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Parents' knowledge, attitudes and practices towards the prevention and treatment of dust mite allergy: a cross-sectional study in Shenyang (China)

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ABSTRACT

Objective This cross-sectional study aimed to evaluate parents' knowledge, attitudes and practices (KAP) concerning the prevention and treatment of dust mite allergy in children.

Design This cross-sectional study survey was conducted from September to December 2022 at Shengjing Hospital, Affiliated with China Medical University.

Participants A total of 503 parents of children with dust mite allergies participated, with 253 parents having children undergoing desensitisation treatment and 250 parents whose children did not. Selection criteria were carefully defined to include parents directly responsible for caring children with dust mite allergies.

Primary and secondary outcome measures Two distinct questionnaires were administered to parents, tailored for those with and without children undergoing desensitisation treatment. These questionnaires covered demographic information, allergy diagnosis, treatment details and KAP related to dust mite allergy. Primary outcomes included parents' scores on KAP regarding dust mite allergy prevention and treatment. Secondary outcomes involved analysing the interaction between these factors using pathway analysis.

Results Parents of children undergoing desensitisation treatment exhibited higher scores for all items of knowledge, attitude and overall practice than those without desensitisation therapy (all p values<0.05). The pathway analyses revealed that in the non-desensitisation group, knowledge directly affected attitude (β=0.22, p<0.001) and attitude directly affected practice (β=0.16, p<0.001), but the knowledge did not affect practice (β=−0.01, 0.06, p<0.001). In the desensitisation group, knowledge directly affected attitude (β=0.13, p=0.028), but the practice was not affected by attitude (β=0.08, p<0.001) or knowledge (β=0.03, 0.12, p<0.001).

Conclusions The study highlighted differing levels of KAP among parents of children with dust mite allergies. The KAP was influenced by desensitisation therapy status. While attitudes tended to be favourable, practices were suboptimal, particularly among parents whose children did not receive desensitisation treatment. These findings emphasise the importance of targeted educational interventions to enhance parental awareness and practices regarding dust mite allergy management, especially in cases where desensitisation treatment is not pursued. Further research is warranted to explore effective strategies for improving parental engagement and adherence to preventive measures.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ Use of a validated questionnaire: the study used two versions of a questionnaire designed by senior experts and pretested for reliability (Cronbach's α>0.7 for both versions).
⇒ Hypothesis-driven analysis: the statistical methods included pathway analysis to explore relationships among the dimensions of knowledge, attitudes and practices (KAP), adding the depth of data interpretation.
⇒ Single-centre study: the study was conducted at a single hospital, which limits generalisability to other regions or hospitals.
⇒ Potential bias in self-reported data: KAP surveys are prone to social desirability bias, where participants may provide responses they believe are expected rather than their true behaviours.
⇒ Cross-sectional design: although the study captured a snapshot of the parental KAP across a broad sample, the temporal relationship is unknown.

INTRODUCTION

House dust mites mainly include *Dermatophagoides pteronyssinus*, *D. farinae* and *Euroglyphus maynei*.[1] They are non-parasitic microscopic bugs that live on desquamated dead skin cells from humans and pets. They prefer warm and moist environments and are found in bedding, linens, carpets and furniture.[2–4] Although the mite's exoskeleton can contribute to the allergic reaction, the main allergens are found in the mite's faecal pellets.[5 6] Each mite produces about 20 pellets daily, each the size and weight of a pollen grain.[5 6] Therefore, they are easily inhaled and can cause sensitisation of the respiratory tract mucosa, leading to epithelial permeability and the movement of the

Table 1 Characteristics of the parents, n (%)

