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Analysis of knowledge and attitudes toward the practice of using whitening creams among female adolescents at SMA negeri 1 binongko

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ABSTRACT

The use of facial whitening creams among adolescent girls is often carried out without adequate understanding of the active ingredients contained in the products, including the risks of hazardous substances such as mercury and hydroquinone. Lack of attention to cosmetic product legality has contributed to the widespread use of products without official distribution permits. This research was conducted to examine the levels of knowledge and attitudes related to the practice of using whitening cream among female students at SMA Negeri 1 Binongko. This research employed a quantitative observational method with a descriptive analytic approach and a cross-sectional design. The sampling technique used was purposive sampling based on predetermined inclusion criteria. The sample consisted of 56 students calculated using the Slovin formula. Data were collected through a structured questionnaire that had been tested for validity using Pearson correlation and reliability using Cronbach's Alpha. Data were processed using chi-square analysis with SPSS version 27 software. The results showed that most respondents had a low level of knowledge (76.8%), but demonstrated high positive attitudes (87.5%) and good practices in using whitening cream (76.8%). The chi-square test indicated no significant relationship between knowledge and practice ($p = 0.989$), while a significant relationship was found between attitude and practice ($p = 0.001$). This study suggests the need for continuous educational programs in schools to enhance adolescents' awareness of the importance of choosing safe and legally registered cosmetic products. Further research is recommended to explore additional factors such as social media influence, family roles, and psychological aspects in decision-making related to cosmetic use.

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1. Introduction

Human skin color is influenced by genetic factors, hormones, environmental exposure, and melanin levels. In Indonesia, the perception that fair skin is synonymous with beauty has become increasingly strong along with the rapid growth of social media and the influx of global cultural influences. This condition has led to a high demand for whitening cream products among various groups, particularly adolescent girls. Data indicate that the national cosmetic industry has experienced significant growth, with sales increasing by 14% in 2016 and continuing to rise in subsequent years [1]. However, this growth has also been accompanied by the circulation of illegal cosmetic products that do not meet safety standards, including whitening products containing hazardous substances [25].

Whitening creams generally work by inhibiting melanin production, making the skin appear brighter. Some products are known to contain active ingredients such as mercury, hydroquinone, and corticosteroids, which may cause serious side effects when used long-term, including skin irritation, permanent discoloration, and even organ damage [15]. The Indonesian Food and Drug Authority (BPOM) has repeatedly identified cosmetic products that fail to meet safety standards, including those containing prohibited substances [26]. This indicates that the distribution of unsafe cosmetics remains a significant public health concern.

Government regulations have strictly governed cosmetic production and distribution through mandatory production permits, the implementation of Good Cosmetic Manufacturing Practices (CPKB), and marketing authorization before products are circulated [25]. Nevertheless, low consumer literacy, particularly among adolescents, continues to contribute to unsafe cosmetic use. Previous studies have consistently reported that adolescent girls tend to have limited knowledge regarding the ingredients and risks of whitening creams, while their attitudes are strongly influenced by social norms, peer influence, and exposure to social media content [14][18][30].

However, most previous studies primarily focus on descriptive aspects, such as the prevalence of whitening cream use or the identification of hazardous chemical contents, without comprehensively analyzing the behavioral relationship between knowledge, attitudes, and actual practices [8][24]. In addition, several studies have examined knowledge and attitudes separately, but have not simultaneously assessed their interaction in influencing behavior using an analytical statistical approach [4][6]. This indicates a gap in understanding how cognitive (knowledge) and affective (attitude) factors jointly contribute to cosmetic use behavior among adolescents.

Furthermore, existing research is largely conducted in urban or semi-urban settings, with limited evidence from geographically isolated areas such as island regions. Adolescents living in these areas may face restricted access to reliable health information, lower exposure to formal education on cosmetic safety, and limited regulatory supervision, which can influence their decision-making processes differently compared to urban populations [12][17]. Despite this, empirical data examining these contextual differences remain scarce.

Adolescent girls represent a particularly vulnerable group due to their psychosocial developmental stage, which is characterized by identity exploration, a strong need for social acceptance, and increased concern about physical appearance. At the same time, they play a significant role in shaping consumer trends within their peer groups. Therefore, this study aims to address the identified research gaps by examining the relationship between knowledge, attitudes, and whitening cream usage practices among female adolescents using a cross-sectional analytical approach.

The novelty of this study lies in its integrated analysis of knowledge, attitudes, and practices (KAP) within a single model, as well as its focus on a high school population in an island region (SMA Negeri 1 Binongko), which has been underrepresented in previous research. By incorporating both behavioral and contextual perspectives, this study is expected to provide a more comprehensive understanding of adolescent cosmetic use and contribute to the development of targeted health education and regulatory strategies..

