

Asthma in Children Under 5 Years in Rural Kyrgyzstan: A Diagnostic Vacuum? a Qualitative FRESH AIR Study

Authors: *Marianne Stubbe Østergaard,¹ Jesper Kjærgaard,² Mette Marie Kristensen,³ Susanne Reventlow,¹ Anja Poulsen,² Elvira Isaeva,⁴ Azamat Akyzbekov,⁵ Talant Sooronbaev⁵

1. The Research Unit for General Practice and Section of General Practice, Department of Public Health, University of Copenhagen, Copenhagen, Denmark
2. The Global Health Unit, Department of Paediatrics and Adolescent Medicine, Juliane Marie Centre, Copenhagen University Hospital "Rigshospitalet," Copenhagen, Denmark
3. National Institute of Public Health, University of Southern Denmark, Copenhagen, Denmark
4. National Centre of Maternity and Childhood Care, Bishkek, Kyrgyzstan
5. National Centre of Cardiology and Internal Medicine named after Academician M.Mirrakhimov, Bishkek, Kyrgyzstan

*Correspondence to moster@sund.ku.dk

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Abstract

Background: Worldwide, asthma is the most frequent non-communicable disease in childhood, often starting in infancy. However, asthma is underdiagnosed in children <5 years of age (Under-5s) in low and middle-income countries.

Aims: This study explored perceptions of, and reasons for, underdiagnosis of asthma in Under-5s in rural Kyrgyzstan.

Methods: Semi-structured qualitative interviews with 22 rural primary care health professionals and 13 caregivers to Under-5s with recurrent lower respiratory tract illnesses.

Results: Most health professionals and caregivers perceived asthma as a severe, debilitating, and potentially fatal disease in young children. None of the health professionals had diagnosed any Under-5s with asthma. In the health professionals' biomedical understanding, asthma occurs predominantly in adolescents and adults, and consists of attacks of respiratory distress, with mandatory heredity and allergy. The health professionals veered away from the asthma diagnosis to avoid scaring parents, and they replaced the diagnostic vacuum with infectious diagnoses. Surprisingly, stigma regarding the population with asthma appeared to be uncommon. Most caregivers were receptive to the idea of treatment with inhaled medication and to the statement that asthma could also be a mild disease.

Conclusion: The apparent systemic underdiagnosis of asthma in rural Kyrgyzstan seemed self-perpetuating. The misconceptions and dated diagnostic criteria and tradition had no provision for asthma in Under-5s; therefore, few children were diagnosed with asthma. This reinforced the inappropriate fear and belief in society that asthma is a rare, severe, and debilitating disease. Training of health professionals and providing information to the public should address the current perception of asthma and raise awareness that asthma is often a mild and treatable disease.

INTRODUCTION

Asthma is the most common non-communicable disease in children worldwide,¹ affecting about 14% of children globally,^{1,2} often occurring in infancy.^{3,4} Infants and young children are particularly vulnerable to respiratory disease.⁵ Children living in low and middle income countries (LMIC) have more severe asthma symptoms than those in high-income settings.² The burden of wheezing and asthma is greatest in children <5 years (Under-5s),⁶ who display significantly higher proportions of emergency department visits.⁷ Furthermore, asthma hospitalisation rates among preschool children remain high.⁸⁻¹¹ Wheezing in early infancy due to viral infections is a strong predictor of school-age asthma.¹²

The few epidemiological studies on Under-5s in LMIC found a high prevalence of asthma or wheezing: 14% of 4-year-old children in Tanzania,¹³ 18% of 4-year-old children in Southern Brazil,¹⁴ 12% of 2-59 month old children in Sao Paulo, Brazil,¹⁵ and 18% of 2-4 year old children in Jamaica had >3 wheezing attacks in the last year.⁶