	Without desensitisation	With desensitisation	P value
Total	250 (49.70)	253 (50.30)	
Parental relationship			<0.001
Father	23 (9.20)	65 (25.69)	
Mother	223 (89.20)	184 (72.73)	
Other family members	4 (1.60)	4 (1.58)	
Father's education			0.167
Primary school and below	19 (7.60)	13 (5.14)	
Middle school	28 (11.20)	44 (17.39)	
High school/technical secondary school	33 (13.20)	41 (16.21)	
Bachelor's degree/junior college	131 (52.40)	128 (50.59)	
Master's degree	30 (12.00)	20 (7.91)	
Doctorate	9 (3.60)	7 (2.77)	
Mother's education			0.028
Primary school and below	1 (0.40)	3 (1.19)	
Middle school	22 (8.80)	39 (15.42)	
High school/technical secondary school	32 (12.80)	44 (17.39)	
Bachelor's degree/junior college	154 (61.60)	143 (56.52)	
Master's degree	35 (14.00)	21 (8.30)	
Doctorate	6 (2.40)	3 (1.19)	
Annual household income (¥)			0.379
<30 000	18 (7.20)	24 (9.49)	
30 000–50 000	29 (11.60)	43 (17.00)	
50 000–100 000	76 (30.40)	73 (28.85)	
100 000–200 000	61 (24.40)	61 (24.11)	
200 000–300 000	32 (12.80)	26 (10.28)	
>300 000	34 (13.60)	26 (10.28)	
Are the parents allergic to dust mites?			0.373
None	102 (40.80)	126 (49.80)	
Father only	21 (8.40)	18 (7.11)	
Mother only	24 (9.60)	19 (7.51)	
Both	6 (2.40)	6 (2.37)	
Unclear	97 (38.80)	84 (33.20)	
Ways to learn about allergies (multiple choice)			–
Newspaper and books	49 (19.60)	19 (7.51)	
Radio and TV	36 (14.40)	21 (8.30)	
Web search	104 (41.60)	82 (32.41)	
Short videos	76 (30.40)	40 (15.81)	
Doctor's guidance during the consultation	164 (65.60)	228 (90.12)	
Never knew about it	26 (10.40)	8 (3.16)	

mite's antigens to antigen-presenting dendritic cells.[5 6] The prevalence of dust mite allergy among patients with allergic diseases varies from 11.21% in Northeast China to 40.79% in South China.[7] Dust mite allergy contributes to the development of allergic rhinitis and asthma.[1 5 8 9] The total asthma incidence of childhood asthma aged 0-14 year old in cities in China was 3.02%, showing a 52.8% increase from 2000 to 2010[10] . Therefore, dust mites allergy represent a serious public health problem.

The most effective management method for dust mite allergy is allergen avoidance (eg, frequently washing bedding, removing carpets, room air cleaners and

Table 2 Knowledge dimension, n (%)

	Correct rate		P value
	Without desensitisation	Desensitisation	
Q1. Which of the following species of dust mite can cause an allergic reaction?	148 (59.20)	216 (85.38)	<0.001
Q2. Only live dust mites can act as allergens that cause allergic reactions.	105 (42.00)	119 (47.04)	0.256
Q3. Which of the following diseases can be caused by dust mite allergy?	153 (61.20)	187 (73.91)	<0.001
Q4. Dust mites in the house mainly breed in bed sheets and bedding; carpets and curtains are not prone to breeding dust mites.	171 (68.40)	192 (75.89)	0.061
Q5. Plush toys are prone to breeding dust mites.	226 (90.40)	245 (96.84)	0.003
Q6. Ultraviolet light can kill dust mites.	68 (27.20)	54 (21.34)	0.126
Q7. Freezing the plush toys or pillowcases in the refrigerator overnight can kill dust mites.	44 (17.60)	68 (26.88)	0.012
Q8. Which hot water temperature will most effectively remove dust mites when washing bed sheets?	127 (50.80)	151 (59.68)	0.045
Q9. Indoor dust mites can be completely eliminated with a good job of cleaning.	185 (74.00)	215 (84.98)	0.002

humidity control).[5 11–13] Medications (antihistamines, nasal corticosteroids, leukotriene receptor antagonists, cromolyn sodium and decongestants) and allergen immunotherapy can also help.[5 11]

