

# Exploring Experiences and Asthma Management Among Middle Eastern Arabic-Speaking Migrants and Refugees with Asthma: A Qualitative Study

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**Purpose:** Effective asthma management relies on individuals' knowledge, inhaler technique, and perceptions of asthma and medications. Investigating barriers and enablers to optimal asthma management is vital. This research pursues a comprehensive understanding of asthma control, asthma-related experiences, perceptions, inhaler technique, and knowledge among Arabic-speaking Middle Eastern migrants and refugees living in Australia. Furthermore, it aims to explore the factors influencing optimal asthma management within this demographic.

**Patients and Methods:** This study involved interviews with 17 participants, with nine identified as migrants and eight as refugees. All participants were Arabic-speaking Middle Eastern individuals residing in Australia and diagnosed with asthma. Interviews were thematically analysed, and findings were presented following the guidelines of the consolidated criteria for reporting qualitative research (COREQ).

**Results:** The thematic analysis yielded five key themes: (1) asthma experiences; (2) participant perspectives on asthma; (3) asthma management; (4) asthma health literacy; and (5) strategies to overcome obstacles in asthma management. Some disparities were noted between refugees and migrants in terms of their comprehension and views on asthma, medications use, interactions with healthcare providers, and inhaler technique. Refugees experienced more psychological distress and lacked social support, while migrants were more concerned about long-term medication use and preferred specialised care.

**Conclusion:** This research addresses a knowledge gap concerning asthma control among Middle Eastern immigrants. It provides insights into their beliefs and medication adherence. It underscores the importance of considering the unique characteristics of Middle Eastern migrants and refugees when delivering healthcare interventions to enhance overall health and medication adherence within these populations. To address these differences, the study recommends tailored education, specialised clinics, and culturally relevant asthma management plans to enhance self-management support for both groups. Future studies should explore the impact of modifying beliefs, attitudes, and knowledge regarding medications and asthma to enhance asthma management within this population.

**Keywords:** immigrants, asthma management, Middle Eastern, Arabic-speaking, good health and well-being

## Introduction

Asthma is a chronic inflammatory lung disease that causes airway inflammation and obstruction, leading to breathing difficulties and potentially impacting the quality of life or resulting in premature death.<sup>1,2</sup> In Australia, 2.7 million individuals are living with asthma, constituting 11% of the population in 2020–21.<sup>3</sup>

Current asthma management strategies aim to control symptoms, maintain daily activities, and minimise exacerbation and medication-related adverse effects.<sup>4</sup> Self-management is supported by international asthma guidelines.<sup>5,6</sup> Asthma self-management requires appropriate knowledge and skills, including a good understanding of the disease, asthma control and treatment basics.<sup>4,7–9</sup>

Pharmacological management of asthma includes short-acting bronchodilators for rapid symptom relief and long-term maintenance therapies, such as long-acting bronchodilators, inhaled corticosteroids (ICS), and combination therapies that incorporate ICS.<sup>6</sup> Globally, adherence to asthma medication stands at a mere 30–50%.<sup>10</sup> A 2016 study highlighted poor adherence rates (17–60%),<sup>11</sup> and only 10–23% demonstrate accurate inhaler technique.<sup>12,13</sup> Asthma management is further complicated by patient misconceptions and difficulties in accurate symptom reporting.<sup>14</sup> Financial constraints, accessibility barriers, and social stigma also hinder effective management, with some patients opting for alternative treatments over standard therapies.<sup>14</sup> Moreover, ethnic minority groups face extra challenges due to diverse levels of acculturation.<sup>10,15</sup>

The number of global migrants is on the rise, and worldwide there are more than 281 million migrants and over 103 million refugees.<sup>16</sup> In recent decades, Australia has emerged as a leading country for resettlement, hosting many refugees,<sup>17</sup> predominantly from Syria, Iraq, and South Sudan.<sup>18</sup> Approximately 2% of Australia's population was born in the Middle East or North Africa, with Arabic being one of the top three non-English languages spoken at home by around 1.4% of the population.<sup>17,19</sup>

A previous study about asthma management among Arabic-speaking immigrants in Australia with limited English proficiency revealed treatment gaps such as poor asthma control, non-adherence, and low awareness of self-management skills.<sup>20</sup> This study, along with other research targeting immigrant populations, approached immigrants as a unified group.<sup>21</sup> Refugees, defined by the 1951 Refugee Convention, flee war or violence and face an uncertain future with restricted access to healthcare, higher unemployment, and increased psychiatric morbidity.<sup>22</sup> These challenges lead to powerlessness and can negatively impact their self-management strategies.<sup>23</sup> In contrast, migrants move voluntarily for better opportunities, generally experiencing less uncertainty and better healthcare access, which may support more effective chronic condition management.<sup>8,24</sup> Therefore, examining the differences in asthma management between Middle Eastern migrants and refugees is crucial to understanding and addressing their distinct needs.

