

Knowledge, Attitude, and Practice Towards Urticaria in an Online Sample of the Chinese General Population

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Public awareness regarding specific aspects of urticaria is generally poor to moderate, but no study has examined the public awareness of urticaria in the general population in China. Therefore, this study investigated the general population's knowledge, attitudes, and practices (KAP) regarding urticaria. This cross-sectional study was conducted in China from 28 October 2023, to 2 December 2023. The study participants were from the general population (convenience sampling). A self-administered questionnaire was used to collect demographic information and KAP. The analysis included 1,056 valid questionnaires, mainly from Beijing (49.87%), Fujian (11.84%), Jilin (9.42%), and Hebei (5.50%). The median knowledge, attitude, and practice scores were 12 (P25–P75: 6–18), 20 (P25–P75: 18–22), and 27 (P25–P75: 24–29), respectively. A college education or bachelor's degree, a non-medical occupation, a history of urticaria, and experience with traditional Chinese medicine (TCM) were independently associated with the knowledge scores. Female sex, with children, with a master's degree or above, and with a non-medical occupation were independently associated with the attitude scores. Non-medical occupations, a history of urticaria, and experience with TCM were independently associated with the practice scores. The general population in China shows low knowledge and attitude scores but high practice scores towards urticaria.

Key words: knowledge; attitude; practice; urticaria; general population; survey; cross-sectional study; China.

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Globally, the incidence of urticaria has been increasing yearly (1), imposing a significant burden on patients' quality of life and socioeconomic factors (2). The management of urticaria requires proper knowledge and attitude to recognize the symptoms, decide when to consult, use of over-the-counter drugs, avoid the inducing factors, and properly follow the prescribed treatments. Knowledge, attitude, and practice (KAP) studies are useful tools to determine the gaps, misunderstandings, and misconceptions regarding a specific subject in a

SIGNIFICANCE

This study aimed to examine knowledge, attitudes, and practices (KAP) towards urticaria of the general population in China. The results could help identify the knowledge gaps in the public's understanding of urticaria and carry out targeted educational campaigns to raise awareness. In addition, the findings could serve as a reference for healthcare providers. In conclusion, the general population in mainland China has low knowledge and attitude scores but high practice scores towards urticaria. Specific knowledge and attitude items warranting improvements were identified. Educational and motivational interventions should be designed to improve the KAP towards urticaria in the general population.

population (3). Educational and motivational interventions can be performed once the gaps in knowledge and attitude are identified, with the aim of improving practice. KAP studies could provide better insights into the public's level of awareness regarding urticaria, providing a basis for improving patients' quality of life and offering more effective treatment approaches.

A previous study revealed that patients with urticaria had a proper KAP towards urticaria, including management and triggers (4). Nevertheless, no previous studies specifically examined the KAP towards urticaria in the general population, but some studies examined very specific aspects of urticaria, such as corticosteroid use (5), food allergies (6), hair-dye use (7), and paracetamol (8). The studies generally reveal that many individuals have misconceptions regarding urticaria symptoms, diagnosis, and treatment methods, leading to incorrect practices. This situation delays appropriate treatment for patients and can worsen their condition and lead to complications. No previous studies have examined the KAP towards urticaria in the Chinese population. KAP surveys remain a cornerstone in public health research, providing critical insights into baseline knowledge, prevailing attitudes, and health-related behaviours within populations on various health-related topics (9, 10). Recent empirical studies continue to validate the utility of the KAP framework, especially in the context of behavioural health and the ongoing challenges posed by misinformation (11, 12).

Therefore, this study aimed to examine the KAP towards urticaria of the general population in China.

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MATERIALS AND METHODS

This study was reported according to the STROBE checklist for cross-sectional studies (13).

Study design and participants

This cross-sectional study was conducted at Beijing Traditional Chinese Medicine Hospital affiliated to Capital Medical University, from 28 October 2023 to 2 December 2023. The study participants were from the general population in China. Ethical approval for this study was obtained from the Ethics Committee of Beijing Traditional Chinese Medicine Hospital, Capital Medical University (2023BL02-109-01). All participants provided written informed consent.

