Medical Research
Volume 8, Issue 2, 2026, Page 130–135
https://doi.org/10.6913/mrhk.080212

Investigating the Current Status of Knowledge Regarding Melanocytic Nevi and Its Influencing Factors among College Students at a university in Shenzhen

Xiangyun Li[1], Yu Zhang[1,*]
[1]*Department of Dermato-Venereology, The Seventh Affiliated Hospital of Sun Yat-sen University, Shenzhen 518000, China;*
**Corresponding author: Yu Zhang, Email: zhangyu@sysush.com*

Abstract

Objective: To systematically evaluate the health literacy level regarding melanocytic nevi among college students based on the Knowledge-Attitude-Practice (KAP) theory, explore the transmission mechanisms among dimensions and population heterogeneity characteristics, and provide theoretical evidence for precision stratified interventions. **Methods:** A cross-sectional survey was conducted among 155 college students at a university in Shenzhen from January and April 2026 using self-administered electronic questionnaires. A quantitative scoring system was constructed based on the KAP theoretical framework. Spearman correlation analysis was used to examine inter-dimensional associations. Mann-Whitney U test and Kruskal-Wallis H test were employed for subgroup comparisons. Population pattern clustering was performed based on the three-dimensional levels. **Results:** The score rates of the K, A, and P dimensions were 38.4%, 57.1%, and 44.2%, respectively. Spearman analysis revealed strong positive correlations among the three dimensions ($r=0.915–0.931$, all $P<0.001$). Females scored significantly higher than males across all dimensions ($P<0.001$). KAP pattern clustering identified four typical populations: all-dimension deficient type (18.06%), all-dimension excellent type (15.48%), attitude-first type (29.68%), and transitional type (33.55%). **Conclusions:** Significant gender differences and population pattern heterogeneity exist in college students' KAP regarding melanocytic nevi. The "attitude-first type" and "transitional type" constitute key intervention targets. Differentiated health promotion strategies based on KAP patterns are recommended.

Keywords Melanocytic nevus; KAP theory; Health literacy; Population heterogeneity; University students

1 Introduction

Melanocytic nevi are benign neoplasms formed by melanocytes at the dermo-epidermal junction or within the dermis, and they are among the most common skin lesions encountered in dermatological practice. Epidemiological data indicate that almost every individual develops varying numbers of melanocytic nevi at different stages of life [1], the vast majority of which remain benign throughout life and require no treatment. However, nevi located in special sites such as the palms, soles, subungual areas, or mucous membranes, or those subjected to repeated physical friction, chemical irritation, or chronic ultraviolet

© **The Author(s) 2026.** CC BY-NC-SA 4.0. **Article History:** Received: May 14, 2026; Accepted: May 10, 2026; Published: June 15, 2026. ***Medical Research***, ISSN 2664-0333 (Print), ISSN 2664-0341 (Online). Published by Creative Publishing Co., Limited (CPCL®). https://mrhk.cc, https://cpcl.hk, Email: cpcl@cpcl.hk.

exposure, carry a potential risk of transformation into cutaneous melanoma [2-3]. Although melanoma accounts for less than 5% of all cutaneous malignancies, it is the leading cause of death among skin cancers [4], with a median survival of only 6–9 months after distant metastasis. Importantly, when identified and completely excised at an early stage (thickness <0.8 mm), the 10-year recurrence-free survival rate exceeds 95% [5]. This stark prognostic contrast underscores the public health importance of early recognition education targeting the general population, especially young age groups [6].

The KAP theory is one of the most widely applied theoretical models in health education and health promotion. It postulates that the formation of individual health behaviours proceeds through three successive stages: "knowledge accumulation → attitude formation → behaviour change". Knowledge provides the cognitive foundation for action, attitude represents the emotional inclination after knowledge internalisation, and behaviour is the overt manifestation of attitude. These three dimensions form a theoretically observable and intervenable causal chain. In recent years, the KAP model has been successfully applied in various health behaviour studies, including chronic disease prevention, infectious disease control, and cancer screening [7]. Nevertheless, a review of the domestic and international literature reveals that systematic application of KAP theory to college students' awareness and behaviours regarding melanocytic nevi remains scarce.

University students are in a critical life transition from adolescence to adulthood, and health concepts and behavioural patterns formed during this period often have long-term persistence. Concurrently, university life grants them unprecedented autonomy in health self-management, making them an ideal target population for health education and behavioural interventions [8]. Against this background, the present study, using the KAP framework, aimed to: (1) quantitatively assess the current levels of knowledge, attitude, and practice regarding melanocytic nevi among college students; (2) test the theoretical transmission pathways among KAP dimensions and their strength; and (3) identify the distribution characteristics of different KAP patterns, thereby providing evidence-based support for designing stratified and precision campus-based skin health education programmes.