The work presented in this study examines asthma management among Middle Eastern Arabic-speaking migrants and refugees in Australia, and identifies their challenges, coping mechanisms, perceptions, and healthcare requirements. The insights gained from this research can lead to the development of more targeted and effective asthma self-management support for these specific populations.

## Materials and Methods

### Study Design and Setting

To address the aim of this study, exploratory semi-structured interviews were undertaken by a female PhD researcher after obtaining ethical approval (25419) from the University Ethics Committee.

### Study Design

This study recruited Arabic-speaking middle Eastern migrants and refugees using a convenience sampling method. Recruitment continued until saturation of concepts and themes occurred.

Participants were recruited through Facebook groups for Arabic-speaking immigrants in Australia. Interested individuals contacted the researcher via telephone and were initially screened to ensure they met the inclusion criteria, including age (between 18 and 70 years), having a confirmed asthma diagnosis made by qualified physicians using standard clinical criteria, regular asthma medication use, Arabic-speaking Middle Eastern immigrant with migrant or refugee background, and residing in Australia as a first-generation immigrant. Eligible participants received detailed information about the study's purpose and procedures. Participants were given a gift voucher as a token of appreciation for their contribution. It is essential to emphasise that no prior relationship was established with the participants before the initiation of the study.

### Interview Protocol

The interview guide was created in English and translated into Arabic by the bilingual researcher (MA). To ensure accuracy, the Arabic version was back-translated into English by another bilingual academic, and both English versions were reviewed by four other researchers to confirm validity (VC, IS, TT, and CL).

The guide was pilot-tested with three Arabic-speaking Middle Eastern immigrants with asthma to assess clarity, cultural relevance, and acceptability. Demographic and disease-related information, including symptoms, reliever use,

and activity limitations, based on the asthma control questionnaire, were included in the guide. Brief Illness Perception Questionnaire (BIPQ) was also included to gauge asthma perceptions, ([Supplementary file 1](#)).<sup>25,26</sup>

Additional questions addressed participant perceptions on medicine use, use of complementary, traditional treatments, asthma management knowledge, healthcare provider interactions, and preferences for Arabic-speaking health professionals. The inhaler technique was evaluated using a standardised checklist and an observational method<sup>27</sup>. The interviewer, a practicing pharmacist, initially assessed the participants' inhaler technique. Additionally, ten participants had their inhaler technique checked by other researchers (VC, CL, TT, and IS), and no discrepancies were found.

## Analysis

All interviews were conducted in the Arabic language using Microsoft Teams<sup>®</sup> with audio and video recorders. The recordings were transcribed and translated into English by the bilingual researcher (MA). Interviewees had the opportunity to review their transcripts but chose not to make any corrections. To ensure accuracy, an Arabic speaking bilingual university academic reviewed two transcripts by comparing the Arabic and English versions. The study adheres to the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines<sup>28</sup> ([Appendix 1](#)).

Thematic analysis was undertaken using NVivo 12 qualitative data analysis software (QSR International, Melbourne, Australia), involving line-by-line coding and iterative reading to refine themes. Emerging themes were discussed among all five researchers, and a coding framework was agreed upon after resolving discrepancies. Data collection persisted until saturation was achieved, with no new themes emerging in the final interviews.

## Results

### Demographic Information

Between September 2022 and May 2023, a total of 17 (eight refugees and nine migrants) interviews were conducted. The duration of these interviews ranged from 35 to 57 minutes.

The characteristics of the participants are presented in ([Table 1](#)). Both groups were similar regarding age, gender, education, and employment. However, majority of migrant participants arrived in Australia before 2015, whereas the majority of the refugee participants entered the country after 2015. In terms of the country of diagnosis, the majority of migrant participants were diagnosed with asthma overseas, while the majority of the refugee participants were diagnosed in Australia. Additionally, migrant participants disclosed experiencing asthma for a duration of five years or longer, whereas refugee participants reported a duration of five years or less since the diagnosis of asthma. Both cohorts shared a similar perception of asthma as a benign disease, as evidenced by their responses to the BIPQ ([Table 1](#)).

