



A qualitative exploration of the impact of knowledge and perceptions about hypertension in medication adherence in Middle Eastern refugees and migrants



Wejdan Shahin ^{a,*}, Gerard A. Kennedy ^{b,c}, Ieva Stupans ^a

^a School of Health & Biomedical Sciences, RMIT University, PO Box 71, Bundoora, Victoria 3083, Australia

^b School of Science, Psychology and Sport, Federation University, University Drive, Mount Helen, Ballarat, Melbourne, Australia

^c Institute for Breathing and Sleep, Austin Health, 145 Studley Road, Heidelberg, Melbourne, Australia

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ABSTRACT

Background: Knowledge and perceptions about chronic disease and medications play a crucial role in determining long-term treatment adherence to diseases such as hypertension. Exploring in depth the barriers and enablers to medication adherence in specific population subgroups such as Middle Eastern refugees and migrants in Australia is important. This may provide a better understanding of each of these groups' beliefs and knowledge and suggest strategies and interventions to improve medication adherence.

Objectives: This study aimed to understand Middle Eastern refugees' and migrants' experiences, perceptions, and knowledge about hypertension and to explore factors affecting medication adherence.

Methods: In this study 15 participants who identified themselves as Middle Eastern refugees and migrants in Australia and had been diagnosed with hypertension were interviewed (migrants = 5, refugees = 10) using semi-structured interviews. Recorded interviews were analysed using a thematic analysis framework and the findings were reported according to consolidated criteria for reporting qualitative research.

Results: Three key themes emerged from the interview analysis: (1) dealing with the illness in terms of understanding the symptoms and causes, self-managing of high blood pressure, and coping and acquaintance with the illness; (2) beliefs, practices around medication adherence and the barriers and facilitators to taking medications regularly; and (3) healthcare encounters represented by participants trust in healthcare providers. Differences were found between refugees and migrants relating to the understanding, control, and coping with hypertension, beliefs about medications, trust of healthcare providers, and taking medications as prescribed. There were also differences in the social context of the two groups.

Conclusion: Understanding the factors that prevent adherence to hypertension in Middle Eastern refugees addressed the gap in the literature regarding refugees' beliefs and medication adherence. Future studies are recommended to assess the improvement in medication adherence in refugees by modifying their beliefs, attitude, and knowledge about medications and illness. In addition, healthcare providers should consider the differences between Middle Eastern refugees and migrants when providing the health advice that targets each of these population independently to ultimately improve their overall health and adherence to medications.

1. Introduction

Essential hypertension can be defined as a rise in blood pressure of unknown cause that increases risk for cerebral, cardiac, and renal events.¹ It is the leading risk factor for premature death and disability worldwide. The numbers of people affected by hypertension is increasing. Its prevalence rises with age, irrespective of the type of blood pressure measurement and the operational thresholds used for diagnosis.² Worldwide, uncontrolled hypertension is believed to be the cause of 13.5% of premature

deaths and 6% of lost years of life due to death or disability.³ Based on data from the 2017–18 Australian Bureau of Statistics National Health Survey, over 34% of Australians have high blood pressure.⁴

The World Health Organization defines adherence as “the extent to which a person's behaviour of taking medication corresponds with agreed recommendations from a healthcare provider”.⁵ Medication adherence is the result of an interplay between several factors including, illness characteristics, social context, patient views, medications and culture.^{6,7} Non-adherence to medications is well established as an important contributor

* Corresponding author.

E-mail addresses: wejdan.shahin@rmit.edu.au (W. Shahin), g.kennedy@federation.edu.au (G.A. Kennedy), ieva.stupans@rmit.edu.au (I. Stupans).

to poorly controlled hypertension.⁸ In literature, healthier dietary patterns, better exercise self-efficacy and adequate sleep were found to manage poor adherence to medication in Australian with high blood pressure.⁹ However, management of adherence to antihypertensive medications can be particularly challenging for vulnerable groups including, homeless, elderly, and poor patient. Furthermore, refugees for whom factors including, prior trauma, poor living conditions, linguistic and cultural differences, false perceptions related to medications, symptoms and causes of hypertension may affect adherence.^{10,11}

The migration phenomenon is one of the most dramatic global challenges, as the latest forced displacement estimates by the UN Commissioner for Refugees (UNHCR) has reached an unprecedented level in 2015, showing that 19.6 million refugees have been forcibly displaced because of persecution, armed conflict, generalised violence, or human rights violations.¹² Each year, Australia offers resettlement to 18,750 refugees - a higher per capita resettlement rate than any other developed country,^{13,14} with the current top countries of origin being Syria and Iraq.¹⁵

