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Original Article

FAMILY KNOWLEDGE AND ATTITUDES AS PREDICTORS OF ADOLESCENTS' CLEAN AND HEALTHY LIVING BEHAVIOR (PHBS) IN BANGKALAN, INDONESIA

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ABSTRACT

Background: Clean and Healthy Living Behavior (PHBS) among adolescents remains a public health priority in East Java, where disparities in sanitation and household health practices persist despite ongoing national efforts. Family cognitive and affective factors—particularly knowledge and attitudes—are widely acknowledged as important determinants of adolescent health behavior; however, evidence from Bangkalan Regency remains limited.
Objectives: This study aimed to analyze family knowledge and family attitudes as predictors of adolescents' PHBS and to identify the dominant influencing factor.
Methods: A cross-sectional study was conducted among 120 families with adolescents aged 12–18 years selected through probability sampling. Data were collected using a structured questionnaire validated through Pearson correlation ($r > 0.361$) and reliability tested using Cronbach's Alpha (knowledge = 0.81; attitude = 0.85; PHBS = 0.79). Data analysis included univariate distribution, Chi-square tests, and multivariate logistic regression with a significance level of 0.05.
Results: A total of 63% of families demonstrated good knowledge of PHBS, 58% had positive attitudes, and 60% of adolescents practiced good PHBS. Family knowledge was significantly associated with adolescent PHBS ($p = 0.021$), as was family attitude ($p = 0.008$). Logistic regression revealed that family attitude was the dominant predictor (OR = 2.87; 95% CI: 1.31–6.28; $p = 0.006$), while family knowledge remained significant (OR = 1.94; 95% CI: 1.02–3.71; $p = 0.039$). The model explained 32% of the variance in adolescent PHBS (Nagelkerke $R^2 = 0.32$).
Conclusion: Both knowledge and attitudes of families significantly influence adolescents' PHBS, with attitudes serving as the strongest predictor. Strengthening family-based health promotion—particularly those targeting attitude change and supportive household norms—is essential for improving sustainable adolescent health behavior in Bangkalan.

Keywords: Family Knowledge, Family Attitudes, Adolescents, PHBS, Clean and Healthy Living Behavior.

INTRODUCTION

Clean and Healthy Living Behavior (PHBS) is a national health strategy in Indonesia aimed at reducing preventable disease through improvements in hygiene, sanitation, and daily household practices. In the adolescent population, PHBS plays a particularly crucial role, as this age group is vulnerable to risky behaviors and is in a transitional phase of developing long-term health habits. National programs such as the Community-Based Total Sanitation (STBM) initiative emphasize household behavior change as a primary driver of public health improvement, given that disparities in access to safe drinking water, sanitation, and hygiene practices remain evident in East Java (Dinas Kesehatan Provinsi Jawa Timur, 2023; World Health Organization, 2023). These disparities are also reflected in rural and peri-urban districts such as Bangkalan Regency, where environmental challenges and uneven sanitation infrastructure contribute to persistent household-level health risks.

Within the family environment, cognitive and affective factors—namely knowledge and attitudes—are widely recognized as determinants of health behavior formation. Bloom's taxonomy suggests that behavioral practices are influenced by the interplay of cognitive knowledge, affective attitudes, and psychomotor skills, meaning that improved understanding of health behaviors can guide positive attitudes and ultimately shape consistent healthy practices. Previous studies in Indonesia and internationally have shown that parental knowledge and attitudes significantly influence children's hygiene behaviors, including handwashing, sanitation use, and healthy eating (Rahmawati et al., 2021; Jatrana et al., 2021). Adolescents, who remain dependent on parental guidance despite increasing autonomy, rely heavily on family norms and modeling to form health-related habits.

Despite the recognized importance of family influence, evidence regarding the specific contribution of family knowledge and attitudes to adolescent PHBS in Bangkalan remains limited. Existing studies largely focus on younger children or school settings, while research involving adolescents within the household context—particularly in rural Madura regions—remains scarce. Moreover, although national and regional policies, including the Bangkalan Regional Regulation on Healthy Environments, emphasize the role of families in improving community health, empirical data supporting these policy directions are insufficient. Previous studies often report associations but rarely examine the relative strength of cognitive versus affective family factors, leaving a gap in understanding which components serve as the strongest predictors of adolescent PHBS.