**Table 1** Participants' Demographic and Disease-Related Characteristics (n=17)

| Characteristic               | Variable Details                 | Migrants (n=9) | Refugees (n=8) |
|------------------------------|----------------------------------|----------------|----------------|
| Gender                       | Female                           | 8              | 6              |
|                              | Male                             | 1              | 2              |
| Age (years)                  | Range (median)                   | 29–45 (39)     | 21–58 (36)     |
| Education level              | Lower secondary (year 7 to 9)    | 1              | 2              |
|                              | Higher secondary (year 10 to 12) | 0              | 1              |
|                              | Tertiary                         | 8              | 5              |
| Occupation                   | Not employed                     | 5              | 5              |
|                              | Government/private Organisation  | 3              | 3              |
|                              | Prefer not to answer             | 1              | 0              |
| Year of arrival in Australia | 2015–2022                        | 2              | 6              |
|                              | 2010–2014                        | 4              | 1              |
|                              | 2005–2009                        | 2              | 1              |
|                              | 2000–2004                        | 1              | 0              |

(Continued)

Table 1 (Continued).

| Characteristic                  | Variable Details                            | Migrants (n=9) | Refugees (n=8) |
|---------------------------------|---|----------------|----------------|
| Country of birth                | Iraq  | 2              | 6              |
|                                 | Syria                                       | 1              | 1              |
|                                 | Egypt                                       | 1              | 1              |
|                                 | Libya                                       | 3              | 0              |
|                                 | Kuwait                                      | 1              | 0              |
|                                 | Jordan                                      | 1              | 0              |
| Languages spoken                | Arabic only                                 | 3              | 0              |
|                                 | Arabic and English                          | 5              | 2              |
|                                 | Arabic, English, and another language       | 1              | 6              |
| Country of asthma diagnosis     | Australia/New Zealand                       | 3              | 6              |
|                                 | Libya                                       | 3              | 0              |
|                                 | Jordan                                      | 2              | 0              |
|                                 | Iraq  | 1              | 2              |
| Length of having asthma (years) | ≤5  | 1              | 6              |
|                                 | 6–14  | 3              | 1              |
|                                 | ≥15   | 5              | 1              |
| Family history with asthma      | Yes   | 7              | 3              |
|                                 | No  | 2              | 5              |
| Medications used                | SABA* monotherapy                           | 4              | 3              |
|                                 | Combination ICS*/LABA*                      | 3              | 4              |
|                                 | ICS/LABA+ SABA                              | 2              | 1              |
| Self-reported asthma control    | Good-Control                                | 0              | 1              |
|                                 | Poor-Control                                | 9              | 7              |
| Inhaler technique scores #**    | Group 1: successfully completed (1–3) steps | 4              | 1              |
|                                 | Group 2: successfully completed (4–6) steps | 4              | 4              |
|                                 | Group 3: successfully completed (7–9) steps | 0              | 3              |
| Overall score of BIPQ (80) ###  | 0–20  | 0              | 0              |
|                                 | 21–40                                       | 4              | 2              |
|                                 | 41–60                                       | 5              | 6              |
|                                 | 61–80                                       | 0              | 0              |

**Notes:** \*SABA, short acting beta-agonist; \*ICS, inhaled corticosteroid; \*LABA, long-acting beta-agonist. \*\*One migrant participant's inhaler technique assessment could not be conducted due to poor recording quality. # determined using Inhaler Technique Checklists.<sup>27</sup> ## determined using BIPQ, a higher score reflects a more threatening view of the illness.<sup>50</sup>

Exploration of enablers and barriers to asthma management revealed that the migrant participants exhibited a higher prevalence of concerns regarding the cost of medications when compared to the refugee group.

Participants' inhaler technique was also evaluated, and refugee participants who were interviewed appeared to demonstrate a better inhaler technique compared to the migrant participants.

## Qualitative Data Analysis

Qualitative analysis unveiled five primary themes: (1) Participants' descriptions of their experience with asthma; (2) Participant perception of asthma; (3) Asthma management; (4) Asthma health literacy; and (5) Suggestions to overcome perceived barriers to asthma management (Table 2).

