Addis Ababa University

College of Health Sciences

School of Pharmacy

Childhood Asthma and Barriers to its Management: Perceptions of Patients, their Caregivers and Healthcare Providers from Selected Referral Hospitals in Addis Ababa, Ethiopia

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This is to certify that the thesis prepared by Eden Kassa, entitled: Childhood Asthma and Barriers to its Management: Perceptions of Patients, their Caregivers and Healthcare Providers from Selected Referral Hospitals in Addis Ababa and submitted to the Department of Pharmaceutics and Social Pharmacy, School of Pharmacy, College of Health Sciences, Addis Ababa University for the partial fulfillment of the requirements for the degree of Master of Science in Pharmacoepidemiology and Social Pharmacy.

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Abstract

Background: Asthma is one of the major causes of morbidity and mortality in the world. The perceptions of children with asthma and their caregivers about asthma and its medication were reasons for low adherence to recommended treatment regimens and to poor asthma control.

Objectives: To identify the perception of children with asthma, of their caregivers and healthcare providers towards asthma and barriers to long term childhood asthma management in two selected referral hospitals in Addis Ababa, Ethiopia.

Methods: Qualitative study design was employed using in depth interview technique supplemented with observational field notes. Children with asthma between the ages of 8 to 15years old, their caregivers and healthcare providers in the pediatric chest clinics of two referral hospitals in Addis Ababa, were purposively sampled for inclusion in the study which was ethically approved. After data was transcribed verbatim, it was translated from Amharic into English. Finally, it was analyzed using thematic analysis.

Result: Twenty-three children with asthma, 23 caregivers and 8 healthcare providers participated in the study. Varied perception about asthma and its management was revealed. Factors affecting childhood asthma management include limited awareness about asthma and its management, inadequate education received from healthcare professionals and non - adherence to recommended treatment.

Conclusion: Varied perceptions about asthma and its management were reported by children with asthma. Low adherence of the children to their recommended regimens, which may be caused by different factors, may contribute to suboptimal health outcomes.

Key words: Asthma, children with asthma, caregivers

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Acronyms

GAN: Global Asthma Network

GINA: Global initiative for Asthma

HCPs: Healthcare providers

ICS: Inhaled corticosteroids

NCD: Non communicable disease

SPHMMC: St. Paul Hospital Millennium Medical College

TASH: TikurAnbesa Specialized Hospital

WHO: World health organization

1. Introduction

1.1. Background

Asthma is one of the respiratory diseases which is defined by the Global Initiative for Asthma (GINA) as “a heterogeneous disease, usually characterized by chronic airway inflammation which is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation”(Bateman *et al*., 2008). It may be classified based on the severity of symptoms as intermittent, mild persistent, moderate persistent, severe persistent asthma (Colice, 2004). It is one of the major causes of chronic morbidity and mortality in the world which is estimated to affect as many as 339 million people worldwide (Masoli *et al.*, 2004).

Asthma prevalence is approximately 10%-13% globally (Lawson *et al.*, 2014). In the African region there was an increase in prevalence of asthma especially in children, which increased from 12.1% to 13.9% among children <15 years over the past two decades (Adeloye *et al*., 2015). According to a systematic review conducted on eleven sub Saharan studies, the prevalence of asthma show a wide variation (5.7–20.3%): varies widely between countries: Ethiopia 9.1%, Kenya 15.8%, Nigeria 13.0%, Mozambique 13.3%, and South Africa 20.3% (Gemert *et al.,* 2011).Among the 541 school age study participants in rural Ethiopian school children, the presence of asthma was observed in 146 cases, 27% of the study population (Mehanna *et al.*, 2018). Although there is very limited information on asthma in Ethiopia, a study showed that its

prevalence is 3.6% and 1.3% in urban and rural Jimma, respectively (Rahim *et al.*, 2013). In addition, as reported by global asthma report, prevalence of asthma in children around central Ethiopia, is currently about 5-10 % (Asher and Pearce, 2014).

The annual economic burden of asthma was estimated to be more than $56 billion in 2007 globally (CDC, 2011). The majority of deaths caused by asthma occurred in developing countries (Senthilselvan *et al.*, 2003). Chronic respiratory disease including asthma accounts for 3% of proportional mortality in Ethiopia (WHO, 2020). Asthma can develop at any stage in life, but most commonly it develops in early childhood (Asher and Pearce, 2014). Its burden has been shown to excessively affect children. Asthma is among the top ten chronic conditions for children aged 5–14 years old. Though there are striking global variations in the prevalence of asthma symptoms (wheeze in the past 12 months) in children, death rates from asthma in children range from 0.0 to 0.7 per 100000 globally (Asher and Pearce, 2014). It strongly impacts children's social life especially education. According to CDC, children with asthma missed 13.8 million school days in 2013. These missing school days will be directly related with missed days of work and loss of earning among the caregivers (CDC, 2013).

Asthma can be treated depending on the severity of the symptoms. According to GINA, the main goal of asthma treatment is to achieve and maintain good control of symptoms (Bateman *et al.*, 2008). Inhaled corticosteroids (ICS) are one of the best maintenance therapies for asthma. Different studies have

shown that ICS improves symptoms and reduce asthma-related morbidity and mortality. However, it is difficult to define asthma control in children 5 years and younger because healthcare providers are dependent on adherence reports of family members or caregivers. Similar to other age groups, the goal of asthma therapy in children is to achieve good control of asthma symptoms, maintain normal activity and to minimize future risk. In clinical practice, the right choice of medication, device and dose should be determined based on the assessment of symptom control, risk factor, patient preference, and other factors like cost of medication (Becker and Abrams, 2017).

Avoidable asthma deaths are still occurring due to inappropriate management of asthma(Asher and Pearce, 2014). There are different factors that affect management of childhood asthma which include a variety of patient and caregiver beliefs and socio cultural as well as psychological factors, complication of the inhaler, uniqueness of inhaler devices and type of inhaled steroids (Rau, 2005; Zaraket *et al.*, 2011). Perception of children with asthma and their caregivers about asthma and concerns about medication were also reported as a reason to poor asthma control, which may also cause high morbidity in low resource countries. Severity of asthma morbidity is a significant risk factor for pediatric asthma deaths. Therefore, assessing the perception of symptoms of asthma and creating better awareness about this disease and its medication, will help reduce the morbidity and mortality associated with asthma, besides improving the quality of life of asthmatic patients (Callery *et al.*, 2003; Hazir *et al*., 2002).

1.2. Statement of the problem

Though asthma can be controlled through long-term controller medication, most children with persistent asthma failed to take their daily medication as prescribed (Gamble *et al.*, 2009). Non-adherence to asthma treatment is associated with poor asthma management, higher healthcare utilization, healthcare costs, and reductions in health-related quality of life (Mäkelä *et al.*, 2013). In management of childhood asthma, the issue of adherence is particularly essential and challenging because they are easily vulnerable to airway restructuring which can lead to permanent life-threatening airway obstruction (Bender *et al.*, 2000). Healthcare providers have the role of providing education and building partnership to help family in managing their child's asthma. They will build partnership by sharing power in decision-making with the family and to focus their attention on inhaler technique and asthma management plan. On the other hand, caregivers' responsibilities in managing asthma, includes proper medication administration, avoidance of triggers, implementation of home environmental control protocols, and accurate symptom recognition. However factors undermining effective asthma management, includes children's and caregiver's health beliefs about asthma and its treatment and poor relationships with healthcare providers (Bellin *et al.*, 2017).

Since knowledge of how perception towards childhood asthma and its treatment impacts asthma management is limited, the intent of this study was to examine the perception of children with asthma, of their caregivers and

healthcare providers towards asthma and how it affects childhood asthma management.

Therefore, the study was conducted to understand the perception of children with asthma and their caregivers as well as the perspective of healthcare providers towards asthma and to determine barriers to asthma management among children with asthma in TikurAnbesa Specialized Hospital (TASH) and St. Paul's Hospital Millennium Medical College (SPHMMC), Addis Ababa. It was thought to provide new information for healthcare providers and society about perception on asthma and problems on childhood asthma management in Ethiopia. The findings from this study will be helpful for all health care providers, decision makers, and for Ministry of Health through providing an update on the current childhood asthma management in the society.

2. Literature review

Non-adherence is a major problem which decreases asthma treatment effectiveness and increasing medical costs (Bender *et al.*, 2000). According to a literature review, one of the main reasons for poor management of childhood asthma is non-adherence to medication which ranges from 33.8 to 97% across countries of the world. Among the reasons for the non-adherence, parents' perception about ICS has been reported as the major factor (Aalderen and Group, 2008; Callery *et al.*, 2003; Klok *et al.*, 2012).

2.1. Perception on Asthma and its management

Children with asthma and their caregivers have different perception about asthma and its management. A study conducted in Saudi Arabia showed that there is a moderate knowledge on asthma but poor knowledge about its medication among majority of asthmatic children and their caregivers (Alotaibi and Alateeq, 2018). This qualitative study using focused group discussion revealed that caregivers of children had modified the asthma management plan which is prescribed by their primary care provider mainly because of their health beliefs about the use, safety, and long-term complications of medication use. It also indicated these beliefs often led to suboptimal management of their child's asthma. Similar studies also showed the presence of different kinds of thought about the cause of asthma. For example, in Saudi Arabia, majority of parents believed that asthma was a hereditary disease, and the rest cited exposure to dust as the potential trigger (Abu-Shaheen*et al.*, 2016; Lakhanpaul*et al.*, 2017). The fact that the later

study uses self administered questionnaire, may be difficult to explore the perception of the participants compared to qualitative method.

There are two key asthma treatments: (1) bronchodilators (most commonly β2-agonists) that reverse airway narrowing by relaxing airway smooth muscle, and (2) corticosteroids, which treat the underlying airway inflammation; inhaled corticosteroids (ICS) are known as preventers. The inhaled route, with the use of a spacer, is the best way to administer both of these classes of medicines. Inhalation is more effective and has fewer side effects than the oral route (Global Asthma Report, 2014). A study conducted in Pakistan also showed that 37% of caregivers living in the country believed that inhaled medications are superior to other medications. These parents reported that the frequency of acute exacerbations and annual hospital visits reduced with inhalation therapy when compared to other oral tablets. None of the caregivers had reported difficulty of inhalation therapy to administer (Hazir *et al*., 2002). However, another qualitative study using focused group discussion including 44 parents of asthmatic children explored that according to their perceptions about illness and medication, parents deliberately stopped or continued administering ICS for their child (Klok *et al*., 2011).Similarly in Kenya, a cross sectional study, which was conducted on 116 caregivers of asthmatic children explained that the participants preferred using syrups for their children instead of inhalers. However, the participants had adequate knowledge about asthma and its management (Simba *et al*., 2018).