Historically, asthma in young children was severely underdiagnosed in high-income countries.¹⁶⁻¹⁹ Therefore, a drive to reduce underdiagnosis and undertreatment followed in the 1990s. However, unawareness of asthma in young children still prevails in LMIC,^{2,20} and poor knowledge and misconceptions of asthma signs, symptoms, and triggers are prevalent.²¹⁻²⁴ Nearly 30% of children in LMIC with severe asthma symptoms have never been diagnosed with asthma.²

Children with asthma symptoms who are not diagnosed with asthma are not treated appropriately, and the health consequences are substantial.^{16,25} Undiagnosed asthma leads to inappropriate infection diagnoses and an excessive use of antibiotics in both primary care^{26,27} and secondary care.⁸⁻¹¹ In many LMIC, underdiagnosis of asthma is a problem due, in part, to health systems that are overwhelmed by communicable respiratory diseases.²⁸

The symptoms of asthma in Under-5s are defined as recurrent or chronic/long term cough, wheeze and/or breathing difficulties, particularly at night and early morning. The diagnosis is reaffirmed by the efficacy of asthma drugs.^{1,29} The Lancet

Commission emphasises that asthma is an umbrella term describing a clinical syndrome.³⁰

Diagnosing asthma in young children is still challenging, as no gold standard diagnostic tests with high validity exist, including the lung function test, which is not possible in clinical practice in Under-5s. Therefore, the diagnosis depends on health professionals' awareness of the symptom pattern, the communications between health professionals and caregivers, and a positive treatment trial.¹

Globally, most children with respiratory illness are managed in primary care clinics. Strategies to prevent asthma morbidity in this youngest age group are still needed.⁷ The authors hypothesised that understanding of asthma in young children is poor among primary care health professionals and caregivers in Central Asia, and that underdiagnosis of asthma in Under-5s is substantial. Therefore, the authors sought to evaluate perceptions of asthma in these groups and explore reasons for the potential underdiagnosis of asthma in Under-5s in primary care. The study was conducted as part of the FRESH AIR programme.³¹ Kyrgyzstan is a 200,000 km² mountainous LMIC, situated in Central Asia, with 6 million inhabitants.

AIMS

The study explored perceptions of asthma and potential reasons for underdiagnosis of asthma in Under-5s in rural Kyrgyzstan.

METHODS

The study was conducted as a qualitative study, using the principles of qualitative data collection and analysis under the COREQ consensus statement.³² Semi-structured qualitative interviews were conducted with 22 rural primary care health professionals and 13 caregivers to Under-5s with recurrent lower respiratory tract illness.

Settings

Data collection for the study was conducted in primary care health clinics in two different Kyrgyz provinces, one in the lowlands (Chui province) close to the capital Bishkek and one in the highlands (Naryn province), far from the capital. In rural districts, primary care operates

with health professionals in medical centres, staffed with family doctors, nurses, paramedics, or paediatricians.

Interviews and Topic Guide

The semi-structured interviews were carried out on a face-to-face basis with primary care consulting health professionals and caregivers to gain insight into knowledge based, theoretical, and sociocultural perceptions of asthma in young children. The interview guide was inspired by explanatory models of illness formulated by Arthur Kleinman³³ and by theoretical perspectives on healthcare availability by Paul Farmer,³⁴ as well as by papers investigating parents' perceptions towards asthma in children.²¹⁻²⁴ The main themes and the topic guide from the standardised interviews with the caregivers and health professionals are depicted in [Table 1](#).

Inclusion and Recruitment Criteria

The health professionals were purposely sampled from different health centres in different villages in the two provinces. They all had independent consultations, although different educational levels. The inclusion criteria for the participant caregivers were to have a child aged between 12–59 months with long-term and/or recurrent cough and respiratory distress visiting a local health clinic for lower respiratory tract illness, without a diagnosis of tuberculosis.

Reflexivity

Prior to the study, the researchers thoroughly discussed their preconceptions and professional experiences with the field and on this basis, the interview guide was developed by two clinicians (MSØ, JK) and a clinician and anthropologist (SR). The interviews were carried out by two Kyrgyz clinicians (EI, AA), while data analysis was conducted by the Danish study team consisting of one clinician (MSØ) and one anthropologist (MMK), with ongoing discussions with all the research team. The various professional backgrounds of the study team resulted in extensive discussions about theoretical and analytical approach.