### Theme 1: Participants' Descriptions of Their Experience with Asthma

Participants' descriptions of their experience with asthma were categorised into: (1) understanding of the illness; (2) emotional consequences; and (3) impact on the quality of life and social support (Supplementary file 2).

Understanding of the Illness: with respect to diagnosis, participants from both groups frequently described their asthma as initially presenting with hay fever-like symptoms which intensified over time -

**Table 2** Overview of Factors Influencing Asthma Management Among Middle Eastern Arabic-Speaking Migrants and Refugees and Key Findings

| Themes  | Subthemes   | Key Findings  |
|---|---|---|
| Participants' descriptions of their experience with asthma      | Understanding of the illness, emotional consequences, impact on the quality of life and social support. | <ul style="list-style-type: none"> <li>• Asthma appeared to resemble hay fever initially, worsening over time and leading to diagnoses.</li> <li>• Asthma prompted changes in housing, cleaning habits, and activities.</li> <li>• Fear, anxiety, and embarrassment were common among participants, with refugee participants reported annoyance and depression.</li> <li>• Refugee participants often received sudden diagnoses and struggled to understand their causes.</li> <li>• Refugee participants attributed asthma to psychological distress causes.</li> <li>• Refugee participants often denied having asthma.</li> <li>• Refugee participants lacked social support beyond their family.</li> </ul>                  |
| Participant's perception of asthma                              | Perception of asthma, medications and healthcare providers.   | <ul style="list-style-type: none"> <li>• Asthma impacted overall health and contributed to the development of other conditions.</li> <li>• There was a preference for natural medications and a belief that Western medications are harmful chemicals.</li> <li>• There was a preference for Arabic-speaking healthcare providers due to perceived understanding.</li> <li>• There was dissatisfaction with short consultation times with doctors.</li> <li>• There was a lack of understanding of pharmacists' roles.</li> <li>• Migrant participants were concerned about long-term side effects of steroid use.</li> <li>• Migrant participants preferred specialists due to perceived limited GP asthma knowledge.</li> </ul> |
| Asthma management   | Asthma attack, action plan and use of natural products.   | <ul style="list-style-type: none"> <li>• Participants were unfamiliar with action plans.</li> <li>• Both migrants and refugees used herbal remedies.</li> <li>• Refugee participants delayed medication, sought fresh air, while migrants used relievers first during asthma attacks.</li> </ul>  |
| Asthma health literacy  | Resources of information and asthma Knowledge.  | <ul style="list-style-type: none"> <li>• Proper asthma education from healthcare professionals was lacking.</li> <li>• Information about asthma was sought through online resources.</li> <li>• Community members and social media platforms served as the primary sources of information about complementary medications.</li> <li>• Greater familiarity with complementary medications was observed among migrant participants.</li> </ul>  |
| Suggestions to overcome perceived barriers to asthma management |   | <ul style="list-style-type: none"> <li>• Migrant participants proposed specialised asthma clinics or community centres for asthma education and management.</li> <li>• Migrant participants suggested structured plans for comprehensive asthma information.</li> </ul>   |

Initially, they said it was hay fever then they said it might be something else and they kept guessing until last year, when they finally stopped going in circles and diagnosed me with asthma -Migrant 1.

Refugee participants reported sudden asthma diagnoses without any family history, leading to confusion about the cause –

I was surprised when I was diagnosed with asthma, I still do not understand it -Refugee 6.

Others attributed asthma to psychological distress –

I was diagnosed with asthma after I turned 20 years old. What happened to me was a psychological thing, my brother went missing, and I kept thinking about it and I felt sad and could not breathe -Refugee 2.

Both groups experienced fear, anxiety and embarrassment about living with asthma and had concerns about asthma complications. Having asthma symptoms in public was particularly distressing for refugees, who faced stigma and misconceptions linking coughing to contagious diseases like COVID-19 –

It's embarrassing, when I cough people think I have COVID, so I wear it (a mask) all the time -Refugee 2.

Emotional Consequences: participants from both groups reported worry, fear and anxiety of experiencing asthma symptoms especially breathing difficulties –

I felt scared when I experience an asthma episode as I cannot breathe. I notice that I am breathing at a fast pace -Refugee 7.