There were also many concerns about side effects of inhaled steroids. For example, among 18 participants in New Work city, majority of them mentioned “facial bloating”, weight gain, hyperactivity as a concern while two mothers stated that they associated steroids with “body builders” (Peterson-Sweeney *et al.*, 2003).

2.2. Impact of childhood asthma

A qualitative study conducted in Netherland showed that children with asthma frequently mentioned being bullied or ignored because of their limited physical capacities, especially during physical education period at school. They had also emphasized that there is feeling of being different from peers. Lack of concentration in school was described as cognitive compliant in particular coughing, was found to disturb their concentration. The study also indicated that the common influence of asthma was dependent on medication, shortness of breath, cough, limitations in activities, and the social limitations (Bemt *et al.*, 2010).

In another study, it was highlighted that in addition to having an impact on the child's own life, asthma can also affect the social and leisure pursuits of the family as a whole (Nocon, 1991). A similar study conducted in Melbourne explored that the burden of asthma as broad which affect social life, personal relationships, employment and finances of the caregivers. Also, it showed that the cost of asthma medication was an issue for the majority of participants (Goeman *et al.*, 2002). In another qualitative study conducted on mothers of asthmatic children it was reported that the mothers have feelings of

uncertainty, fear of asthma crises, and stressed for ways to handle it. The mothers also worried about the impact of asthma on their child's learning and future development, the side effects of medications, and the risk of drug dependence (Chong*et al*., 2018). Although the study had limitation on recruiting fathers, it should include all caregivers instead of only taking the perception of mothers of asthmatic children. A systematic review in south Africa showed that almost half of children in urban communities experience severe asthma symptoms, and many asthmatics lack a formal diagnosis and access to treatment (Mesekela *et al*., 2018).

2.3. Barriers to asthma management in children

Different studies reported several types of barriers to childhood asthma management (Klok *et al.*, 2012;Aalderen and Group, 2008 ;George *et al.*, 2003). A qualitative study conducted in USA, indicated that the major factors for poor management of asthma in children include reluctance to take medications on a daily basis, challenges to obtaining and maintaining ICS therapy, social distractions, inappropriate use of ICS, and fear of steroid side effects (George *et al.*, 2003).

A qualitative study in London using semi structured interviews with parents, and caregivers indicated that families of children with asthma aged between 5 and 12 years old had difficulty with administering asthma medicines to children or remembering to take medicines (Lakhanpaul *et al*., 2017). Another study conducted in Pakistan showed inadequate asthma awareness is the major contributing factor for poor asthma control (Hazir *et al*., 2002). Whereas, a

similar study revealed that high cost of medications to the patient and the provider's lack of knowledge on medication cost are among the major reasons for poor asthma management (Mowrer *et al*., 2015).

According to a qualitative study conducted in Ohio, the barriers most commonly reported by parents were related to patient and family characteristics, health beliefs, or to their social and physical environment (Mansour*et al.*, 2000). A study conducted in Australia showed that lower levels of asthma knowledge and family dysfunction were found to be associated with the non-adherence (Burgess*et al*., 2010). Whereas in study conducted in Brazil, the factors include mother's schooling level, replacement of the caregiver, prescription greater than two puffs/day, absence of rhino sinusitis, age under 7 years, number of consultations lower than two in a 4-month period. The study was a concurrent cohort observational study which includes 168 patients aged 1 to 12 years. The participants were followed for 24 months, and it simultaneously assessed the adherence rates and factors related to lower adherence in three different intervals for 24 months. Therefore it was well designed cohort study.

A different result was obtained from another study which revealed that female sex, Asian ethnicity, living in a smaller household, younger age at diagnosis has been associated with the poor asthma control in children (Chan *et al.*, 2016; Lasmar*et al.*, 2017).

The main factors for non-adherence of children to inhalers were related to fear of dependence, side effects and over dosage, and the child's dislike for

inhalers based on parent's perspective in a study conducted in Singapore. According to this study, in order to improve the management of asthma a better understanding of parents' attitudes towards inhaled asthma medications would be useful in improving asthma educational program and therefore ensure better patient compliance with therapy (Lim *et al.*, 1996). Whereas, another study indicated that the most obvious factors for non-adherence were unawareness of non-adherence by both parents and health care providers, lack of parental drive to achieve high adherence and ineffective parental problem-solving behavior (Klok *et al.*, 2014). It was also explained in one study that in young children, since the medication regimens often require nebulizer treatments, it will be time consuming, difficult to transport outside the home, and require frequent cleaning (Desai & Oppenheimer, 2011). In addition, another study indicated that there are significant errors related to inhaler use that lead to inadequate use of inhalational medications in Ethiopia. These errors were due to different factors like the device used, lack of giving appropriate instructions and parents giving too much responsibility to the child for monitoring and treating their asthma (Gelaw and Gelaw, 2014).

A systematic review of qualitative studies showed that the common barriers to asthma treatment in children includes practical barriers, such as costs of medications, misunderstanding of medication instructions, the inconvenience of remembering and administering medication, particularly for children and school staff during school hours. Input from health professionals was mentioned by most caregivers as influencing their beliefs about the illness and the treatment (Santer *et al.*, 2014).

According to global asthma report recommendation, improving barriers to asthma management like access to care, especially to controller (including preventer) therapies, and better adherence to such therapies can significantly reduce the economic burden of asthma (Asher and Pearce, 2014).

2.4. Conceptual framework

Two models had been used in order to frame this qualitative study :Kleinman's model and Horne's necessity – concern model. The first model was very important for understanding and comparing how patients perceive, experience and manage their illness and how their healthcare providers understand patient's health related problem or their disease. It also provide an idea to understand how both perceptions affect patient compliance and clinical care in childhood asthma management. Explanatory models give meaning to the persons' experience of illness and their choice of treatment. Explanatory models may explain five interrelated issues pertaining to an episode of illness: 1. The etiology of the illness. 2. The timing and mode of onset of symptoms. 3.Pathophysiology. 4. The course of illness, including the sick role. 5. The appropriate treatment of the illness (Kleinman, 1980). Analysis of illness narratives are sources for understanding patient's unique perception about illness and its treatment.

The second model which is about necessity and concerns belief of medications is very important to get insight in to necessity and concerns about asthma medications especially ICS. The factors affecting management of asthma includes disease and drug related factors (severity of symptoms and side effect), Patient factors (Personal beliefs, knowledge on asthma and its treatment),health facility factors(availability of medicine and health service), Interaction of patient and health care provider factors (Counseling and health education).

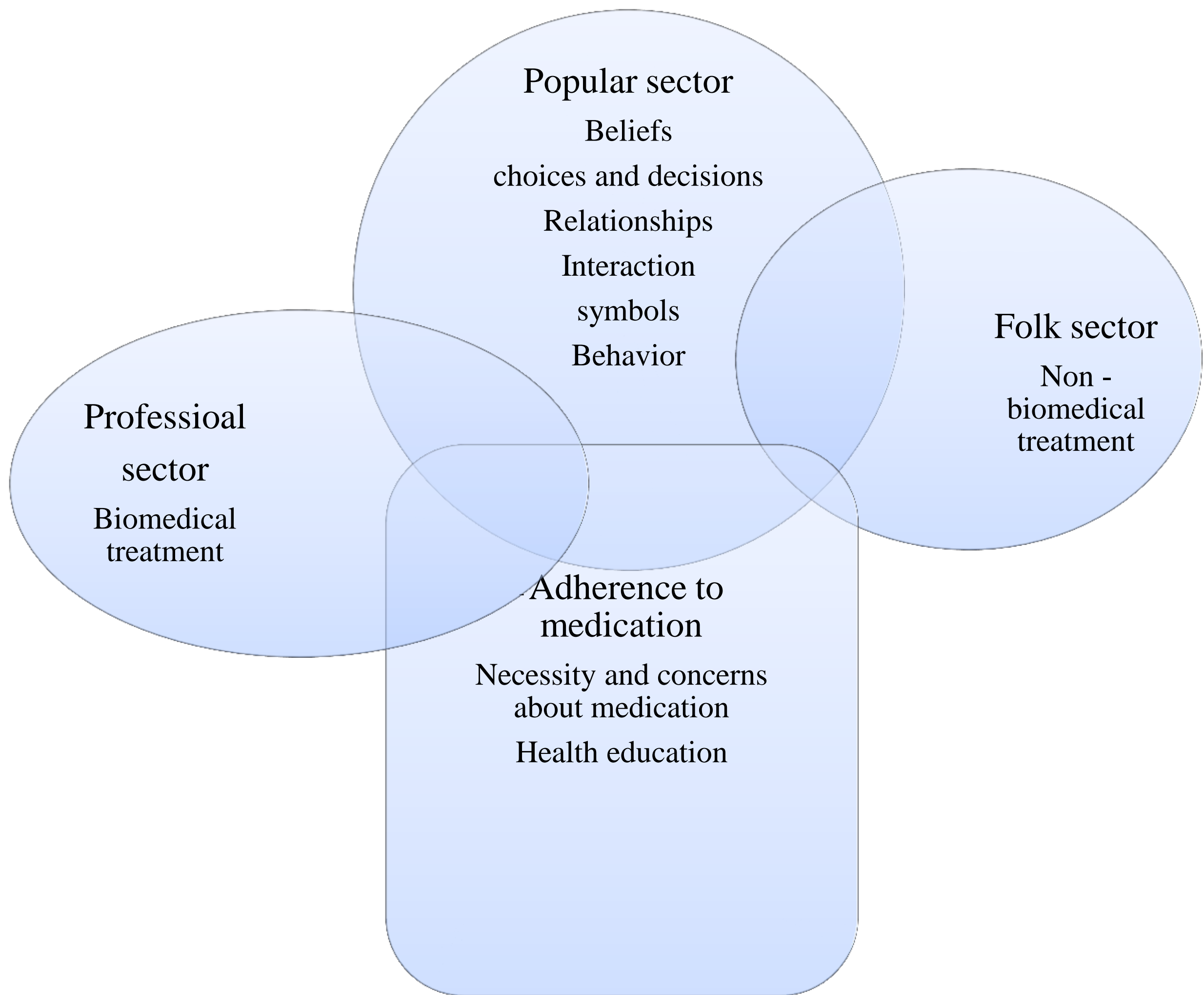

Figure 1: Conceptual framework based on Kleinman's model and Horne's necessity-concern model (Kleinman *et al.*, 1978; Petrie and Weinman, 1997).