Since allergen avoidance involves specific lifestyle habits,[5 11–13] parents' proper knowledge, attitudes and practices (KAP) towards dust mites are essential to manage the allergic symptoms in their children. KAP surveys provide quantitative and qualitative data about a specific subject in a specific population.[14 15] They can identify gaps and design tailored teaching and training activities.[14 15] It is known that parents who visited an allergist demonstrated higher dust mite KAP.[16] Generally, parents display very high KAP towards food allergies in their children,[17–19] mainly because several of these allergies can be fatal, which is not the case with dust mite allergy. Studies revealed poor parental KAP for allergic rhinitis[20 21] and poor KAP regarding allergic disorders in general,[22] including in parents of asthmatic children.[23] The KAP towards dust mite allergy remains unknown in the general population of China. Therefore, many parents do not consult when their children display dust mite allergy symptoms or delay consultation when the symptoms exacerbate. Some patients testing positive for dust mite allergy will receive desensitisation therapy, but many parents refuse treatments. All parents receive the same information package when their children test positive for dust mite allergy, and the parents are free to consult all sources of information and to ask questions. Nevertheless, differences can be present between those who decide on desensitisation therapy and those who refuse. It was hypothesised that differences in KAP could explain, at least in part, the parents' decision.

Therefore, this study aimed to evaluate the KAP of parents towards preventing and treating dust mite allergy and to examine the differences between the parents of children who were treated with desensitisation treatment and those of children who were not. Parents are the primary actors in house cleaning and management, and evaluating their KAP towards house mite allergy should help design future teaching activities.

MATERIALS AND METHODS

Study design and participants

This cross-sectional study survey was conducted from September to December 2022 at Shengjing Hospital, Affiliated with China Medical University. The participants were the parents of children with dust mite allergies. All participants were enrolled at the outpatient clinic of Shengjing Hospital, Affiliated to China Medical University when their children had an appointment.

The inclusion criteria were (1) parents of children who tested positive for dust mite-specific serum IgE (measured by Phadia ImmunoCAP) and (2) voluntarily completed the questionnaire. The participants were grouped according to whether the children were treated with desensitisation treatment or not.

Questionnaires

Two senior experts in allergy designed the questionnaire with reference to the literature.[16 24 25] The final questionnaire had two versions: one for the parents of children who did not undergo desensitisation treatment (questionnaire A) and one for the parents of children who underwent desensitisation treatment (questionnaire B). 30 parents were randomly selected to complete the questionnaire to test its reliability. Cronbach's α was 0.726 for questionnaire A and 0.702 for questionnaire B.

The questionnaire contained six dimensions: demographic information of the parents, demographic information of the child, diagnosis and treatment information related to dust mite allergy in children, knowledge dimension, attitude dimension and practice dimension. The specific questions and scoring instructions for both questionnaire versions can be found in the online supplemental materials. The data were collected by on-site inquiry and questionnaire when the parents visited the hospital.

Statistical analysis

The continuous variables were expressed as means±SD and analysed using Student's t-test or Analysis of Variance(ANOVA). The categorical data were expressed as n (%) and analysed using the χ^2 test. All statistical analyses were performed using two-sided tests, and p values<0.05 were considered statistically significant. Pathway analysis was constructed, and the hypotheses were (1) knowledge has direct effects on attitude, (2) attitude has direct effects on practice and (3) knowledge has direct effects on practice. Good practice was defined as a score >70% of the highest possible score for practice. STATA V.17.0 (Stata Corporation, College Station, Texas, USA) was used for statistical analysis.

Patient and public involvement

No patient is involved.

RESULTS

Characteristics of the participants

All the patients with dust mite allergy who attended the Pediatric Respiratory Clinic of Shengjing Hospital from September to December 2022 were invited to participate, of whom 189 refused to fill in the questionnaire due to concern about privacy, lack of time or disinterest. A total of 668 people were surveyed, of which 165 questionnaires were invalid and excluded (135 had missing questions, 27 had contradictory options and 3 were filled with all the same options). Therefore, 503 valid questionnaires were included in the analyses: 250 from non-desensitised patients and 253 from desensitised patients.