Some refugee participants reported that their experience with asthma symptoms often led to feelings of depression and annoyance –

Asthma makes me depressed and annoyed -Refugee 6.

Additionally, some refugee participants struggled to accept their diagnosis, particularly if, they did not experience severe asthma symptoms requiring immediate medical attention -

My asthma is not chronic. My son has asthma; we took him to the doctor to put him on a device to help him breathe. I am not that bad; I do not even lose consciousness -Refugee 5.

Impact on Quality of Life and Social Support: asthma significantly impacted participants' lifestyle and quality of life. Both groups reported making lifestyle changes such as moving to houses without carpets and frequent cleaning to reduce asthma triggers such as dust and mould, avoiding strong-smelling products, -

I changed the detergent, I used to use perfumed detergent but now I stopped using those ones. I changed the house that we used to live in because it was fully carpeted-Refugee 3

In my daughter's room during winter there was hidden mould behind their wardrobes. Every time I enter their room, I get an attack. One day, I told my husband and he found it (the mould) and removed it. -Migrant 3.

Physical activities like walking and exercise became challenging and uncomfortable for many participants –

I cannot run or play football it is a bit hard and uncomfortable -Migrant 6.

Refugee participants experienced a lack of social support, often receiving no assistance despite their requests –

No one helps here. You can be dying on the road, and no one would offer help -Refugee 1.

## Theme 2: Participants' Perception of Asthma

Within this theme, migrant and refugee participants discussed their perceptions of asthma, asthma medications, and healthcare providers.

Participants from both migrant and refugee groups viewed asthma as not only impacting their overall health but also potentially causing other health conditions –

Asthma opened the door for other conditions -Migrant 4.

Migrant participants were concerned about the adverse effects associated with long-term use of corticosteroids –

The chemical medications caused harm to my body. Because of using Cortisone<sup>®</sup>, I gained weight -Migrant 2.

In both groups, participants preferred natural remedies over Western medications, -

I hear that anise is good for coughing or marjoram is useful, so I started taking them because I feel like I'm taking a lot of medications -Migrant 1.

Migrant participants expressed dissatisfaction with asthma care provided by their general practitioner, believing that respiratory specialists could provide more effective care -

I feel that the general practitioners here have studied diseases superficially, so they do not understand asthma deeply and relies on this superficial information for diagnosis and treatment and does the experimentation without taking into account that there are differences between patients -Migrant 1.

The majority of participants preferred visiting an Arabic-speaking general practitioner, believing they understand cultural needs. Due to the limited availability of such doctors, some consulted non-Arabic speakers -

I prefer a doctor who speaks Arabic even if my English is good; not the language but the way of communication'-Refugee 4.

Both groups expressed frustration with brief consultation time and lack of comprehensive support from their healthcare providers -

The consultation time with the GP is 10 minutes, they see you very quickly and give you the script then they say they have seen you. If the GP were to explain to you about asthma and treatment, you will need a minimum of 30 minutes and the GP is not willing to sacrifice 30 minutes to explain to you, this is the truth-Refugee 1.

All participants in this study lacked an understanding of the role of pharmacists in asthma management, particularly refugee participants, who viewed pharmacists as "cashiers" rather than healthcare professionals -

If you have the script, you can get it from anywhere. I go to any pharmacy which is the closest and the cheapest-Refugee 1.

The majority of participants chose the nearest or most affordable pharmacy, and noted frequent changes in pharmacists in charge, which diminished the perceived benefits of regular visits or consulting the same pharmacist -

So many pharmacists out there. I don't see the same faces as there are so many pharmacists within the same pharmacy-Migrant 9.

### Theme 3: Asthma Management

This theme includes immigrants' knowledge and perceptions on acute asthma management, possession of an action plan, and the utilisation of complementary medications for asthma management.

Asthma management varied between the two groups. Migrant participants reported using short-acting beta 2 agonists (SABA) as the first step in their management plan, while refugee participants delayed using SABA. They reported trying to regulate their breathing and getting fresh air before resorting to medication -

Once I experience symptoms, I open windows and I sometimes walk into the garden, I feel this helps me sometimes to get oxygen for like five minutes. If I notice no improvement, then I take my medication -Refugee 3.

The majority of participants were unfamiliar with the concept of an asthma action plan. Some participants only knew about the asthma action plan because it was required for their child/children with asthma at school, not realising that adults also need one -

I do not have one, but I know what it is because my son is asthmatic, and the school requested that, so I know what it is -Refugee 3.

