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Patient perceptions of inhaled asthma medications: a qualitative study in Northern Sri Lanka

Yalini Guruparan ,[1] Thiyahiny S Navaratinaraja,[1] Ramya Kumar,[2] Gowry Selvaratnam,[3] Shalini Sri Ranganathan [4]

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TSN and RK contributed equally. GS and SSR contributed equally.

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[1]Department of Pharmacology, University of Jaffna, Jaffna, Sri Lanka
[2]Department of Community and Family Medicine, Faculty of Medicine, University of Jaffna, Jaffna, Sri Lanka
[3]Department of Medicine, Faculty of Medicine, University of Jaffna, Jaffna, Sri Lanka
[4]Department of Pharmacology, University of Colombo, Colombo, Sri Lanka

Correspondence to
Dr Yalini Guruparan;
yalinig@jfn.ac.lk

ABSTRACT

Objectives This study explores perceptions of inhaled medications among patients with asthma at an outpatient tertiary care setting in Northern Sri Lanka.

Design A descriptive qualitative research design was used to gather data through focus group discussions (FGDs) that were transcribed, translated, manually coded and thematically analysed using Braun and Clarke's six-step approach.

Setting The study was conducted at an outpatient medical clinic at a tertiary care centre in Northern Sri Lanka.

Participants Six FGDs were carried out among adult patients with asthma who had been on inhaled medications for at least 3 months. Participants were selected by maximum variation sampling, with each FGD consisting of 6–10 participants.

Results 51 participants between the ages of 20 and 71 years were recruited; 36 (70.6%) were female, and about a fourth had primary education or less. Seven subthemes were drawn out and organised into three overarching themes: (1) inhaler hesitancy; (2) fear-driven adherence and (3) conviction at last. Most participants were initially reluctant to use inhalers, primarily due to concerns about dependency and side effects, often influenced by opinions of family members. They delayed use until they experienced severe symptoms, with some describing nebulisation, hospitalisation and fear of death as turning points. Symptom alleviation and improved quality of life led to better adherence.

Conclusions Delays in inhaler use could lead to poor asthma control and outcomes. As many patients reported using their inhalers more consistently after an exacerbation or hospitalisation, asthma education programmes, involving both patients and family members, could address context-specific beliefs and misconceptions to promote early and sustained adherence to inhaled medications.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ A qualitative study design using focus group discussions was employed to explore patient perspectives on inhaled medications.
⇒ Six focus group discussions stratified by education level were conducted using maximum variation sampling to ensure diverse participant perspectives.
⇒ Focus group discussions were conducted away from the clinic area, although within the hospital; this may have influenced free expression and sharing of experiences.
⇒ As the participants were recruited from a single medical clinic at the Teaching Hospital Jaffna, the findings may not be transferable to all people with asthma in Sri Lanka.

INTRODUCTION

Asthma affects approximately 300 million people globally and results in around a thousand deaths per day.[1] The majority of people with asthma live in low-income and middle-income countries (LMICs).[2] The prevalence of asthma in Sri Lanka has been estimated to be 11%, which is relatively higher than in other countries in South Asia.[3]

Asthma can be controlled with appropriate treatment.[4] Effective asthma management requires long-term use of inhaled medications to control symptoms, reduce exacerbations and improve quality of life.[1] Despite the existence of effective inhaled medications, asthma often remains poorly controlled.[5 6]

Patient perceptions of a disease and its treatment crucially shape adherence to treatment and clinical outcomes.[7 8] In asthma, patients frequently rely on their symptoms and experiences instead of guideline-based control.[8] Their understanding of asthma and their perceptions of inhaled medications could lead to poor adherence to prescribed therapy—a major problem in asthma management.[9]

Studies have explored patients' perceptions of asthma and its management in diverse settings, including South Korea,[10] The Gambia[11] and New Zealand.[12] Evidence suggests that patients often have questions and uncertainties about inhalers. Many individuals worry that inhalers might be harmful or cause dependence, while others are concerned about side effects. When

symptoms are seasonal or not always present, they question whether regular inhaler use is truly necessary.[10–12] There are no published studies on patient perceptions of inhaled medications in Sri Lanka; anecdotal evidence from experts suggests that illness stigma may be a significant impediment to treatment adherence.

