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# Relationship Between Knowledge, Attitudes and Practices and the Incidence of Pediculosis Capitis Among Female Students of State Junior High School 1 Silimakuta

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**Abstract:** Background: Head lice infestation, or pediculosis capitis, remains a significant health challenge in public junior high schools, particularly among adolescent female students. This condition causes high morbidity, potentially leading to a decline in academic performance. Close social interaction, the habit of sharing personal items, and poor personal hygiene are the primary contributing factors. Objective: To determine the relationship between the level of knowledge, attitudes, and practices and the incidence of pediculosis capitis among female students at State Junior High School 1 Silimakuta. Method: This study employed a quantitative design using a cross-sectional approach. The study population consisted of 186 female students from State Junior High School 1 Silimakuta, selected via simple random sampling. Data collection involved self-administered questionnaires followed by physical hair examination. Results: Chi-square test results revealed a highly significant correlation between the level of knowledge and the risk of pediculosis (p = 0.003, RP = 2.465); attitudes also showed a significant association (p = 0.002, RP = 2.680), as did the aspect of practices (p = 0.001, RP = 2.847). Multivariate analysis confirmed that practices were the most dominant predictor of the occurrence of pediculosis capitis. Conclusion: There is a strong relationship between the levels of knowledge, attitudes, and practices and the occurrence of pediculosis capitis among the respondents. Among these three variables, the aspect of practice is the most dominant determining factor.

**Keywords:** Pediculosis Capitis, Students, Knowledge, Attitudes, Practices

## INTRODUCTION

Pediculus humanus var. capitis is an ectoparasite of the family Pediculidae that is the main causative agent of skin disorders on the human scalp, known as pediculosis capitis. This parasite lives on the scalp, with a predilection for the back of the head (occipital) and behind the ears (retroauricular). It is a strictly obligate extracellular parasite that has no wings and therefore cannot fly, and lacks strong enough legs to jump. They move with the help of claws on their legs, so transmission occurs via shared items or direct contact between heads (Irianto, 2009; Djuanda et al., 2013).

Head lice or Pediculus capitis are the size of a sesame seed, approximately 1–3 mm in length. Lice reproduce by laying approximately 6 to 10 eggs per day on hair strands, with up to 300 eggs produced per laying cycle, which can hatch and mature within 20 days. Eggs can be seen attached to individual hair shafts. The primary complaint is intense itching, especially in the predilection areas, which can spread to the entire scalp. This itching is caused by the saliva and excrement of lice on the scalp (Lee & Yosipovitch, 2019). Scalp lesions worsen with scratching, leading to secondary infections (Bohl et al., 2015).

Chronic infestation of P. capitis among school-age children can cause anemia, making children lethargic, drowsy in class, and negatively affecting learning performance and cognitive function. It also frequently causes social problems such as reduced self-confidence, negative social stigma, and isolation from peer groups (Nutanson et al., 2008). At present, pediculosis capitis remains a public health problem worldwide, both in developed and developing countries, particularly among primary and secondary school children, who are at higher risk due to frequent social interaction and habits of playing and sharing personal items (CDC, 2024).

The disease can affect anyone across all age groups, sexes, and races. However, it occurs more frequently among children aged 3–12 years and more commonly in females (Setiyani et al., 2021). In terms of prevalence in Indonesia, research at 4 orphanages in Palangkaraya showed a prevalence rate of 52.6% (Merrary et al., 2024). In 2023, the prevalence among students at SMP Negeri 1 Silimakuta reached 62% (Habeahan, 2024).

From an epidemiological perspective, knowledge, attitudes, and practices are viewed as interrelated. Theoretically, good knowledge will form positive attitudes, which in turn encourage preventive actions against a disease. Several Knowledge, Attitude, and Practice (KAP) studies have shown significant associations between these variables and the incidence of pediculosis capitis. However, other research has found no significant relationship between knowledge level and pediculosis capitis incidence (Venty Rosalina et al., 2026). These inconsistencies in previous findings underlie the importance of re-examining the relationship between knowledge, attitudes, and practices among female students at SMP Negeri 1 Silimakuta.

This study aims to determine the relationship between the level of knowledge, attitudes, and practices and the incidence of pediculosis capitis among female students at State Junior High School 1 Silimakuta, Simalungun Regency, North Sumatera Province.

## METHODS

This study is a quantitative analytical research using a cross-sectional design. The research was conducted from March to April 2026 at SMP Negeri 1 Silimakuta, Simalungun Regency, North Sumatera Province. The study population comprised all female students at SMP Negeri 1 Silimakuta, totaling 347 individuals. Based on the calculation using the Slovin formula with a 5% margin of error, a sample of 186 female students was obtained through simple random sampling.