2 Materials and Methods

2.1 Study Participants

A convenience sampling method was used to recruit students from a university in Shenzhen, spanning from freshmen to postgraduate levels, between January and April 2026. Inclusion criteria: ability to complete the questionnaire independently and provision of informed consent. Exclusion criteria: severe mental or cognitive disorders that prevented comprehension of the questionnaire content. A total of 155 electronic questionnaires were distributed, and 155 valid responses were returned, yielding a valid response rate of 100%.

2.2 Survey Method

A cross-sectional study design was adopted, and a self-administered anonymous electronic questionnaire was constructed using the Wenjuanxing platform. The questionnaire was developed based on literature review and expert consultation, and a pilot survey confirmed its comprehensibility and operability. The questionnaire covered: (1) demographic characteristics (gender, grade, skin type); (2) basic nevus status (number, distribution, congenital nevi, and family history); (3) knowledge dimension (K): including awareness of malignant potential, mastery of the ABCDE rule, prognosis awareness, and risk factor identification, with a full score of 10; (4) attitude dimension (A): including concern for special sites, recognition of sun protection importance, and inclination towards managing asymptomatic nevi, with a full score of 8; (5) practice dimension (P): including sun-protective measures implementation, sunscreen use frequency,

medical consultation history, and regularity of self-examination, with a full score of 13. Based on the KAP theory, the grading criteria were preset as follows: K<4 as low, 4–7 as moderate, ≥7 as high; A<4 as negative, 4–6 as moderate, ≥6 as positive; P<5 as poor, 5–8 as moderate, ≥8 as good.

2.3 Statistical Analysis

Data were analysed using SPSS 26.0 software. Categorical variables were described as frequencies and percentages. Since KAP scores were not normally distributed (Shapiro-Wilk test, P<0.05), group comparisons were performed using the Mann-Whitney U test (two groups) or Kruskal-Wallis H test (multiple groups), with post-hoc pairwise comparisons adjusted by Bonferroni correction. Inter-dimensional associations were examined using Spearman rank correlation. Pattern clustering of respondents was conducted based on the three-dimensional level classifications. A P<0.05 was considered statistically significant.

3 Results

3.1 Baseline Characteristics of Participants

Among the 155 respondents, 67 (43.23%) were male and 88 (56.77%) female. The grade distribution was dominated by seniors (fourth-year students, n=110, 70.97%), followed by postgraduates and above (n=26, 16.77%), and freshmen to juniors (n=19, 12.26%). Regarding Fitzpatrick skin phototypes, type IV (rarely burns, tans easily) was the most common (n=67, 43.23%), followed by type III (n=50, 32.26%). For nevus prevalence, 147 (94.84%) reported having melanocytic nevi, with 1–5 lesions being the most frequent (n=87, 56.13%); facial distribution was reported by 58.06% (n=90), and special-site involvement (palms/soles/subungual) was present in 18 (11.61%). The prevalence of congenital nevi (<1.5 cm) was 45.16% (n=70), and only one participant (0.65%) reported a family history of melanoma (Table 1).

Table 1: Demographic characteristics and nevus distribution of participants ($n = 155$)

Variable	Category	n (%)	Variable	Category	n (%)
Gender	Male	67 (43.23)	Number of nevi	0	8 (5.16)
	Female	88 (56.77)		1–5	87 (56.13)
Grade	Freshman–Junior	19 (12.26)		6–20	48 (30.97)
	Senior	110 (70.97)		>20/Unclear	12 (7.74)
	Postgraduate+	26 (16.77)	Special sites	Yes (palms/soles/ subungual)	18 (11.61)
Skin type	II–III	62 (40.00)		No	137 (88.39)
	IV–V	93 (60.00)	Family history	Yes/Unclear	10 (6.45)
				No	145 (93.55)

3.2 KAP Dimension Scores, Correlations, and Pattern Clustering

The mean scores and level distributions for the three KAP dimensions were as follows: knowledge dimension mean (3.84±2.65), score rate 38.4%, with 47.74% at low level; attitude dimension mean (4.57±1.56), score rate 57.1%, with 66.45% at moderate level; practice dimension mean (5.75±2.59), score rate 44.2%, with only 18.71% at good level.

Spearman rank correlation analysis showed strong positive correlations among the three dimensions (K-A: r=0.915; K-P: r=0.931; A-P: r=0.922, all P<0.001). The Kruskal-Wallis H test revealed significant differences in practice scores across different knowledge level groups (H=113.566, P<0.001) and across different attitude level groups (H=107.038, P<0.001); post-hoc tests indicated that the high-knowledge and positive-attitude groups had significantly better practice scores than their counterpart subgroups.

