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Original Research Article

Perceptions of mothers having children with bronchial asthma regarding inhaler therapy: a qualitative study

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ABSTRACT

Background: Bronchial asthma imposes a significant health burden on the children. Multiple inflammatory mediators are recruited in bronchial asthma. Inhaled corticosteroid therapy is the mainstay of bronchial asthma treatment which is most effective to suppress the inflammatory changes in bronchial airways. The principal issue in proper control of bronchial asthma is adherence to treatment. The objective of the study is to find out the causes of non-adherence to treatment and perceptions of mothers having child with bronchial asthma through a qualitative in-depth interview method.
Methods: The study was conducted in the Paediatric Department of Burdwan Medical College, Burdwan, West Bengal. The study was one of qualitative descriptive types involving in depth interviews (IDI) of 27 mothers having children with bronchial asthma. The interviews were translated into English transcripts which were then analyzed to find out suitable codes and categories.
Results: From the transcripts we found out eight categories each of which is further divided into several codes. The categories are given here with codes in parenthesis. Initial repercussion (disagreement, habit forming, harmful, future problems), non-willingness to treatment (discontinuation, avoidance and oral medication), hazards during treatment (cost, availability, remote places, lack of time and family crisis), technical difficulties (demonstration, lack of knowledge, and cleaning the device), problem of the baby (irritability, vomiting, and excessive crying), attitude of mother/caregiver (misconception, non-motivation, and worriedness), other modalities of treatment (homeopathy, and ayurvedic medicines), and response to treatment (better feeling, decreased frequency, reduced recurrences, and total cure).
Conclusions: Most of the studies dealing with the various factors of non-adherence of treatment of bronchial asthma is not a qualitative approach. In the present study we have applied qualitative in-depth interview approach and able to find out different causes of non-adherence to inhaler therapy of bronchial asthma. In the category "response to therapy", a few of the comments is quite encouraging and fully support the modern views of the management of bronchial asthma.

Keyword: Bronchial asthma, In depth interview, Qualitative research

INTRODUCTION

Bronchial asthma is a leading and preventable cause of morbidity, mortality and economic burden, estimated to affect 235 million people throughout the world.[1] It is a complex syndrome with many clinical patterns in both children and adults. Its major features include a variable degree of airflow obstruction, bronchial hyper-responsiveness, and airway inflammation. For many patients, the disease has its roots in infancy, and both

genetic and environmental factors contribute to the pathogenesis of the disease. Bronchial asthma imposes a significant health burden on the children. In spite of advancement in treatment, mortality, hospitalization rates, acute exacerbations, and symptom control remain sub-optimal.[2] Patients with bronchial asthma have a specific pattern of inflammatory changes in the bronchial airways that is characterized by degranulation of mast cells, infiltration of eosinophils, and an increased number of activated T-helper 2 (Th2) cells.[3]

Multiple inflammatory mediators are recruited in bronchial asthma, and the approximately hundreds of known mediators that are involved in patients with asthma. Those mediators are lipid mediators, inflammatory peptides, chemokines, cytokines, and growth factors.[4] Inflammation of the bronchial airways is mediated by the increased expression of multiple inflammatory proteins, including cytokines, chemokines, adhesion molecules, and inflammatory peptides and receptors which are regulated by increased gene transcription, and is controlled by proinflammatory transcription factors, such as nuclear factor-kB(NF-kB) and activator protein-1 (AP-1).[5]

Inhaled corticosteroid therapy is the mainstay of bronchial asthma treatment which is most effective to suppress the inflammatory changes in bronchial airways. Inhaled corticosteroids reduce the number of inflammatory cells in the airways, including eosinophils, T lymphocytes, mast cells, and dendritic cells.[6] These effects of corticosteroids are produced through inhibiting the recruitment of inflammatory cells into the airway by suppressing the production of chemotactic mediators and adhesion molecules and by inhibiting the survival in the airways of inflammatory cells, such as eosinophils, T lymphocytes and mast cells.[7]

The anti-inflammatory actions of inhaled corticosteroid are divided into delayed actions (taking hours and days) and rapid actions (within seconds and minutes). The delayed actions are mediated through genomic mechanisms interacting with intracellular glucocorticoid receptors causing alteration of transcription through direct binding with DNA or indirectly through inactivation of transcription factors. Rapid actions are mediated through non-genomic mechanisms involving membrane bound glucocorticoid receptors and direct interactions with airway vasculature.[8,9]

Modern treatment of bronchial asthma requires prolonged medications. Medications for asthma specifically inhaled corticosteroids reverse and prevent symptoms and airflow limitations.[10] The principal issue in proper control of bronchial asthma is adherence to treatment. So, improving adherence to inhaled corticosteroids is the most effective approach through which healthcare providers can help children with uncontrolled asthma. But, identifying factors for non-adherence to treatment is not a very easy task. Therefore, we have ventured to find out the causes of non-adherence to treatment and perceptions of mothers having child with bronchial asthma through a qualitative in-depth interview (IDI) method.