3. Objective

3.1. General objective:

- To identify the perception of children with asthma, of their caregivers and healthcare providers towards asthma and barriers to its management in two selected referral hospitals in Addis Ababa.

3.2. Specific objectives

- To explore the perception of children with asthma and their primary caregiver towards asthma
- To investigate the perceptions of children with asthma, their primary caregivers and healthcare providers towards childhood asthma management
- To identify factors related with barriers to asthma management in children in all perspectives

4. Method

4.1. Study area

The study was conducted in Addis Ababa, the capital city of Ethiopia. Addis Ababa has a total population projection of about 4.8 million in 2020(World Population Review, 2020). The city has an area of 540 km2 and includes ten sub-cities and 116 woredas. It has a total of 56 private and public hospitals of which six of the public hospitals are under Addis Ababa city administration. There are also six referral hospitals in the city. Among them the study was conducted in TASH and SPHMMC which are the highest referral hospitals in Ethiopia. The study was conducted in the pediatric chest clinic from April to June 2018.

4.2. Study setting

One of the study sites, TASH, is found in Lideta sub city of Addis Ababa city administration. It is Ethiopia's highest referral public hospital in the country. The hospital is administered by Addis Ababa University and is the largest teaching hospital among all in Ethiopia providing teaching for about 300 medical students and 350 Residents every year. It offers diagnosis and treatment for approximately 500,000 patients a year. The hospital has 800 beds, with 130 specialists, 50 non-teaching doctors. The emergency department sees around 80,000 patients a year (College of Health Sciences | Addis Ababa University Sites, 2020).

There are two chest clinics in the hospital: pediatric and adult chest clinic. Among the children with asthma served in the pediatric follow up clinic, more than half of them were asthmatic children. There were two pediatric residents and one nurse assigned every Monday afternoon (asthma follow-up day) who were working by rotation to serve in pediatric chest clinic. The period of appointment for children may be varied according to their conditions.

The second study site, SPHMMC is also one of the largest referral hospitals in Ethiopia. It is located in Gullele Sub City in Addis Ababa and built by Emperor Haile Selassie in 1969. The hospital receives referrals from around the country and is under the Ethiopian Federal Ministry of Health. It has 350 beds and sees an annual average of 300,000 patients. It has a catchment population of more than 5 million (Saint Paul's Millennium Medical College, 2020). The clinic serves children with asthma every Monday morning and there were two residents, one or two pediatrician, and two nurses assigned in every follow up day.

4.3. Study design

The study adopted a qualitative method using individual in-depth interview among children with asthma, caregivers and healthcare providers. This method was selected because it has the ability to explore a new idea on perception of study participants on asthma and factors associated with its management since there was no well-defined concept on the area of study.

4.4. Eligibility criteria

4.4.1. Inclusion criteria for patients and caregivers

- All children with asthma aged 8 to 15 years
- Children with asthma who had been attending in the chest clinic for at least six months
- Children with asthma who had been using ICS for at least three months
- Those children who gave assent after study was explained.
- Children whose parents consented to their involvement in the study
- Caregivers who consented to participate in the study.

4.4.2. Exclusion criteria for patients and caregivers

- Children with asthma who were severely ill
- Children with asthma who couldn't express their ideas
- Children with asthma who couldn't communicate either in Amharic or English
- Caregivers of children with asthma, who couldn't communicate either in Amharic or English

Inclusion criteria for healthcare providers

- Physicians and nurses who were working with children for at least 3 months in the chest clinic
- Pharmacists working on pediatric pharmacy during study period
- HCPs who consented to participate in the study

4.5. Sampling and recruitment

Purposive sampling technique was employed to select participants. This sampling technique was preferred to select study participants who could express their feeling independently and had more exposure with asthma and its barriers to treatment. Among different types of this specific sampling technique, the study used a maximum variation/heterogeneous purposive sample in which the study participants (children with asthma and their caregivers) were selected from different place of residence and different severity of asthma to provide a diverse range of cases relevant to the topic. Study participants were selected based on their ability to deliver adequate information on the topic. For example, all selected children with asthma were attending in the chest clinic for at least six months and taking ICS for at least three months. Due to this reason, it was thought that they might have more acquaintance with asthma and its treatment in the clinic compared to the rest of children with asthma. Assuming the adequacy of information caregivers might provide those who were providing the needed care to selected children participants were included in the study. Healthcare providers were selected from those who had more contact with children with asthma and from three types of health care professions to increase heterogeneity of the data i.e. physicians, nurses and pharmacists.

Children with asthma were recruited on their follow up day in the chest clinic. They were approached during their follow up day through communicating with nurses. After getting informed consent and assent, they were appointed for interview. Selected children were paired with their caregivers but interviewed

separately. As it was described, the study included children with asthma aged 8-15 years with the assumption that they can express themselves independently. Thirty children who were being treated for asthma at TASH and SPHMMC were approached for participation in the study. However, five of them declined to participate and two of them discontinued the interview in the middle of the study due to personal reasons.

Sampling and recruitment of participants had continued until saturation was achieved. Saturation was achieved when different participants start expressing the same idea repeatedly (Senthilselvan *et al.*, 2003). To make sure that saturation was achieved further data collection was conducted for five more respondents.

4.6. Data collection instrument and procedures

Semi structured interview guide based on Kleinman's model and utilized previously for a similar study, was used (Peláez *et al*., 2015; Searle *et al.*, 2017). The topic guide consisted of three parts which included open ended questions for children with asthma, primary caregivers and health care providers based on Kleinman's Model and necessity-concerns model (Kleinman *et al*.,1978; Petrie and Weinman, 1997).Amharic language (the local language) was used to interview the participants.

After result of pilot study, the interview guide was adapted to Ethiopian context before being used for data collection. Some of the ideas on the interview guide were not applicable in Ethiopia. For example, the term inhaler spacer was not

known and not available in the country. Therefore, it was modified by homemade spacer that is made from packed water container. The idea talking about the patient's participation in health care team was also removed since there was no health care team which included the patients in the clinic. There were also some substitutions on the terms of drugs used for the asthma like 'oxygen' for inhalers as it is described in the community. The interview guide was mainly revolving around their perceptions of asthma, cause of their asthma and its sign and symptoms use of asthma medications (ICS), necessity and concerns related with medications, adherence to recommended treatment, barriers to their asthma management, patient-physician relationship and other ideas. The interview for healthcare providers was around their experiences with managing childhood asthma, medication counseling, and views on management of childhood asthma.

The entire data collection was administered by the principal investigator at convenient place to gather full information i.e. at the participant's home, office separated from the clinic and cafeteria inside both hospitals but far from the pediatric chest clinic. Children participants and their caregivers were interviewed mainly at separate office that was arranged through communicating with the nurses in the clinic. The interview was done face to face with open ended questions which were aimed at probing participants to talk freely with enough time to reflect. It was also iterative in that after the first few interviews; there will be addition of prompts and supplemented questions based on responses of the first interviewees. In addition, observation field notes were continuously taken throughout data collection.

The duration of interview lasted 18–30min in children with asthma and it was 30-40 min for caregivers. Each of the interviews was audio recorded. After analysis of three children and their caregivers as well as five healthcare providers interviews, the advisers reviewed the progress continuously and some participants were also giving feedbacks after being interviewed. The use of triangulation technique which was one of data quality assurance method was also supposed to decrease personal bias.

4.7. Data analysis

Primarily, recorded data was checked for completeness and quality. The completed data was then transcribed verbatim and all the facial expression and different gestures were integrated with the transcription. The Amharic transcribed data was translated into English by two bi-lingual health professionals. The supervisors are two intellectuals with different profession which is linked to the study area. One of them is a social pharmacist with a great experience in qualitative methods. The second one is a consultant pediatrician and pulmonologist. It was agreed that all the data sets should be analyzed thematically as this would enable comparisons to be made both within and across the data sets, i.e., children with asthma, caregivers, and healthcare professionals. The PI and another qualitative researcher independently coded the sampled data and then discussed the coding to develop coding frames for each interview. There was possible disagreements during translation and coding between the two researchers but it was resolved through continuous discussions. Inductive reasoning was employed to group the codes under logical

categories to arrive at analytic concepts. Kleinman's conception of "explanatory models" was used to focus on data concerning explanation of asthma and its treatment and to define codes. Then themes and subthemes were developed in the data based on the two models: Kleinman's Model and necessity-concerns model to describe relations and trends between variables. And each data set was analyzed separately before comparisons were made between each interview group (Braun and Clarke, 2006).

4.8. Data quality assurance

Before the actual data collection, a pilot study was conducted with five asthmatic children and two primary caregivers. Although the result of the pilot study was not included in the results of the main study, it was used to improve the interview guide. The interview was tape recorded to capture all the information given by the participants and field note was taken in detail so as to support the audio recording. During data collection process, the completeness of data was checked after every interview through crosschecking the recordings with the interview guide. The research used triangulation technique and it was conducted with careful attention to the rules and conventions of qualitative study. Both source triangulation and researcher triangulation were incorporated to check and establish validity of the study. There was a scheduled meeting with a multidisciplinary team incorporating the PI and the two supervisors after data collection of 3 to 4 participants. During the meeting, the PI had been addressing comments raised from the team. Similar ideas mentioned by all data set and logical relationship of findings were some of the criteria for this research's

credibility. To check for respondent validation, the transcribed data was disclosed to some of study participants of which three were healthcare providers and two were caregivers. Feedback was collected from healthcare providers and it helped physicians to improve the gap from their side after discussion was done based on the partial analysis of the finding.

4.9. Ethical consideration

Before starting data collection, ethical approval was obtained from research and ethics committee at School of Pharmacy (ERB/SOP/11/10/2018) and permission was obtained from the Pediatric and Child Health Department, School of Medicine, Addis Ababa University. Permission was also obtained from hospital administrations of TASH and SPHMMC. Finally, informed assent and consent were obtained from all participants. To maintain anonymity, names were not mentioned during the interview and on the report. In addition, the information that was collected in this research will be kept confidential in a locked computer where nobody, other than the PI, can access it.