Migrant and refugee participants used herbal medications such as warm beverages with ingredients like ginger, anise and mint to help manage their asthma. Migrant participants displayed greater familiarity with complementary therapies, often learning about these therapies from friends and relatives -

Anise is in some medications given to children who have cough, you can smell anise in these medications, so I thought about using them because it is natural and helps to relax so why not -Migrant 1.



Refugee participants also preferred herbal products. However, their knowledge in this area and the absence of information resources limited their access to such approaches. Several refugee participants expressed a desire for reliable information on herbal medications for managing asthma –

No one recommended anything to me or advised me on something specific. I would love to get help with that -Refugee 2.

## Theme 4: Asthma Health Literacy

Some participants stated that healthcare professionals had not demonstrated inhaler use techniques, nor did they assess participants' inhaler technique following asthma diagnosis. None of the participants had received education regarding asthma, its triggers, medication usage, management techniques or thunderstorm asthma, and the majority of participants lacked an understanding about the differences between preventer and reliever inhalers –

I do not understand it, I almost have no information about it. I use Google<sup>®</sup> and Facebook<sup>®</sup> to gather information about it - Refugee 2.

All participants shared their experiences of resorting to online search engines, particularly Google<sup>®</sup> and utilising social media platforms such as Facebook<sup>®</sup>, to educate themselves about asthma after diagnosis -

I searched and I realised here in Australia sadly that you must ask, if you do not ask no one will give you the information and they do not tell you the complications of asthma, so you become careful. Sometimes humans need to be aware of the complication to be careful -Migrant 8.

All participants expressed their opinion that the Australian healthcare system is more responsive to providing information if individuals actively seek it, rather than proactively offering it –

From whom? No one teaches you here if I did not have some information about it based on the previous study I would not know - Refugee 1.

## Theme 5: Suggestions to Overcome Perceived Barriers to Asthma Management

All participants emphasised the crucial role of education in enhancing asthma management, noting a significant lack of asthma-related information from healthcare professionals. This gap led them to conduct their own online research to better understand the condition. Migrant participants suggested the need for specialised asthma clinics or community centres where patients can receive education, regular follow-up and ongoing management -

I wish there is a specialised clinic for asthma; it would reduce the workload a lot. They (asthma clinic clinicians) follow patients and diagnoses, and you can go every six months to follow up that would help a lot -Migrant 5.

This initiative would aid individuals in understanding their condition and learning effective management strategies.

Migrant participants were concerned about the cost of medications, particularly their preventative medications. The high cost led to hesitation in medication use, creating a barrier to adherence -

I suggest opening centres that are similar to NDSS centres for asthmatic patients, and they can have a card to go (to these centres) and take monthly treatment at a further discounted rate because I think 90% of Australians suffer from asthma. It is my observation that the number of people with asthma increases on a daily basis -Migrant 1.

## Discussion

This study is the first to explore the perspectives of Middle Eastern Arabic-speaking refugees and migrants with asthma on their asthma management, asthma care, and health beliefs. The key finding is that asthma is poorly controlled in this population. Participants encountered challenges in managing asthma, mainly due to limited knowledge about asthma, asthma medications, self-management, negative beliefs about asthma, and their perceptions of how the healthcare system and providers deliver care. Additionally, poor communication resulting from brief consultation duration between patients



and healthcare providers was identified as a barrier to effective asthma management. These findings emphasise the need for targeted interventions designed to enhance asthma management and improve patient and healthcare professional relationships within this particular population.

This study aligns with prior research on asthma management barriers and is consistent with the findings reported by Alzayer et al.<sup>20</sup> In addition, similar enablers and barriers have been reported by researchers in other immigrant populations.<sup>8,30–32</sup> In the current study, we considered the potential differences in asthma management between migrants and refugees, which may support the development of tailored interventions. It builds upon prior research by including patients without language proficiency restrictions and explicitly excluding caregivers.<sup>20</sup> Additionally, the incorporation of the BIPQ and inhaler technique assessment offers a more comprehensive view of asthma management among Middle Eastern immigrants.

