

Knowledge assessment among caregivers about various allergic disorders in a hospital-based pediatric outpatient department in North India

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Abstract

CONTEXT: Various types of allergic disorders are increasing worldwide. The diagnostic and treatment facilities are limited compared to their vast magnitude. Lack of awareness among caregivers and beneficiaries could be one of the critical factors for inadequate management especially in developing countries.

AIM: This study aims to evaluate the knowledge among caregivers about various allergic disorders in a pediatric setup.

SUBJECTS AND METHODS: Caregivers of children, presenting for their illness at pediatric outpatient department of a tertiary care hospital of North India, were recruited over 6 months' period using a 22-item prevalidated questionnaire.

STATISTICAL ANALYSIS USED: Sigma Plot Software version 12.

RESULTS: Among the 1000 participants, majority (94%) had some knowledge about allergy. Doctors were major source (55%) of information. More than half (53%) believed it to be contagious. House dust (70%) and food additives (24%) were considered major allergens. Seasonal variations (54%) and environmental pollution (48%) were considered the most common aggravating factors while steam inhalation (14%), yoga (11%), and air purifiers (10%) helped in symptom reduction. Skin and respiratory symptoms were a common knowledge amongst many study participants. Only 8% were aware about skin tests for allergy diagnosis. Alternative medicine was the treatment of choice among two-third of people. Oral route was preferred over inhaled medicines.

CONCLUSION: The current study highlights limited knowledge and existence of misconceptions regarding allergic disorders in general population necessitating the need to improvise awareness campaigns.

Keywords: Allergy, awareness, caregivers, knowledge, misconceptions

Introduction

The prevalence of various allergic disorders is rising worldwide, affecting about 400 million (rhinitis), 300 million (asthma), and 250 million (food allergies) people across the globe and is one of the top 10 reasons for visit to primary care physicians.^{[1],[2]} Developing countries like India have also shown a similar upsurge in these disorders recently, partly due to better control over infectious diseases and partly due to improved understanding of allergies among health-care workers. The spectrum of allergic disorders affects multiple systems and can manifest as asthma, rhino-sinusitis, conjunctivitis, anaphylaxis, drug, food, occupational and insect allergy, eczema, urticaria, and angioedema. As per a recent estimate, approximately 20%–30% of the total Indian population suffers from at least one of the allergic disorders at a given time.^[3] The reported prevalence of allergic rhinitis and asthma, in Delhi alone, was 10% and 1% six decades back,^[4] which has increased exponentially to 30% and 15%, respectively.^{[5],[6]} These figures under-estimate the true prevalence of allergies due to lack of awareness among both physicians and general public, and scarcity of reliable diagnostic modalities in this part of the world. Despite the huge magnitude of the problem, very little is known about the public perception to the diagnosis and the impact of allergies on individuals, their families and communities.^{[7],[8]}

Allergic disorders are often misdiagnosed (both over and under diagnosed) and improperly treated, creating considerable clinical and economic burden on individuals and families.^[9] It thus adversely affects the psychosocial wellbeing, quality of life and attributes to increasing health care costs. Moreover, an individual may have multiple manifestations involving more than one system either simultaneously or sequentially. This demands an integrated approach to appropriate diagnosis and management. There have been few studies regarding knowledge assessment of parents and care givers about asthma, allergic rhinitis, eczema, food allergies and anaphylaxis, across the globe.^{[10],[11],[12],[13]} Deb *et al.*, did a clinic-based similar study in eastern India.^[2] The awareness about common allergic symptoms with availability of diagnostic and therapeutic modalities, among families, is an unmet need in most of the developing countries.

In pediatric population, parent's perception about their child's illness is a significant factor influencing acceptance of the disease and compliance to therapy. The objective of current study was to assess basic knowledge and awareness about allergies, among caregivers of children presenting to the pediatric outpatient department (POPD) of a tertiary care referral hospital in North India. This effort might be helpful in better planning and thus improving the health-care

infrastructure and educational activities in this part of the developing world.

Subjects and Methods



This cross-sectional study was conducted over a 6 months' period (September 2019–February 2020), at a tertiary care multi-specialty referral hospital in North India after approval from hospital's ethical committee. Caregivers accompanying children attending the general POPD were eligible to participate in the study. Children from birth to 18 years of age and belonging to lower and upper lower socioeconomic status as per Modified Kuppuswamy scale [\[14\]](#) attend the general POPD. Caregivers, above 18 years, who consented for their participation in the study and those who were able to understand either Hindi or English were included.