4.10. Researcher's position and reflexivity

Since researcher's position and reflexivity is a major strategy for quality control in qualitative research, understanding of the effect of characteristics and experiences of the researcher is very important. Different aspects of the primary investigator may affect the finding of the study and its interpretation. Although a great care has been taken to minimize this effect, the primary investigator (PI) being a pharmacist as well as an assistant lecturer may be considered as an

opportunity and difficulty for the study. The participants were talking freely about their condition and they were also interested to be interviewed as they believed that the PI as a pharmacist will give an advice for their problems related with medication. Being experienced with teaching was also a great opportunity for probing the participants during the interview.

Another opportunity was the experience of the PI as a daughter of an asthmatic parent who was on inhaled corticosteroid for a long time. This experience helped the PI to understand the perception of children and their caregivers about asthma and its management easily in addition to being a healthcare provider.

On the other hand, some of the caregivers were asking back the PI about asthmatic medicines during the interview knowing that she was a pharmacist. In addition, the PI, being a native Amharic speaker, may affect the finding from other languages' native speaker participants. Because, they may not express their ideas as they would in their languages. Being a female was not an obstacle for the research since all participants express their ideas freely and the PI was conducting the research with great curiosity and energy.

The PI had taken a course on introduction to qualitative study design and methods as part of fulfilling the Master's program from Addis Ababa University, School of Pharmacy. However, it was not enough to perform such kind of qualitative study. Therefore, to fill the gap, the PI had to explore more about qualitative methods and read many journals and books on qualitative studies.

5. Result

Twenty-three children with asthma aged between 8 and 15 years, their caregivers and eight healthcare providers from the pediatric chest clinic of TASH and SPHMMC participated in the study. Among a total of 30 children who were approached to participate in the study, five of them declined to participate and two of them discontinued the interview in the middle of study due to personal reasons. The socio-economic - health conditions of those who couldn't participate in the study were somehow similar with the study participants.

As it is illustrated in the table below, majority of children with asthma were recruited from TASH. Of the total participants, 13 of them were female, 19 of them were within the age range 8 and 12. Among them, 14 of them were between grades 1 &5. Muslim participants constituted the highest number compared to Christians. Place of residence for the majority was Addis Ababa.

Majority of caregivers were married females, within the age range of 35 to 45 and had completed high school. It was also apparent that 9/23 were asthmatic.

Table 1: Socio-demographic characteristics of children with asthma

Socio-demographic characteristics	No
Sex	
Female	13
Male	10
Age group	
[8, 11]	19
[12 – 15]	4
Religion	
Muslims	14
Orthodox	6
Protestant	3
Place of residence (region)	
Addis Ababa	9
Oromia	8
Afar	3
Somali	2
Benishangul	1
Grade	
1 – 5	14
5 – 8	9

Table 2: Treatment related characteristics of children with asthma

Characteristics	No
Name of follow up hospital	
TASH	15
St Paul	8
Severity of asthma	
Mild Persistent	6
Moderate persistent	17
Prescribed medicine	
Only ICS	15
ICS + Salbutamol inhaler	2
ICS + Salbutamol syrup	6
Duration of asthma (years)	
1-4	5
5-8	11
>9	7

Table 3: Socio - economic characteristics of caregivers

Characteristics	Number
Sex	
Female	15
Male	8
Marital status	
Single	0
Divorced	4
Married	18
Widowed	1
Age group	
[25 – 35)	8
[35 – 45)	12
[45 – 50)	3
Religion	
Muslims	14
Christian	9
Level of education	
Unable to read and write	6
High school	10
Higher education (first degree and above	7
Monthly income	
<1000	3
1000 – 3000	15
> 3000	5
Asthma profile	
Asthmatic	9
Non Asthmatic	14

Table 4: Profile of healthcare providers

Characteristics	No
Profession	
Physician	4
Nurse	2
Pharmacist	2
Sex	
Female	5
Male	3

Themes on perception of study participants

Perceptions of children with asthma and their caregivers towards asthma and barriers to long term childhood asthma management were clustered into four key themes: Perceptions on asthma, burden of asthma, management of asthma and adherence to recommended treatment. The findings from healthcare providers perception are also presented integrated with these main themes.

Theme 1: Perception on asthma — Sub themes

- Definition of asthma
- Sign and symptoms of asthma
- Cause and aggravating factors of asthma

Theme 2: Burden of asthma

- Physical influence
- Emotional influence
- Social influence

Theme 3: Management of asthma

- Non pharmacological treatment
- Pharmacological treatment
- Medication availability

Theme 4: Adherence to treatment

- Perception on drawback of ICS
- Medication taking behavior
- Action when symptoms worsen
- Approach of healthcare providers

5.1. Theme 1: Perception on asthma

Majority of children with asthma had different perspectives about the meaning of asthma, its sign, symptoms, cause and aggravating factors. All of them reported that they were not well informed about the meaning of asthma by the healthcare providers. The caregivers had also very different perspective on the disease.

5.1.1. Definition of asthma

Majority of children with asthma have defined asthma as sickness related to breathing. The Amharic term for asthma is 'asem' as all of the participants described it in Amharic. There was difficulty to differentiate between the definition and symptoms of asthma and some of the participants didn't know the meaning of asthma. One of the children with asthma defined it briefly

while the rest had incomplete knowledge on asthma as seen in the quotes below.

"In my opinion, asthma is just coughing."(Child 1)

"Asthma is a state of being sick repeatedly and there is coughing associated with it."(Child 4)

Although caregivers witnessed that they were oriented by the healthcare providers about the definition of asthma, majority of them were not able to give a complete definition of asthma as seen in the following quote.

"In my opinion, asthma is a problem of breathing. It causes coughing and difficulty of breathing" (caregiver 2)

5.1.2. Sign and symptoms of asthma

Majority of children with asthma have described signs and symptoms of asthma as difficulty of breathing, coughing and sweating. Some of them described difficulty of breathing as the only symptom of asthma. There were others that have added high temperature and sweating as among the symptoms while a few were not able to mention any sign and symptom. Some of the quotes regarding the child participants' perceptions towards the signs and symptoms presented below.

"I think there is difficulty of breathing, coughing, ehh, nothing else."(Child 7)

“In my opinion, the main symptom is coughing and the rest are difficulty of breathing, high temperature and sweating.”(Child 9)

Unlike children, caregivers were relatively better in terms of explaining the signs and symptoms of asthma.

For example, one of the caregiver described as follows

“ *In my opinion, the sign and symptoms of asthma includes difficulty of breathing, cough, chest pain, fast heart rate etc.*”(caregiver 5)

However, one common perspective observed with both children and caregivers was considering sweating as a sign and symptom for asthma.

“Well as the doctors told me, the sign and symptoms are coughing, difficulty of breathing and sweating.”(Caregiver 9)

5.1.3. Cause and aggravating factors

Cause and aggravating factors were not clear for children with asthma. They did not differentiate the cause from aggravating factors. For instance, some of them misclassified environmental aggravating factors such as bad smell, smoke, cold, dust and change of weather as causes of asthma.

Some of them didn’t have any clue about the cause of their asthma. For example, one of them replied that…

“I don’t know what caused my asthma because I am asthmatic since my birthday. May be my mom knows about it.”(Child 3)

However, two of the children explained major causes and aggravating factors of asthma. One of them explained that…

" Asthma can be caused by bad smell, cold air, allergens, common cold and others."(Child 14)

Caregivers linked genetic predisposition as a cause of asthma in addition to environmental factors. Caregivers who were asthmatic themselves thought as genetic predisposition solely causes asthma.

"*In my opinion the cause is hereditary because I am also asthmatic."(Caregiver 8)*

Some caregivers' knowledge about the causes is not any different from what children have explained.

"The causes of asthma are smoke, cold weather, bad smell ehh…. etc."(Caregiver 10)

Two of the caregivers also described that there's no clear perceptible cause or aggravating factor for asthma. As they had described, when they tried to warm their children considering cold weather as an aggravating factor, symptoms get even worse. Due to this reason, they believed that neither the causes nor aggravating factors were predictable. Some of the caregiver also had a problem to distinguish between the cause and aggravating factor for asthma. And there was also a thought asthma may be a result of a curse.

"Asthma is unpredictable, for example, one time I thought the cause of my child's asthma could be a bad smell around our home, and then…But he couldn't get better. Then I started to think that the cause will be the change of weather. So, that is why I couldn't be sure about the cause and aggravating factor of asthma."(Caregiver 15)

"Oh, I almost forget it. Most of the time, we smoke incense in front of pictures of God, St Mary and angels whenever we pray in our home as we believe this will help treat diseases like asthma. Will that aggravate his symptoms?"(Caregiver 18)

5.1.4. Views of healthcare providers about children and their caregiver's perception on asthma

Some of the physicians described that children had limited knowledge about the disease. They explained that children as well as their caregivers may not clearly define asthma.

For instance, one of the physicians said that…

"Personally, I don't think that children with asthma as well as caregivers have adequate knowledge about definition of asthma as we are not working on creating awareness about the disease due to patient load in the clinic."(Physician 2)

The other physician also added…

"Majority of children with asthma and caregivers do not know much about the disease and its behavior...So, they discontinue the medication as soon as they get a relief and they come back when symptoms aggravate."(Physician 1)

Two of the physicians compared the knowledge of children and their caregivers. One of them said that…

"Children with asthma have very little knowledge about the disease. Although not adequate, caregivers have relatively better knowledge about asthma than children."(Physician 1)

All of the physicians also believed that majority of children with asthma as well as caregivers, had no clear knowledge about the cause of asthma.

For example, one of them said that,

"Personally, I don't think that children with asthma and their caregivers have a clear knowledge about the cause and aggravating factor of asthma. For example, some of them believed that asthma can be transmitted through coughing and inhalation like Tuberculosis."(Physician 3)

Some physicians explained that they spend too much of their limited time on advising caregivers to protect children from aggravating factors.

One of them said that…

"Since there is limited time to discuss about the disease with every patient and caregiver, we mostly focus on advising them about aggravating factors of asthma like smoking, cold, carpet, cat etc."(Physician 4)

5.2. Theme 2: Burden of asthma

Almost all children with asthma stated the psychological and physical burden of asthma on their daily life. Only few respondents said that the disease didn't affect their life.

5.2.1. Physical burden

Majority of children with asthma described that the disease had influenced their physical activities like playing, performing physical exercise and other day to day activities.

For example, one of them described how it affected playtime with friends.

"I usually feel its impact while I play with my friends. There were times when I stopped playing because I was afraid that I might suddenly face difficulty of breathing in the middle of the game."(Child 20)

Some of them also described that their friends at school thought as they were incapable to perform things as the others.