Although modern migratory patterns can make it sometimes difficult to distinguish between the various groups on the move, it is important to keep on mind that refugees are not migrants and confusing this terminology is detrimental and leads to problems for both populations.¹⁶ A Middle Eastern refugee defined as a person who fled their country because of the war or violence to find safety in another country.¹⁷ They leave behind their homes, most or all their belongings, family members and friends, and are forced to flee because of the risk and persecution with little or no warning and cannot return home.¹⁸ Middle Eastern migrants on the other hand make a conscious choice to leave their country to seek a better life elsewhere. They plan their travel, seek information about their new destination, study the language, and explore employment opportunities, take their belongings, and can say goodbye to their family or friends. Most importantly, they are free to return home at any time.¹⁸ Although, refugees and migrants may sometimes share the same migration experience including, conditions endured during transit and the mode of travel that can increase the vulnerabilities to chronic illnesses, such as hypertension,¹⁹ several factors have been identified that differentiate refugees and migrants across a number of personal and social dimensions that may impact on their perceptions about, and adherence to, medications.²⁰

It has become well-established in the literature that the burden of hypertension is more pronounced in vulnerable populations including refugees.²¹ It leads to a decrease in the quality of life, increase morbidity and mortality, and increase the poverty of these populations.²¹ Additionally, management of hypertension is a challenging process in these populations.²² In a recent systematic review, it was found that refugees showed suboptimal levels of medication adherence compared to other populations.²³ In particular, refugees from Middle East in Australia showed a 60% rate of non-adherence to antihypertensive medications.²⁰ Several theories and models focused on illnesses, psychological behaviour and medication perceptions have been developed to understand the reasons for limited adherence in different populations.²⁴⁻²⁶ However, limited work focusing on Middle Eastern refugees that may explain their limited adherence to prescribed medications has been undertaken.

A study conducted in Australia to compare Iraqi with Australian patient's medication adherence and to evaluate the predictors of cardiac medication adherence behaviour. Iraqi patients were found to have lower level of adherence than Australian patients. In addition, the ability to correctly self-administer and refill medications, and beliefs about cardio-protective medication were identified as independent predictors of cardiac medication adherence behaviour in both Australian and Iraqi participants.²⁷

Another two cross-sectional studies assessed more than 300 participants of Middle Eastern refugees and migrants in Australia found that refugees have lower levels of adherence compared to migrants from the same countries of origin. The findings of these studies suggest that the reasons behind the differences in medication adherence contribute to refugees' and migrants' differing perceptions of illness, culture and medications.^{20,28} Research highlights the need for patient-centred interventions and processes to improve medication adherence.²² Therefore, understanding these

beliefs, and the differences between the two groups regarding their perceptions is crucial for developing interventions oriented towards better adherence to prescribed medications. In addition, understanding the differences between the two groups will improve healthcare providers' ability to provide optimal care that meets the needs of this expanding and vulnerable population.

To the best of the authors' knowledge, this is the first qualitative study to explore the differences between Middle Eastern refugees and migrants, in Australia, regarding their personal, and cultural beliefs, about a specific chronic health condition and medications used in the treatment of that health condition.

2. Methods

2.1. Participants

Inclusion criteria were as follows; being a Middle Eastern refugee or migrant and being diagnosed with essential hypertension.

All refugees were recruited through Victorian Arabic Social Services (VASS) - a not-profit association providing support to people of Arabic speaking background communities in Victoria. Migrants were recruited through snowball sampling.

Participants were initially made aware of the study using a poster which described the aim, inclusion criteria, and the phone number of Victorian Arabic Social Services (VASS) case manager. Phone numbers of the participants who inquired and met the inclusion criteria were provided by the VASS case manager to one of the researchers. Participants were provided with a plain language statement about the research project by VASS case manager who contacted the participants, explained the study and obtained consent from them. The interviews were conducted during a period of seven months from beginning of Dec. 2019 to the end of June 2020. There was no relationship established with the participants prior to study commencement. All participants were provided with \$20 vouchers for taking part.

2.2. Study design

Individual qualitative telephone interviews were carried out by a female PhD researcher and ranged from 15 to 30 min in duration. Telephone interviews were conducted in Arabic, audio recorded, transcribed, and translated to English by two bilingual researchers independently (redacted). To ensure accuracy and validity, translated transcripts were read by two English native researchers (redacted) and discrepancies resolved by comparing the English version transcripts. Transcripts were not returned to interviewees for comment, correction, or feedback on the findings. When data saturation occurred, and no new themes emerged no further interviews were deemed necessary. Reporting of this study is in line with the Consolidated criteria for reporting qualitative research (COREQ).²⁹ (Appendix 1).