Data Collection

Pilot interviews took place during May 2016 in Naryn with two caregivers and one health professional, and in Chui with one health

professional, in cooperation between the Kyrgyz and Danish research team. Minor revisions to the interview guide were made based on the pilot interviews. The rest of the interviews were carried out between August and November 2016 by the Kyrgyz team, who were bilingual in Kyrgyz and Russian, in the respondent's native language. The interviews were audiotaped, then transcribed and translated into English by the Kyrgyz team. When content on the central themes in the topic guide was repetitive and a pattern based on the triangulation was apparent, data saturation was reached and data collection stopped.

Data Analysis and Interpretation

An inductive-deductive approach was applied in the analysis and data was analysed for concepts following a coding strategy described by Corbyn and Strauss.³⁵ Firstly, an open reading of the raw data was conducted by several members of the study team. Newly identified themes were

added to the list that had informed the interview guide. Themes were then collectively discussed and identified within the study team, and a thematic coding framework³⁶ was generated. Each transcript was then re-read and manually coded by two researchers using a coding tree. Coding was compared and discussed several times with the Kyrgyz team, until consensus on code allocation was reached. A topic guide was developed based on the coding process. The topic guide can be seen in [Table 1](#).

Ethical Considerations

The study was approved by the Ethical and Research Committee in Kyrgyzstan and was conducted according to the ethical guidelines of the Helsinki Declaration. The local administrative leader and the health professionals permitted the study.

All participants provided written informed

Table 1: Topic guide and coding framework for questions on asthma.

Topic guide	Coding framework
Background information	HPs' background
	Caregivers' background
Perceived occurrence of asthma in Under-5s	HPs' diagnostic experience
	Caregivers perception of occurrence of asthma
Perceptions of asthma in Under-5s	Caregivers' knowledge of the term
	Caregivers' explanations of symptoms and severity
	Caregivers' prognostic thoughts of their child's disease
	HPs' explanation of symptoms and severity
	HPs' prognostic thoughts
Stigmas of asthma in the society	Caregivers' meaning, beliefs, fears, stigma thoughts
	HPs' meaning, beliefs, stigma thoughts
Health professionals' theoretical knowledge of asthma	Age span
	Symptoms, signs, prognosis, terminology for wheeze
	Triggers such as colds, weather, allergy, smoke
	Causes such as heredity, allergy, transmission
	Training and guidelines
The consultation: the encounter between caregivers and HP	Caregivers' questions and concerns
	HPs' response and advice
Caregivers perception of inhaled medicine	Caregivers' knowledge, positive and negative reaction
	HPs' knowledge and positive and negative reaction
Reaction to the interviewers' suggestion that asthma also can be a mild disease	Caregivers' reflections
	HPs' reflections

HP: health professional; Under-5s: children under the age of 5 years.

Box 1: Main themes and findings in children under 5 years of age (Under-5s).

The caregivers' perceptions
The term asthma is well-known,
Asthma is a serious, progressive, incurable disease and potentially fatal disease,
Children with asthma cannot live a normal physical life,
However, notable stigmas against asthma in society were not prevalent and,
Inhaled salbutamol is effective, from hearsay or personal experience.
The health professionals' perceptions and statements
Asthma is mostly seen in adolescents and adults,
Asthma was not suspected or diagnosed in any Under-5s,
Asthma is a serious, progressive, and potentially fatal disease,
Asthma is attacks of respiratory distress, strongly related to stethoscope sounds,
Heredity and allergy are a precondition for asthma,
Inhaled salbutamol was used for acute respiratory distress in the clinic and,
Inhaled steroids and salbutamol were not prescribed for Under-5s.
The Under-5s with asthma symptoms were mostly diagnosed with infections.
The encounter between caregivers and health professionals
Caregivers fervently hoped not to have their children diagnosed with asthma; however,
Caregivers still asked if their young child could have asthma and
Health professionals veered away from the diagnosis of asthma in Under-5s.

consent to participate in the study.