Data collection was carried out using a self-administered questionnaire measuring three independent variables — knowledge level, attitudes, and practices — and a physical hair examination to determine the dependent variable, the incidence of pediculosis capitis. The knowledge questionnaire covered understanding of the causes, transmission, symptoms, and prevention of pediculosis capitis. The attitude questionnaire assessed respondents' responses to pediculosis capitis prevention measures. The practice questionnaire evaluated personal hygiene behaviors related to hair and scalp care.

Data were analyzed using univariate, bivariate, and multivariate methods. Bivariate analysis used the Chi-square test to determine the association between independent and dependent variables, with a significance level of $p < 0.05$ and Relative Prevalence (RP) to assess risk magnitude. Multivariate analysis using logistic regression was conducted to

identify the most dominant predictor variable. Ethical clearance was obtained prior to data collection and all participants provided informed consent.

## RESULTS AND DISCUSSION

### Results

Table 1 shows the distribution of respondents' characteristics. The majority of students were 14 years old (34.4%, n=64), and the largest class represented was Grade VII (33.3%, n=62). These findings indicate a young adolescent population with characteristics susceptible to pediculosis capitis transmission through close social interaction in the classroom and dormitory-like settings.

**Table 1. Frequency Distribution of Age Characteristics of Female Students at SMP Negeri 1 Silimakuta, 2026**

| Category | n | % |
|---|---|---|
| **Age (Years)** | | |
| 12 years | 42 | 22.6 |
| 13 years | 53 | 28.5 |
| 14 years | 64 | 34.4 |
| 15 years | 27 | 14.5 |
| **Class** | | |
| Grade VII | 62 | 33.3 |
| Grade VIII | 65 | 34.9 |
| Grade IX | 59 | 31.7 |
| **Total** | **186** | **100** |

Source: Primary data (2026)

Table 2 presents the frequency distribution of independent variables. The majority of students had poor knowledge about pediculosis capitis (55.4%, n=103), poor attitudes (62.9%, n=117), and poor practices (55.9%, n=104). These high proportions of poor knowledge, attitudes, and practices form a conducive environment for transmission.

**Table 2. Frequency Distribution of Independent Variables**

| Variable | Category | n | % |
|---|---|---|---|
| **Knowledge** | Good | 83 | 44.6 |
| | Poor | 103 | 55.4 |
| **Attitudes** | Good | 69 | 37.1 |
| | Poor | 117 | 62.9 |
| **Practices** | Good | 82 | 44.1 |
| | Poor | 104 | 55.9 |

Source: Primary data (2026)

Table 3 shows the incidence of pediculosis capitis. Of 186 respondents, 90 students (48.4%) were diagnosed positive for P. capitis and 96 students (51.6%) were negative. This prevalence rate is notably high for an urban public-school setting, comparable to rates found in boarding school environments.

**Table 3. Incidence of Pediculosis Capitis Among Female Students**

| Status | n | % |
|---|---|---|
| Positive P. capitis | 90 | 48.4 |
| Negative P. capitis | 96 | 51.6 |
| **Total** | **186** | **100** |

Source: Primary data (2026)

Table 4 presents the bivariate analysis results for all three independent variables against the incidence of pediculosis capitis.

**Table 4. Relationship Between Knowledge, Attitudes, and Practices and the Incidence of Pediculosis Capitis Among Female Students of SMP Negeri 1 Silimakuta, 2026**

| Variable | Category | Positive n (%) | Negative n (%) | p-value | RP (95% CI) |
|---|---|---|---|---|---|
| **Knowledge** | Good | 27 (32.5) | 56 (67.5) | 0.003 | 2.465 (1.397–4.350) |
| | Poor | 63 (61.2) | 40 (38.8) | | |
| **Attitudes** | Good | 21 (30.4) | 48 (69.6) | 0.002 | 2.680 (1.441–4.987) |
| | Poor | 69 (59.0) | 48 (41.0) | | |
| **Practices** | Good | 20 (24.4) | 62 (75.6) | 0.001 | 2.847 (1.618–5.010) |
| | Poor | 70 (67.3) | 34 (32.7) | | |

Source: Primary data (2026)

## Discussion

### Relationship Between Knowledge Level and Pediculosis Capitis Incidence

Knowledge is everything in our minds; we can know something based on our experiences. In addition to experience, we also gain knowledge from information shared by others (Prasetyo, 2007). The results show a significant relationship between knowledge level and pediculosis capitis incidence ($p = 0.003$), with students who have poor knowledge having a 2.465 times greater risk of experiencing P. capitis compared to students with good knowledge.

This finding is consistent with previous research supporting a significant relationship between knowledge and pediculosis capitis incidence (Sari et al., 2024). Knowledge and personal hygiene behavior play a large role in the incidence of pediculosis capitis, as a person's behavior is influenced by three factors: predisposing factors (from within the individual), enabling factors, and reinforcing factors. Predisposing factors include knowledge, attitudes, and beliefs that motivate a person to act (Notoatmodjo, 2012).