The interview discussion guide was focused around four main areas: (1) perceptions about the illness; (2) medication beliefs and adherence and (3) healthcare encounters. In addition, the interviews commenced with the interviewer asking the participants to describe their journey to Australia (Appendix 2). The interview questions for the discussion guide were written by one researcher, and then discussed with another two researchers to ensure the clarity and relevance of the questions. Ethical approval was obtained from (redacted) 60-19/22299.

2.3. Analysis

Thematic analysis was used to analyse the transcripts.³⁰ The qualitative thematic analysis consisted of the following steps: (1) reading and rereading the interview transcripts to get closely familiar with the data; (2) generating initial codes which were clustered into related ideas (categories); (3) pulling the categories together to generate themes; and (4) illustrating each theme and defining it with reference to the transcripts.³¹

Two researchers (WS, IS) independently read and reread the full transcripts to become familiar with the interviews before generating any codes. Once familiar with the entire breadth of the data, the two researchers independently highlighted the data of interest, to identify the codes. This ‘blind coding’ approach was an attempt to ensure the integrity of the identified codes by reducing misinterpretation of codes, avoiding the influence of preconceptions of individual researchers and reducing the possibility of individual researcher bias.³² The codes were subsequently combined into categories and in turn the categories were grouped in themes that were finally discussed with a third researcher GK to resolve any disagreements between IS and WS.

3. Results

3.1. Demographics

The study participants; refugees (*n* = 10), and migrants (*n* = 5) were all from the Middle East and were diagnosed with essential hypertension and were predominantly female (87%). Refugees reported themselves as non-workers, and on average had resided in Australia for 10 years. Migrants primarily described themselves as workers and had resided in Australia for an average of 13 years. The mean age and duration of hypertension of refugees were 59, 9 years respectively while the mean age and duration of hypertension for migrants were 52, 12 years respectively (Table 1).

3.2. Themes derived from the interviews present the differences between refugees and migrants

Three key themes emerged from the interview analysis: (1) dealing with the illness, (2) beliefs and practices around medication adherence, and (3) healthcare encounters represented by participants trust in healthcare providers.

3.2.1. Dealing with the illness

This theme described refugees and migrants' experiences before and after being diagnosed with hypertension and is captured by three different categories: (1) understanding of the illness; (2) coping and acquainted with the illness; and (3) self-managing of hypertension.

In terms of causes of hypertension, some refugees attributed the causes of hypertension to the traumatic experiences and stress associated with the migratory experience - “I spent long time not hearing any news about my family, all the circumstances that we faced, kidnapping, killing, and bombing next to us. All this affect my health and causes my hypertension.”—Refugee 8. Others attributed having hypertension to supernatural beliefs, including God's will, fate or bad luck - “I believe that this illness is related mainly to people's luck. Every person has his/her own fate. I know some people who are older than me but do not have the same issues that I have. It is all a matter of fate and luck”—(Ref. 6).

Lack of social support is another factor that refugees contribute to their hypertension. - “I don't have a family. I live here with my daughter; I don't have a home. Sometimes my daughter husband behaves badly with my daughter and her kids. This really affects my health and the real cause for my hypertension is the loneliness”—(Ref. 6).

Migrants on the other hand referred to having hypertension due risk factors - “I know that blood pressure is related to cardiovascular problems, obesity, and salty food. In my case I am sure that this related to hereditary factors - (Mig 6).

Additionally, refugees in this research expressed difficulties in accepting being diagnosed with hypertension, denying having any illnesses because they do not feel any symptoms or they showed limited understanding of the symptoms of hypertension by attributing incorrect symptoms to having hypertension - “I know that I do not have any symptoms or hypertension. I do belief (sic) that my blood pressure only rises when I have stress or feeling sad” (Ref. 4).

“I know that when you have hypertension, your head become red and inflated from inside.”—(Ref. 4). In comparison, migrants accept the fact of having a chronic illness despite their knowledge of the asymptomatic nature of the illness -, It runs in my whole family. So, the reason for sure is related to my family.....” I have no specific symptoms, this illness has no symptoms actually,”—(Mig. 2).

In respect of coping with the transition from being a healthy individual to having hypertension, refugees reported the negative emotional and physical impacts imposed on them by this illness - “This illness affects me very badly. I feel really depressed, I cannot control myself, I stay all the time in home because I am really depressed and keep fainting because of this illness”—(Ref. 3). In contrast, migrants showed good problem-focussed coping with having a chronic condition - “All people have blood pressure. What should I do? I tried to keep my food healthy, this is what I can do.” (Mig 1).