Data Availability

Access to the data sets supporting the conclusions of this manuscript may be obtained from the author upon reasonable request.

RESULTS

Participants

Participants comprised 22 rural primary care health professionals in different public health centres (7 family physicians, 2 paediatricians, 5 nurses, 8 paramedics) and 13 caregivers to Under-5s with long-term recurrent lower respiratory tract illnesses. There were 10 mothers and 3 grandmothers, with a median education of 9 years (from 8–14 years), who were interviewed while visiting these health centres. **Box 1** presents the main themes and findings.

Perceptions of Asthma

All caregivers knew the term asthma and had some knowledge of the disease. Most caregivers, as well as most health professionals, were convinced that asthma, especially in young children, is a serious,

progressive, and incurable disease which carries a risk of death due to shortness of breath and lack of air. Many were concerned about asthma exacerbations because the attacks might develop very acutely and children could suffocate. Some caregivers described asthma as “a lack of air” or “an obstruction in the throat.” Others explained that even in adults, asthma is very severe. They described their child’s respiratory illness sounds with terms such as noisy breathing, loud breathing, and whistling breathing.

Caregiver (CG)8 (Grandmother, girl 46 month, Naryn): This diagnosis (asthma) is terrible. It is terrible for the baby probably [...] I think this is an incurable and progressive disease.

Health professional (HP)33 (Family doctor, Naryn): Asthma occurs with wheezing and suffocation. This is progressing and incurable disease, it becomes harder and harder.

HP5 (Paramedic, Naryn): They (parents) think that if a child is sick with asthma, then it will die. Everyone is afraid of asthma.

Some caregivers commented that an asthma diagnosis would require permanent medication, in the form of pills or inhalers, and would lead

to dependency on medical care and frequent hospitalisation. In the health professionals' experience, it was a belief in society that children would be handicapped and would be unable to live a normal life. One doctor stated that a young child with asthma cannot live in the highlands because the disease is incompatible with high altitude.

CG7 (Grandmother, boy 36 months, Naryn): I'm afraid very much, I don't want that (asthma)[...] Then we must be treated all the time, admitted to hospitals.

HP10 (Paramedic, Chui): Sure, it (asthma) will be a misfortune; they (parents) also know that asthma is a breath difficulty, the child constantly suffocates [...] The child needs constantly care, attacks stopping, availability of required drugs in house.

Although parents feared asthma, several stated that stigma or humiliating stereotypes towards patients with asthma in the population were insignificant. Asthma was not thought to be contagious either; therefore, there would be no apprehension from the surrounding community, and neither children nor their families would be excluded or isolated from the community. This was supported by health professionals stating that asthma would be stressful for the families but not stigmatising, in contrast to the stigmatisation of tuberculosis. However, a few caregivers believed that a child with asthma is a consequence of neglect by the family, or due to complications at birth, and therefore stigmatising.

Perceived Rarity of Asthma in Under-5s

None of the health professionals interviewed had suspected or diagnosed asthma in any Under-5s. The majority claimed never to have seen asthma in young children, including in schoolchildren. Some stated that there were no children from the village with asthma. Some health professionals were uncertain about criteria and indicated that they did not know if young children could have asthma.

HP22 (Family doctor, Chui): No, I did not put the diagnosis of asthma for children under 5 years. I have only one patient with asthma - girl 11 years [...] This is such a dire diagnosis. I can't diagnose.

Health professionals in general did not believe in asthma in young children but were aware of asthma as a prognostic outcome later in children with recurrent respiratory illnesses.

HP17 (Paramedic, Naryn): Now if a child often has long coughs, everyone say that this child is going to get asthma.

Likewise, none of the Under-5s in whom caregivers described recurrent and long-term asthma symptoms had been diagnosed with asthma.