The inclusion criteria were (i) residing in mainland China, (ii) 18 to 80 years of age, (iii) receiving sufficient education to enable communication, interaction, and participation in online survey methods, and (iv) signing the informed consent form. The exclusion criteria were (i) cannot participate in an online survey, (ii) mental disorders or cognitive impairments that prevent them from completing the survey in a reliable manner, (iii) surveys with response time <86 s or >3,000 s, or (iv) incomplete questionnaires.

Questionnaire

The questionnaire design was based on the literature concerning urticaria (14–16). After the initial design, the questionnaire was modified based on the suggestions from 5 experts, including 3 dermatologists and 2 biostatisticians. A small-scale pilot test was conducted with 30 respondents, resulting in a reliability coefficient of 0.717.

The final questionnaire was in Chinese and consisted of 4 dimensions: demographic information on the participants (8 questions), knowledge, attitude, and practice. The knowledge dimension included 15 questions; "well known" was scored 2 points, "heard of" was scored 1 point, and "unclear" was scored 0 points, for a score range of 0 to 30 points. The attitude dimension contained 12 questions, all using a 5-point Likert scale to assess attitude levels, with scores ranging from 1 to 5 points; the total score range was 12 to 60 points. The practice dimension included 8 questions. Questions 1–7 used a 5-point Likert scale to assess action levels, with scores ranging from 1 to 5 points. The eighth question was an open-ended one. The score range was 7 to 35 points.

Procedure

The questionnaires were distributed to study participants through convenience sampling, also known as "accidental sampling", in an online format. Questionnaire Star (Changsha Ranxing Information Technology Co, Hunan, China), a professional online questionnaire software platform, was used to design and create a link to the questionnaire. A QR code was generated to collect data through WeChat. Participants scanned the QR code sent to them via WeChat to log in and complete the questionnaire. To ensure the quality and completeness of the questionnaire results, each IP address was allowed to submit only 1 questionnaire, and all items were mandatory. An Excel spreadsheet (Microsoft Corp, Redmond, WA, USA) was exported from the Questionnaire Star platform. The research team members examined the completeness, internal coherence, and validity of all questionnaires.

Statistical analysis

Descriptive analyses were conducted to gather demographic information on the survey participants and KAP scores for each dimension. First, the normality of the score distribution for each dimension was assessed, and it was found that the scores were not normally distributed. The data were summarized using medians, the 25th percentile, and the 75th percentile. The categorical data were presented as *n* (%). For comparisons of continuous variables between 2 groups, the Wilcoxon–Mann–Whitney test was used. For comparisons of continuous variables among 3 or more groups, the Kruskal–Wallis analysis of variance was used. Categorical variables were analysed using the χ^2 test. The correlations were examined using Spearman's correlation coefficient. Regression analyses were performed with the scores for each dimension as the dependent variables, analysing their relationships with demographic information. The results were categorized using the median scores for each dimension. The multi-variable regression analyses included the variables with a *p*-value <0.10 (or <0.25 for a supplementary practice score analysis) from the univariable analyses. Multiple linear regression analyses were also performed using the KAP scores as continuous variables. In this analysis, *p*-values were reported to 3 decimal places. Two-sided *p*-values <0.05 were considered statistically significant. Statistical analysis was conducted using SPSS 26.0 (IBM Corp, Armonk, NY, USA).

RESULTS

Characteristics of the participants

In this study, 1,195 questionnaires were collected, but 139 were excluded: 99 for logic errors (e.g., IP duplication), 36 for completion in <86 s or >3,000 s, and 4 for

incomplete questionnaires. Therefore, 1,056 questionnaires were included in the analysis. The participants were mainly from Beijing (49.87%), Fujian (11.84%), Jilin (9.42%), and Hebei (5.50%) (Table SI).

Most of the participants were female (67.2%), 30–39 years old (34.6%), with children (70.2%), with college education or bachelor's degree (67.4%), living in urban areas (86.8%), in a non-medical occupation (69.3%), without a history of urticaria (58.5%), and without experience of traditional Chinese medicine (TCM) treatments (59.9%) (Table I).

Knowledge

The median knowledge score was 12 (P25–P75: 6–18) (Table SII). Higher knowledge scores were observed in females ($p < 0.001$), younger participants ($p < 0.001$), those with higher education ($p < 0.001$), urban residents ($p < 0.001$), medical occupation ($p < 0.001$), with a history of urticaria ($p < 0.001$), and with experience of traditional Chinese medicine (TCM) ($p < 0.001$) (see Table I). The lowest scores were observed for K5 (78.1% unknown; "Helicobacter pylori can trigger urticaria"), K6 (63.6% unknown; "Mast cells play a crucial role in the pathogenesis of urticaria, being induced to activate through both immune and non-immune mechanisms"), and K13 (51.3% unknown; "Providing psychological counselling is also a way to manage recurrent episodes of chronic urticaria") (Table SIII).