Considering these gaps, there is a need for empirical research that analyzes how family knowledge and attitudes contribute to adolescent PHBS and identifies which factor holds greater predictive power. Generating such evidence is essential for guiding local health promotion strategies, strengthening family-based interventions, and supporting regional sanitation and hygiene programs. Therefore, this study aims to examine family knowledge and family attitudes as predictors of adolescents' clean and healthy living behavior in Bangkalan and to determine the dominant influencing factor.

METHODS

Study Design

This study employed an analytical observational design with a cross-sectional approach to examine the predictive influence of family knowledge and family attitudes on adolescents' Clean and Healthy Living Behavior (PHBS).

Settings

2025, an area characterized by diverse household sanitation conditions and varying levels of health behavior adoption.

Research Subject

The study population consisted of all families residing in the selected area who had at least one adolescent aged 12–18 years and had lived in the region for a minimum of one year. Families with cognitive impairments or communication barriers that prevented questionnaire completion were excluded. The minimum sample size was determined using a proportion estimation formula with a 95% confidence level and a 5% margin of error, yielding 109 participants. To account for potential non-response, an additional 10% was added, resulting in a final sample of 120 families. Probability sampling with simple random sampling was used to select participants from a family registry obtained from the local community health center (Puskesmas). The sampling frame included all eligible households, and each was assigned a number from which samples were randomly drawn using a computerized randomization process.

Instruments

Data were collected using a structured questionnaire developed based on the official PHBS indicators issued by the Kementerian Kesehatan Republik Indonesia (Ministry of Health) (2023) and grounded in Bloom's behavioral theory framework. The instrument consisted of three sections: (1) family knowledge (e.g., "What are the components of safe sanitation in the household?"), (2) family attitudes (e.g., "I believe maintaining household cleanliness prevents illness"), and (3) adolescents' PHBS practices (e.g., frequency of handwashing with soap, safe water use, daily consumption of fruits and vegetables). Each domain used a Likert or multiple-choice format and was scored based on correct and consistent responses. Scores were categorized using a 75% cut-off from the maximum score to distinguish between good and poor categories, following common PHBS assessment standards.

Content validity was assessed through expert judgment involving three public health and maternal–child health specialists. Construct validity was tested using Pearson product–moment correlation, with all items exceeding the minimum threshold ($r > 0.361$). Reliability testing conducted on a pilot sample showed strong internal consistency, with Cronbach's Alpha values of 0.81 for knowledge, 0.85 for attitudes, and 0.79 for PHBS practices, fulfilling the requirement for $\alpha > 0.70$.

Data Collection

Data collection was carried out by trained research assistants who conducted household visits and guided participants in completing questionnaires to minimize misinterpretation.

Data Analysis

The collected data were processed and analyzed using statistical software. Univariate analysis described the frequency and percentage distributions of key variables. Bivariate associations between predictor variables (knowledge and attitudes) and the outcome variable

(adolescent PHBS) were examined using the Chi-square test with a significance level of $\alpha = 0.05$. Variables with $p < 0.25$ in the bivariate analysis were included in the multivariate logistic regression model to identify predictors and determine the dominant influencing factor. Odds ratios (OR) with 95% confidence intervals (CI) were generated to measure effect size, and diagnostic analyses such as multicollinearity testing and the Hosmer–Lemeshow goodness-of-fit test were performed to ensure model validity.

Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Committee of STIKes Husada Jombang, and all procedures adhered to the ethical principles of autonomy, beneficence, and confidentiality. Written informed consent was obtained from each participating family prior to data collection, with additional assent obtained from adolescents involved in the study.

RESULTS

A total of 120 families residing in Bangkalan Regency participated in this study. Most respondents were between 35–45 years old (52%), predominantly female (68%), and had completed senior high school (48%). Approximately 63% of families had four or more household members. These demographic characteristics align with the general sociodemographic profile of families in East Java, which continues to exhibit disparities in sanitation and clean-living practices.