The majority of the participants were women (81.91%) and had a bachelor's degree or higher education, but only a small proportion had a history of dust mite allergy. There were more fathers in the desensitisation group (25.69% vs 9.20%, p<0.001), and the mothers' education was higher in the non-desensitisation group (p=0.028) (table 1). There were no differences between the children of the two groups, except for the residence area (p=0.001) and means of transportation to the hospital (p=0.003) (online supplemental table S1). Compared with the non-desensitisation group, the children in the desensitisation group had higher proportions of dust mite allergy diagnosis (p=0.009), less rhinitis (p=0.004) and shorter rhinitis attacks (p<0.001) (online supplemental table S1).

Table 3 Attitude dimension, n (%)

	Without desensitisation	Desensitisation	P value
You can't stand dust mites infesting your home			0.481
Strongly agree	111 (44.40)	122 (48.22)	
Agree	95 (38.00)	98 (38.74)	
Unsure/don't know	35 (14.00)	28 (11.07)	
Disagree	9 (3.60)	5 (1.98)	
What is your attitude towards the possible health risks of dust mite infestation in children?			0.001
Very worried	137 (54.80)	177 (69.96)	
Worried	92 (36.80)	70 (27.67)	
Unsure/don't know	20 (8.00)	5 (1.98)	
Not worried at all	1 (0.40)	1 (0.40)	
Even though you have followed the doctor's advice to reduce your child's exposure to dust mites by mite removal in the house, you are still worried about the dust mite allergy			0.016
Strongly agree	101 (40.40)	114 (45.06)	
Agree	105 (42.00)	118 (46.64)	
Unsure/don't know	39 (15.60)	17 (6.72)	
Strongly disagree	5 (2.00)	4 (1.58)	
Do you think it is necessary to remove mites from your home regularly?			0.053
Very necessary	182 (72.80)	188 (74.31)	
Possibly necessary	55 (22.00)	54 (21.34)	
Unsure	13 (5.20)	6 (2.37)	
Unnecessary	0	5 (1.98)	

Table 4 Practice dimension, n (%)

	Positive behaviour		
	Without desensitisation	Desensitisation	P value
P1. Due to your child's dust mite allergy, have you and your family made a special effort to learn about relevant knowledge (including dust mites, dust mite allergy and desensitisation treatment, etc)	154 (61.60)	216 (85.38)	<0.001
P2. Does your child use mite-proof bedding such as mite-proof pillowcases and bedclothes	94 (37.60)	105 (41.50)	<0.001
P3. Do you use a dust mite controller to remove mites in your home	162 (64.80)	162 (64.03)	<0.001
P4. Do you use instruments such as dehumidifier/air conditioning, air cleaner, etc, to remove mites in your home	115 (46.00)	85 (33.60)	<0.001
P5. Do you use decoration prone to mites, such as carpet in your home	20 (8.00)	4 (1.58)	0.001
P6. Do you or your family weekly wash your pillowcases and bedclothes	161 (64.40)	173 (68.38)	0.345
P7. Do you or your family use a vacuum cleaner to clean your house every day	114 (45.60)	99 (39.13)	0.142

Knowledge, attitudes and practices

For the items common to the two questionnaires, compared with the non-desensitisation group, the desensitisation group showed higher correct response rates about dust mites, the complications of dust mite allergies, the source of dust mites and how to manage dust mite populations (all p values<0.05) (table 2). Both groups showed relatively poor knowledge regarding the group-specific items (online supplemental table S2).

About half of the participants cannot stand dust mites in their homes. More participants in the desensitisation group were very worried about the possible health risks of dust mites in children (p<0.001). More participants in the desensitisation group remained worried after following the doctors' advice to decrease dust mites (p=0.016). Most participants in the two groups agree that it is necessary to remove dust mites regularly (p=0.053) (table 3). The participants in the non-desensitisation group are willing to undergo treatments, but cost appears to be a barrier, while most participants in the desensitisation group have a favourable attitude towards treatment (online supplemental table S3).

Compared with the non-desensitisation group, subjects in the desensitisation group displayed higher rates of positive behaviour regarding all practice items (all p value≤0.001), except for the weekly cleaning of bedding and daily vacuuming (p=0.345 and p=0.142) (table 4). There were no significant differences between the two groups regarding the pillow and bedding materials (online supplemental table S4).