"*At school, most of the children don't want to play with me because they believe that I couldn't play or run as good as they do."(Child 10)*

The other child explained that asthma is the reason for the feeling of tiredness and coughing frequently.

"Asthma makes me cough, and tired so frequently."(Child 1)

Some of caregivers also reported that their children were not able to attend some of their classes because of exacerbation of symptoms. Consequently, they themselves were forced to stay at home in working days.

"I have no words to explain the burden of asthma in our family. To mention one, sometimes my child would be forced to miss school days because her asthmatic symptoms get worse. Therefore, I should also stay at home. Her asthmatic condition got the entire family worried every day."(Caregiver 20)

One of the caregivers also said that she was forced to move to a new place in order to protect her child from aggravating factors.

"Since I thought that there was a bad smell around the place where we used to live, I was forced to move to another place."(Caregiver 15)

5.2.2. Emotional burden

Almost all children described that asthma had an impact on their emotion. A couple of them described how they were mentally affected by the disease. They explained that asthma made them feel worried and nervous. The emotional burden extends to worries related to the inability to administer the medicine as shown by the following quote.

"Inability of administering the medication by myself also frightens me."(Child 20)

The other child explained how his life changed after the disease.

"My life has become different since I was diagnosed with asthma. Emotionally, I feel anxious in my daily activity."(Child 1)

Difficulty of breathing as a result of smelling something also got the other child worried.

"Sometimes, I get worried since I believe that smelling something unusual would result in difficulty of breathing. For this reason, I don't want to go to school."(Child 4)

On the other hand, majority of caregivers reported that asthma caused feeling of dependency to children. They also described that it made them shy and limited their communication with people. Fear of exacerbation of asthma was another thing they worried about.

One of the caregivers explained her child's condition as the following.

"My child is so shy and he is not communicating with people well, especially after his symptoms of asthma worsens." (Caregiver 3)

The other caregiver said that…

"*I am so worried about my child's condition in case she suddenly experience exacerbation of asthma symptoms"(Caregiver 8)*

The other issue that worried the caregivers was the low availability of the ICS both in the hospitals where they were treated at and even in the majority of the community pharmacies. This has led some to become afraid that they wouldn't

get the medicine and treat their children. [They were explaining their feeling tensely].

"We all know that this disease will not give time to kill patients and children with asthma will die if they couldn't get oxygen or the inhalation medication immediately."(Caregiver 21)

5.2.3. Social/parental influence

Majority of the children with asthma explained that their daily activities were closely monitored by their parents. Playing outdoors and eating the kind of food they prefer were only possible if their parents allowed them to do so. When it comes to taking their medications, children described that they were even forced by their parents to take their medications as instructed.

One of the children with asthma mentioned that…

"*Since my mother fears that my asthma will be aggravated, she always yells at me whenever I want to play outdoors with my friends. Frankly speaking, I hate to stay at home."(Child 8)*

The other child also mentioned about being forced to take medication.

"Mostly, I am forced to take the "oxygen" (ICS)… I wouldn't take it if my father did not strictly follow my medication."(Child 11)

5.3. Theme 3: Management of asthma

Majority of the children with asthma as well as caregivers described that asthma can be managed by avoiding things that could cause and aggravate it in addition to medication. Both biomedical and non-biomedical approaches were described in the process of managing asthma.

By and large, the biomedical approach was the mainstay of treatment as would be expected in this hospital based study. In addition to taking the medicines that were prescribed (as will be discussed in subsequent themes), physical exercise and other preventive measures were practiced.

"Since I believe that sport is one of preventing mechanism for exacerbation of symptoms, I usually insist my child to perform simple physical exercises with me every morning."(Caregiver 10)

Changing place of residence from bad smelling area to a fresh area was also another strategy used by one of the caregivers.

"Since I thought my child's asthma may be aggravated by bad smell around our home, I was forced to change the place where we used to live."(Caregiver 22)

Participants in addition used non-biomedical approaches such as home remedies and religious healing as discussed below.

Majority of the children with asthma as well as their caregivers described that they used home remedies such as taking "*tazma mar*" (a special type of honey

obtained from a different type of bee which is stingless), and were given other remedies that were believed to help with their asthma such as milk with honey and garlic as can be seen in the following quotes.

"My mother always gives me milk in combination with honey and garlic to prevent exacerbation of asthma."(Child 5)

"Sometimes, I will give him a special honey called "tazma mar". Because, I heard that it is good for reliving cough and other symptoms of asthma."(Caregiver 3)

Caregivers also shared the use of preventive measures such as making adaptation in home and dietary modifications, changes at home including damp dusting, changing beds more frequently, improving ventilation, and avoiding having pet, keeping their child warm or indoors. With regard to diet, they described avoiding cold foods such as ice-cream and giving warm foods and drinks.

"Oftentimes, I discontinued administering the medication and started natural treatment like dressing him a sweater, giving him honey, milk with garlic."(Caregiver 12)

There were also the practice of religious healing to help manage the asthma as can be seen in the quotes below.

"We usually went to church to pray and I will drink holy water when my symptoms get worse." (Child 3)

"For example, I have administered 5 puffs of the inhaler three times yesterday. But he couldn't get better. Then I lose hope and started praying in the middle of the night."(Caregiver 10)

5.3.1. Views of healthcare providers about management of childhood asthma

The healthcare providers explained that the major therapy in the pediatric chest clinic was inhaled steroids. All of the physicians described that the main goal of steroid therapy is controlling acute exacerbation; improving patient's quality of life and side effects. Although, they admitted that they were not achieving these goals because of patient load in the hospitals.

One of the physicians said that…

"The main goal of ICS therapy is controlling acute exacerbations, and improving the patient's quality of life. However, we couldn't achieve the goals."(Physician 3)

Another pediatric resident responded as follows

" Although we didn't advise children with asthma on the side effects, the major goals of the ICS therapy include strictly following major side effects like hypertension, and others."(Physician 1)

Their practice on management of childhood asthma is explained in the following themes. All of physicians described that in managing childhood

asthma they didn't use the guideline of pediatric asthma management correctly.

For example, one of the physicians said that…

"Most of the time, we don't clearly classify asthma as mild, moderate, mild persistent etc. Therefore, the treatment in our clinic is more of symptomatic. In addition, as we treat children with steroid, we don't strictly follow step up, step down principle."(Physician 2)

One of them also mentioned that…

"I am available whenever the residents need a consultation to step up or step down the treatment. Although, I noticed that the residents alone are not stepping-up or stepping-down steroids appropriately."(Physician 3)

Another physician described fear of beginning steroids for children with asthma because of different reasons.

"*Personally I am not fully confident when to prescribe steroids for children since the diagnosis is not clear and it is too difficult once it is started.*

5.4. Theme 4: Adherence to recommended treatment

Over the study period, the main medical treatment was steroid therapy in the two hospitals. Majority of children and their caregivers believed that their asthma is under the control of 'oxygen' or ICS. Their perception on the necessity, concerns and availability of ICS and their medication taking behavior is discussed in this theme.

5.4.1. Necessity of ICS

All children with asthma described that their health has been improving after they started taking inhaled steroids as expressed by the following quote from a child participant.

"Asthma can be treated by taking medicines like ICS (Oxygen) and protecting oneself from factors that can cause asthma."(Child 2)

They described that the ICS is essential for their health because it will give them a relief when they couldn't breathe. Similarly, the caregivers also reported that the medicine was a better medicine from all asthmatic treatment. Because, it could enable their child to breathe normally as their asthma aggravates as can be discerned from the participant quotes below.

"I think it is a better medicine because it will enable me to breathe when I get difficulty of breathing. I mean it gives me oxygen."(Child 8)

"... I have seen the medication relieving the difficulty of breathing my child was suffering from." (Caregiver 9)

5.4.2. Concerns towards ICS

Majority of the children with asthma stated some ideas about drawbacks of ICS. They reported that the medicine had a bad taste, smell, and feeling of no sensation to their tongue. They also reported that they don't want to take it because of the difficulty of administration, fear of side effect and general dislike.

"I don't like its smell. In addition, my tongue will not sense anything for some time after I administer the ICS."(Child 3)

"My mom forced me to take the medicine. However, I don't like it at all."(Child 6)

Another one also described a problem related with the apparatus of ICS...

"I don't like the inhalation; it has bad taste… Since I found a cockroach inside the apparatus, I always fear to inhale it. Because, I became suspicious of getting something inside it. Once, I remember refusing to take it because of this problem. However, there was nothing inside it. Then my mother bought me another one and administered it herself."(Child 4)

Majority of the caregivers described that, if it was not obligatory, they wouldn't administer the medicine for a long time because they were afraid of side effect, dependency, and some exceptional effects of the medicine on their children.

One of the caregivers stated her concern about using ICS as the following…

"As I heard from my friends, ICS will cause some side effects like hypertension and I think it will cause my child to be dependent only on this medication."(Caregiver 22)

Some of the caregivers also explained their perception about ICS. Especially, those who were also asthmatic and prescribed with ICS had described their

concern in detail. For example, one of the caregivers described her perception about ICS relating it with her experience of taking it.

"Well about this medication, it was also prescribed for me. But when I took it, my nose will not sense anything... Yeah, I am serious. Then I was forced to discontinue taking it. Since my nose was not sensing anything (my nasal secretion, sorry for the word, but I want to tell you openly), I was not able to sense any secretion coming from my nose. Another person told me the situation. Therefore, I don't like to administer the medicine to my child though I believe it is an obligation."(Caregiver 20)

Some caregivers also described that they faced some challenges from the society about their children's asthma therapy. As they described, there was some bad thought about ICS by the community.

For example, one of the caregivers reported that…

"My neighbors and even my wife tried to persuade me that I shouldn't administer ICS to my child as they thought it will make her dependent on this medication. However, this didn't make me change my mind…" (Caregiver 9)

5.4.2.1. Views of healthcare providers about concerns towards ICS

All of physicians believed that children with asthma did not take their prescribed medicine especially ICS as recommended. As they described, the reasons may be bad perception about the medicine, fear of side effect, and difficulty of administration. They explained the patient's and caregiver's

perception on ICS medicine. For example, one of the physicians described the concern of caregivers on ICS.

"The main concern is that majority of the caregivers had a bad perception about the ICS... For example, they thought the medicine will make adaptation and through time the patient will not respond to this medicine. But I don't know where they got this idea."(Physician 2)

Another physician also described about bad perception of children with asthma and their caregivers about ICS.