Study procedure

A self-structured questionnaire (Bilingual-English and Hindi) was administered to the caregivers. The questionnaire was designed based upon current understanding of allergic disorders. It contained 22 questions with multiple close and open-ended options, focusing on awareness about various allergic symptoms, potential triggers, availability of diagnostic, preventive, and therapeutic options. The aforesaid questionnaire was prevalidated with a pilot study. No attempt was made to correct a wrong answer or response until the completion of the questionnaire by a caregiver. Data were analyzed using Sigma Plot Software version 12 (Systat Software, Inc., San Jose California USA, www.systatsoftware.com). Continuous variables were normally distributed and reported as mean and standard deviation (SD). Categorical variables were described using percentage.

Results



A total of 1000 participants were enrolled during the study duration. Their age varied from 18 to 55 years (mean $\pm$ SD = 32.5 ± 2.47 years) with female preponderance (female: male ratio = 1.2:1). Majority of the participants belonged to Delhi (56%) and adjoining North Indian states of Uttar Pradesh (8%) and Haryana (7%).

Source of information

Ninety-four percent people were aware about the term “allergy” [\[Table 1\]](#) and 658 (70%) of them considered it as a disease. Physicians played a major role (55%) in imparting knowledge about allergic disorders. The other sources were friends and family members (24%) and social media (21%).

Parameters	n (%)
Total number of participants	1000
Female (%)	546 (55)
Mean age in years ($\pm$ SD)	32.5 ($\pm$ 2.47)
Had some knowledge about allergy	940 (94)
Source of information	
Physician	517 (55)
Family members and friends	225 (24)
Media	198 (21)
Mode of transmission	
Droplet	226 (24)
Oral	188 (20)
Inherited	103 (11)
Touch	85 (9)
Not aware	338 (36)
Potential triggers (multiple)	
Seasonal variation	508 (54)
Pollution	451 (48)
Outdoor: Indoor*	2.4:1
Dust	657 (70)
Food additives	225 (24)
Cosmetics	91 (10)
Pollens	87 (9)
House dust mite	64 (7)
Not aware	89 (9)
Relieving factors (multiple)	
Steam inhalation	128 (14)
Yoga	103 (11)
Air purifiers	95 (10)
Not aware	749 (80)
Common symptoms (multiple)	
Eczema	346 (37)
Nasal symptoms	344 (37)
Cough and breathlessness	277 (29)
Fever	183 (19)
Eye redness	64 (7)
Gastrointestinal symptoms	51 (5)
Not aware	102 (11)
Diagnostic methods (multiple)	
Not available	374 (40)
Blood test	492 (52)
Skin test	76 (8)
Others including X-ray	32 (3)
Not aware	74 (8)
Therapeutic options (multiple)	
Alternative medicine	631 (67)
Allopathy	411 (44)
Not aware	114 (12)
Preferred route of therapy	
Oral	394 (42)
Inhaled	149 (16)
Topical	56 (6)
Water steam	148 (16)
Not sure	193 (20)
Possibility of permanent cure	
Yes	589 (63)
No	351 (37)
If yes, by which modality (n=589)	
Ayurveda	397 (67)
Homeopathy	180 (31)
Immunotherapy	12 (2)

*signifies knowledge about environmental triggers causing allergic symptoms.
SD=Standard deviation

Table 1: Allergy knowledge assessment study results

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Allergy pathophysiology

Majority (53%) of the participants considered it as a contagious disease with air-borne transmission being the most common route. Around one-third of participants were unaware about the mode of transmission. Only 11% knew that allergic disorders have a familial tendency.

Majority of the caregivers attributed allergy to house dust (70%), seasonal variation (54%), and pollution (48%). The contribution of outdoor environment was mentioned out of proportion when compared against indoors. This highlights emphasis on various parameters like air quality index and pollen count by physicians and social media. Only 14% knew about indoor polluting agents with some contribution of house dust mites. Processed foods were held responsible by one-fourth of the study group. Among natural food items, allergy was mainly attributed to eggs, milk, nuts, banana, and rice. Most of the caregivers were not sure about measures to overcome allergic symptoms.

Eight hundred and thirty-eight (89%) respondents were aware about either skin, nasal, or chest symptoms. Few participants highlighted fever (19%), eye congestion (7%), or gastrointestinal symptoms (5%) as a manifestation of allergy. 65% of people were aware that allergies can be life-threatening.

Diagnosis

Half of the study population thought that allergies can be diagnosed by blood test while only 8% were aware about skin prick test. Forty-eight percent of the participants were not having any knowledge about availability of any allergy tests.

Treatment and prevention

Two-third of the participants preferred alternative medicine such as Ayurveda, Homeopathy, and Unani. Many people followed home-based remedies such as steam inhalation (26%), honey (18%), aloe-vera (8%), and gargles (7%) during various allergic manifestations. When questioned about preferred mode of treatment, aerosol mode of therapy was accepted by only 16% of people. Larger proportion (42%) preferred oral route for therapy.