Health Professionals' Biomedical Knowledge

The majority of the health professionals stated that asthma is a disease mostly seen in adolescents and adults. The symptoms of asthma in Under-5s were reported to be severe attacks of breathing difficulty, with a focus on nightly respiratory attacks of expiratory dyspnoea, shortness of breath, stridorous sounds, whistling in the chest, asthmatic breath, or "viscous sputum, blocking the airways." Only two health professionals used the expression wheeze, respectively as expiratory wheeze or noisy wheezing. Some expressed the view that auscultatory crackles, rales, or rattles was a criterion for the diagnosis.

HP22 (Family doctor, Chui): Prolonged exhalation. Noisy wheezing. Attacks come at night and in the afternoon. Auscultation with dry wired crackles.

HP1 (Nurse, Naryn): Probably there is a stridor, an asthmatic breath.

Most health professionals said that asthma is a hereditary disease, implying that the diagnosis in a child depends on parents having asthma. One nurse connected heredity to transmission during pregnancy, stating the child would have asthma: "if the mother had asthma during pregnancy."

HP7 (Paramedic, Naryn): if a child has asthma, it means that the parents also have it.

Many stressed that asthma is an allergic disease and that allergy is a precondition for asthma, however, several were quite vague about which allergies. Some noted untraditional allergies, like being allergic to "the smell of a mother, when she is breastfeeding a child," smoke, or the mother's hair.

HP4 (Family doctor, Naryn): The society knows that

asthma is an allergic disease, and is not contagious [...] The causes are allergens, a malfunction in the immune system, stress, heredity.

HP3 (Family doctor, Naryn): The cause of the disease is an allergic reaction, because there is a night cough. They are even allergic to mother's hair...

The triggers mentioned were mostly cold weather, colds, acute respiratory infections, tobacco smoking, and indoor cooking. One nurse mentioned birth complications, and one doctor stated that tobacco smoke could cause allergy.

HP2 (Nurse, Naryn): If the mother gave birth well, without complications, maybe he would not get asthma.

Some doctors stated that asthma is a complication of badly treated flu, bronchitis, or pneumonia.

HP4 (Family doctor, Naryn): It also may be a result of the flu complication, which passes into pneumonia then into asthma. Therefore, starting from a small age, children need to treat well, treat bronchitis, use antibiotics as required.

Some of the interviewed health professionals, including nurses, described asthma, according to the defined asthma pathophysiology, as an inflammatory disease.

HP2 (Nurse, Naryn): Asthma is an inflammatory disease of the respiratory tract. It has a hereditary genesis and allergic character.

The Encounter Between Caregivers and Health Professionals

Several of the interviewed caregivers feared that their child with recurrent and/or long-term respiratory illness also had a severe pulmonary disease. However, they seemed to fervently refuse to acknowledge that their child could be diagnosed with asthma, with the hopeful expression: "no, we do not let it happen. He will not have asthma."

On the other hand, according to the health professionals, during a consultation, caregivers often asked about the reason for their child's respiratory illness, and some caregivers inquired directly about the asthma disease or an allergic disease.

HP5 (Paramedic, Naryn): Many parents ask how a

child can suffer from asthma.

HP7 (Paramedic, Naryn): Parents often ask about the cause of the disease. But there was none (with asthma) in our practice [...] Some says that when children have long term coughing, parents think it is an allergic cough and turn it into asthma.

In response to parents' concerns, the health professionals seemed to veer away and provide explanations such as "the child may have a weak immune system." Some health professionals asserted that they would hesitate to diagnose a child with asthma because they did not believe it to be asthma, and also to protect the family, because: "the diagnosis of asthma would be a shock for the families and stress them."

In contrast, one family doctor stated that caregivers are indifferent about asthma, and another thought that parents were mainly concerned about tuberculosis. However, only one caregiver expressed concern about tuberculosis.

If the health professionals suspected asthma in a young child, they would refer to specialised practitioners or even the national child hospital for further tests and treatment.