Table 5 Estimates of hypothesis paths of KAP

	β (95% CI)	P value
Without desensitisation		
K→A	0.22 (0.10, 0.35)	<0.001
A→P	0.16 (0.09, 0.22)	<0.001
K →P	−0.01 (−0.07, 0.06)	0.871
Desensitisation		
K →A	0.13 (0.01, 0.25)	0.028
A→P	0.08 (−0.01, 0.17)	0.095
K→P	0.03 (−0.05, 0.12)	0.439

A, attitude; K, knowledge; P, practice.

Pathway analysis

The root mean square error of approximation (p<0.001), Comparative Fit Index (p=1.000), Tucker–Lewis index (p=1.000) and standardised root mean square residual (p<0.001) all indicated that the model fit was acceptable. In the non-desensitisation group, knowledge directly affected attitude (β=0.22, p<0.001) and attitude directly affected practice (β=0.16, p<0.001) (table 5), but the knowledge did not affect practice (β=−0.01, 0.06, p<0.001). In the desensitisation group, knowledge directly affected attitude (β=0.13, p=0.028), but the practice was not affected by attitude (β=0.08, p<0.001) or knowledge (β=0.03, 0.12, p<0.001) (figure 1).

Factors influencing practice among parents of children who underwent desensitisation treatment

Among parents of children who underwent desensitisation treatment, bachelor's degree or above (OR=3.816, 95% CI: 1.483 to 9.818, p=0.005), suspected dust allergy based on symptoms (OR=4.299, 95% CI: 1.429 to 12.929, p=0.009) and children having rhinitis (OR=0.352, 95% CI: 0.170 to 0.272, p=0.005) were associated with the parents' practice (table 6).

DISCUSSION

This study investigated parents' KAP regarding the prevention and treatment of dust mite allergy and examined the differences between the parents of children treated with desensitisation and those of children who were not. The results showed that the parents of children with dust mite allergy had relatively good KAP regarding dust mites. The parents of children who did not undergo

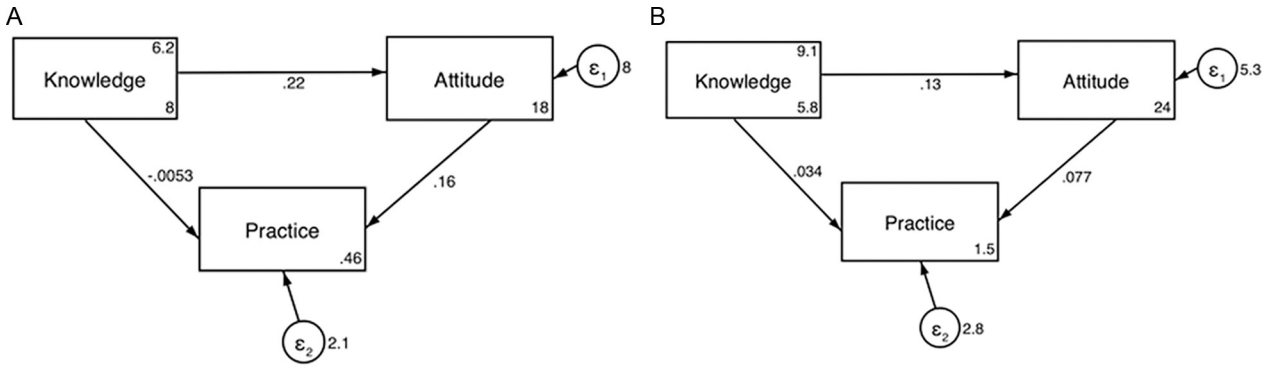

Figure 1 Pathway analysis. (A) Without desensitisation. (B) With desensitisation.

desensitisation therapy had poor knowledge, favourable attitudes and poor practice regarding dust mites, while the parents of children who underwent desensitisation therapy had good knowledge, favourable attitudes and poor practice.