In Sri Lanka, patients with asthma may seek care in the public or private health sector. Healthcare services, including consultations, investigations and medicines, are provided free of charge at public facilities. However, all medications may not be available in all public facilities at all times owing to resource constraints and intermittent stockouts.[13–15] In the case of asthma treatment, while relievers and preventers are available through the public system, simpler patient-friendly inhaled therapy such as maintenance and reliever therapy (MART) is not currently available at public hospitals. While asthma medications, including MART, are widely available for purchase in the private sector, they may not be an affordable option for many patients.[16]

This study is set in the Jaffna district, one of five districts that make up the Northern Province of Sri Lanka. Teaching Hospital Jaffna is the largest public hospital and functions as the primary referral centre in the Northern Province. This study explores perceptions of inhaled asthma medications among patients visiting a medical clinic for asthma follow-up at Teaching Hospital Jaffna.

METHODS

Methods and results are reported according to the Consolidated Criteria for Reporting Qualitative Research guidelines (online supplemental file).[17]

Study design and setting

This exploratory descriptive qualitative study was conducted at a medical clinic at Teaching Hospital Jaffna. The hospital has four internal medicine units, each of which has an outpatient medical clinic that serves patients with a range of chronic illnesses, including asthma. About 100–120 patients with asthma visit a medical clinic on a given day.

Participant selection and recruitment

The first author (YG) visited the medical clinic to recruit patients for this study. Adult patients with an asthma diagnosis documented in their medical record and who were on inhaled asthma medication for at least 3 months were included. Patients with chronic obstructive pulmonary disease, a history of tuberculosis or congestive cardiac failure, were excluded. An information sheet (online supplemental file) was given to those who expressed willingness to participate in a focus group discussion (FGD) on a prescheduled date in the future. After obtaining informed written consent, a brief pretested questionnaire (online supplemental file) was administered to collect sociodemographic details. 80 participants who met the study criteria were recruited, and their contact details were recorded.

Participants were purposively selected for the FGDs from among the 80 recruited. 60 participants representing a wide range of social positions based on age, gender and socioeconomic status were invited, capturing a spectrum of social and illness experiences. Six FGDs were planned: two each for three groups stratified by education level (primary or less, secondary and higher education) owing to wide variations in the educational achievements among participants.[18 19] 10 participants were selected for each FGD. Participants were contacted individually to schedule the FGDs and were reminded by telephone the day before the FGD.

Data collection

Face-to-face FGDs were conducted between February and April 2019 at the hospital's Health Education Unit, a venue distinct and located away from the medical clinics, to encourage participants to express their views freely. Written informed consent was obtained for participation and audio recording. FGDs were conducted in Tamil, the local language, by the first author, an academic researcher in clinical pharmacology, who was not a member of the treating team. She was assisted by a designated note-taker, a junior doctor awaiting her internship who had no role in healthcare delivery at the hospital. The note-taker was trained by the first author to take detailed notes; she did not engage directly with participants. As a clinical pharmacologist, the first author remained reflexively aware of her prior knowledge of inhaled medications and took deliberate steps to ensure that her beliefs and assumptions did not influence the facilitation of discussions. All FGDs were audio-recorded, and each session lasted between 45 and 90 min. They commenced with an explanation of the FGD's purpose, followed by brief introductions. A discussion guide (online supplemental file), developed prior to the commencement of the study, was used to facilitate the FGDs. Open-ended questions were asked to elicit experiences with asthma, asthma management and perceptions of inhaled medications. At the end of each FGD, participants were reimbursed 500 Sri Lankan rupees to cover transportation expenses. No financial incentives were provided for participation.

Data analysis

Participants' sociodemographic information was summarised using descriptive statistics. The transcripts were translated verbatim from Tamil to English by the first author and checked and rechecked for accuracy. Field notes were integrated into the analysis to provide contextual depth; these notes were reviewed alongside transcripts to refine codes and strengthen the credibility of interpretation. Thematic analysis was conducted, following Braun and Clarke's six-step approach,[20] with themes derived inductively from the data. A constructionist approach was adopted, shifting the analysis from seeing the use of inhaled medications as a purely

Table 1 Focus groups stratified by education level

Focus groups	Education level	n (%)
1 and 2	Primary or less	14 (27.5)
3 and 4	Secondary	18 (35.3)
5 and 6	Higher	19 (37.2)

biomedical issue towards a focus on how meanings and experiences of illness and treatment are socially produced. An inductive coding approach was employed. Initial line-by-line coding was conducted to capture the salient features of the participants' narratives. Coding was carried out iteratively, with continuous reading, reviewing and refining of codes. The first (YG) and second (TSN) authors independently coded the data based on a coding frame. The subthemes were reviewed, analysed and organised into overarching themes by YG, TSN and RK. The quotes extracted for inclusion in the results were labelled with the group and participant numbers. For example, a comment from participant 2 in group 3 was assigned G3P2.