Attitude

The median attitude score was 20 (P25–P75: 18–22) (/60, 33.3%) (see Table SII). Higher attitude scores were observed in females ($p = 0.018$), younger age ($p = 0.001$), without children ($p < 0.001$), with higher education ($p < 0.001$), with a medical occupation ($p < 0.001$), with a history of urticaria ($p = 0.048$), and with experience of TCM ($p = 0.004$) (see Table I). Table SIV presents the distribution of scores for the attitude items. Regarding A1, 77.4% of the participants agree that urticaria is just an allergic reaction. For A2, 61.1% consider that urticaria is related to a low immune system, while 34.9% disagree.

Practice

The median practice score was 27 (P25–P75: 24–29) (/35, 77.1%) (see Table SII). Higher practice scores were observed with a college education or a bachelor's degree ($p = 0.018$), with medical occupation ($p < 0.001$), without a history of urticaria ($p = 0.001$), and with experience of TCM ($p = 0.002$) (see Table I). Table SV presents the distribution of scores for the practice items. The participants responded that if they had to undergo TCM, they would choose oral Chinese herbal medicine (78.3%), herbal baths or topical applications (67.6%), and external therapies such as acupuncture, moxibustion, cupping, scraping, or bloodletting (37.2%).

Table I. Characteristics of the participants

Item	n (%)	Knowledge (K)		Attitude (A)		Practice (P)	
		Median (P25, P75)	p-value	Median (P25, P75)	p-value	Median (P25, P75)	p-value
Total	1056	12 (6, 18)		20 (18, 22)		27 (24, 29)	
Gender			< 0.001		0.018		0.096
Male	346 (32.8)	10 (4, 16)		20 (18, 22)		26 (23, 28)	
Female	710 (67.2)	13 (7, 18)		20 (18, 22)		27 (24, 29)	
Age			< 0.001		0.001		0.558
< 30 years	189 (17.9)	12 (6, 18)		21 (18, 22)		27 (23, 29)	
30–39 years	365 (34.6)	14 (8, 18)		20 (18, 22)		27 (23, 28)	
40–49 years	234 (22.2)	12 (7, 19)		20 (18, 22)		26 (24, 28)	
50–59 years	132 (12.5)	11 (5.5, 16.5)		20 (18, 22)		27 (24, 29)	
≥ 60 years	136 (12.9)	8 (3.5, 15)		19 (17, 20.5)		28 (24.5, 28)	
Reproductive status			0.217		< 0.001		0.357
Not yet given birth	315 (29.8)	13 (7, 17)		21 (18, 23)		27 (24, 29)	
Already given birth	741 (70.2)	12 (6, 18)		20 (18, 22)		27 (24, 28)	
Education level			< 0.001		< 0.001		0.018
High school/technical school or below	158 (15.0)	7 (3, 13)		19 (17, 22)		27 (24, 28)	
College/bachelor's	712 (67.4)	13 (7, 18)		20 (18, 22)		27 (24, 29)	
Master's degree or above	186 (17.6)	13 (7, 23)		22 (19, 23)		26 (23, 28)	
Place of residence			< 0.001		0.116		0.762
Urban	917 (86.8)	13 (7, 18)		20 (18, 22)		27 (24, 29)	
Suburban	70 (6.6)	10 (5, 15)		19.5 (17, 22)		27 (24, 28)	
Rural	69 (6.5)	8 (4, 15)		20 (17, 22)		27 (22, 29)	
Occupation			< 0.001		< 0.001		< 0.001
Medical personnel	324 (30.7)	18 (13.5, 24)		20 (18, 22)		28 (25, 30)	
Other	732 (69.3)	9 (5, 15)		20 (18, 22)		26 (23, 28)	
History of urticaria			< 0.001		0.048		0.001
No	618 (58.5)	10 (5, 15)		20 (18, 22)		27 (24, 29)	
Yes	438 (41.5)	15 (9, 20)		20 (18, 22)		26 (23, 28)	
Experience with traditional Chinese medicine treatment			< 0.001		0.004		0.002
No	633 (59.9)	10 (5, 15)		20 (18, 22)		27 (24, 28)	
Yes	423 (40.1)	14 (8, 20)		20 (18, 22)		27 (24, 29)	