2. Method

This study used a quantitative method with an analytic observational design and a cross-sectional approach, where both the independent and dependent variables were measured at the same time [2], [5]. The research was conducted at SMA Negeri 1 Binongko, Binongko District, Wakatobi Regency, Southeast Sulawesi, from May to June 2025. The study population consisted of all female students who used whitening cream and were actively enrolled in the school, totaling 127 individuals. The sample size was determined using the Slovin formula with a 10% margin of error, resulting in 56 respondents selected based on the established inclusion and exclusion criteria. The data included primary data collected through questionnaires and secondary data obtained from supporting documents. The research instrument was a structured questionnaire consisting of three sections: knowledge (Guttman scale with true and false options), attitude (Likert scale with four response alternatives), and practice (Guttman scale with yes and no options).

The research instrument was a structured questionnaire consisting of 30 items divided into three variables: knowledge, attitudes, and practices (10 items each).

1. Knowledge was measured using a Guttman scale (true/false), with correct answers scored 1 and incorrect answers scored 0.
2. Attitudes were assessed using a 4-point Likert scale: strongly disagree (1), disagree (2), agree (3), and strongly agree (4). Negative statements were reverse scored.
3. Practices were measured using a Guttman scale (yes/no), with "yes" scored 1 and "no" scored 0.

All scores were summed and converted into percentages using the formula:
score = (obtained score / maximum score) × 100%. The classification criteria were as follows:

1. Knowledge (Independent Variable)
   Knowledge refers to the respondent' s level of understanding regarding the use of whitening cream, including its ingredients, benefits, and potential side effects. It was measured using a 10-item true/false questionnaire, with a score range of 0–10, which was then converted into a percentage. Knowledge was categorized as good if the score was ≥ 50% and poor if the score was < 50%.
2. Attitude (Independent Variable)

Attitude refers to the respondent's tendency to respond positively or negatively toward the use of whitening cream. It was measured using a 10-item Likert scale questionnaire with scores ranging from 10–40, then converted into a percentage. Attitude was categorized as positive if the score was ≥ 62.5% and negative if the score was < 62.5%.

3. Practice (Dependent Variable)
   Practice refers to the respondent's actual behavior in using whitening cream, including usage patterns and attention to product safety. It was measured using a 10-item yes/no questionnaire, with a score range of 0–10, which was then converted into a percentage. Practice was categorized as good if the score was ≥ 50% and poor if the score was < 50%.

The research procedure began with obtaining permission from the school authorities, explaining the study objectives to the respondents, and providing informed consent prior to questionnaire distribution. The data that was gathered went through various steps like editing, coding, scoring, and entering it into a computer system using the Statistical Package for the Social Sciences software. Validity testing was done through item-total correlation analysis, and reliability testing was carried out using Cronbach's Alpha, with a minimum acceptable value of 0.600. The data analysis included a univariate analysis to describe how often each variable related to knowledge, attitude, and practice occurred, and a bivariate analysis using the chi-square test to check if there was a connection between the independent and dependent variables, with a significance level set at 0.05. The results were shown in frequency distribution tables and contingency tables to help with clear and scientific analysis.

3. Results and Discussion

This research took place at SMA Negeri 1 Binongko, which is situated in Binongko District, Wakatobi Regency, part of Southeast Sulawesi Province, Indonesia. The school is situated on Binongko Island, one of the islands within the Wakatobi archipelago, which is well known for its marine potential and relatively remote island environment. Geographically, the school covers an area of approximately 20,000 square meters and is bordered by Palahidu Barat Village to the west, Palahidu Subdistrict to the east, the Banda Sea to the north, and Popalia Subdistrict to the south.

3.1. Respondent Characteristics

a. Age

The respondents in this study consisted of students aged between 15 and 18 years, with a relatively even distribution across grades X, XI, and XII.