Friends are the predominant source of the misleading information for some of refugees - “One of my friends advised me to take aspirin to control this illness, and to stop taking it before 70 this will help my blood pressure and improve my health.”—(Ref. 8). On the contrary, reading, and healthcare providers are the primary sources of information for migrants to understand this illness -“I got all my information about hypertension from the doctors that I visit regularly.”—(Mig. 5). The last category in this theme was generated from the various ways reported by refugees and migrants to control hypertension. For example, some refugees reported that taking deep breaths, fasting, or applying a cold compress to the head may help control the illness - “When I feel my blood pressure rises, I usually apply cold compressor to my head and drink a lot of water” - (Ref. 4). Diversely, migrants preferred measuring blood pressure regularly, engaging in physical activity, and avoiding salty food - “I measure my blood pressure every day especially early morning” —(Mig.1). Details in Table 2.

Table 1
Participants age, sex, country of birth, occupation, years since arrival and duration of illness.

Participant ID	Age (years)	Country of birth	Sex	Occupation	Place of diagnosis
Refugee 1	59	Lebanon	Female	House keeping	Australia
Refugee 2	54	Iraq	Female	House keeping	Australia
Refugee 3	50	Lebanon	Female	House keeping	Australia
Refugee 4	75	Iraq	Female	House keeping	Australia
Refugee 5	65	Iraq	Female	House keeping	Australia
Refugee 6	50	Syria	Female	House keeping	Australia
Refugee 7	60	Iraq	Female	House keeping	Australia
Refugee 8	57	Iraq	Female	House keeping	Australia
Refugee 9	75	Iraq	Female	House keeping	Australia
Refugee 10	47	Syria	Female	House keeping	Australia
Migrant 1	50	Iraq	Male	Working	Australia
Migrant 2	45	Jordan	Male	Working	Jordan
Migrant 3	59	Palestine	Female	House keeping	Australia
Migrant 4	51	Jordan	Female	Working	Jordan
Migrant 5	53	Jordan	Female	Working	Australia

Table 2
Themes extracted from refugees' interviews.