This study found that poor asthma health literacy significantly contributed to uncontrolled asthma within the target populations, especially refugee participants. This observation is not unique to Middle Eastern immigrants; previous research has consistently shown that insufficient asthma knowledge serves as a significant obstacle to achieving optimal asthma management.<sup>9,31–33</sup> Furthermore, patient education plays a pivotal role in achieving effective asthma control, given the complexities of treatments, comorbidities, inappropriate inhaler technique and their impact on quality of life.<sup>34</sup> Existing research indicates that enhancing asthma knowledge among patients and promoting correct inhaler device usage can contribute to improved disease control and quality of life.<sup>32,33,35–38</sup>

Poor inhaler technique poses a significant challenge in asthma management, often leading to misconceptions about treatment efficacy.<sup>34</sup> Notably, refugee participants exhibited better inhaler technique compared to the migrant participants in this study. This contrast could be attributed to the fact that refugee participants in this study received their asthma diagnoses in Australia within the last five years, while migrant participants were diagnosed overseas more than five years ago. Patients can forget how to use their inhalers correctly over time due to factors such as the complexity of inhalers, infrequent use, lack of reinforcement, age-related challenges, and potential initial misunderstanding of instructions.<sup>39,40</sup> A recent systematic review on asthma and COPD educational interventions in immigrant populations found that tailored interventions significantly improved outcomes, such as inhaler technique.<sup>21</sup> This highlights the importance of customised interventions and regular assessments, as well as education by healthcare providers. Follow-up appointments and written instructions are essential to help patients maintain proper technique and ensure effective asthma management.<sup>39,40</sup> However, it must be emphasised that all participants reported a lack of assessment of their inhaler technique since their initial diagnosis. This is consistent with prior studies, as many patients lacked adequate training to master inhaler technique, and the ongoing assessment and education needed are frequently absent.<sup>41–43</sup>

Participants in the study emphasised their use of online resources, including social media, to acquire information about asthma. Nonetheless, they regarded healthcare providers as the most reliable source of health-related information, which contributed to an overarching sense of trust. However, the constraint of limited consultation time with general practitioners curtailed their opportunities to gain asthma-related knowledge during these engagements. This finding resonates with prior research findings, where abbreviated consultation duration was found to be exerting negative impacts on the patient-provider relationship, subsequently influencing asthma management.<sup>30,32,44</sup> Incorporating the practice of guiding asthma patients to reliable online educational sources as part of the consultation can promote accurate learning, enhance asthma comprehension, and cultivate positive patient-provider relationships.

Participants in both groups generally lacked clarity about the roles of general practitioners, specialists, and pharmacists in asthma management. Particularly, the role of pharmacists was unclear to them, with participants being unaware of the services that pharmacies can offer to help manage their asthma. This finding is consistent with a previous study that reported individuals with asthma frequently view pharmacists as suppliers of medications.<sup>45</sup> Pharmacists are vital in promoting asthma self-care, especially in primary care settings.<sup>7</sup> Their clinical expertise allows them to educate patients, improve inhalation techniques, address concerns, and enhance therapy adherence.<sup>7</sup> A previously published review of 25 studies revealed that pharmacist-led interventions in various settings improved asthma outcomes and reduced healthcare utilisation,<sup>46</sup> emphasising the substantial positive influence that pharmacists can exert on asthma management through their interventions and expertise. This finding also highlights the need to educate the public on the roles of allied health care professional and the services patients can access through them.

Within the context of asthma management, the challenge of medication cost is particularly pronounced among migrants. Migrants often do not have access to additional financial support from the government. In Australia, patients with a Medicare card receive medication at a subsidised price. This cost is further reduced for patients with a health care card, issued by the Commonwealth government. However, health care cards are limited to individuals with a low income. As a result, medication expenses become a significant burden to individuals with an income above the threshold, leading some to adopt the practice of rationing their medication to make it last longer. This rationing can compromise the effectiveness of asthma management and overall health outcomes. Research from multiple studies consistently highlights the significant obstacle posed by the cost of medication.<sup>32,47</sup> Our finding reinforces the financial aspect of asthma treatment holds the potential to undermine effective asthma management strategies, ultimately contributing to the undesirable outcome of uncontrolled asthma symptoms, which can contribute greater costs to the healthcare system due to hospitalisation with asthma complications.