Table II. Correlation analysis

Item	Knowledge	Attitude	Practice
Knowledge	1.000		
Attitude	0.146 ($p<0.001$)	1.000	
Practice	0.278 ($p<0.001$)	0.013 ($p=0.678$)	1.000

Correlations

The knowledge scores were correlated to the attitude ($r=0.146$, $p<0.001$) and practice ($r=0.278$, $p<0.001$) scores. There were no correlations between the attitude and practice scores ($r=0.013$, $p=0.678$) (Table II).

Factors influencing the KAP scores

A college education or bachelor's degree (OR=1.751, 95% CI: 1.168–2.626, $p=0.007$), non-medical occupation (OR=0.119, 95% CI: 0.084–0.169, $p<0.001$), a history of urticaria (OR=2.281, 95% CI: 1.712–3.038, $p<0.001$), and experience with TCM (OR=1.690, 95% CI: 1.270–2.249, $p<0.001$) were independently associated with the knowledge scores (Table III). The multivariable linear regression analysis identified 4 significant independent factors associated with knowledge scores (Table SVI). Higher knowledge scores were positively associated with higher education levels, specifically a college/bachelor's degree ($\beta=2.035$, 95% CI: 0.753 to 3.317, $p=0.002$) or a master's degree or above ($\beta=3.268$, 95% CI: 1.667 to 4.868, $p<0.001$), compared with high school education or below. A history of urticaria ($\beta=2.740$, 95% CI: 1.899 to 3.581, $p<0.001$)

and experience with TCM treatment ($\beta=2.402$, 95% CI: 1.562 to 3.242, $p<0.001$) were also independently associated with higher knowledge scores. Conversely, a non-medical occupation was significantly associated with lower knowledge scores compared with medical personnel ($\beta=-7.388$, 95% CI: -8.307 to -6.469, $p<0.001$).

Female sex (OR=1.397, 95% CI: 1.064–1.835, $p=0.016$), with children (OR=0.683, 95% CI: 0.514–0.906, $p=0.008$), with a master's degree or above (OR=2.568, 95% CI: 1.605–4.108, $p<0.001$), and with a non-medical occupation (OR=0.742, 95% CI: 0.556–0.990, $p=0.042$) were independently associated with the attitude scores (Table IV). In the multiple linear regression analysis, female gender ($\beta=0.527$, $p=0.026$), a master's degree or higher ($\beta=1.573$, $p<0.001$), and being medical personnel ($\beta=0.679$, $p=0.013$) were independent predictors of higher attitude scores. After adjusting for other variables, the significant association between knowledge scores and attitude scores disappeared ($p=0.734$), suggesting its effect may be mediated by factors such as education and occupation (Table SVII).

When using $p<0.10$ for inclusion in the multivariable analysis, having a non-medical occupation (OR=0.541, 95% CI: 0.412–0.709, $p<0.001$), a history of urticaria (OR=0.640, 95% CI: 0.495–0.827, $p=0.001$), and experience with TCM (OR=1.398, 95% CI: 1.080–1.808, $p=0.011$) were independently associated with the practice scores (Table V). Using the $p<0.25$ threshold for variable inclusion yielded similar results, with age being