Theme 1: Dealing with hypertension		
Categories	Quote (Refugee)	Quote (Migrants)
Causes attribution	<p>Migratory and distress experience</p> <p>"I spent long time not hearing any news about my family, all the circumstances that we faced, kidnapping, killing, and bombing next to us. All this affect my health and causes my hypertension." —Refugee 8.</p> <p>Supernatural beliefs</p> <p>"I believe that this illness is related mainly to people's luck. Every person has his/her own fate. I know some people who are older than me but do not have the same issues that I have. It is all a matter of fate and luck"—Refugee 6.</p> <p>"I don't know why I have this illness; this is God's will. Everything happens because God wants them to happen" —Refugee 9.</p> <p>Lack social support</p> <p>"I don't have a family. I live here with my daughter; I don't have a home. Sometimes my daughter husband behaves badly with my daughter and her kids. This really affects my health and the real cause for my hypertension is the loneliness"—Refugee 6.</p>	<p>Risk factors</p> <p>"I know that blood pressure is related to cardiovascular problems, obesity and salty food. In my case I am sure that this related to hereditary factors. It runs in my whole family. So, the reason for sure is related to my family - Migrant 2</p> <p>I know that the blood pressure is the flow of the blood is higher than the cross sectional of the arteries or veins, maybe because of cholesterol blockage or any other reasons that may affect blood flow. I need to take care of my food, especially the salty food, hormones affect as well. – Migrant 5</p>
	Symptoms	<p>Incorrect symptoms</p> <p>"I know that when you have hypertension, your head become red and inflated from inside."—Refugee 4.</p> <p>"I experience a lot of symptoms related to this illness, I have become to forget a lot because of hypertension."—Refugee 6.</p> <p>Asymptomatic nature</p> <p>"I had beliefs that I don't have any illness, I don't feel anything, so I did not take any medications."—Refugee 8.</p> <p>"I know that I don't have any symptoms or hypertension because my blood pressure only rises when I have stress or feeling sad"—Refugee 4.</p>
Coping and acquainting with hypertension	<p>Impact of illness on emotional and physical life</p> <p>"This illness really affects my life. I do not know how this illness will stop, whatever I do it does not stop. I feel sad because I cannot control myself or my blood pressure. —Refugee 4.</p> <p>Having hypertension affects my life widely. I have started to forget everything. It affects me badly – Refugee 6.</p> <p>Sources of health information</p> <p>"Within the social group, they educate me about hypertension, but I did not understand, I totally forget." —Refugee 7.</p> <p>"One of my friends advised me to take aspirin to control this illness, and to stop taking it before 70 this will help my blood pressure and improve my health."—Refugee 8.</p>	<p>Impact of illness on emotional and physical life</p> <p>"All people have blood pressure. What should I do? I tried to keep my food healthy, this is what I can do." Migrant 1</p> <p>"Hypertension does not affect my life at all". Migrant 2</p> <p>Sources of health information</p> <p>"I read a lot about my hypertension. Especially when you know that you have a chronic illness, you have to read about it."—Migrant 4.</p> <p>"I got all my information about hypertension from the doctors that I visit regularly."—Migrant 5.</p>
	Self-management of hypertension	<p>"When I feel my blood pressure rises, I usually apply cold compressor to my head and drink a lot of water. If this process does not work, I take the medicine"—Refugee 4.</p> <p>"I feel much better if I fast. Fasting relieves me, and I take aspirin daily as one of my friends recommended this" —Refugee 8.</p>
Theme 2: Beliefs and practices around taking medications		
Necessity beliefs	<p>"I do not feel worse, even when I am not taking my medications frequently"—Refugee 4.</p> <p>"My medications do not cure me; it might reduce the problem but not cure it"—Refugee 3.</p>	<p>Not taking medications will affect health badly as after a while people may develop heart illnesses and other complications" – Migrant 2.</p> <p>"I may develop heart failure or any other chronic conditions if I did not adhere to taking my medications" - Migrant 3.</p> <p>–</p>
Harm and concern beliefs	<p>"Medications will hurt me, make me feel depressed, and will hurt my body and make me feel worse"—Refugee 1</p> <p>"I feel that they make me worst. My stomach hurts me because of these medications."—Refugee 5.</p>	–
Remembering and forgetting taking medications	<p>"I don't take them regularly. I forget to take them. All the things that I faced in my life, make me struggle in this life. All this stress on my life make me forget to take them". — Refugee 7.</p> <p>"I forget taking my medication so often. I feel that I want to sleep, and I have no willing to take the medicine. Sometimes when I feel tired, I take one tablet. – Refugee 6</p>	<p>Routine to remember</p> <p>"I have never forgotten taking my medication. To keep remember it, I link it to the early morning coffee that I drink every day."—Migrant 3.</p> <p>"I take my medication regularly; I keep taking it after each breakfast. I assign the time for taking the medication to be with the breakfast."—Migrant 4.</p> <p>Using Pill Box</p> <p>"I take my medications regularly, I put all my medications in a pillbox and put it in front of me, this keep me all the time remember my medications." —Migrant 1</p>
Theme 3: Healthcare encounters		
Categories	Quote (refugee)	Quote (Migrant)
Trusting relationship and personal expectations	<p>"Any medication that the doctor prescribed, I asked my neighbour, which is an Arabic nurse, to double check on these medications. Usually doctors do not admit their mistakes if they do any"—Refugee 9.</p> <p>"I am visiting a GP in Australia, but what I need to tell you that visiting a GP is useless. He is not doing anything. I faced a lot of troubles with my health. I told the GP to help me to write a letter to the Centrelink so they can increase the money they give me, but they did nothing."—Refugee 7.</p>	<p>"When the GP asks me to follow one recommendation, he is doing this for my own benefit, they do not have any personal reasons"—Migrant 1.</p> <p>"The healthcare system is different here- better. It can detect any mistake a GP or a pharmacist can do. I believe that GPs will admit any mistake they do". – Migrant 2.</p>
	Language-barrier affecting the choice of healthcare providers	<p>"I visit a GP every 3 months, an Arabic speaking doctor. She knows my language and understand my circumstances."—Refugee 5.</p> <p>"I visited an Arabic GP, because I don't know how to talk in English,"—Refugee 6.</p>

3.2.2. Beliefs and practices around medication adherence

In this theme, refugees and migrants discussed their experience with medications, and the reasons behind their adherence or non-adherence to prescribed anti-hypertensive medications. Refugees reported that they do not take their medications regularly or do not take them at all. In addition to commonly reported unintentional reasons, such as forgetfulness – “Sometimes I forget to take it because I sleep over—(Ref. 4)”. Some refugees may have chosen not to take their medications for various reasons including, no perceived necessity for taking medications- “These medications are useless – (Ref. 5)”, or they perceived medications as being harmful substances - “Medications will hurt me, make me feel depressed, and will hurt my body and make me feel worse- (Ref. 1)”, As mentioned previously, a few of them denied having any illness to take medications for – “I had beliefs that I don't have any illnesses, so I did not take any medications”- (Ref. 8). Others preferred lifestyle modifications rather than taking medications - “Sometimes the doctor needs to understand patient's mood and their choice not to take medications and to give them some other advices that might help, such as walking or changing diet—(Ref. 1)”.

On the other hand, migrants perceived the necessity of taking medications to their health and focusing on the importance of adhering to medications by taking them regularly, highlighting some strategies that they used to remind themselves to take prescribed medications. One migrant for example, mentioned using organisational tools – “I take my medications regularly, I put all my medications in a pillbox and put it in front of me, this keep me all the time remember my medications— (Mig. 1)”, and some other migrants developed a daily routine, that served as a reminder, by combining taking their medications with other daily activities including daily morning coffee, having lunch or breakfast meal – “I have never forgotten taking my medication. To keep remember it, I link it to the early morning coffee that I drink every day—(Mig.3)”. For details see [Table 2](#).

