion will be recorded. The recording will be transcribed by the primary researcher, and analysed to find common themes from the discussions.

**What are the discomforts and risks?**

Discomfort or risk is not anticipated. There will be separate focus groups for males and females – the male focus group will be facilitated by the male primary researcher; the female focus group will be facilitated by the female research assistant.

**How will these discomforts and risks be alleviated?**

Discomfort or risk is not anticipated. However, if you have any discomfort or risk please contact the AUT health Counselling and Wellbeing service. AUT Health Counselling and Wellbeing is able to offer three free sessions of confidential counselling support for adult participants in an AUT research project. These sessions are only available for issues that have arisen directly as a result of participation in the research, and are not for other general counselling needs. To access these services, you will need to drop into our centres at WB219 or AS104 or phone 921 9992 City Campus or 921 9998 North Shore campus to make an appointment. Let the receptionist know that you are a research participant, and provide the title of my research and my name and contact details as given in this Information Sheet

**What are the benefits?**

The results of this research will be used to inform changes to future breakfast programs at AUT Mosque. This will be of benefit to the Mosque community in future years.

Participants may gain insight into their personal views around food and healthy eating during Ramadan.

The participant will be better informed because a summary of the project results will be available to participants, and in the AUT Mosque after this research completed.

**How will my privacy be protected?**

There will be no identifying data used in the results.

**What are the costs of participating in this research?**

The cost to participants will be the time to attend the focus group, which is 1 hour. There will be a healthy snack provided during the focus group.

**What opportunity do I have to consider this invitation?**

The information sheets will be available from the start of Ramadan. If you have read this information sheet and you would like to participate, contact the primary research or research assistant below. If you have further questions, he/she can discuss these, or meet with you to go over the research in more detail. If after that you agree to volunteer to participate you will be asked to sign a consent form. If you decide you want to think about it, the primary researcher or research assistant will give you a call back in one week.

**Will I receive feedback on the results of this research?**

Once the program is completed a summary of the project (including feedback of the results) will be available for all participants and through the AUT Mosque.

**What do I do if I have concerns about this research?**

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor,

Heather Came, email address [heather.came@aut.ac.nz](mailto:heather.came@aut.ac.nz), phone 099219999ext7799.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, Kate O'Connor, [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz), 921 9999 ext 6038.

**Whom do I contact for further information about this research?**

Please keep this Information Sheet and a copy of the Consent Form for your future reference. You are also able to contact the research team as follows:

***Researcher Contact Details:***

Primary Researcher: Abduraouf Ibrahim, email [kiko500020@yahoo.com](mailto:kiko500020@yahoo.com) phone 0224397762

Research Assistant: Marwa Khalifa, email [omarmarwa247@gmail.com](mailto:omarmarwa247@gmail.com) phone 0221709620

***Project Supervisor Contact Details:***

1. Dr Heather Came, email address [heather.came@aut.ac.nz](mailto:heather.came@aut.ac.nz) , phone 09 9219999 ext7799.
2. Dr Carolyn Cairncross, email address Carolyn.[Cairncross@aut.ac.nz](mailto:Cairncross@aut.ac.nz) phone 09 9219999 ext7609

**Approved by the Auckland University of Technology Ethics Committee on *type the date final ethics approval was granted*, AUTEK Reference number17/75 on 15 May 2017.**

**Appendix C:  
Confidentiality agreement**



*For an intermediary or research assistant.*

*Project title: xxx*

*Project Supervisor: xxx*

*Researcher: xxx*

- I understand that all the material I will be asked to record is confidential.
- I understand that the contents of the Consent Forms, tapes, or interview notes can only be discussed with the researchers.
- I will not keep any copies of the information nor allow third parties access to them.

Intermediary's signature:

.....

Intermediary's name:

.....

Intermediary's Contact Details (if appropriate):

.....  
.....  
.....  
.....

Date:

Project Supervisor's Contact Details (if appropriate):

.....  
.....  
.....

***Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number***

*Note: The Intermediary should retain a copy of this form.*

**Appendix D:  
Consent form**

**AUT**

TE WĀNANGA ARONUI  
O TĀMAKI MAKĀU RAU

**Consent Form**

**Perceptions of the impact of Ramadan on holistic health.**

*Project Supervisor: Dr Heather Came*

*Researcher: Abduraouf Ibrahim*

- I have read and understood the information provided about this research project in the Information Sheet dated ...../...../.....
- I have had an opportunity to ask questions and to have them answered.
- I understand that identity of my fellow participants and our discussions in the focus group is confidential to the group and I agree to keep this information confidential.
- I understand that notes will be taken during the focus group and that it will also be audio-taped and transcribed.
- I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without being disadvantaged in any way.
- I understand that if I withdraw from the study then, while it may not be possible to destroy all records of the focus group discussion of which I was part, I will be offered the choice between having any data that is identifiable as belonging to me removed or allowing it to continue to be used. However, once the findings have been produced, removal of my data may not be possible.
- I agree to take part in this research.
- I wish to receive a summary of the research findings (please tick one): Yes   
No

Participant's signature:

.....

Participant's name:

.....

Date:

.....

***Approved by the Auckland University of Technology Ethics Committee on type the date on which the final approval was granted AUTEK Reference number type the AUTEK reference number 17/75 on 15 May 2017.***

*Note: The Participant should retain a copy of this form.*

***Appendix E:***  
**Focus group questions**

The logo for AUT (Auckland University of Technology) is displayed in white, bold, sans-serif capital letters on a black rectangular background.

TE WĀNANGA ARONUI  
O TĀMAKI MAKĀU RAU

Perceptions of the impact of Ramadan on holistic health.

**Focus group questions**

1. What does Ramadan mean to you?
2. How does Ramadan impact on your holistic health?
3. How do you think about the breakfast program?
4. What the most satisfying things in the breakfast program at AUT mosque?
5. What needs improvement?
6. What do you think would make you healthier in Ramadan?

## Appendix F: Ethical approval



Auckland University of Technology  
D-88, WU406 Level 4 WU Building City Campus  
T: +64 9 921 9999 ext. 8316  
E: [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz)  
[www.aut.ac.nz/researchethics](http://www.aut.ac.nz/researchethics)

15 May 2017

Heather Came

Faculty of Health and Environmental Sciences

Dear Heather

Re: Ethics Application: **17/75 Perceptions of the impact of Ramadan on holistic health**

Thank you for your request for approval of amendments to your ethics application.

The change to the title and the data collection protocols (to include focus groups) is approved.

I remind you of the Standard Conditions of Approval.

1. A progress report is due annually on the anniversary of the approval date, using form EA2, which is available online through <http://www.aut.ac.nz/researchethics>.
2. A final report is due at the expiration of the approval period, or, upon completion of project, using form EA3, which is available online through <http://www.aut.ac.nz/researchethics>.
3. Any amendments to the project must be approved by AUTEK prior to being implemented. Amendments can be requested using the EA2 form: <http://www.aut.ac.nz/researchethics>.
4. Any serious or unexpected adverse events must be reported to AUTEK Secretariat as a matter of priority.
5. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEK Secretariat as a matter of priority.

### Non-Standard Conditions of Approval

1. Provision of the AUT logo on the recruitment advertisement.

Please quote the application number and title on all future correspondence related to this project.

AUTEK grants ethical approval only. If you require management approval for access for your research from another institution or organisation then you are responsible for obtaining it. If the research is undertaken outside New Zealand, you need to meet all locality legal and ethical obligations and requirements.

For any enquiries, please contact [ethics@aut.ac.nz](mailto:ethics@aut.ac.nz)

Yours sincerely,



Kate O'Connor

Executive Manager

**Auckland University of Technology Ethics Committee**

**Appendix G:  
Advertising of the focus group**



■ Assalam Alaikom

Dear respected all;  
I would like 20 volunteers (10 males and 10 females)  
to participate in a focus group discussion for how we  
practice healthy eating during Ramadan.  
This focus group will be in the third week in Ramadan and  
it will take time 1 hour maximum  
Your participation will be very much appreciated.  
Some healthy snacks will be available for the participants

*for more information please contact with  
Brother Abduraouf Ibrahim phone 0224397762  
Sister Marwa Khalifa phone 0221709620*