Although dust mite allergy is bothersome for the patients and can evolve into allergic rhinitis and asthma, the condition is not as dangerous as food allergies, probably explaining why the KAP towards food allergies is very high in parents of food-allergic children[17–19] but lower in parents of children with dust mite allergy, as observed in the present study. Indeed, the relatively low KAP observed here is supported by previous studies on allergic rhinitis[20 21] and allergies in general.[22] Even parents of children with chronic asthma (in whom allergens can be triggers for asthma attacks) have a poor KAP towards allergies.[23] A study covering 29 Chinese cities showed that the KAP of parents towards allergic rhinitis was low.[26] In the present study, the total KAP scores and knowledge scores were higher in the desensitisation group than in the non-desensitisation group, as supported by Callahan *et al*,[16] who reported higher KAP in the parents who met an allergist compared with those who did not (to receive desensitisation treatment, all patients must consult an allergist in China). Still, in the present study, the non-desensitisation group included parents of children newly diagnosed with dust mite allergy and parents of children with known dust mite allergy who did not receive or did not yet receive desensitisation treatment. The attitude scores were relatively high in both groups, but the practice scores were low. These results indicate that although the willingness to take measures against house dust mites to improve their child's health was high, the actual application of these measures was low. Indeed, for example, vacuuming each day is time-consuming, boring and bothersome. The same goes for changing and laundering sheets more often. Since house dust mite allergy is not a serious condition, many parents do not feel the need to perform all those tasks.

This study showed significantly better scores for several knowledge areas, such as the dust mite species causing allergies, the diseases that can be due to dust mite allergies, the objects in which dust mites are more likely to thrive, methods to eliminate dust mites, and whether cleaning can completely eliminate dust mites. The parents who opted for desensitisation therapy in their children probably obtained more information from the physicians or other sources when discussing the treatment options or by themselves to understand better what they were getting into. Indeed, a study showed that the parents of children with life-threatening illnesses actively sought information about the illness[27]; although dust mite allergy is far from life-threatening, a similar protective behaviour could be involved. Furthermore, parents of children with allergies actively seek information from different sources.[28] Desensitisation therapy is relatively expensive, and parents might fear some adverse effects on their children, encouraging them to take more information. Compared with the non-desensitisation group, the parents in the desensitisation group also reported a more worried attitude towards the possible health risks related to dust mites in their children and more worries towards dust mites despite active measures taken to decrease them. These worries could come from a better knowledge of the diseases and complications related to dust mite allergies. Regarding the practice items, compared with the non-sensitisation group, the parents in the desensitisation group declared more efforts being taken to gain knowledge about dust mites (which could relate to the knowledge scores), as previously suggested[28] and reported a higher use of mite-proof bedding and pillowcase and a lower use of dust mite-prone decoration, which could be related to a better knowledge of the sources of dust mites. Still, both groups reported poor practice regarding washing bedding weekly and vacuuming daily. In the desensitisation group and higher education, suspected dust mite allergy based on symptoms (suggesting a higher knowledge of dust allergy) were independently and positively associated with the practice. On the other hand, rhinitis was independently and negatively associated with practice.

The pathway analysis showed different patterns of association among the KAP dimensions between the non-desensitisation and desensitisation groups. Indeed, in the non-desensitisation group, knowledge affected attitude, which in turn affected practice, while in the desensitisation group, only knowledge affected attitude. It may be because the parents in the desensitisation group had already taken action to address their children's condition. Still, these

Table 6 The factors influencing good practices (n=44 parents with good practice) among parents of children who have undergone desensitisation treatment (n=253)