3.2.3. Healthcare encounters

This theme differentiates between refugees and migrants in terms of the relationships with their healthcare providers. Refugees recalled experiences in which they claimed that physicians had mistakenly prescribed medications to them or to their acquaintances. This resulted in their low trust levels in their healthcare providers - One day a doctor has prescribed a medication to me called TRAMADOL because of my headaches, he prescribed 2 tablets together. When I took these two tablets, I felt that I lost my consciousness and I stayed two days instable (sic) (Ref. 8). Refugees also, anticipated that doctors would not admit their mistakes if they made any - there is no doctors who will admit doing something wrong. This happened to many cases that I know very well.”— (Ref. 1). In addition, all refugees in this study explained their preferences to visiting Arabic healthcare providers, whom they believe are more likely to understand their language and their circumstances - “I visited an Arabic GP, because I don't know how to talk in English,”—(Ref. 6). On the other hand, migrants discussed their trust relationship in their healthcare providers, and their high level of adherence in following their recommendations. - When the GP asks me to follow one recommendation, he is doing this for my own benefit, they do not have any personal reasons”— (Mig. 1). “I trust doctors very much and almost following 95% of their recommendations”. - (Mig. 4). In addition, migrants showed no preferences about doctor's background or language. They selected their doctors according to their availability, and proximity to their residential addresses.

4. Discussion

This qualitative study is the first in Australia to shed light on Middle Eastern refugees' and migrants' perceptions regarding illnesses, medications, and cultural beliefs. In addition, this study details why it is important for healthcare practitioners not to consider refugees and migrants from the same ethnic background as a single population. Through understanding the differences between both groups regarding perceptions, barriers and facilitators to medication adherence a reason for adherence and non-adherence become apparent.

The main findings of this study showed that refugees choosing not to take their medications. They demonstrated several barriers to adherence, denying that they had hypertension, they reflected negative beliefs about hypertension, and attributed the causes of illness to their distressing migratory experience, or religious or supernatural beliefs. They also demonstrated lack of understanding of the symptoms of hypertension. Knowing the factors that affect adherence could play a significant role in the development of interventions to improve adherence.³³

The findings of a number of studies in the literature which have evaluated refugees' health beliefs and adherence to medications are consistent with those in this study.^{34,35} However, none of these previously published studies focused on addressing the direct impact of these beliefs on medication adherence or evaluated the differences between refugees and migrants. Two qualitative analyses which compared the health beliefs of Middle Eastern migrants and Caucasians, found that Middle Eastern migrants in Europe have negative beliefs about their health and illness in comparison to the Caucasian population.^{36,37} However, in these studies, refugees and migrants were considered as a single population and treated under the same umbrella. The findings of our study indicate that this would lead to erroneous conclusions because they showed very different responses in terms of beliefs and adherence.

A conceptual framework ([Fig. 1](#)) has emerged from our study to identify several modifiable targets to enhance medication adherence of Middle Eastern refugees in Australia. This framework encompasses facilitators of taking medications suggested by migrants' and refugees' views and beliefs.

Migrants confirmed relying on healthcare providers as the most trusted source of health information about symptoms, causes and medications, contributed to their trust in healthcare providers. Patients who have high trust in physicians, are more willing to disclose their personal and medical information and more likely to seek medical opinions from healthcare providers and vice versa.³⁸

Trust relationships affect whether health information is disclosed and also whether it is taken on board and thus impacts medication adherence. This was confirmed by our findings and aligns with the literature. Refugees who have little trust in their physicians are more likely to seek a second medical opinions and obtain health advice from non-physicians, such as their friends, and family.³⁹ Improving refugees' trust is a modifiable factor, and an important facilitator in maintaining medication adherence.⁴⁰ This would contribute to a better care experience, and alleviate anxiety and distress that refugees may have, and enhance their involvement in decisions about their care.⁴¹ Healthcare providers' communication training focused on positive and empathic communication would improve refugees' satisfaction, adherence and trust.⁴²

Inadequate health literacy may be a marker of barriers associated with provider-patient communication, undesirable health behaviours, or negative beliefs regarding aspects of disease management, such as medication adherence.⁴³ It can be expected that refugees who navigate a new country, language and culture may have a low health literacy, that affects their self-managing with respect to their illness and the taking of medications. Improving health literacy in this population would have a positive potential impact on refugees' confidence, to manage their health. Health literacy in refugee populations could be tackled by multifaceted, multidisciplinary interventions and policies carried out by healthcare providers.⁴⁴