"Some of the children didn't like to take their ICS medicine. The reasons may be fear of adaptation, side effect or another reason."(Physician 4)

5.4.3. Medication availability

In general, all children as well as their caregivers reported that the hospitals had a good environment for them except the low availability of medicine inside the hospital. All of the caregivers appreciated the chest clinic since their children were getting a good follow up according to their appointment. However, they had complained about the availability of ICS and other essential medicines in the hospital. They stated that when ICS was not available in the hospital, they would be forced to buy the medicine at private pharmacy which will be very expensive. As some of them added on this issue, the medicine was at times also not available in majority of the community pharmacies.

One of the children complained about regular non-availability of ICS inside the hospital.

"The 'oxygen' which was prescribed for me is not available in the hospital. For example, last time we couldn't find the medicine. Then my mom was forced to buy it from private pharmacies. Currently, it is not also available everywhere."(Child 21)

The mother of child 21 also explained her feeling emotionally [by crying].

"I was so disappointed when I couldn't find the medication by the time my child was very sick. I thought X hospital has chest clinic department separately and it serves many children with asthma daily. So, it was hard to believe that it is appropriate to lack this medication at this huge hospital."(Caregiver 21)

5.4.3.1.Views of healthcare providers on medication availability

Majority of healthcare providers described that the availability of medicine is different in the two hospitals. All of the physicians as well as the pharmacist mentioned that there is no consistent availability of ICS and other asthma medication.

However, the physicians described that most of the time ICS and some asthma medication will be available only in one hospital even when there is scarcity in most of health facilities. By the time of study, as the field note showed, the ICS was available in the one hospital but not in the other one.

One of the physicians described that ….

"I don't think that ICS as well as salbutamol is available in adequate amount in this hospital, I mean it is not constant."(Physician 3)

One of the pharmacist also described that

"In our hospital, ICS is not available consistently compared to other asthma medications."(Pharmacist 2)

5.4.4. Medication taking behavior

Majority of children with asthma described that they discontinued taking the medicine if they had no problem of breathing. Then they would continue taking it when the symptom aggravates. They also described that they used one opened inhaler after three months or four months. In addition, some of

them didn't have a clear knowledge about administration of the inhaled corticosteroid.

"I am taking the 'oxygen' (ICS) whenever my symptoms aggravate like when I have difficulty of breathing."(Child 3)

Majority of the children with asthma also reported that their caregivers were administering the medicine for them. The rest of them described that they just inserted the device and inhaled into their mouth. They didn't describe closing their mouth after inhalation except one participant.

One of them explained that he simply insert the inhalation without following the steps to take ICS.

For example, one of the children explained how he was taking ICS…

"First, I opened the inhaler then I inhaled the medicine into my mouth, then remove from my mouth." (Child 7)

Caregivers were not an exception with this regard. There was also a misunderstanding related with the idea of administering inhalers, especially the way of administration, the dose of ICS and frequency of administering ICS. Except two, all of the caregivers didn't describe the correct administration of inhalation to their children. They described that they discontinue administering it if they thought it was not necessarily to administer.

"I will give him ICS only when his symptoms aggravate then if he gets a relief, I will discontinue. However, the doctor told me to keep giving the inhalation every day."(Caregiver 15)

All of children with asthma reported that they went immediately to hospital when their asthma aggravated after they tried getting a relief by increasing the dose and frequency of the inhaled corticosteroid. However, as they stated, sometimes, there would be no response even when they increased the dose and frequency of inhalation. Except one, all of them had the same response: They increased the dose as well as the frequency of the ICS as soon as their asthma worsened. For example, one of the children explained his action when his asthma aggravated.

"First I will increase the puffs from twice to four times and I will take it frequently. Then I will come to the hospital if oxygen is required."(Child 2)

The other one also said that…

"I will come to TASH and I will take the inhaled medication whenever I am sick. I will increase the dose from four to six puffs in about 20 minutes."(Child 6)

The caregivers also described their reaction when their children's asthma aggravated in a similar way with the children with asthma. All of the caregivers reported that they increased the dose and frequency of the ICS and they took them to the hospital (chest clinic) by the time their children's asthma aggravated. One of them said that…

"*Before going to hospital, I will give him (her child) the inhalation more frequently than I used to give him. Then if the symptom occurs again, we will come immediately to TASH" (Caregiver 20)*

5.4.4.1.Views of healthcare providers about medication taking behavior

Majority of the healthcare providers believed that children with asthma were not taking ICS as prescribed. They explain as to how children with asthma were taking ICS for some time then they would discontinue as soon as they felt better and the problems with as described in the following quote.

"*The major problem in controlling asthma is administering inhaled medicine incorrectly. And some of children with asthma will not take it totally. For example, one of them who had moderate persistent asthma and prescribed with ICS was frequently admitted in the hospital. Since I thought she was taking ICS, I couldn't find the cause of the exacerbation. Finally, her mother told me that she didn't give her the ICS since it was prescribed. Therefore, I thought there will be many other caregivers who didn't claim that they were not giving the inhalation. The other problem is that even though they administer the ICS, they may not give them correctly."(Physician 2)*

Some of them also reported that children considered ICS as a reliever medicine instead of the preventer medicine as it was intended as can be seen in the following quotes.

"Most of children with asthma were not taking ICS as we prescribed; they took it as PRN (on need) bases by themselves."(Physician 2)

"In my opinion, children with asthma are not taking the ICS as prescribed. I think they are taking it when there is exacerbation of symptoms only. Then they will discontinue taking it."(Physician 4)

5.4.5. Interaction with healthcare providers

Children with asthma reported that they had a good relationship with the health professionals since they treated them in a friendly manner. They didn't have a problem to express their feeling to the healthcare providers. The findings from the observation field notes also corroborated the friendly interaction stated by the children with the health care providers.

"I have a good relation with them. I mean I can talk to them openly."(Child 8)

The caregivers also described that they had a good relation with the healthcare providers. They also stated that the healthcare providers approached them equally with respect as seen in the following quote.

"I have a good relationship with the healthcare providers. I like their friendly relation with my child and he also liked them. So, he is happy when there is an appointment to this clinic."(Caregiver 9)

However, children with asthma described that the healthcare providers didn't give them a clear knowledge about asthma as described by a child study participant.

"The doctors didn't provide me with any knowledge about the disease; they simply talk about it with my mom."(Child 15)

Though the caregivers appreciated the effort of the healthcare providers to express about how to prevent from aggravation of asthma, they didn't believe that they got adequate health education about asthma.

5.4.5.1. Views of healthcare providers about interaction with children

All of the healthcare providers explained that there was a friendly relationship with the children with asthma as well as the caregivers. They mentioned that they approached children with asthma and the caregivers in a friendly manner. So that, majority of children with asthma and caregivers can be able to describe their feeling openly though some of them were shy to express their feeling.

One of the nurses said that…

"We approached children with asthma in a friendly manner to make them feel free. In addition, I am trying to treat them as a mother."(Nurse 1)

However, all of the healthcare providers described that they couldn't give advice to every child with asthma because of high patient flow in the clinic. High patient flow in both chest clinics was also observed in the field note.

One of the physicians responded that…

"Since it is a public hospital there is more patient load. Therefore, I couldn't discuss each and every detail with every patient. However, within the

available time, I will try to advise them on the administration of the ICS, when to come to the hospital, and I will also tell that asthma is a lifelong disease that cannot be cured by medication."(Physician 4)

Similarly another physician also added…

"I think the children may not have adequate knowledge about the disease because we are not working on creating awareness about the disease due to patient load in the clinic."(Physician 2)

Another physician explained his prior expectation that the children may have some knowledge about asthma.

"I will try to advise the patient on some points like how to prevent themselves from precipitating factors for asthma, and other things. However, we generally believe that they already will have knowledge about these things. Other healthcare providers may also think like this so I believe that we are not advising every patient."

One of the pharmacists also described her practice in the following quote…

"Since I believe that the doctors will advise them before coming to the pharmacy, I don't usually advice about the disease. However, I will tell them little about the administration of ICS."(Pharmacist 1)

Generally, all of the healthcare providers especially the physicians mentioned that appropriate education was not provided to the children.

For example, one of the physicians responded that,

"Not only in this hospital, but also in other healthcare facilities in our country, less attention is given to educating patients about a disease and its preventive measures. Children with asthma are no exception in this regard. Most of the time, we focus only on the medication and we forget to educate them about the disease and why they are taking their medication etc.…if we don't educate them about the disease, they won't have any knowledge about it. So definitely, the gap is from our side."(Physician 2)

Finally one of physicians explained that the role of advising and checking the correct administration of ICS should go to nurses

"In my opinion, nurses should check the technique of administering the ICS as they take vital sign."(Physician 4)

6. Discussion

This qualitative study explores the perception of children with asthma, caregiver and healthcare providers about asthma and its management. In addition, it also described the factors associated with the suboptimal adherence to childhood asthma treatment. Kleinman's concept included an important examination of belief about illness and treatment that were able to understand the perception of participants about asthma and its management. The study revealed that the child participants and their caregivers expressed varied perceptions about asthma and its management especially the ICS and experienced emotional, physical and social burdens in relation with asthma in their daily activities. These factors alongside the limited accessibility of medicines and limited education from the healthcare providers were found to affect the adherence to recommended treatment regimens and the overall management of childhood asthma. Horne's necessity - concern model was also found to be helpful in identifying themes related with the perception of participants about ICS like concerns about it.

The result obtained from all data sets (the children with asthma, their care givers and health care providers) disclosed that the main cause of limited knowledge about asthma was receiving inadequate advice about asthma and its management from the healthcare providers. A similar qualitative study conducted on 25 children and their caregivers in Manchester, also showed the difference in perception between children and their caregivers (Callery *et al.*, 2003). The fact that the perception of the children and their caregivers differs,

may show that there was inconsistent health education about the disease and its management. As it was indicated above, both group of participants in the current study also described that they didn't get enough knowledge about the disease. The physicians also stated that the children as well as caregivers had a limited knowledge about asthma. This finding is similar with a study conducted in South Asia that reported that many children with asthma experienced an uncoordinated care and inconsistent advice from healthcare professionals (Lakhanpaul *et al.*, 2017).

In addition, the study revealed that children with asthma as well as the caregivers had poor understanding about correct administration of ICS mainly because of limited education about the medication and its technique receiving from healthcare providers. This idea was obtained from all data sets through triangulation The finding is also similar with a study conducted in New York which showed that there is confused understanding about administration of ICS medication (Peterson-Sweeney *et al.*, 2003).