Table 1. Age of respondents

No	Age	Total	
		n	%
1.	15	11	19,6%
2.	16	13	23,2%
3.	17	18	32,1%
4.	18	14	25.0%
Summary		56	100%

Based on Table 1, all respondents were within the age range of 15–18 years. The largest proportion of respondents was 17 years old (32.1%), followed by 18 years (25.0%), 16 years (23.2%), and 15 years (19.6%). This finding indicates that the respondents were predominantly in mid-to-late adolescence, a developmental stage characterized by increased attention to physical appearance and social acceptance. However, this study did not perform inferential statistical analysis to examine differences in knowledge or behavior across age groups. Therefore, no conclusions can be drawn regarding the relationship between age and levels of knowledge, attitudes, or practices in this study.

b. Types of Whitening Creams

Table 2. Types of cosmetic products used

No	Whitening Cream Brand	Description
1.	Merek-A	BPOM (NA18200104519)
2.	Merek-S	BPOM (NA11231900008)
3.	Merek-G	BPOM (NA18141900106)
4.	Merek-W	BPOM (NA18150100560)
5.	Merek-E	BPOM (NA18180102602)
6.	Merek-GG	BPOM (NA11240100172)
7.	Merek-N	NON-BPOM
8.	Merek-H	NON-BPOM
9.	Merek-NR	NON-BPOM

Source: Primary Data Processing, 2025

The table shows that most whitening cream products used by respondents were registered with BPOM, while several products were identified as unregistered. The use of BPOM-registered products indicates a certain level of awareness regarding product safety and legality among respondents. However, the presence of non-BPOM products suggests that some adolescents still use cosmetics without proper regulatory approval.

Previous studies have reported that adolescents often select cosmetic products based on peer recommendations, social media exposure, and product popularity rather than verified safety information [14]. In addition, the circulation of illegal whitening products containing hazardous substances such as mercury and hydroquinone remains a significant concern in Indonesia [20].

This finding is consistent with research indicating that despite the availability of safe and registered products, some consumers are still attracted to unregistered cosmetics due to lower prices, faster perceived results, and persuasive marketing claims [17]. Therefore, the use of both registered and unregistered products among respondents reflects a combination of safety awareness and external influences in cosmetic selection behavior.

c. Religion

All respondents in this study were Muslim.

d. Gender

This study focused on female adolescents, as they are more likely to use cosmetic products and generally show higher interest in halal cosmetic products.

3.2. Validity Test

The validity test is designed to check how accurate each question or scale is in measuring what it's supposed to. To decide if an item is valid, the calculated correlation value (r-count) was compared to the value from the r-table. This comparison was done at a significance level of 0.05 and with a sample size of N = 30. To assess the validity of the model, a statistical test was performed using SPSS version 27.0. The test results are shown in the tables below.

a. Knowledge

Table 3. Knowledge validity test

Variable	Question No.	Conclution	Description	
		r_{count}	r_{table} 5%	
Knowledge	1	0,5436	0,361	Valid
	2	0,6245	0,361	Valid
	3	0,5954	0,361	Valid
	4	0,5331	0,361	Valid
	5	0,5825	0,361	Valid
	6	0,4576	0,361	Valid
	7	0,559	0,361	Valid
	8	0,508	0,361	Valid
	9	0,5386	0,361	Valid
	10	0,7006	0,361	Valid

From the table provided, we can say that all the questions related to the knowledge variable are valid. This is because each of the r-count values is greater than the r-table value of 0.361.

b. Attitude

Table 4. Attitude validity test

Variable	Question No.	Conclution	Description	
		rcount	r table 5%	
Attitude	1	0,842914	0,361	Valid
	2	0,396401	0,361	Valid
	3	0,37883	0,361	Valid
	4	0,367	0,361	Valid
	5	0,486284	0,361	Valid
	6	0,382584	0,361	Valid
	7	0,799928	0,361	Valid
	8	0,449481	0,361	Valid
	9	0,437094	0,361	Valid
	10	0,795191	0,361	Valid

From the table above, we can say that every item in the attitude variable is valid because all the r-count values are higher than the r-table value of 0.361.

c. Action

Table 5. Action validity test

Variable	Question No.	Conclution	Description	
		r_{count}	r_{table} 5%	
Action	1	0,378096	0,361	Valid
	2	0,49988	0,361	Valid
	3	0,3781	0,361	Valid
	4	0,449	0,361	Valid
	5	0,545162	0,361	Valid
	6	0,72941	0,361	Valid
	7	0,378096	0,361	Valid
	8	0,545162	0,361	Valid
	9	0,402347	0,361	Valid
	10	0,525226	0,361	Valid

Based on the table above, it can be concluded that all question items in the action variable are valid, as all r-count values exceed the r-table value of 0.361.

3.3. Reliability Test

The reliability test checks if a measuring tool gives the same results every time it's used, to see if it can be relied upon to provide dependable data each time a measurement is taken. In this study, reliability testing was carried out using the Cronbach's Alpha method, and the data were deemed reliable if the Cronbach's Alpha value was above 0.6. The Alpha values were computed with SPSS version 27.0. The results are shown in the table below.