The level of knowledge that underpins a person's beliefs about medications and illness determines medication taking behaviour.⁴⁵ Migrants in this study had a good understanding of their illness, and accepted healthcare providers' advice, and thus, they were more confident in their ability to control their blood pressure. It was demonstrated previously that patients who attributed their hypertension to external factors, similarly to refugees in our study, may lack the understanding of their illness, and are not able to control their blood pressure.⁴⁵ In addition, refugees differed as they discussed the influence of religion and their supernatural beliefs, leading to even poorer understanding of their illness and potentially a poorer adherence to medications. Refugees also frequently made more references to God's will and the subordinate necessity of taking medications. It would be difficult to modify refugees' religious beliefs; however, healthcare

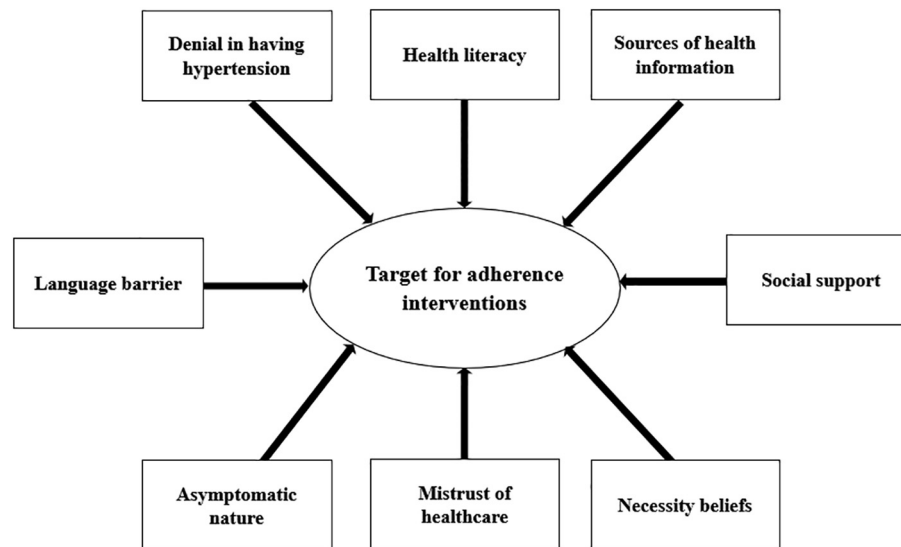


Fig. 1. Targets for adherence interventions obtained from the themes of the interviews.

providers may assess, understand these beliefs, and consider them to tailor specific and targeted counselling to this population.

Refugees commonly reported lack of awareness of having hypertension, potentially due to the asymptomatic nature of hypertension. However, this negatively impacted the necessity to take medications. Educational interventions may change refugees' necessity beliefs about medications and thus increase knowledge about hypertension and its treatment. This may prevent misunderstandings regarding the asymptomatic nature of the illness, necessity beliefs about medications, and promote medication adherence.⁴⁶

Several factors influencing the level of refugees' knowledge of the illness and medications outlined in the literature include a knowledge gap that varies between the refugee population, and health-care providers. Further, severe experiences related to refugee's experience and acculturation stress because of adaptation problems in a new society, due to cultural dissimilarities.³⁷

Distress among refugees in this study is better understood in the context of the challenges of adaptation post-migration in Australia. Several factors consistently predict distress among refugees including, lack of social support, unemployment, and poverty. In addition, the most significant predictor of the distress post migration is poor language proficiency.⁴⁷

Language is known as one of the major barriers for refugees in general practice.⁴⁸ Refugees who confirmed in this study their limited English language, are less likely to engender empathic response from doctors, receive enough information about their health or participate in decision making.⁴⁹ This can be seen, when refugees with language barriers have access to healthcare, they would have lower satisfaction with care provided, and reinforce mistrust in physicians, thus poorer understanding of their diagnoses, and lower adherence to medications would be anticipated.⁵⁰

In contrast, migrants in this study indicated that their good understanding to English language facilitates their adaptation to Australian culture, enables them to participate in employment and other opportunities, and increases trust to healthcare providers in the Australian community.

4.1. Recommendations for future studies and impact on clinical practice

This study gives insight and recommendations for future studies that would address medication non-adherence of Middle Eastern refugees by targeting the barriers and modifiable factors mentioned by them. To enhance medication adherence, educational programs are needed to close gaps between refugees and healthcare providers. These programs may promote refugees' understanding of their health, and illnesses, and may enhance refugees' ability to control their illness and overall, increase the

adherence to medications.²⁰ Interventional studies should focus on improving medication adherence by changing refugees' illness and medication knowledge.