	Univariate		Multivariate	
	95% CI	P value	95% CI	P value
Knowledge	0.966 (0.846 to 1.102)	0.604		
Attitude	1.16 (0.99 to 1.36)	0.067		
Parental relationship				
Mother	Ref			
Father/other family members	0.449 (0.19 to 1.061)	0.068		
Father's education				
Junior college or below	Ref			
Bachelor's degree or above	1.44 (0.721 to 2.877)	0.302		
Mother's education				
Junior college or below	Ref		Ref	
Bachelor's degree or above	3.928 (1.589 to 9.709)	0.003	3.816 (1.483 to 9.818)	0.005
Annual household income (¥)				
<100 000	Ref			
≥100 000	1.297 (0.676 to 2.487)	0.434		
Are the parents allergic to dust mites?				
None	Ref			
One of the parents/both	1.83 (0.814 to 4.112)	0.144		
Unclear	0.639 (0.286 to 1.428)	0.275		
Learnt about allergies				
No	Ref			
Yes	0.621 (0.121 to 3.182)	0.567		
Previsit knowledge of child's dust mite allergy				
Unaware	Ref		Ref	
Aware	1.81 (0.887 to 3.694)	0.103	1.679 (0.792 to 3.561)	0.176
Suspected based on symptoms	3.08 (1.118 to 8.481)	0.03	4.299 (1.429 to 12.929)	0.009
Child's sex				
Male	Ref			
Female	1.111 (0.564 to 2.187)	0.761		
Child's age	0.855 (0.738 to 0.992)	0.039	0.895 (0.764 to 1.049)	0.17
Only child				
Yes	0.552 (0.286 to 1.065)	0.076		
No	Ref			
Child's diagnosed conditions				
Rhinitis	0.432 (0.222 to 0.841)	0.013	0.352 (0.17 to 0.727)	0.005
Bronchial asthma	0.87 (0.428 to 1.767)	0.699		
Cough-variant asthma	0.833 (0.362 to 1.921)	0.669		
Allergic cough	1.01 (0.521 to 1.957)	0.977		

differences should be investigated more in-depth to tailor future interventions to the specific target populations. In addition, pathway analyses are only statistical surrogates for causality,[29 30] and the results should be confirmed.

In the present study, it was hypothesised that differences in KAP could explain, at least in part, the parents' decision for desensitisation therapy for children with dust mite allergy. The results support the hypothesis and may provide ideas and directions to guide and educate the parents in the clinic. Nevertheless, although the parents of children receiving desensitisation treatment had a higher KAP, there were still many gaps in knowledge,

suggesting that we should strengthen the education and management of these patients in addition to drug desensitisation treatment. The present study provides insights for designing teaching brochures, videos, podcasts or activities to increase the KAP of parents towards dust mites. In particular, the knowledge about the dust mites themselves and the methods to kill them was poor. The practice of minimising the living habitats of dust mites and using actual means to get rid of them should be emphasised. An intervention based on the results of the present study is being developed and will be investigated in a future study.

This study had limitations. It was performed at a single centre, and the sample size is relatively small. In addition, because the two subpopulations of participants (ie, with children with or without desensitisation treatments) had two different KAP questionnaires, a direct comparison of the KAP scores was impossible between the two groups. Furthermore, as for all KAP surveys, the data represent the situation of a specific population at a specific point in time.[14 15] In addition, KAP surveys are subject to a social acceptability bias, that is, the participants can be tempted to answer what they should do instead of what they really do.[14 15] Nevertheless, the present study might provide a comparator point to evaluate the KAP in a similar population after an intervention to increase health literacy on house dust mites.

CONCLUSIONS

In conclusion, the parents who did not decide on desensitisation therapy for their children had poor knowledge, favourable attitudes and poor practices regarding dust mites. On the other hand, the parents of children who underwent desensitisation therapy had good knowledge, favourable attitudes and poor practices. The poor practice scores highlight the need to emphasise the importance of dust mite control for the children's health. There is a need to educate the general population about the importance of controlling house dust mites.

Contributors SL and QZhou: Conceptualisation. BD: Methodology. LC: Software. QZhang: Validation. LH: Formal analysis. XL: Investigation. WS: Resources. SL: Data curation and writing—original draft preparation. QZhou: Writing—review and editing and visualisation. LS: Supervision, project administration and funding acquisition. The guarantor is LS.

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Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants and was approved by the research carried out in accordance with the Declaration of Helsinki. The study was approved by the medical ethics committee of Shengjing Hospital Affiliated to China Medical University (approval #2022PS935K). Participants gave informed consent to participate in the study before taking part.

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Data availability statement All data relevant to the study are included in the article or uploaded as online supplemental information.

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