Table 6. Reliability test

No	Variable	Cronbach Alpa	Required Alpha	Description
1.	Knowledge	0.745	0,6	Reliable
2.	Attitude	0.738	0,6	Reliable
3.	Action	0.796	0,6	Reliable

Looking at Table 6, the Cronbach's Alpha score for the knowledge variable is 0.745, for the attitude variable it is 0.738, and for the action variable it is 0.796. All of these scores are higher than the minimum requirement of 0.6. Therefore, all the tested variables have been found to be reliable or consistent, showing good levels of reliability.

3.4. Univariate Analysis

a. Knowledge

Table 7. Distribution of female adolescent respondents based on their knowledge of whitening cream

Knowledge	Total	
	n	%
Good	13	23,2
Low	43	76,8
Total	**56**	**100**

Description:
n = Sample
% = Percentage

Based on Table 7, out of 56 respondents, the majority had a low level of knowledge, totaling 43 respondents (76.8%), while only 13 respondents (23.2%) had good knowledge.

b. Attitude

Table 8. Distribution of respondents based on attitude toward the use of whitening cream

	Total	
Attitude	**N**	**%**
Positive	49	87,5
Negative	7	12,5
Total	**56**	**100**

According to Table 8, the majority of respondents had a positive attitude, with 49 people (87.5%) showing support, whereas 7 respondents (12.5%) expressed a negative attitude..

c. Action

Table 9. Distribution of respondents based on actions toward the use of whitening cream

	Total	
Action	**N**	**%**
Good	43	**76,8**
Poor	13	**23,2**
Total	**56**	**100**

According to Table 9, the majority of respondents demonstrated good actions (43 respondents or 76.8%), while 13 respondents (23.2%) showed poor actions.

3.5. Bivariate Analysis

a. Distribution of Female Adolescent Respondents Based on Their Knowledge of Whitening Cream

Table 10. Relationship between knowledge level and actions

Knowledge	**Action**				**Total**		***Asymptotic Significance (2-sided)***	***Phi (p)***
	Good		Poor					
	n	%	n	%	∑	%		
Good	10	77	3	23	13	100	0,989	
Poor	33	77	10	23	43	100		**0,002**
Total	43	77	13	23	56	100		

Source: Primary Data Processing, 2025

Table 10 shows that among the 13 respondents with good knowledge, 10 respondents (77%) demonstrated good actions, while 3 respondents (23%) showed poor actions. Meanwhile, among the 43 respondents with poor knowledge, 33 respondents (77%) demonstrated good actions and 10 respondents (23%) showed poor actions. Overall, out of 56 respondents, 43 respondents (77%) demonstrated good actions and only 13 respondents (23%) demonstrated poor actions.

The statistical analysis using the chi-square test showed a significance value of 0.989 with a significance level of $\alpha = 0.05$, where 0.989 > 0.05. Therefore, it can be concluded that there is no statistically significant relationship between knowledge and actions.

b. Relationship Between Attitude and Actions in the Use of Whitening Cream Among Female Adolescents

Table 11. Relationship between attitude and actions

Attitude	Action				Total		*Asymptotic Significance (2-sided)*	*Phi (p)*
	Good		Poor					
	n	%	n	%	∑	%		
Good	41	85	8	17	49	100	0,001	0,432
Poor	2	29	5	71	7	100		
Total	**43**	**77**	**13**	**23**	**56**	**100**		

Source: Primary Data Processing, 2025

Table 11 shows that among the 49 respondents with a positive attitude, 41 respondents (85%) demonstrated good actions, while 8 respondents (17%) showed poor actions. Meanwhile, among the 7 respondents with a negative attitude, 2 respondents (29%) demonstrated good actions and 5 respondents (71%) demonstrated poor actions. Overall, out of 56 respondents, 43 respondents (77%) demonstrated good actions and only 13 respondents (23%) demonstrated poor actions.

The chi-square statistical test revealed a significance value of 0.001, which is lower than the significance level of $\alpha = 0.05$, indicating that the result is statistically significant. So, we can say that there is a meaningful connection between someone's attitude and the actions they take, and this connection is supported by statistical evidence.

3.6. Discussion

The use of skin-whitening creams among adolescent girls is strongly influenced by sociocultural factors, including social media exposure, beauty standards, and peer dynamics. Adolescence (15–18 years) represents a critical developmental stage characterized by identity exploration, heightened self-awareness, and increased sensitivity to social acceptance [14]. At this stage, physical appearance often becomes central to self-concept, making adolescents more susceptible to external influences such as peer recommendations, social media trends, and marketing strategies [2]. In geographically remote areas such as island communities, limited access to credible health information may further increase reliance on informal sources, thereby shaping perceptions and practices related to cosmetic use [15].