However, knowledge alone does not guarantee prevention. Even individuals with good knowledge may remain at risk if they continue to live or interact with someone who has pediculosis capitis. This is supported by the fact that transmission of P. capitis can occur through direct contact with an infected person and through the use of shared personal items such as clothing, combs, hats, headscarves, and towels (Marianingrum & Amelia, 2019).

Interventions therefore cannot rely solely on knowledge enhancement but must also encompass the formation of sustained clean and healthy living behaviors.

**Relationship Between Attitudes and Pediculosis Capitis Incidence**

A person with good knowledge about something is expected to have a good attitude towards it, which in turn is expected to lead to good practice as well (Notoatmodjo, 2012). The results of this study found a significant relationship between attitudes and pediculosis capitis incidence ($p = 0.002$), with students who have poor attitudes having a 2.680 times greater risk of experiencing P. capitis compared to students with good attitudes.

This finding is in line with previous research concluding that a respondent's response to pediculosis capitis plays an important role in preventing transmission (Babazadeh et al., 2023). Positive attitudes, such as the awareness of maintaining hair and scalp cleanliness through the habit of washing hair regularly, can reduce the risk of head lice infestation (Azizah et al., 2025). Similarly, the attitude of not sharing personal items such as combs, towels, pillows, and hair accessories can minimize the risk of transmission through indirect contact.

Notably, although most respondents reported positive attitudes toward prevention, 90 students (48.4%) were still found to be positive for pediculosis capitis. This condition illustrates that positive attitudes alone do not necessarily translate into preventive actions. Attitude is the second stage in the Health Belief Model, and its translation into behavior requires enabling conditions and reinforcing stimuli from the social environment (Nangi et al., 2019). This study concludes that good knowledge and attitudes are insufficient to prevent pediculosis capitis without being accompanied by consistent application of personal and environmental hygiene behaviors.

**Relationship Between Practices and Pediculosis Capitis Incidence**

A person's behavior can be influenced by the level of knowledge they previously possessed (Mitriani et al., 2017). Personal hygiene is an action to maintain one's cleanliness and health for physical and psychological well-being. The results show a significant relationship between practices and pediculosis capitis incidence ($p = 0.001$), with students who have poor practices having a 2.847 times greater risk of experiencing P. capitis compared to students with good practices.

Research results explaining that personal hygiene factors have a relationship with the incidence of P. capitis are consistent with this finding. Female students who use combs together, take turns wearing headscarves and clothes, sometimes use a damp towel when bathing, share it with their friends, and lack proper hair washing frequency are at significantly higher risk. Poor personal hygiene can facilitate infection in various body parts including the scalp, hair, or other limbs (Pringgayuda et al., 2021).

Equipment used together, such as combs, headscarves, and hair accessories, can significantly influence the incidence of P. capitis. The use of shared combs makes lice eggs and even adult lice attach to the comb and transfer to the next user. Direct contact is one of the modes of transmission of pediculosis capitis, as is indirect contact through shared item use. In addition, females predominantly have longer hair that is more difficult to clean and can serve as a hiding place for mites to breed (Rifka, 2019).

These results are consistent with the KAP (Knowledge, Attitude, and Practice) framework and Notoatmodjo's health behavior theory, where good knowledge about the causes, transmission, and prevention of P. capitis can form a positive attitude and encourage the emergence of preventive practices. The main contribution of this research is to provide empirical evidence that controlling head lice infestation requires a comprehensive and integrated approach combining promotive and preventive efforts with environmental interventions and strengthened personal hygiene practices (Notoatmodjo, 2012).

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusion

The characteristics of female students at SMP Negeri 1 Silimakuta were predominantly in the 14-year age group and from Grade VIII. Based on the research results, the following conclusions can be drawn:

1. Of 186 samples, 90 students (48.4%) were positive for P. capitis and 96 students (51.6%) were negative.
2. There is a significant relationship between knowledge level and the risk of P. capitis (p = 0.003, RP = 2.465), indicating that students with poor knowledge are 2.465 times more likely to experience pediculosis capitis.
3. There is a significant relationship between attitudes and P. capitis incidence (p = 0.002, RP = 2.680), indicating that students with poor attitudes are 2.680 times more likely to experience pediculosis capitis.
4. There is a significant relationship between practices and P. capitis incidence (p = 0.001, RP = 2.847), indicating that students with poor practices are 2.847 times more likely to experience pediculosis capitis.
5. Among the three variables, the practice aspect is the most dominant determining factor (RP = 2.847), confirming that behavioral and hygiene interventions are the most critical target for prevention programs.

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