Learning language is another modifiable factor that may potentially positively impact medication adherence and health outcome of refugees. It was reported before that understanding English language is associated positively with the culture adaptation in the host country, thus better medication adherence.^{42,51} Having the opportunity to improve oral language proficiency through interaction with native English speakers might be a good reason for refugees to seek a higher level of contact with Australians,⁵² thus better acculturation, healthcare access, adherence to medications and better overall health.⁵³

Regarding the difficulties with the language in healthcare centres, this may be resolved by using mobile technologies that can translate for interpretation such as Google Translate or CALD-Assist (an Australian application that uses pre-recorded text words and phrases along with pictures and videos for healthcare providers to facilitate communication when interpreters are not available or not practical).⁵⁴ Health facilities also may benefit from bilingual staff able to consult directly. If perfectly bilingual, such medical encounters yield better patient recall and allow patients to ask more questions.⁵⁵

Another factor of refugees' distress and poor health is the lack of social support. Our study confirmed the importance of receiving social support as a facilitator of medication adherence. Social support is a potential solution that has been found to build and foster psychological wellbeing in refugee populations.⁵⁶ This support can be provided by health professionals who speak the refugees' language to ensure that their concerns receive serious consideration, and their support needs are communicated. In addition, accessibility to support programmes was important in the view of these refugees and could be enhanced by providing transportation, translation, childcare, and community venues.⁵⁷

Although some of the above-mentioned factors have been identified before including, health literacy, mistrust in healthcare providers, and necessity beliefs of taking medications,⁵⁸ the other factors emerged from this study were not highlighted sufficiently and deserve some consideration to enhance medication adherence.

4.2. Limitations

Some limitations of this study must be considered. Most of the interviewed participants were female and all the interviews were conducted by phone. This could have an impact on the interpretation of the findings. In addition, the data from a qualitative study are limited.

5. Conclusion

Refugees hold different beliefs, values, and preferences that influence how they interpret medication taking behaviour and healthcare messages. Knowing the differences between refugees' and migrants' beliefs and culture is a key for understanding their illness and taking medications behaviour.

This study fills a significant gap in literature by identifying refugees' personal and cultural perceptions and interventions that overcome barriers and address medication adherence in comparison to their migrant counterparts.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix 1. COREQ (CONSOLIDATED criteria for REporting Qualitative research) Checklist

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	137
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	128
Occupation	3	What was their occupation at the time of the study?	-
Gender	4	Was the researcher male or female?	128
Experience and training	5	What experience or training did the researcher have?	NA
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	125
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	121-123
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	126
Domain 2: Study design			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	144
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	118-120
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	128
Sample size	12	How many participants were in the study?	161
Non-participation	13	How many people refused to participate or dropped out? Reasons?	None

(continued)

Topic	Item No.	Guide Questions/Description	Reported on Page No.
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	115-116
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	122
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	161-167
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	140-142
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	No
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	129-130
Field notes	20	Were field notes made during and/or after the interview or focus group?	No
Duration	21	What was the duration of the interviews or focus group?	129
Data saturation	22	Was data saturation discussed?	134-135
Transcripts returned	23	Were transcripts returned to participants for comment and/or	133-134

Appendix 2. Interview discussion guide

Thank you for agreeing to participate in this research. This interview will last only 15 min. By answering the interview questions, you will provide information about your health and your practices in taking medication. You have been involved in this study because you identified yourself as a Middle Eastern migrant or a refugee who have hypertension. The following discussion guide presented in questionnaire form that designed to understand beliefs and understanding of illness and medication. In addition, it addressed medication adherence barriers.

1. Can you tell me about yourself and why you are here in Australia?
2. Tell me about your life before hypertension diagnosis? How have you had diagnosed?
3. What do you know about your hypertension? What do you think is the main causes of this illness? Symptoms?
4. Can you tell me about how hypertension has impacted on your life?
5. What do you do specifically to control or prevent raising blood pressure?
6. What activities do you do that require walking or physical exercise?
7. Since you were diagnosed with hypertension what sorts of changes you have made to your diet. Your exercise?
8. Sometimes making changes can be hard- how has it been for you?
9. Can you tell me about managing your hypertension on a daily basis?
10. How do you keep your BP readings?
11. Can you tell me about your experience with illnesses when you visit health facilities?
12. How do you remember taking your medications daily? What do you think are the main causes of not taking medications regularly? Have you ever forget taking your medication?
13. What do you expect the impact of blood pressure on your health if you did not take your medications?
14. Can you tell me about your current physician that you follow up with? How often do you visit him/her?
15. How close do you come to following your doctor's recommendations?
16. What do you think physicians might do if a mistake was made in your treatment?
17. What do you think are the characteristics of the best physicians?

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