Perception of and Experience with Asthma Medicine

Although the interviewed health professionals had never diagnosed asthma in Under-5s, they used bronchodilators (inhaled salbutamol) acutely for shortness of breath in the clinic and found them to be effective. Some had administered theophylline and Euphyllin tablets, or Atrovent (anticholinergic drug) and dexamethasone (intramuscular steroids). However, neither inhaled bronchodilators nor inhaled corticosteroids were prescribed for subsequent use at home.

Several caregivers had experienced inhaled salbutamol as highly efficient against shortness of breath, either in the local health centre or at hospital. However, they were not informed about any diagnoses in the asthma and wheeze spectrum, or information on follow-up treatment.

CG2 (Grandmother, boy 31 months, Naryn): My child received it (inhaled bronchodilator) 2-3 times when he was in the hospital, and it helped to make his breath free [...] I know salbutamol, people used it inhaled through cut bottles and it helped. I am not afraid of this.

The caregivers without personal experience had heard about the efficiency of inhaled medicine and knew that the use of an inhaler during an attack “opens the airways” and “makes it easier to breathe” and had no resistance towards inhaled treatment.

CG4 (Boy 49 months, Chui): I think they (inhaled bronchodilators) expand the lungs and after using them, it becomes easier to breath.

Several health professionals confirmed that caregivers are receptive to and favour inhaled medicine because they know it is effective and helps the children.

HP11 (Paediatrician, Chui): Inhalers help when the child has breath difficulties and suffocation. Parents already know that they are helping the child.

In contrast, a few caregivers were sceptical about inhaled medicine because it did not cure or provide complete recovery but only relieved shortness of breath, saying: “because they are constantly using inhalants, they probably do not help.” Another caregiver directly said that inhalers could harm the child. In line with this, a few health professionals stated that parents would react negatively to inhaled medicine because they would be afraid of the diagnosis of asthma or addiction to the medicine.

CG6 (Boy 19 months, Naryn): I think they are harmful indeed, they dry a throat, narrow everything there. The child will be even worse.

HP1 (Paramedic, Chui): The parents think that the inhalants are mostly used by adults with severe diseases. They can say: Why should a young child use these drugs? It can result developing an addiction to these drugs.

Reactions to Hearing Asthma May Also be A Mild Disease

Towards the end of the interview, the interviewer suggested that some doctors believe that asthma in Under-5s covers a wide severity spectrum and may in fact be a mild disease. Given this new information, several caregivers expressed confidence in the health professionals who adopted this new perspective on asthma, but others doubted it.

CG1 (Boy 21 months, Naryn): If someone had told

me so, I would have believed it. I would have a positive reaction to it.

Likewise, some health professionals including a family doctor declared that, if they diagnosed asthma in a young child, they would calm the parents and explain that the disease can be healed and treated with inhalers.

HP3 (Family doctor, Naryn): Parents will believe, if we say that asthma is not so serious disease and it can be taken under control.

A few other health professionals, and some caregivers, maintained that asthma is a serious progressive disease.

DISCUSSION

Strengths and Limitations

The methodological approach in this study allowed for a triangulation of the data collected, in the sense that the various rural health professionals and the caregivers to Under-5s with recurrent respiratory illnesses contributed with their perspectives on asthma.

The interviews were conducted by the Kyrgyz researchers who co-authored this paper. They had an understanding of the context, the field, and the language. Thereby, misunderstandings were minimised.

There are potential weaknesses in the design and the data collection carried out in this study. The interviews dealt with theoretical, knowledge based, and hypothetical questions about asthma. However, the caregivers seemed to have rooted considerations about asthma, due to their child’s recurrent lower respiratory disease and their own search for explanations. The number of interviews carried out, as well as the triangulation of data, makes this a lesser risk to the validity of the study. Nuances may have been lost in the translation of data from Kyrgyz to English. However, the data has been translated by Kyrgyz researchers involved in the study, who have paid special attention to any local or cultural terms, phrases, or sayings in the process of interviewing and translating.