One of the barriers of asthma management was found to be the burden of the disease itself. The psychological and physical influence of asthma in day to day life of children with asthma will make the children unable to manage their asthma correctly. For example, the children may not be comfortable to take their inhalation at school because of feeling of dependency. There was psychological as well as physical influence of asthma The psychological influence was related with fear of aggravation of the symptoms specifically difficulty of breathing and dependency on parents. Parents of children with

asthma also reported that asthma caused their children to feel dependent, shy, and have limited communication with people. And they stated that it had a huge impact on family life since it is a constant worry for them and makes them not to feel relaxed. In a similar study, majority of parents of children with asthma reported that asthma caused their children to feel self-pity; and to have poor self-opinion, and others felt their children had poor relationships with their peers (Castella and Castella, 2018). Another study also found that repeated hospital admissions led the caregivers to lose confidence and to feel powerless (Chong*et al.*, 2018).Therefore, the fact that these psychological influence on them, may contribute to the poor management of their asthma. Because, the children may be independent to take ICS, manage their symptoms well.

The physical influence was related with difficulty during running or playing with friends, performing physical exercises. Another study conducted in Nottingham (UK), also described that children attending a hospital clinic for asthma were more likely to be obese and were significantly less active than a comparison group with other medical conditions. Asthma was identified by the parents and children as a barrier to exercise (Glazebrook *et al.*, 2006). Similar study conducted in Netherlands also showed that asthma influenced the life of the children physically, emotionally and socially (Bemt *et al.*, 2010).

The current study also discovered that there was also a social influence of asthma on children. This influence includes less social interaction because of fear of smell and missing school days. It is well studied that school absence

can affect academic performance, and frequent short absences are generally more harmful than an occasional long one (Glazebrook *et al.*, 2006); (Bemt *et al.*, 2010). Therefore, it is so mandatory that children with asthma and their caregivers get psychological as well as social support from the caregivers as well as the society.

Children with asthma as well as their caregivers had negative attitude towards ICS.As it was indicated on the result, the mentioned reason for the negative attitude includes its bad taste, smell, difficulty of administration, side effect, dependency, and some exceptional effects of the medicine. This perception as well as inadequate education provided from healthcare providers may affect adherence on ICS. Similar study conducted on attitudes of children with asthma also indicated that one of the factors for poor management of asthma is dislike of inhaled steroids (Sovani *et al.*, 2008).

The finding from all data sets revealed that there was non-adherence of children on asthma management especially on ICS. It was recommended by GAN that health care professionals should actively participate in improving asthma management by assisting in improving correct inhaler technique and adherence to treatment. The physicians in this study also believed that it will be better to check the adherence and technique of administering ICS in every visit of the children with asthma to chest clinic and better to train the healthcare professionals particularly nurses about the correct way of administering ICS. However, it should be well noted that the major role to advice on adherence to any medication is the pharmacists'. It will be very

helpful to develop chronic care management system which incorporated different healthcare professionals in order to get a coordinated care including counseling and monitoring of this particular group of patients.

The caregivers as well as the health care providers had complained about the availability of the ICS in both hospitals. As the caregivers stated, this is directly related with their children's life and affect the disease management. Because, they believed that their children cannot be alive without oxygen. Even though ICS could be available outside the hospital, it will be too costly that majority of them could not afford. Another study, which was conducted on the availability, pricing and affordability of three essential asthma medicines in 52 low- and middle-income countries including Ethiopia, reported that the availability of these essential medicines was particularly poor for corticosteroids. The availability of ICS particularly Beclomethasone was 19 % which is very low and the price of the medication was found to be unaffordable in these countries (Babar *et al.*, 2013).

In addition, the healthcare providers reported that they were not working accordingly pediatric asthma treatment principle. This may lead to poor control of asthma and frequent admission in asthmatic children. This finding is similar with a qualitative study conducted in America which reported that there was non-adherence to following guidelines to asthma management. It also reported the cause of this non adherence to guidelines was related with lack of time to stay informed and poor guideline distribution (Cabana *et al.*, 2000). However, in our study the cause of the inconsistency in the

management of childhood asthma may be due to the non-availability of some essential medicines to prescribe and non-availability of national guideline specific to pediatric asthma management. The gap from physicians including the above and non-confidence to prescribe steroids should be avoided through continuous training of healthcare professionals about childhood asthma management. However, there is a need to conduct multiple of researches on this area to have a better understanding.

Limitation and strength of study

The study is the first in its kind in the country as well as in its triangulation technique which incorporated the data sets including children with asthma, caregiver's and healthcare professionals view point. Therefore, the obtained result could be considered as very refined result that was cross checked from the three perspectives.

However, majority of study participants were recruited from AA may not be representative of and it may not be representative of other healthcare settings in the other parts of the country such as the primary healthcare and private settings.

7. Conclusion

Children with asthma and their caregivers expressed different perceptions about asthma and its management compared to the biomedical recommendation and reported facing physical and emotional and social burdens. They used non biomedical managements including physical exercise home remedies and religious healing. Major concerns related with ICS were difficulty of administration, fear of side effect and general bad attitude towards it. These and other factors such as the low availability and affordability of the ICS could have contributed to the low adherence of the children to their recommended regimens. This in turn may contribute to suboptimal health outcomes.

8. Recommendation

There should be adequate education about asthma and its management for the asthmatic children as well as their caregivers by the healthcare professionals. There is a need to change the attitude towards asthma and the treatment including inhaled corticosteroids and work on its adherence in children. For this task, the hospitals may consider assigning an asthma educator who can serve this group of patients and should also train healthcare providers about proper management of childhood asthma as well as techniques of administering ICS. Pharmacists should monitor and counsel chronic patients and ensure that they check adherence to their medicines and ensure their correct administration.

Health care providers

- Should be aware of the factors that affect the asthmatic management in children to improve the problems.
- Should educate children and caregivers about asthma and its management.
- Need to address how parents' health beliefs may affect management of asthma with prescribed regimens for treatment and shall provide written asthma action plan
- Should strictly follow pediatric asthma management guideline and attend continuous training about the appropriate management of childhood asthma.
- Should be aware that the parent's quality of life is also compromised by their child's asthma and try to encourage their effort.

Policy makers

- Pharmaceuticals fund and supply agency should work on the availability of essential asthmatic medications specially inhaled corticosteroids.
- Shall prepare a national guideline for childhood asthma management

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Annex 1

English version of interview guide

Addis Ababa University

College of Health Sciences

School of Pharmacy

Department of Pharmaceutical and Social Pharmacy

Interview for data collection on perception of children with asthma, their caregivers and healthcare providers towards asthma and barriers to long term childhood asthma management in two selected referral hospitals in Addis Ababa, Ethiopia.

Written consent form

Hello, my name is ______________________________. I am a graduate student in college of health sciences, School of Pharmacy, Addis Ababa University and this study is for fulfillment of masters in Pharmacoepidemiology and social pharmacy. The purpose of this study is to identify Perception of children with asthma, their caregivers and healthcare providers towards asthma and barriers to long term childhood asthma management in two selected referral hospitals in Addis Ababa, Ethiopia.

We want to better understand, your perception towards asthma and barriers to long term childhood asthma management. The interview would take a

maximum of 40 minutes of your time. Your participation is completely voluntary. You can refuse to answer any questions and/or with draw from the study at any time you want. All your responses will remain confidential.

Are you volunteer to participate in the study?

Yes □ No□

Section 1: Socio-demographic characteristics of respondents

1.1 Age categories: 8-12☐12-16☐

1.2 Parents marital status

Single □Divorced □Married □Widowed □

1.3 Parents level of education

Unable to read and write□ Primary school □Secondary School and preparatory school □Higher education (first degree and above) □

1.4 Parents employment status

Government employee □

House wife □

Employee of private company□

Disabled due to illness □

Retired □

Business Man or woman □

Other, please specify ______________________________

1.5.Parents monthly income

<1000□ 1000-3000□>3000□

Section 2: Medical Characteristics filled from patient chart

2.1. Disease severity

Mild□ Moderate□ Severe□ Other------------

2.2. Prescribed inhalers

Inhaled corticosteroids only□ Inhaled corticosteroids and other medication□

Others, specify______________________________

2.3. Co morbid conditions

Chronic heart disease□ chronic obstructive pulmonary disease (COPD) □

Others, specify______________________________

A. **Introduction/Ice breaker (Patient and care giver)**

1. How did you learn that you (your child) were asthmatic? Can you describe your (child's) health? Can you describe signs and symptoms of asthma?

2. When did the asthma start? What do you think of the factors that caused your asthma? What do you think triggers your asthma?

3. Who follows your (the child's) asthma? How did the physician/s and/or healthcare professionals describe asthma to you?

Topic Guide 1: Children

Knowledge about Asthma and treatment

1. How long have you had asthma?

2. How does your asthma affect you/make you feel? Prompt for: Physical and mental effects. How severe is your sickness? What do you fear about your sickness?

3. How do you manage your asthma? Can you describe factors that will affect to manage your asthma? How do you feel about your relationship with your parents and health care providers?

4. What do you think of the kind of treatment you should receive? What type of medication/s are you taking for your asthma? How do you administer it? Do you think you are following the recommendations prescribed by your physician?

5. What do you think of Inhaled corticosteroids ("Oxygen")? What is its benefit to your asthma? (Explore the perception of advantages and disadvantages associated to this type of prescription).

6. Most of asthmatic children have difficulty administering Inhaled corticosteroids("Oxygen"). How do you administer it? Do you follow the recommendations prescribed by your physician?

7. Why do you take (or not) the Inhaled corticosteroids ("Oxygen") in the way you have just described? What do you fear about using Inhaled corticosteroids?

(Explore different possible sources of influence, and among them, which one was the most important for the patient).

B. Consideration of medical recommendations

1. What do you do when your asthma worsens? Have you consider increasing the dose or frequency of the inhaled corticosteroids ("Oxygen")?How frequently you will administer it?

2. Why do you react this way when your symptoms worsen? (Explore different sources of influence, and if there are many, see which one was the most important)

C. **Patient-physician relationship**

1. How would you describe your meetings with the physician/s and health care professionals that treat/s your asthma? Is there anything you want to add?

Topic guide 2: Primary care giver

1. What type of medication is the child taking for his/ her asthma?

2. How do you administer it? Do you follow the recommendations prescribed by your physician? Why do you administer (or not) inhaled corticosteroids ("Oxygen") in the way you have just described?