The Mann-Whitney U test showed that females scored significantly higher than males across all three dimensions (all P<0.001). KAP pattern clustering identified five types, of which four were typical: all-dimension deficient type (low K-negative A-poor P) accounted for 18.06% (n=28); all-dimension excellent type (high K-positive A-good P) for 15.48% (n=24); attitude-first type (low K but moderate or above A) for 29.68% (n=46); transitional type (moderate in all three dimensions) for 33.55% (n=52); and other atypical types for 3.23% (n=5) (Table 2).

Table 2: KAP dimension correlations, gender differences, and pattern clustering

Analysis dimension	Indicator	Result		Analysis dimension	Category	*n* (%)
Spearman correlation (r/P)	K–A	0.915/<0.001		KAP pattern	All-dimension deficient	28 (18.06)
	K–P	0.931/<0.001			All-dimension excellent	24 (15.48)
	A–P	0.922/<0.001			Attitude-first	46 (29.68)
Gender differences (mean±SD)	**Dimension**	**Male**	**Female**		Transitional	52 (33.55)
	Knowledge	1.34±0.78	5.74±1.88*		Others	5 (3.23)
	Attitude	3.33±1.35	5.51±0.90*			
	Practice	3.61±2.28	7.39±1.32*			

*Note: * indicates P<0.001 for male-female comparisons.*

4 Discussion

This study systematically introduced the KAP theoretical framework into the research on college students' awareness and behaviours regarding melanocytic nevi. Through quantitative assessment and pattern clustering, it revealed the overall health literacy level, inter-dimensional transmission effects, and population heterogeneity. The findings showed that the score rates of the three KAP dimensions ranked from highest to lowest as attitude (57.1%), practice (44.2%), and knowledge (38.4%), presenting a typical pattern of "attitude leading, knowledge and practice lagging". This ordering does not fully conform to the KAP theory's postulated progressive chain of "knowledge → attitude → practice" – theoretically, knowledge accumulation should precede attitude formation, which in turn precedes behavioural change, with knowledge scores expected to be the highest and practice scores the lowest. However, in this study, attitude scores ranked first, suggesting that for the specific health issue of melanocytic nevi, attitude formation among college students may not depend heavily on systematic knowledge acquisition but is more driven by mass media risk narratives, peer word-of-mouth, and fragmented information exposure [9-10]. In other words, students have not yet acquired a systematic scientific knowledge base about melanocytic nevi, yet they have already formed general attitudinal inclinations such as "I should pay attention" or "I need sun protection". This "attitude-first without knowledge support" may, on the one hand, facilitate subsequent knowledge supplementation and behavioural guidance, but it also carries risks – attitudes lacking a scientific core are vulnerable to distortion by misinformation.

The strong positive correlations among KAP dimensions (r=0.915–0.931) statistically confirmed the co-variation trend among the three dimensions, and the Kruskal-Wallis tests further established that the high-knowledge and positive-attitude groups had significantly better practice levels. Nevertheless, it is noteworthy that such high correlation coefficients (approaching 0.93) are relatively uncommon in behavioural science surveys and may partially reflect mathematical co-variation arising from the shared linear scoring logic of the KAP system. This suggests that future studies should employ more rigorous causal inference methods, such as structural equation modelling, to validate the transmission pathways [11].

The KAP pattern clustering analysis constitutes the core finding of this study. The four typical populations each correspond to different intervention strategies. The all-dimension deficient type (18.06%)

represents the group most in need of basic health education, requiring instruction starting from fundamental concepts of melanocytic nevi, step-by-step explanation of the ABCDE rule, and awareness of risk factors for malignant transformation to establish a systematic cognitive framework. The attitude-first type (29.68%) constitutes the population with the greatest intervention potential – they are "willing to pay attention but do not know what to look for"; supplementation with core recognition skills can readily translate their favourable attitudes into action, offering low-cost, high-yield intervention. The transitional type (33.55%) is the largest group, with all three dimensions at moderate levels, sitting at the "critical zone" of KAP transformation; appropriate behavioural incentives and technical support (e.g., mobile self-examination reminders, standardised recording tools [12]) may facilitate progression to the excellent type, while prolonged lack of intervention may lead to regression to the deficient type. The all-dimension excellent type (15.48%) is the smallest in number, yet its existence itself demonstrates that the KAP chain can be fully established for this issue; these individuals can serve as peer educators, exerting a peer-radiation effect.