Patient and public involvement

Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination of this study.

RESULTS

Participant characteristics

In total, 15 males (29.4%) and 36 females (70.6%), aged 20–71 years, participated in the six FGDs. The FGDs were stratified by education level as depicted in table 1.

Participant perceptions of inhaled asthma medications were grouped into three overarching themes: (1) inhaler hesitancy, (2) fear-driven adherence and (3) conviction at last. The themes and subthemes are supported by illustrative quotes, as depicted below.

Inhaler hesitancy

Most participants shared that they were reluctant to use their inhalers when they were initially prescribed and waited until they experienced severe symptoms to commence treatment. Many were worried about side effects, feared dependence or felt embarrassed to use them in public.

Concerns about side effects

Several participants expressed concerns about perceived side effects of inhaled medications. A few had experienced problems first-hand like oral thrush, tremors or a racing heartbeat, which added to their worries and sometimes made them hesitant to continue treatment (table 2).

Fear of dependency

Some participants believed that regular use of the inhaler could lead to dependence, a view that was reinforced by

Table 2 Inhaler hesitancy: Illustrative quotes

Subthemes	Participant	Illustrative quotes
Concerns about side effects	G6P2	When the inhaler was prescribed to me, I was worried about side effects at first…I still worry about the side effects of using it for a long time.
	G3P5	Initially, I used the inhaler regularly… then I developed a white coating on my tongue. After that, I used the inhaler only when I had difficulty breathing… I was afraid of the side effects.
	G4P2	I used the blue inhaler (salbutamol) when I had a wheeze… I had tremors and palpitations (after using the blue inhaler)… Then the doctor gave me the brown inhaler (steroid) … I used the brown inhaler only when I had chest tightness or breathing difficulties because I was worried about the side effects of long-term use.
Fear of dependency	G1P6	At first, I was scared to use the inhaler… I thought if I started using it every day, I might become dependent. The doctor reassured me… But I still worry about becoming dependent.
	G1P3	When the inhaler was first prescribed, I was worried that I might have to use the inhaler my entire life.
	G3P4	My mother always tells me not to inhale every day; she says I won't be able to breathe without it.
	G2P4	My husband tells me not to use the inhaler regularly… because it might cause dependence.
Social stigma	G4P5	I don't like using (the inhaler) in front of others… it makes me feel uncomfortable.
	G3P5	At first, I avoided using the inhaler around people… I was afraid of being labelled as sick.
	G1P2	I was afraid to use (the inhaler) in the office… because other staff might think something was wrong with me. I felt they may treat me as less capable.

Table 3 Fear-driven adherence: illustrative quotes

Subthemes	Participant	Illustrative quotes
Acute exacerbation as a turning point	G2P2	I was diagnosed with asthma more than ten years ago. Initially I used the inhaler on and off…A few months later my wheezing worsened… and I was admitted to the hospital and had repeated nebulisations. Since then, I use the inhaler regularly.
	G2P3	I was nebulised several times when I was admitted to the hospital… I realised how serious my condition was. After being discharged, I never missed using my inhaler again.
	G3P7	I had a continuous wheeze, and I took oral tablets whenever needed (instead of my inhaler) … My wheeze worsened when I was at the garment factory (place of work). I had to get admitted to the hospital. Since then, I use the inhaler regularly.
	G5P3	Initially I took the blue inhaler (salbutamol) on and off… One day while cleaning the house, I had severe difficulty in breathing… I was admitted to the hospital… I had frequent nebulisations at the hospital. After that I began to use (the brown inhaler—steroid) regularly.
Fear of death as a turning point	G3P3	I did not use my inhalers regularly when my asthma was initially diagnosed. I had asthma attacks during the rainy season… I couldn't breathe at all. I felt like I might die. Then I began to use my inhalers regularly.
	G4P1	Earlier (before using an inhaler) I had extreme difficulty in breathing… I felt I might die… I had to have frequent nebulisations… which also disturbed my A/L (Advanced Level) studies. Since then, I use the inhaler regularly.
	G4P3	When my asthma was first diagnosed, the doctor prescribed an inhaler… Because I was worried about long-term use… I stopped using it… A year later I had a severe wheeze and difficulty in breathing… I felt I might die. Since then, I use the inhaler regularly… I have had no hospital admissions in the last four years.

family members. In some cases, community beliefs influenced the idea that using medication regularly would make one 'addicted'. A small number worried that relying too much on the inhaler might prevent them from coping with symptoms naturally (table 2).