The findings of this study shed light on the strategies for asthma health promotion initiatives. Health promotion initiatives, for example to improve asthma management, have faced criticisms for emphasis on individual lifestyle changes while neglecting broader contextual factors that influence health.<sup>48</sup> Social ecological models, building upon Bronfenbrenner's framework, delineate five levels of influence: intrapersonal, interpersonal, institutional, community, and public policy.<sup>48</sup> These levels go beyond mere settings for interventions; they signify the range of intervention possibilities.<sup>48,49</sup> Intrapersonal interventions target individual knowledge and skills, while interpersonal and institutional interventions concentrate on social relationships and organisational dynamics.<sup>48,49</sup> Community-focused interventions entail collaborative efforts with various groups, aiming to improve health services or empower disadvantaged communities.<sup>48,49</sup> Public policy interventions address policies with health implications or advocate for broader societal change.<sup>48,49</sup> These models have proven valuable in different public health domains, facilitating the development of effective interventions and policies that enhance the well-being of populations.<sup>48</sup> When integrated into healthcare interventions, this model serves as a powerful tool for pinpointing specific areas that require attention, addressing disparities, advocating for change, engaging communities, and fostering interdisciplinary collaboration.<sup>48,50</sup> Drawing upon this theoretical foundation, a comprehensive framework has been devised by the authors of this paper to guide targeted asthma interventions among Middle Eastern Arabic-speaking migrants and refugees, as depicted in Figure 1. Potential asthma intervention targets span all five levels for both population groups, with areas of emphasis tailored to each group's unique needs. For instance, refugees may benefit from interventions addressing the emotional impact of asthma, reshaping beliefs concerning social support, providing guidance on asthma management and crisis response, and introducing them to available pharmacy services. Conversely, migrants may require interventions focused on



**Figure 1** Considerations for intervention targets and implementation strategies guided by Bronfenbrenner's ecological theory.<sup>48</sup> \*Target refugees. \*\*Target migrants.

reducing the cost of medications. This multi-level approach encompasses public policy measures to enhance medication accessibility and promote asthma management among immigrants, organisational interventions to improve pharmacy services and consultation times, community-level efforts to enhance the roles of healthcare providers and provide accessible asthma information sources, and interpersonal and personal-level interventions to influence perceptions, foster social support, and cultivate effective asthma management skills.<sup>50</sup> These personalised interventions would aim to optimise asthma management and overall health outcomes for Middle Eastern Arabic-speaking migrants and refugees, ensuring that their specific needs are effectively addressed and ultimately enhancing their well-being.

## Limitations and Strengths

This study aimed to understand asthma management among Middle Eastern Arabic-speaking refugees and migrants. Therefore, our findings may not be generalisable to other immigrant populations. Furthermore, even though the interviews for both groups of participants were conducted until no new themes emerged, the number of interviews conducted was relatively small, which may limit the generalisability of the findings. Additionally, convenience sampling could introduce selection bias, potentially leading to a non-representative sample that may affect the credibility and diversity of the results. A further limitation is that none of the participants reviewed their transcripts, which could compromise the authenticity of their responses. Moreover, the study relied heavily on self-reported data, susceptible to recall bias and inaccuracies, particularly regarding medical histories and medication adherence. Finally, a single researcher conducted the interviews, as well as managed both translation and analysis. This setup may introduce interviewer bias, despite the lack of a prior relationship with participants.

## Conclusion

The key barriers to asthma management among Middle Eastern Arabic-speaking immigrants are limited health literacy, suboptimal inhaler technique, an unclear understanding of the role of allied health professionals, and concerns about the cost of medications. Refugees often face sudden diagnoses, attribute their condition to psychological distress, and experience limited social support, leading to delayed medication use and a preference for natural remedies. They also struggle to understand roles of healthcare professionals and prefer Arabic-speaking providers. In contrast, migrants proactively adjust their living conditions, are concerned about side effects associated with long-term use of medication, and prefer specialists over general practitioners. They actively seek information from online sources and through community resources, advocating for specialised asthma clinics, and structured educational plans. Addressing these cultural distinctions and barriers is crucial for developing effective asthma management strategies for this population.

## Data Sharing Statement

The data for this study is available on request due to privacy/ethical restrictions, the corresponding author/s can be directly contacted for further inquiry.

## Ethics Approval

This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of RMIT University (25th Aug 2022/ No: 25419).

## Consent to Participate and for Data Publication

Participation in the interview was voluntary and informed written or verbal consent was obtained from all study participants. The participants informed consent included publication of anonymised responses.

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## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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## Disclosure

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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