Table III. Univariable and multivariable analyses of the knowledge dimension

Cut-off value: ≥ 12	<i>n</i>	Univariable		Multivariable ($p<0.10$)	
		OR (95%CI)	<i>p</i> -value	OR (95%CI)	<i>p</i> -value
Gender					
Male	152/346	ref.			
Female	407/710	1.714 (1.323, 2.222)	<0.001		
Age					
< 30 years	99/189	ref.			
30–39 years	224/365	1.444 (1.013, 2.059)	0.042		
40–49 years	121/234	0.973 (0.663, 1.429)	0.891		
50–59 years	62/132	0.805 (0.516, 1.257)	0.340		
≥ 60 years	53/136	0.581 (0.371, 0.908)	0.017		
Reproductive status					
Not yet given birth	178/315	ref.			
Already given birth	381/741	0.815 (0.625, 1.062)	0.130		
Education level					
High school/technical school or below	48/158	ref.		ref.	
College/bachelor's	408/712	3.076 (2.124, 4.453)	<0.001	1.751 (1.168, 2.626)	0.007
Master's degree or above	103/186	2.844 (1.821, 4.440)	<0.001	1.461 (0.887, 2.407)	0.136
Place of residence					
Urban	500/917	ref.			
Suburban	32/70	0.702 (0.431, 1.144)	0.156		
Rural	27/69	0.536 (0.325, 0.885)	0.015		
Occupation					
Medical personnel	274/324	ref.		ref.	
Other	285/732	0.116 (0.083, 0.163)	<0.001	0.119 (0.084, 0.169)	<0.001
History of urticaria					
No	272/618	ref.		ref.	
Yes	287/438	2.418 (1.877, 3.114)	<0.001	2.281 (1.712, 3.038)	<0.001
Experience with traditional Chinese medicine treatment					
No	295/633	ref.		ref.	
Yes	264/423	1.902 (1.480, 2.446)	<0.001	1.690 (1.270, 2.249)	<0.001

Table IV. Univariable and multivariable analyses of the attitude dimension

Cut-off value: ≥20	n	Univariable		Multivariable (<i>p</i> < 0.10)	
		OR (95%CI)	<i>p</i> -value	OR (95%CI)	<i>p</i> -value
Gender					
Male	178/346	ref.		ref.	
Female	428/710	1.432 (1.106, 1.856)	0.007	1.397 (1.064, 1.835)	0.016
Age					
< 30 years	121/189	ref.			
30–39 years	219/365	0.843 (0.586, 1.212)	0.357		
40–49 years	129/234	0.690 (0.466, 1.023)	0.065		
50–59 years	74/132	0.717 (0.455, 1.129)	0.151		
≥ 60 years	63/136	0.485 (0.309, 0.760)	0.002		
Reproductive status					
Not yet given birth	206/315	ref.		ref.	
Already given birth	400/741	0.621 (0.472, 0.816)	0.001	0.683 (0.514, 0.906)	0.008
Education level					
High school/technical school or below	77/158	ref.		ref.	
College/bachelor's	391/712	1.281 (0.907, 1.809)	0.159	1.112 (0.777, 1.592)	0.562
Master's degree or above	138/186	3.024 (1.923, 4.757)	< 0.001	2.568 (1.605, 4.108)	< 0.001
Place of residence					
Urban	533/917	ref.			
Suburban	35/70	0.72 (0.443, 1.172)	0.187		
Rural	38/69	0.883 (0.540, 1.445)	0.621		
Occupation					
Medical personnel	209/324	ref.		ref.	
Other	397/732	0.652 (0.498, 0.854)	0.002	0.742 (0.556, 0.990)	0.042
History of urticaria					
No	343/618	ref.			
Yes	263/438	1.205 (0.940, 1.545)	0.141		
Experience with traditional Chinese medicine treatment					
No	350/633	ref.			
Yes	256/423	1.239 (0.965, 1.592)	0.092		

included in the model but without being independently associated, finally. After adjusting for covariates, the multivariable analysis revealed that a higher knowledge score was a strong independent predictor of a higher prac-

tice score ($\beta=0.177$, 95% CI: 0.137 to 0.217, $p<0.001$) (Table SVIII). Experience with TCM treatment was also positively associated with practice scores ($\beta=0.746$, 95% CI: 0.185 to 1.306, $p=0.009$).