METHODS

The study was conducted in the Paediatric Department of Burdwan Medical College, Burdwan, West Bengal. The study was one of qualitative descriptive types involving in depth interviews (IDI) of 27 mothers of children with bronchial asthma who were diagnosed and treated at Burdwan Medical College, Burdwan, West Bengal.

All the interviews of the mothers of babies with bronchial asthma were conducted after taking consent by the first author guided by the second author. The first author was enlightened about the in-depth interview (IDI) methods by the second author who was trained in "Qualitative methods in health research".

Before the beginning of the study an interview guide was prepared by the authors after thorough literature review. All the mothers were met face to face and permission was taken before the interview. Qualitative data was obtained by the in-depth face to face interviews of 27 mothers and each of the interview lasted for 10 to 16 minutes. All the interviews were conducted in Bengali language which is the native tongue of the participants. Non-participants were not allowed to remain while conducting the interview.

Thorough handwritten notes were taken while conducting the interviews. The interviews were then translated and typed into English. The transcript analysis was performed manually by the second author. Descriptive 'codes' of the text information were done. Then 'categories' were formed by merging similar codes together. The consolidated criteria for reporting qualitative research guidelines were followed. All the questions used during the interview were open ended. Before beginning the study, formal approval was taken from the Institutional Ethical Committee (IEC) of the institution. The script was written by the second author and reviewed and revised by the first author. Finally, the script was prepared for publication.

RESULTS

The age group of the children with bronchial asthma varied from 6 months to 12 years. Of which 5 children (3 male and 2 female) were in the age group of 6 months to 1 year. Total 9 children (4 male and 5 female) were in the age group of 1 year to 3 years. 8 children (5 male and 3 female) were in the age group of 3 years to 5 years. Only 5 children (3 male and 2 female) were in the age group of 6 years to 12 years.

Regarding education status of the mothers of children with bronchial asthma, 11 mothers had primary level of

education, 7 mothers had upper primary level of education, 4 had madhyamik level, 3 had higher secondary level and two were graduates. Regarding housing condition, 11 lived in mud houses and 16 lived in the pucca houses. The results showed that the IDIs of mothers could be divided into eight categories each of which is further divided into several codes. The categories are given here with codes in parenthesis. Initial repercussion (disagreement, habit forming, harmful, future problems), non-willingness to treatment (discontinuation, avoidance and oral medication), hazards during treatment (cost, availability, remote places, lack of time and family crisis), technical difficulties (demonstration, lack of knowledge, and cleaning the device), problem of the baby (irritability, vomiting, and excessive crying), attitude of mother/caregiver (misconception, non-motivation, and worriedness), other modalities of treatment (homeopathy, and ayurvedic medicines), and response to treatment (better feeling, decreased frequency, reduced recurrences, and total cure).

Table 1: Qualitative data analysis.

Categories	Codes	Comments
Initial repercussion	Disagreement	If I start this inhaler device, it will be continued lifelong.
	Habit forming	These inhaler medicines are habit forming, one cannot give up.
	Harmful	The inhaler devices are harmful for my baby. It will damage the lungs and other organs of the baby
	Future problems	The inhaler device will create problems of the baby in future. Baby will suffer from heart disease
Non-willingness to treatment	Discontinuation	I have stopped using inhaler therapy after 3 weeks as my baby feeling well.
	Avoidance	I don't use regular inhaler therapy, only use it in emergency situations.
	Oral medication	I prefer oral drugs. I don't want to use inhaler therapy for my kid.
Hazards during treatment	Cost	I am not able to buy inhaler device as the income of my family is low. The cost of inhaler devices is very high.
	Availability	The inhaler devices are not available in rural areas. The same brand is not available in the medicine shops.
	Remote places	We are living in remote villages, we have to go to town for buying inhaler devices
	Lack of time	I am the only female member of the family, I have to work hard the whole day, I have not enough time to use the inhaler regularly for my baby.
	Family crisis	The father of the baby is seriously ill, so I am unable to use inhaler therapy for my baby
Technical difficulties	Demonstration	I cannot use the device properly. The doctor does not train me about how to use the inhaler.
	Lack of knowledge	I do not know about the inhaler,
	Cleaning of device	I am unable to clean the device regularly
Problem of the baby	Irritability	My baby usually feels more irritation during use of inhaler devices
	Vomiting	My baby vomits after inhaler use
	Excessive crying	There is excessive crying of my baby after use of inhaler device
Attitude of mother/caregiver	Misconception	I have no clear idea about continuation and maintenance of inhaler device for the baby
	Non-motivation	Two/three members are needed to hold the baby during use of inhaler therapy, other members do not always co-operate
	Worriedness	I am always worried about the use of the inhaler device
Other modalities of treatment	Homeopathy	My family members prefer to use homeopathic medicines
	Ayurvedic medicines	I like to use ayurvedic medicines for my ill baby
Response to therapy	Better feeling	My baby feels better after getting inhaler therapy
	Decreased frequency	There is reduced frequency of asthmatic attacks after initiation inhaler therapy
	Reduced recurrence	There is less recurrence of attacks of asthma of my baby after treatment with inhaler device
	Total cure	My baby is totally cured with inhaler therapy

DISCUSSION

During qualitative data analysis the present study showed that the data related to bronchial asthma, could be classified into eight categories, viz., initial repercussion, non-willingness to treatment, hazards during treatment, technical difficulties, attitude of mother/caregiver, other modalities of treatment, and response to treatment.