Regarding gender differences, the finding that females outperformed males significantly across all three dimensions is consistent with previous studies on skin health behaviours [13]. This gap was especially pronounced in the knowledge dimension (5.74 vs. 1.34, out of 10), suggesting that male students are nearly "blank" in their knowledge of melanocytic nevi. This phenomenon cannot be simply attributed to females' higher concern for skin appearance; it also reflects gendered pathways of health information acquisition. Women gain incidental health education opportunities through daily practices such as skincare product consumption and exposure to beauty-related social media, whereas men have extremely limited relevant channels. Therefore, health education for male students should not be a mere replication of content designed for females; independent educational pathways should be developed – for example, embedding melanocytic nevus knowledge into sports-injury protection modules within physical education courses, or into outdoor safety training during military training sessions, which are more relevant to male students' interests.

In summary, this study, using the KAP theory as a tool, revealed the overall low level of health literacy regarding melanocytic nevi among college students, significant gender disparities, and the existence of four typical KAP patterns, providing a theoretical basis for designing stratified and precision campus-based intervention programmes. Future research may adopt longitudinal designs to track the transformation trajectories of different KAP pattern groups after intervention, thereby validating the predictive validity of the present pattern classification for intervention responses.

To Cite This Article Li X Y, Zhang Y. (2026). Investigating the Current Status of Knowledge Regarding Melanocytic Nevi and Its Influencing Factors among College Students at a university in Shenzhen. *Medical Research*, *8*(2), 130-135. https://doi.org/10.6913/mrhk.080212

References

[1] Lopez-Ravello BM, Arias-Santiago S, Fernandez-Pugnaire MA, et al. Prevalence of common and atypical melanocytic nevi in young adults and its relationship with sun protection and exposure habits[J]. European Journal of Dermatology, 2015, 25(1): 45-51.

[2] Gandini S, Sera F, Cattaruzza MS, et al. Meta-analysis of risk factors for cutaneous melanoma: I. Common and atypical naevi[J]. European Journal of Cancer, 2005, 41(1): 28-44.

[3] Narayanan DL, Saladi RN, Fox JL. Ultraviolet radiation and skin cancer[J]. International Journal of Dermatology, 2010, 49(9): 978-986.

[4] Sun Y, Shen Y, Liu Q, et al. Global trends in melanoma burden: A comprehensive analysis from the Global Burden of Disease Study, 1990-2021[J]. Journal of the American Academy of Dermatology, 2025, 92(1): 100-107.

[5] Garbe C, Amaral T, Peris K, et al. European consensus-based interdisciplinary guideline for melanoma.

Part 1: Diagnostics - update 2024[J]. European Journal of Cancer, 2025, 215: 115152.
[6] Tsao H, Olazagasti JM, Cordoro KM, et al. Early detection of melanoma: reviewing the ABCDEs[J]. Journal of the American Academy of Dermatology, 2015, 72(4): 717-723.
[7] Zafar M, Zaidi TH, Zaidi NH, et al. Students' Knowledge, Attitude, and Practices Regarding Solar Ultraviolet Exposure in Karachi, Pakistan[J]. Ethiopian Journal of Health Sciences, 2024, 34(2): 125-132.
[8] Jia Y, Ma S, Bai L, et al. Health Literacy and Disparities in Knowledge, Attitude and Practice Regarding COVID-19 Among College Students During the COVID-19 Outbreak in China: A Cross-Sectional Study[J]. Risk Management and Healthcare Policy, 2021, 14: 4477-4488.
[9] Kyprianou D, Charalambidou I, Famojuro O, et al. Knowledge and Attitudes of Cypriots on Melanoma Prevention: Is there a Public Health Concern?[J]. BMC Public Health, 2022, 22(1): 53.
[10] Agha-Mir-Salim L, Bhattacharyya A, Hart D, et al. A randomised controlled trial evaluating the effectiveness of Facebook compared to leaflets in raising awareness of melanoma and harmful sun-related behaviour among young adults[J]. European Journal of Cancer Prevention, 2020, 29(1): 89-91.
[11] Julian A, Thorburn S, Geldhof GJ. Health Beliefs About UV and Skin Cancer Risk Behaviors[J]. Cancer Control, 2020, 27(4): 1073274819894008.
[12] Hamidi R, Peng D, Cockburn M. Efficacy of skin self-examination for the early detection of melanoma[J]. International Journal of Dermatology, 2010, 49(2): 126-134.
[13] Kasparian NA, McLoone JK, Meiser B. Skin cancer-related prevention and screening behaviors: a review of the literature[J]. Journal of Behavioral Medicine, 2009, 32(5): 406-428.