INTERPRETATION OF FINDINGS

The study hypotheses were supported by the

interviews; underdiagnosis of asthma in Under-5s is substantial, due to misconceptions and fear of childhood asthma among primary care health professionals and caregivers in Kyrgyzstan. The discussion focuses on reasons for underdiagnosis of asthma and how asthma becomes the elephant in the room in the encounter between caregivers and health professionals.

Reasons for Underdiagnosis of Asthma

No Expectation of Asthma

A major reason for the underdiagnosis of asthma in Under-5s seemed to be the fact that the health professionals did not focus on, nor expect, asthma in Under-5s.

None of the health professionals interviewed had suspected or diagnosed asthma in any Under-5s and the majority claimed never to have met asthma in young children, including schoolchildren. Likewise, none of the Under-5s in this study with long-term and/or recurrent cough and respiratory distress were diagnosed with asthma, despite a prior Kyrgyz study which found a prevalence of 12.2% among 6–7 year old Kyrgyz schoolchildren.³⁷ As asthma often emerges in infancy,^{3,4} asthma in young children seemed to be excessively underestimated in primary care in Kyrgyzstan, as is the case in secondary care in several other LMIC.^{8–11} No other studies seem to have indicated this systemic ignorance of asthma in Under-5s.

Misconception and Fear of Asthma

Likewise, an important reason for underdiagnosis was the misconception of asthma among caregivers and health professionals. All caregivers knew the term asthma and had some knowledge of the disease, even though their children were not diagnosed with asthma. Most caregivers, as well as most health professionals, were convinced that asthma, especially in young children, is a serious, progressive, and incurable disease with the risk of death, due to exacerbations. However, this perception of asthma does not align with the current asthma definitions.¹ In general, caregivers feared for their child receiving a diagnosis of asthma. Paradoxically, several caregivers and health professionals expressed no major stigmas towards children with asthma, as opposed to other findings of negative connotations surrounding asthma diagnosis.²³

When the interviewers suggested that asthma is often a mild disease, most of the parents seemed open to this new perspective “if the doctors said so.” Many parents were also positive about inhaled salbutamol, because they had experienced it used for their own child with respiratory distress or heard about its high efficiency, which other studies also indicate.²¹

Partly Outdated Biomedical Knowledge

The health professionals apparently relied on an outdated biomedical understanding of asthma, which probably affected the diagnostic pattern recognition. They explained asthma as a very serious disease, mostly seen in adolescents and adults, characterised by attacks of respiratory distress combined with stethoscope rattle and with mandatory allergy and heredity. This perception does not align with the present definition of asthma.^{1,29} Thus, the health professionals’ pattern recognition seemed based on a dated asthma definition, with unawareness of asthma in young children and, for instance, not identifying recurrent or long-term cough in Under-5s as potential asthma.

Regarding allergy, epidemiological evidence suggests that less than half of asthma cases are associated with allergy³⁸ and ISAAC II demonstrated that non-allergic asthma is frequent worldwide, particularly in LMIC.³⁹ In fact, the interviewed Kyrgyz health professionals’ empirical evidence indicated that major triggers were cooling or cold virus, in line with evidence of asthma exacerbations often being triggered by common cold viruses.^{3,40,41} Moreover, the allergy component was sometimes expressed in vague and untraditional terms by the health professionals, such as: “being allergic to the smell of a mother when she is breastfeeding.”

Regarding heredity, in a society where asthma seems to be underdiagnosed, the focus on the heredity criteria can reinforce the underdiagnosis of asthma in children, since children are more likely to get a timely diagnosis of asthma if there is a family history of asthma,⁴² and health professionals need to be reminded that asthma is possible without commonly recognised risk factors.⁴²

Terminological Gaps

The caregivers described their child’s respiratory

illness with severe cough and sounds such as noisy breathing, loud breathing, and whistling breathing, but seemed unacquainted with the terms wheeze and viral wheeze. This matches findings that the word wheeze is not often understood among lay persons,⁴³ especially in countries where the native language is not English, and predominantly in LMIC.²⁸ Correspondingly, the health professionals applied medical terms like stridor, chest whistling, shortness of breath, sputum secretion, and expiratory dyspnoea for describing the respiratory sounds, and few used the terminology wheeze. As the asthma diagnosis is primarily based on the communication of patient history,¹ there may have been a communication gap regarding symptom description in the Kyrgyz settings. Further academic terminology clarification regarding the linguistically and culturally appropriate terms may help clinical communication between health professionals and lay people.