The category “initial repercussion” could be further classified into four codes, viz., disagreement (once started inhaler device will be continued lifelong), habit forming (one cannot give up inhaler therapy), harmful (damage lung and other organs of the baby), future problems (suffer from heart disease in future).

The category "nonwillingness to treatment " includes three codes viz., discontinuation (stopped treatment), avoidance (do not use regularly) and oral medication (prefer to use oral medicine).

The category "hazards during treatment " consists of five codes which are cost (inhaler devices are costly), availability (not available in rural areas and the same brand not always available), remote places (living at remote places, have to come to town for buying inhaler devices), lack of time (only female member of the family, have to work hard and not having enough time to use inhaler device for baby) and family crisis (father seriously ill, unable to use inhaler therapy).

The category "technical difficulties" includes three codes viz., demonstration (health professionals have not demonstrated about how to use inhaler device correctly), lack of knowledge (do not know about the inhaler device), and cleaning of device (unable to clean inhaler device regularly).

The category "problem of the baby" has three codes viz., irritability (baby feels more irritation after inhaler use), vomiting (baby vomits after inhaler use), and excessive crying (more crying of baby after use of inhaler device).

The category "attitude of the mother/caregiver" consists of three codes viz., misconception (no clear idea about continuation and maintenance of inhaler device), non-motivation (other family members do not cooperate during use of inhaler devices), and worriedness (always worried about the use of inhaler).

The category "other modalities of treatment " includes two codes viz., homeopathy (prefer to use homeopathy medicines), and ayurvedic (like to use ayurvedic medicines).

The category “response to therapy” has always of been a positive one and noteworthy in the present findings which include the codes “better feeling" (feeling better with inhaler therapy, "decreased frequencies" (decreased frequencies of asthmatic attack), reduced recurrences (less number of recurrent attack of asthma), and total cure (baby is totally cured of asthmatic attack).

A study conducted by Gaude GS who had interviewed 300 asthma patients (children above 5 years and adults) using standard schedule had mentioned the causes of non-adherence in bronchial asthma as non-drug related and drug related factors.[10] Non-drug factors were the main reasons for decreased adherence. The major nondrug factors associated with poor adherence were: fears about side effects of the medications, higher cost of the therapy, feeling of well-being on therapy and negligence on the part of the patients, forgetfulness or complacency, attitudes toward ill health and anger about the disease. Amongst the reasons for drug-related factors for non-adherence included cost of therapy, difficulties with inhaler devices, awkward regimes, dislike of medications, and distant pharmacies.

Another study conducted by Bender B et al, had included 27 children with bronchial asthma (7-12 year age group) and their families.[11] Their study revealed that adherence to treatment decreased with increasing age and poorer functioning families. Increased non-adherence was also found in nonwhite children, boys and in homes with a smoker and pets.

In a review by Makela MJ et al, it was stated that factors responsible for adherence to inhaler therapy include age of patient, level of education and knowledge about the disease, medications and devices, time to onset of symptom relief, severity of symptoms, regimen complexity, cost of medicines and delivery devices, comorbidities (depression), additional medications, adverse effects of medications, and poor doctor patient communication.[1]

A study by Lindberg et al, included 77 randomly selected asthma patients from 11 primary health care settings of Sweden.[12] Out of these 63 participated in the study who were interviewed by using semi-structured questionnaire. The factors identified for self-reported adherence with prescribed medication were age of the patients, gender, duration of the disease, the attitude of the health personnel and information as well as education about asthma.

Another study conducted by Klok T et al, had stated that non-adherence was influenced by many interacting factors.[13] Intentional non-adherence is common; driven by illness perceptions and medication beliefs, patients and parents deliberately choose not to follow the doctor's prescriptions. Common non-intentional causes of non-adherence are related to family routines, child-raising issues, and to social issues such as poverty.

Most of the above-mentioned studies dealing with the various factors of non-adherence of treatment of bronchial asthma is not a qualitative approach. However, in this study we have applied in depth interview method,

a qualitative approach. In the category "response to therapy", a few of the comments like, "my baby feels better after getting inhaler therapy", "there is reduced number of frequency of asthmatic attack", "less number of recurrence" and "my baby is totally cured after use of inhaler therapy" is quite encouraging and fully support the modern views of the management of bronchial asthma.

CONCLUSION

Present study has been on the perceptions of mothers having children with bronchial asthma regarding inhaler therapy. The approach of the present study is a qualitative research performed through in-depth interviews. The inhaled corticosteroid therapy is the most effective method of treatment in bronchial asthma. Non-adherence to treatment is the principal issue for long term management in bronchial asthma. Various factors have been identified as a cause of non-adherence to inhaled corticosteroid therapy. A few of the encouraging comments of the mothers fully support the modern views of the management of bronchial asthma.

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