Table V. Univariable and multivariable analyses of the practice dimension

Cut-off value: ≥27	No.	Univariable		Multivariable (<i>p</i> < 0.1)		Multivariable (<i>p</i> < 0.25)	
		OR (95% CI)	<i>p</i> -value	OR (95% CI)	<i>p</i> -value	OR (95% CI)	<i>p</i> -value
Gender							
Male	169/346	ref.					
Female	389/710	1.269 (0.981, 1.642)	0.070				
Age							
< 30 years	104/189	ref.				ref.	
30–39 years	185/365	0.840 (0.590, 1.195)	0.332			0.766 (0.533, 1.102)	0.151
40–49 years	115/234	0.790 (0.538, 1.160)	0.229			0.778 (0.524, 1.154)	0.212
50–59 years	73/132	1.011 (0.647, 1.581)	0.961			1.053 (0.667, 1.665)	0.824
≥ 60 years	81/136	1.204 (0.770, 1.881)	0.416			1.383 (0.876, 2.184)	0.164
Reproductive status							
Not yet given birth	167/315	ref.					
Already given birth	391/741	0.990 (0.760, 1.289)	0.941				
Education level							
High school/technical school or below	80/158	ref.					
College/bachelor's	392/712	1.194 (0.846, 1.687)	0.313				
Master's degree or above	86/186	0.839 (0.548, 1.282)	0.416				
Place of residence							
Urban	480/917	ref.					
Suburban	42/70	1.366 (0.832, 2.241)	0.218				
Rural	36/69	0.993 (0.609, 1.621)	0.978				
Occupation							
Medical personnel	204/324	ref.		ref.		ref.	
Other	354/732	0.551 (0.421, 0.720)	< 0.001	0.541 (0.412, 0.709)	< 0.001	0.500 (0.379, 0.661)	< 0.001
History of urticaria							
No	348/618	ref.		ref.		ref.	
Yes	210/438	0.715 (0.559, 0.914)	0.007	0.640 (0.495, 0.827)	0.001	0.639 (0.494, 0.826)	0.001
Experience with traditional Chinese medicine treatment							
No	318/633	ref.		ref.		ref.	
Yes	240/423	1.299 (1.014, 1.664)	0.038	1.398 (1.080, 1.808)	0.011	1.457 (1.122, 1.892)	0.005

DISCUSSION

This cross-sectional study investigated the KAP regarding urticaria of the general population in mainland China. The results suggest that the general Chinese population in mainland China has low knowledge and attitude scores but high practice scores towards urticaria. Educational and motivational interventions should be designed to improve the KAP towards urticaria in the general population.

The adequate management of urticaria requires proper knowledge and attitude to be able to perform the proper actions, including symptom recognition, deciding when to consult, using or not over-the-counter drugs, avoiding known or suspected triggers, and following the prescribed treatments. Patients suffering from a given disease are more likely to have a proper knowledge of it (17), at least better than the general population. Indeed, Renuka et al. (4) showed that patients with urticaria had a proper KAP toward urticaria, including its management and triggers. Accordingly, the participants with urticaria in the present study had higher knowledge scores, independent of other factors.

This study generally showed low knowledge and attitude scores towards urticaria but high practice scores. This discrepancy could be due to the participants applying general knowledge and following general recommendations regarding allergic reactions and skin lesions without knowing that they apply to urticaria specifically. Urticaria affects not only appearance and social interactions but also encompasses the itching problem, which cannot be ignored. In situations where individuals are not entirely clear about the condition or have not sought medical advice, many individuals with urticaria in China tend to self-administer antiallergic medications or resort to traditional Chinese medicine treatments, such as using Chinese patent medicine like Fang Feng Tong Sheng Wan, or performing cupping therapy, to alleviate itching symptoms (18, 19). A higher education was associated with a better KAP, as supported by the association between a higher socioeconomic status and health literacy (20). Having a medical occupation was associated with a better KAP, probably due to the health-related knowledge acquired with training and experience. TCM is also often used in China to manage urticaria (18, 19), and patients seeking TCM could gain more information. In this study, the patients with urticaria who had received TCM treatment scored significantly better than those who did not receive TCM treatment. This suggests that TCM treatment may play a key role in the management of urticaria. Indeed, TCM provides patients with comprehensive health management with its comprehensive treatment methods, personalized treatment plans, holistic concept, and promotion of self-healing. By emphasizing health education, TCM enables patients to gain a deeper understanding of urticaria and helps them adopt a health-

ier lifestyle in their daily lives (21). The combination of these characteristics may make TCM show significant advantages in the treatment of urticaria and provide support for the comprehensive recovery of patients. Female gender was associated with higher attitude scores than the male gender, consistent with findings from previous studies suggesting that women may place more emphasis on factors related to cosmetic appearance (22). Similarly, not having children was associated with higher attitude scores, which may be influenced by different social or personal priorities compared with those with children (23).