The findings of this study indicate that the majority of respondents had low levels of knowledge regarding whitening cream safety, particularly concerning hazardous substances such as mercury, hydroquinone, and corticosteroids [17]. This reflects inadequate cosmetic literacy, which may be attributed to limited health education, low regulatory awareness, and the dominance of persuasive digital marketing that emphasizes instant results rather than safety aspects [14][17]. However, beyond this descriptive finding, it is important to critically interpret how such limited knowledge translates into behavior. Studies have shown that inadequate knowledge about cosmetic ingredients is significantly associated with unsafe product selection and improper usage practices [18], highlighting the need for improved educational interventions [19].

Interestingly, despite low knowledge levels (76.8%), most respondents demonstrated good practices (76.8%) and positive attitudes (87.5%) toward whitening cream use. This apparent inconsistency suggests that behavior is not solely determined by knowledge. One possible explanation is the presence of social desirability bias, where respondents tend to report socially acceptable behaviors, such as choosing registered products or following safety guidelines, even if their actual practices may differ [20]. In addition, peer influence and family guidance may play a significant role in shaping behavior, as adolescents often rely on recommendations from friends or trusted individuals rather than their own understanding [21].

Furthermore, the influence of branding and market trust may also contribute to this phenomenon. Adolescents may choose well-known or widely used products perceived as "safe" without fully understanding the scientific basis of their safety. This indicates that their "good practices" may be driven more by external trust and conformity rather than informed decision-making. Therefore, the good practices observed should be interpreted cautiously, as they may not fully reflect genuine risk awareness or critical understanding. According to behavioral theories, attitudes function as a critical determinant of behavioral intention and actual practice, often exerting a stronger influence than knowledge alone [22].

The statistical findings support this interpretation, where no significant relationship was found between knowledge and practice ($p > 0.05$), while a significant relationship was observed between attitude and practice ($p < 0.05$) [23]. This suggests that affective and social components, such as attitudes, norms, and perceived expectations, play a more dominant role in influencing behavior than cognitive knowledge alone [24]. Additionally, although most respondents reported good practices, the identification of unsafe products still being used by some participants highlights a gap between perceived and actual safety behavior. This further strengthens the argument that knowledge alone is insufficient and must be complemented by critical awareness and behavioral reinforcement. Long-term exposure to hazardous substances such as mercury and hydroquinone may lead to serious dermatological and systemic health effects [25].

The persistence of such products in the market reflects gaps in regulatory enforcement and consumer vigilance [26]. Therefore, this study emphasizes the need for more comprehensive interventions that go beyond knowledge dissemination. Educational programs should incorporate critical thinking skills, media literacy, and risk awareness, while also addressing social influences such as peer pressure and digital marketing. Collaboration between schools, families, healthcare providers, and regulatory authorities is essential to ensure that adolescents not only possess adequate knowledge but also develop consistent and safe behavioral practices [24].

4. Conclusion

Based on the study's findings, it is clear that most of the respondents had a limited This study found that the majority of respondents had low levels of knowledge regarding the safe use of whitening creams, while most demonstrated positive attitudes and relatively good practices. The findings also revealed that knowledge was not significantly associated with practice, whereas attitude showed a significant relationship with practice. This indicates that behavioral factors related to cosmetic use among adolescents are more

strongly influenced by attitudes and social factors rather than knowledge alone. These results highlight an important gap between knowledge and behavior, suggesting that improving knowledge alone may not be sufficient to ensure safe cosmetic practices. Behavioral outcomes may be shaped by external influences such as peer pressure, family guidance, and social norms, which play a critical role in shaping adolescents' decision-making.

From a public health perspective, these findings emphasize the need for comprehensive educational interventions that not only provide information about cosmetic safety but also strengthen critical thinking, risk awareness, and media literacy among adolescents. School-based health promotion programs should be developed to address both cognitive and behavioral aspects, ensuring that students are able to make informed and responsible decisions regarding cosmetic use. In addition, there are important regulatory implications. Strengthening supervision of cosmetic product distribution, particularly in online markets, is essential to reduce the circulation of unsafe and illegal whitening products. Authorities such as regulatory agencies should intensify public awareness campaigns and improve accessibility to reliable information regarding registered cosmetic products. Future research is recommended to explore other influencing factors, such as social media exposure, peer influence, and psychological aspects, to better understand adolescent behavior related to cosmetic use. Overall, a collaborative approach involving schools, families, healthcare providers, and regulatory bodies is crucial to promote safe and responsible cosmetic practices among adolescents.

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