Majority (63%) believed in achieving permanent cure through either Ayurveda or Homeopathy. The concept of immunotherapy was almost nonexistent among the study population.

Five hundred and ninety (63%) participants believed that allergy can be prevented by employing face-mask (31%), avoiding smoking (16%), and installing air purifiers (11%).

Discussion



The prevalence of allergic diseases has increased dramatically in recent decades at the global level. Despite a rapid rise in many educational programs, caregivers' knowledge still lags behind the current understanding of disease and its management.

Source of information

In our study, majority of the caregivers accompanying the sick children were female (55%). The trend is similar to previous Indian surveys where female respondents dominated the sample.^[15] The major source of information was from doctors (55%) similar to an observation by Lai *et al.* where 42% parents had heard about asthma from physicians.^[16] However, the results point towards a poor level of communication between parents and doctors. As parental perception is a significant factor in the management of allergic disorders, their education through improved physician-parent communication is desired especially for female caregivers such as mothers and grandmothers who are often involved with the child care practices.

Allergy pathophysiology

Seventy percent people accepted allergy as a disease but with considerable gaps in knowledge and misconceptions. The perception of allergy as a contagious disease (53%) is a significant observation. A previous study in Chennai over the last decade documented almost similar findings about asthma.^[17] Awareness about dust as major aeroallergen and pollution being a major aggravating factor is in concordance to previous KAP studies in India on asthma.^{[15],[17],[18]} This correct knowledge about common triggers of allergy can be used to our advantage during patient education programs. However, indoor allergen exposure including role of house dust mites was a lesser known fact unlike findings of Rastogi *et al.*^[15] The prevalence of food allergy in infancy has increased to 10% particularly in western regions and is more common among children than in adults.^[19] At the global level, Codex stated that cereals containing gluten, egg, soy, milk, peanuts, tree nuts, fish and shellfish are the eight common food allergens (Codex, 1985). Children in the UK

were found to be most commonly affected by milk, eggs, and peanut allergy.^[20] In our study, we found that egg (27%), milk (12%), and nuts (12%) were most common food allergens. However, misconceptions such as processed food, food additives, banana, and even rice being a food allergen need to be corrected. These misconceptions reinforce the role of social media and nongovernmental organizations in educating the masses. The formulation of national programs, conducting continuing medical education programs and frequent reminders, such as newsletters and stage dramas, are the initial steps in improving knowledge and awareness in the community.^[18]

Diagnosis

Rhinitis is a major allergic manifestation which is frequently ignored both by the patients and doctors, due to lack of awareness.^[2] Our study too showed ignorance about the nasal and chest symptoms of allergy among majority of the participants. Parents are the lead informant about their child's symptoms; this inadequate knowledge will lead to delay in diagnosis and treatment which will indirectly lead to increased disease burden.^[21]

Skin prick test is the gold standard investigation for common immunoglobulin E-mediated allergic disorders ^[22] but unfortunately, people were either not aware about any available diagnostic methods or have heard about utility of blood tests probably due to maleducation both by physicians and social media.

Treatment and prevention

Parents held diverse views regarding the treatment. There was a general tendency to seek help from alternative forms of medicine such as Ayurveda, Homeopathy, and Unani. Because the study was a hospital-based study, this figure should be an underestimate of the real situation in community. This reinforces the well-known tendency to seek help of alternative medicine to cure chronic ailments. In addition, people have a fear that modern medicines are very "strong" or produce "heat" in the body and are harmful in the long run. It is a common misconception that aerosol therapy is the end to the road ^[23] and this scenario remains unchanged in our study too. Only 16% of the study population preferred aerosol form of therapy. In spite of being most effective and rapidly acting, the notion that these devices are harmful or addictive and daily use impairs the child's growth still prevails in the majority.

Two-third of the people believed that allergy can be cured though majority prefer alternative form of medicine and have no knowledge about immunotherapy and modern methods of therapy. As more people were aware about outdoor pollution, they prefer use of face mask and avoidance of smoking as main preventive measure.

This study reveals a spectrum of knowledge, aptitude, and practices regarding allergies among the sample population at large. Although our study has certain limitations including the study being single center and hospital based with a predominant focus on the lower strata of society, the results are an eye opener and can very well guide us for need of targeted awareness measures in the developing world. The study also highlights an unmet need of physician education about various allergic disorders.

Conclusion



Information about allergy has not percolated enough among caregivers of children in our setting. Knowledge about the prevailing perception in the community would be the first step in achieving this. Parental education through improved physician-parent communication is necessary which should be supplemented by a responsible social media, so that caregivers can become partners in management of their child's illness. This effort might help in augmenting awareness; eliminate social stigma and misconceptions in the community regarding allergies.

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Conflicts of interest

There are no conflicts of interest.

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