The previous study by Shen and Zhao (24) showed that patients with urticaria exhibited low knowledge and attitude scores but high practice scores concerning medication treatment. On the other hand, the advantage of the present study was the extensive survey sample that included Beijing (49.87%), Fujian (11.84%), Jilin (9.42%), and Hebei (5.50%), while the study by Shen and Zhao (24) included only patients from the First Affiliated Hospital of Kunming Medical University, leading to a lower representativeness and generalizability than the present study. In addition, Shen and Zhao (24) explored the KAP of patients with treatments for urticaria, while the present study included treatment, but also pathogenesis, susceptibility factors, characteristics, and prognosis of urticaria, which paints a more comprehensive picture of the situation. Furthermore, China is a vast country with vast disparities among provinces regarding socioeconomic status, policies, and healthcare access (25–27). Kunming has a moderate gross domestic product per capita for a provincial capital, higher than Jilin and Hebei but lower than Beijing and Fujian. It is a key economic centre in Southwest China but, overall, Yunnan province remains less developed compared with the coastal regions. Although Kunming offers high-quality care relative to its region, with several top-tier hospitals and ongoing investments, overall access and quality are not on par with Beijing or major coastal cities (28, 29).

Therefore, given the poor knowledge and attitude scores, educational and motivational interventions concerning urticaria could be warranted. Hacard et al. (30) showed that therapeutic patient education improved the knowledge and skills of patients with chronic spontaneous urticaria. Nevertheless, several studies showed a relatively poor KAP towards urticaria among healthcare providers (16, 31, 32). The KAP of healthcare providers towards urticaria in mainland China was not investigated, but future studies could examine whether they would also require continuous education activities.

The present study must be considered within the specific cultural context of China. The management of urticaria in China is marked by distinct cultural specificity, deeply influenced by TCM philosophy, patient behaviours, and healthcare system characteristics. TCM has a long history in urticaria management, dating back to the Spring and

Autumn Period, with the condition historically known as "addiction rash". Aetiological theories in TCM attribute urticaria to factors such as "wind", "heat", "dampness", "improper diet", and "emotional disturbances", leading to diverse individualized treatment strategies (19). Common TCM interventions include herbal decoctions (e.g., Guizhi Decoction, Yupingfeng Powder, Xiaofeng San), acupuncture, moxibustion, and cupping. These therapies aim to clear heat, remove dampness, nourish blood, and expel wind pathogens, reflecting a holistic approach that considers both symptom relief and underlying body imbalances (19, 33). Modern clinical practice in China often combines TCM with Western pharmacotherapy (primarily second-generation antihistamines), with evidence suggesting that such integrative approaches may improve symptom control, reduce relapse, and minimize adverse effects (33). Many patients in China self-administer over-the-counter antiallergic medications or seek TCM treatments before consulting a physician. This is partly due to cultural familiarity with TCM, accessibility of herbal remedies, and sometimes limited awareness of chronic urticaria's nature or optimal management strategies (34). There is a tendency towards as-needed rather than continuous medication use, and low adherence to prescribed regimens is common, influenced by patient beliefs, economic factors, and cultural practices (34). Acupuncture and moxibustion for urticaria have been documented since the Jin Dynasty, with treatment protocols often based on classical meridian theory and syndrome differentiation, though ancient prescriptions were typically simple and not always tailored to specific syndromes (35).

Limitations

This study had limitations. About half of the participants were from the Beijing area, which could introduce a bias affecting generalizability. In addition, the participants were sampled through convenience (or accidental) sampling, which, while ensuring a large sample size, may not fully represent the general population. This method could have excluded individuals without access to smart devices or with limited electronic device literacy due to the need to access the QR codes and complete the online questionnaire, potentially affecting the diversity of the sample and inherently favouring younger, urban, and digitally connected individuals. Additionally, factors such as income, education, and family size may influence health literacy and could further impact the responses, limiting the generalizability of the findings. Furthermore, the cross-sectional design of the study prevents the analysis of causal relationships. The questionnaire was designed by the investigators based on local guidelines, culture, and policies, limiting the exportability of the questionnaire and the generalizability of the results. All KAP studies are susceptible to social

desirability bias, which entails that the participants can answer what they know they should think or do instead of what they are actually thinking or doing (36, 37). However, considering the poor knowledge observed here, that bias is less likely.

Conclusion

The general population in mainland China has low knowledge and attitude scores but high practice scores towards urticaria. Specific knowledge and attitude items warranting improvements were identified. Educational and motivational interventions should be designed to improve the KAP towards urticaria in the general population.

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Availability of data and materials: All data generated or analysed during this study are included in this published article.

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