3. What do you think of inhaled corticosteroids ("Oxygen")? (Explore the perception of advantages and disadvantages associated to this type of prescription and if relevant, see what could help or prompt them to take it).

4. Why do you administer (or not) inhaled corticosteroids ("Oxygen") in the way you have just described?

(Explore different possible sources of influence, and among them, which one was the most important for the patient).

D. Consideration of medical recommendations

1. What do you do when your child's asthma worsens? Have you consider increasing the dose or frequency of the inhaled corticosteroids? How frequently you will administer it?

2. Why do you react this way when the child's symptoms worsen?

(Explore different sources of influence, and if there are many, see which one was the most important)

E. **Patient-physician relationship**

1. How would you describe your meetings with the physician/s and health care professionals that treat/s your asthma? Is there anything you want to add?

2. In your opinion, what is your role in the treatment of asthma? What is your role?

Topic Guide 3: Health care provider

F. Background

1. To start could you introduce yourself and your clinical role?

2. How long have you worked at this clinic / respiratory medicine?

3. How often do you see children with asthma?

G. Consultations with children with asthma

1. What do you see as the main aims of the treatment/management you provide? How do you manage childhood asthma?

2. What are you trying to achieve when managing childhood asthma? What are the factors that will affect your management of childhood asthma?

3. Do you think children with asthma will take the inhaled corticosteroids as prescribed by the physician? Why?

3. What care or advice do you normally give to parents?

4. We are interested in children aged 8-15 years. Is there anything we need to particularly think about, when thinking about management in this age group?

Annex 2

Amharic version of interview guide

ቃለ- ምልልስ

ፋርማሲዩቲካል እና ሶሻል ፋርማሲ ዲፓትርትመንት

ጤና ይስጥልኝ እኔ---እባላለሁ፡፡ በአ.አ ዩኒቨርስቲ በፍርማሲ ዲፓትርትመንት የቅድመ ምርቃ ተመራቂ ተማሪ ነኝ፡፡ ይህ ጥናት ለመመሪቂያ ፅሁፍ ማሚያ የሚስራ ነው፡፡ የዚህ ጥናት አላማ አሰም በሽታ ያለባቸውን ህጻናት ፣ የነሱን ተንከባካቢዎች እና የጤና ባለሙዎችን በአስም በሽታ እና ህክምናው ላይ ያላቸውን አስተሳስብ ለማወቅ ነው፡፡

ይህ ቃለ ምልልስ ቢበዛ የእርስዎን አርባ ደቂቃ ብቻ ይወስዳል፡፡ የእርስዎ ተሳታፊነት ሙሉ በሙሉ በእርስዎ ፈቃድኝት ላይ የተመሰረተ ነው፡፧ በማንኛውም ሰዓት ጥያቂዎችን ያለመመለስ እና ከጥናቱ መውጣት ይችላሉ፡፡ ሁሉም መልሰዎ በሚስጥር የተጠበቀ ነው፡፡

በጥናቱ ለመሳተፍ ፈቃደኛ ነዎት?አዎ --------- አይደለም-------------

ክፍል1

1.1 እድሜ 8-11 ----------- 12-15 ----------

1.2 የቤተሰብ የጋብቻ ሁኔታ ያላገባ የፈታ --------ያገባ-----

1.3 የቤተሰብ የትምህርት ደርጃ መፃፍና ማንበብ የማይችል

1ኛ ደርጃ ----------- 2ኛ ደርጃ--------- ከፍተኛደረጃ------------ሌላ----------

1.4የቤተሰብ ስራ ሁኔታ መንግስት ሰራተኛ -----------የቤት እመቤት -----የግል ሰራተኛ

መሰራት የማይችል ---------- ነጋዴ----------ጡረተኛ--------ሌላ----------

1.5 የቤተሰብ ገቢ ሁኔታ 40000-------------1000-3000 --------- 3000 -----

ክፍል 2

የጤና ሁኔታ (ከካርድ ላይ የሚማላ)

2.1 የበሽታ ደረጃ መጠነኛ ------ መካከለኛ---------- ከባድ----------

2.2 የታዘዘለት መድሃኒት ሚነፍ ብቻ ---------- የሚነፋ እና ሌላ መድሃኒት---------- ሌላ---

2.3 ተጓዳኝ በሽታ አለ---------- የለም-------- ሌላ-------

መግቢያ (ለህፃናት እና ለተንከባከቢዎቻቸው)

1. የአስም በሽታ እንዳለብዎት (ልጃዎት እንዳለባት /በት)እንዴት አዎቁ? አሁን ያሉበትን የጤና ሁኔታ (የልጃዎትን የጤና ሁኔታ) ሊገልፁልኝ ይችላሉ፡፡ የአሰም በሽታ ምልክቶች ሊገፁልኝ ይችላሉ?
2. የአስም በሽታ የጀመረህ/ሽ መቸነው? የአሰም በሽታውን ምን ሊያመጣው ይችላል

ሀ. የህፃናት /ልጆች ቃለ ምልልስ

<u>ሰለ አስም እና ህክምናው ያላቸው እውቀት /አሰተሳሰብ</u>

1. የአለምበሽታውለምንያክልጊዜነውየቆየው?
2. የአሰም በሽታው (በአንተ(ች) ላይ ምን ተፅዕኖ አለው? ለምሳሌ በአካላዊ እንቅሰቃሴ እና በአዕምሮ ላይ፣ በሽታው ምን ያክል ከባድ ነው? ስለ በሽታው የሚያስፈራህ/ሽ ነገር ካለምንድን ነው?
3. በሽታው እንዴት ነው የምታክሚው/መው? በሽታውን ለማከም የሚያግድህ/ሽ ነገር ምንድን ነው? ከቤተሰብ ወይም ከሀኪሙ ጋር ያለህን/ሽን ግንኙነት እንዴት ትገልፀዋለህ/ሽ ?
4. ሰለሚነፍው መድሃኒት ምን ታሰባለህ/ቢያለሽ? ይህ መድሃኒት ለበሽታው ምን ጥቅም ይኖረዋል? (ስለጥቅምና ጉዳቱ ያላቸውን አሰተሳሰብ መጠየቅ)
5. ብዙ ልጅች ይህንን መድሃኒት ለመውሰድ ይቸገራሉ፡፤ አንተ/አንች እንዴት ነው?
6. አሁን በገለፅከው/ሽው መንገድ የምተውወሰደው/ጀው ለምንድን ነው? የሚነፋውን መድሃኒት ለመውሰድ የምትፈራው/ሪው ለምንድንነው?

የመድሃኒት አጠቃቀም

1. የበሽታው ምልክቶች ሲባባሱ ምን ታደረጋለህ/ሽ ? የመድሃኒቱን መጠን መጨመር መቀነስ አስበህ ታውቃለህ/ሽ? በምን ያክል ጊዜ ነው የምትወስደው/ጅው?
2. ለምንድንነው እንደዚህ ልታደርግ/ጊ የቻልከው /ሽው ? (የተለያዩ ተፅእኖዎች ካሉ መፈለግ)

ከጤና ባለሙያ ጋር ያለግንኙነት

1. ከሀኪሙ ጋር እና ከሌሎች የጤና ባለሙያዎች ጋር ያለህ/ሽ ግንኙነት እንዴት ትገልፀዋለህ/ሽ? መጨመር የምትፈልገው ነገር ካለ?

ለ. የተንካባካቢዎች ቃለ ምልልስ

1. ልጆዎት ምን መድሃኒት ይወስዳል/ትወሰዳለች?
2. መድሃኒቱን እንዴት ይሰጡታል? በሀኪሙ ትዕዛዝ መሰረት ነው ብለው ያምናሉ?
3. ስለሚነፍው (ኦክስጅን) መድሃኒት ምን ያሰባሉ?(ስለ ጥቅም ና ጉዳቱ ያላቸውን አስተሳሰብ መፈለግ)
4. ከላይ በገለፁት መሰረት የሚሰጡት ለምንድን ነው?(የተለያዩ ተፅእኖዎችን መፈለግ)

የመድሃኒት አጠቃቀም

1. የልጅዎ የጤና ሁኔታ ሲባባስ ምን ያደርጋሉ? የመድሃኒቱን መጠን መጨመር ወይም መቀነስ አስበው ያውቃሉ? በምን ያክል ጊዜ ነው የሚሰጡት/ጧት?

2. የልጅዎት በሽታ ሲባባስ ከላይ በጠቀሱት መሰረት የምታደርጉት ለምንድን ነው?(የተለያዩ ተፅዕኖዎችን መፈለግ)

<u>ከጤና ባለሙያ ጋር ያለ ግንኙነት</u>

1. ከሀኪሙ ጋር ወይም ከሌሎች የጤና ባለሙያዎች ጋር ያለዎትን ግንኙነት እንዴት ይገልፁታል? መጨመር የሚፈልጉት ነገር ካለ?

ሐ. <u>የጤና ባለሙያዎች ቃለ-ምልልስ</u>

1. እባክዎት እራስዎትን እና የስራ ሃላፊነትዎትን ያስተዋውቁን

2.በዚህ ክሊኒክ ውስጥ ለምን ያክል ጊዜ ነው የቆዩት?

3. የአሰም በሽተኛ ህፃናትን የሚያዩት በምን ያክል ጊዜ ነው?

<u>የልጆች አስም ህክምና ልምድ</u>

1. በዚህ ህክምና ውስጥ ዋናው አለማ ምንድን ነው ብለው ያስባሉ? እነዚህን ታካሚዎች እንዴት ነው የሚያክሙት?
2. የልጆች አስምን ለማከም የሚያግዱ ነገሮች/ችግሮች ምንድን ናቸው ብለው ያስባሉ?
3. እነዚህ ልጆች ስለበሽታው እና ህክምናው ግንዛቤ አላቸው ብለው ያስባሉ?
4. እነዚህ ልጆች ታዘዛላቸውን መድሃኒት በአግባቡ ይወሰዳሉ? ለምን ይመስልዎታል?
5. ለልጆቹ እና ተንከባካቢዎቻቸው ምን አይነት የህክምና ምክር ይለግሳሉ? ለምን ?

6. ይህ ጥናት የሚያጠናው ከ8-15 ዓመት ሆኑ አስም በሽታ ያለባቸው ህፃናት ላይ ነው፡፡ እርስዎ የሚነግሩን አስተያየት ካለ?