Social stigma

A few participants reported delaying the use of the inhaler because they were concerned about the opinion of others. They were afraid of being labelled as 'sick' and were worried about how others in their family and social circles would perceive their illness. Some said they avoided using the inhaler outside the home, even during episodes of breathlessness, to prevent drawing attention to their condition (table 2).

Fear-driven adherence

Most participants eventually turned to their inhalers when they experienced severe symptoms or exacerbations. Some described nebulisation or hospitalisation as a turning point, while others described fear of death as the turning point.

Acute exacerbation as a turning point

Some participants revealed that nebulisation or hospitalisation following acute exacerbations prompted regular inhaler use. These experiences led to an understanding of the severity of their asthma and the importance of adherence for control (table 3).

Fear of death as a turning point

Some participants described episodes so intense that they feared for their lives, experiencing extreme breathlessness, chest tightness and panic. Others spoke of feeling they 'might die' during an exacerbation and turned to inhaled medications, transforming previous hesitation into fear-driven adherence (table 3).

Conviction at last

Once they used inhaled medication regularly, participants had fewer symptoms and could engage in their day-to-day activities without disruption. Through experience, they learnt that discontinuing inhalers would lead to a recurrence of symptoms. Together, these experiences marked a shift from reluctance to steady acceptance (table 4).

Symptom relief

Most participants spoke of symptoms like difficulty in breathing, chest tightness and wheezing, which they experienced in the early period of diagnosis, substantially lessening with the consistent use of inhaled medications (table 4).

Improved quality of life

Some participants described being able to sleep uninterrupted, manage household tasks and return to work without frequent disruptions once they used inhalers regularly (table 4).

Table 4 Conviction at last: illustrative quotes

Subthemes	Participant	Illustrative quotes
Symptom relief	G1P1	I have cough and wheezing … which reduced after using the inhaler.
	G2P3	I didn't use the inhaler at first… my breathing difficulties worsened… I was terrified. Then I started using the inhaler. After that, I could breathe again and my life went back to normal.
	G4P4	I had difficulty in breathing during an asthma attack… the inhaler relieved these symptoms.
	G1P5	I felt heaviness in my chest and difficulty in breathing during an asthma attack… The inhaler relieved these problems.
Improved quality of life	G1P3	Before using the inhaler, I was unable to sleep well. After I began using the inhaler regularly, I'm able to sleep through the night.
	G2P3	I felt distressed with asthma; it disturbed my daily activities. After using the inhaler… I am able to do them.
	G4P4	I was diagnosed with asthma 20 years ago. Initially the doctor gave me salbutamol tablets…but my wheeze continued and I could not manage my farm work. With the inhaler, my wheezing was better controlled. I take the inhaler before going to the farm… and I am able to work.
	G6P5	When the inhaler was prescribed… I did not use it…and my cough got worse. I could not do my household chores. The doctor urged me to use the inhaler. Eventually I did and now I can manage my household work and even heavier tasks without any difficulty.

DISCUSSION

This qualitative study explored how adults with asthma in Northern Sri Lanka viewed and used inhaled asthma medications. Faced with doubt and fear, many participants avoided using inhalers even after they were prescribed. As a result, many experienced acute exacerbations and hospitalisation before they turned to inhaled medications. Once they began to recognise the benefits, their attitudes shifted, and they became more confident and comfortable with inhaler use. These experiences, reflected in three main themes: inhaler hesitancy, fear-driven adherence and conviction at last, highlight the complex ways in which sociocultural beliefs, family attitudes and personal experiences of illness, relief, and treatment interact and inform patient behaviour.

For many participants, hesitance to use inhalers was driven by multiple factors that went beyond personal preference. Their reluctance was shaped by fears of dependence, concerns about side effects and not wanting to be seen using an inhaler in public. Similar findings have been reported in qualitative studies from The Gambia,[11] the USA,[21] the UK[8 22] and New Zealand.[12] According to Jayasooriya *et al*,[11] asthma patients in The Gambia thought inhalers were dangerous or addictive and worried about becoming dependent on them. George *et al*[21] reported that low-income African American individuals in the USA often did not use their inhalers because they worried about side effects and social shame. Meanwhile, Baggott *et al*[12] observed in New Zealand that many patients questioned the need for regular inhaler use, particularly when they did not experience symptoms and had concerns about side effects. Bidad *et al*[8] found that patients in the UK were often hesitant to use inhalers because they worried about becoming dependent on them. Svedsater *et al*[22] noted that some individuals in the UK felt stigmatised when using inhalers in front of others. While patient perceptions on inhaled medications in Northern Sri Lanka are consistent with those reported in the literature, a striking finding in the present study is that most patients delayed using inhaled medications until they encountered an acute exacerbation with hospitalisation or felt an intense sense of panic or fear of death.