Asthma: A Diagnostic Vacuum

Although they were afraid of asthma, several parents seemed to have a latent suspicion that their child had a serious pulmonary disease, such as asthma. When seeking an explanation for their child's recurrent respiratory distress, they speculated that it might be asthma. However, the health professionals hesitated to diagnose asthma, even when caregivers posed the question directly in the consultation.

The asthma diagnosis became the elephant in the room in the encounter between caregivers and health professionals. This was partly because the health professionals did not think asthma was likely at this age, due in part to their uncertainty about the diagnosis and management of asthma, and also because the health professionals wanted to shield the family from what was thought to be a severe diagnosis, despite their tacit knowledge of asthma as a possible outcome of a child's recurrent respiratory illness. Speight et al.¹⁶ clearly demonstrated that avoiding the term asthma when talking to parents was responsible for much underdiagnosis and undertreatment.¹⁶

Limited access to inhaled preventer medication also seemed to be a factor in dissuading professionals from making the diagnosis. This is in accordance with Zar et al.²⁸ whose findings stated that diagnostic uncertainty, confounding diagnoses, tradition, and unavailability of inhaled

medication make diagnosis and management of asthma in young children challenging.

Instead, the health professionals seemed to fill the diagnostic vacuum using infection interpretations, especially bronchitis, pneumonia, and viral disease diagnoses, and often prescribed antibiotics.²⁷ A recent study indicated that parental anxiety influences the decision of both health professionals and parents in the management of respiratory tract infections in young children, leading to unnecessary use of antibiotics,⁴⁴ possibly due partly to the lack of consulting time as a barrier to educating parents.⁴⁴ However, an observational study from rural Kyrgyzstan demonstrated appropriately long consultations in primary care (Kjærgaard J et al., 2019, forthcoming).

The authors' findings regarding caregivers' and health professionals' erroneous perception of asthma as a very severe, often progressive and fatal disease, which leads to fear and avoidance of the asthma diagnosis in Under-5s, has not previously been documented. Other studies have stressed parents' misconceptions of asthma symptoms, triggers, and treatment when diagnosed with asthma.^{21-24,45}

CONCLUSIONS

The apparent systemic underdiagnosis of asthma in young children in primary care seemed to occur due to the health professionals' unawareness of asthma in Under-5s, their misperception of asthma being very severe, and their unconscious wish to shield parents against a frightening diagnosis. Thus, for Under-5s with recurrent lower respiratory illness, the health professionals seemed to fill the diagnostic vacuum using infection interpretations. This reinforced the belief in society that asthma is very rare and serious, leading to a widespread fear of asthma. None of the former studies on perception of asthma have stressed these aspects.

IMPLICATIONS

Early asthma diagnosis presents a window of opportunity to alleviate prolonged respiratory illness, reduce mortality^{28,46} and psychosocial stress for the families.²⁷ Inappropriate infection diagnoses, excessive antibiotic use,^{11,27} and potentially irreversible lung damage^{12,47,48} can

also be reduced through early identifications of asthma.

Training of health professionals and informing the public can increase awareness of the disease and address the current lack of knowledge on asthma. The use of the term asthma implies an approach to the re-evaluation and treatment of children with asthma symptoms. As the term asthma is well-known in Kyrgyzstan, albeit feared,

a diagnosis of asthma must be combined with information to caregivers that asthma is often a mild and intermittent disease. Episodic treatment is often sufficient in children with intermittent asthma symptoms.^{49,50} When properly treated, children can live a normal and physically active life.

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