Indeed, for many, personal experiences with severe exacerbations and hospitalisations played a key role in determining adherence to inhaled medications. These intense episodes, often marked by feelings of helplessness or fear of dying, became pivotal moments that prompted more consistent inhaler use. Hospitalisation and the need for nebulisation made the seriousness of asthma clear. These experiences shifted individuals from hesitation to confidence, as has been reported by Song *et al*, who described how patients in South Korea felt 'helpless' during attacks, motivating them to begin using inhalers.[10] Although severe exacerbations appeared to encourage subsequent adherence in the present study, waiting for such events exposes patients to unnecessary clinical risk. Apart from the personal health costs associated with these illness experiences, such health behaviours result in unnecessary health expenditures for both patients and governments.

The majority in the present study reported symptom relief and improved quality of life after long-term use of inhaled medications. This sense of relief and restored normality encouraged regular use of inhaled medication. Participants described how using inhalers helped them return to their usual routines—they were able to

sleep better and manage daily household tasks with ease, findings consistent with previous studies from New Zealand[12] and the UK.[8 22] Baggott *et al*[12] found that symptoms like shortness of breath and coughing had a major impact on daily life, while Svedsater *et al*[22] reported that inhalers were widely recognised by patients as effective in improving breathlessness, disturbed sleep and limitations on daily activities.

The findings reported from this study conducted in Northern Sri Lanka may be transferable to other LMICs with comparable sociocultural and health system contexts. Inhaler hesitancy, driven by fears of dependence, concerns about side effects and doubts about necessity, has been described across diverse settings, suggesting that these perceptions are not unique to this population. In contrast, the influence of family on adherence, the stigma surrounding public inhaler use and the tendency to normalise symptoms until crises, appear to be more context-specific. These findings suggest that interventions to improve adherence may benefit from community-based educational approaches that address sociocultural beliefs and stigma surrounding inhaler use. Public health strategies that involve family members, community groups and local media may help normalise inhaler use and encourage earlier acceptance of inhaled medication.

Strengths and limitations

This is the first qualitative study that explores patient perspectives on inhaled medications in Northern Sri Lanka. The inclusion of a large and diverse sample, that is, six FGDs stratified by education level, with recruitment based on maximum variation sampling, enabled exploration of sociocultural attitudes and behaviours, beyond individual patient experiences.

The study has some limitations. Although the FGDs were conducted away from the clinic, the hospital setting may still have influenced how freely participants felt able to share their experiences. Participants were recruited from a medical clinic at the Teaching Hospital, Jaffna; therefore, the findings may not be transferable to all people living with asthma in Sri Lanka.

CONCLUSIONS

This study highlights that adherence to inhaled medications is shaped not only by knowledge or access to treatment but also by personal beliefs, family attitudes, sociocultural values and expectations, and the lived experience of illness and recovery. It also underscores the importance of proactively supporting adherence to inhaled medications before clinical deterioration occurs. Given the context-specific nature of the illness experience, healthcare professionals could play an important role in addressing community beliefs, sharing accurate information and communicating with empathy. Involving family members in education and counselling may be beneficial, as their views shape how patients perceive and use inhalers. Such approaches are particularly relevant for improving asthma care in lower-resource settings, where simpler inhaled therapy, including MART, may not be widely available. They could be combined with strategies to normalise inhaler use through the media to reduce stigma in public settings. Innovative research is needed to design and evaluate interventions that address community beliefs early in the treatment pathway, particularly culturally tailored education strategies that involve family members and community networks.

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Contributors This study was conceptualised by all five authors. YG was responsible for data collection. All transcripts were checked against the audio recordings manually by YG. Coding was performed by YG and TSN. Data analysis and interpretation were performed by YG, TSN, RK, GS and SSR. YG, TSN and RK wrote the first draft of the manuscript, and all authors contributed to the final version. All authors agreed to be accountable for all aspects of the work. YG is the guarantor of this manuscript.

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Patient consent for publication Consent obtained directly from patient(s).

Ethics approval This study involves human participants and was approved by Ethics Review Committee, Faculty of Medicine, University of Colombo, Sri Lanka (Number EC-18-108). Participants gave informed consent to participate in the study before taking part.

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Data availability statement Data are available on reasonable request.

ORCID iDs

Yalini Guruparan https://orcid.org/0000-0002-2082-8230
Shalini Sri Ranganathan https://orcid.org/0000-0003-0184-104X

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