Regarding family knowledge of clean and healthy living behavior (PHBS), 63% demonstrated good knowledge, while 37% showed moderate or low levels. In terms of attitudes, 58% of families reported positive attitudes toward PHBS implementation. Meanwhile, 60% of adolescents exhibited good PHBS practices, whereas 40% remained in the poor category. Sub-indicators with the lowest adherence included daily fruit and vegetable consumption and regular physical activity.

Bivariate analysis using the Chi-square test showed a statistically significant association between family knowledge and adolescent PHBS ($p = 0.021$). Adolescents from families with good knowledge demonstrated a higher proportion of good PHBS (72%) compared with those whose families had insufficient knowledge (41%). A stronger association was found between family attitudes and adolescent PHBS ($p = 0.008$), where 76% of adolescents from families with positive attitudes practiced good PHBS, compared with only 38% among those with negative attitudes.

Both independent variables met the criteria ($p < 0.25$) for inclusion in multivariate analysis. Logistic regression revealed that family attitudes were the dominant predictor of adolescent PHBS (OR = 2.87; 95% CI: 1.31–6.28; $p = 0.006$), indicating that adolescents in families with positive attitudes were nearly three times more likely to perform good PHBS. Family knowledge remained significant (OR = 1.94; 95% CI: 1.02–3.71; $p = 0.039$). Model fit tests showed acceptable performance (Hosmer–Lemeshow $p > 0.05$), and the Nagelkerke R^2 value of 0.32 indicated that 32% of the variance in adolescent PHBS was explained by the two predictors.

DISCUSSION

The results of this study demonstrate that both family knowledge and family attitudes are significantly associated with adolescents' Clean and Healthy Living Behavior (PHBS), indicating that cognitive and affective family factors play central roles in shaping adolescent health practices. The significant association between family knowledge and adolescent PHBS is consistent with Bloom's cognitive domain, which posits that knowledge forms the initial foundation for behavior acquisition. Families with adequate understanding of hygiene, sanitation, and healthy routines are more likely to guide adolescents toward adopting health-promoting behaviors. This finding aligns with previous Indonesian studies showing that households with stronger health literacy exhibit higher adherence to hygiene and sanitation practices among school-aged children and adolescents (Rahmawati et al., 2021; Febiyanti, 2023). International evidence similarly supports this, as studies have shown that parental health literacy contributes directly to adolescent hygiene practices and disease prevention behaviors (Jatrana et al., 2021).

However, while knowledge remains important, the present study reveals that family attitudes serve as the dominant predictor of adolescent PHBS. The strong influence of attitudes reflects the operation of the affective domain in Bloom's taxonomy and resonates with behavior change theories such as the Theory of Planned Behavior (TPB) and the Health Belief Model (HBM). According to TPB, attitudes shape behavioral intentions, which subsequently influence actual behavior. Therefore, families who internalize the value of cleanliness, perceive hygiene as beneficial, and feel responsible for maintaining a healthy environment provide a stronger motivational context for adolescents to adopt PHBS. This mechanism is also supported by the HBM, which suggests that perceived benefits, perceived susceptibility, and perceived severity contribute to preventive behaviors—elements closely linked to attitudes. Prior studies have shown similar patterns, where parental attitudes, modeling, and emotional reinforcement contribute more intensely to adolescent health habits than knowledge alone (Handayani et al., 2020; Ashrafi et al., 2023).

The effect size found in this study (OR = 2.87) indicates that positive family attitudes nearly triple the likelihood of adolescents practicing good PHBS. This suggests that affective reinforcement, household norms, and consistent parental modeling may facilitate deeper internalization of health behaviors. Adolescents, who are in a developmental stage characterized by higher susceptibility to social and familial influence, tend to form behavioral norms based on the attitudes demonstrated in their immediate environment. This observation is reinforced by studies showing that adolescents' hygiene and dietary practices are strongly shaped by household climate and parents' emotional engagement (Putri et al., 2023; Yunita et al., 2025).

The contextual environment of Bangkalan provides an important backdrop for interpreting these findings. Bangkalan continues to face challenges related to sanitation disparities, cultural norms surrounding household hygiene, and limited health-supportive infrastructure, as reported in regional health statistics. The fact that 40% of adolescents in this study still demonstrated poor PHBS highlights the gap between policy intentions—such as those articulated in the regional health regulations and the national STBM program—and actual behaviors at the household level. The STBM framework explicitly emphasizes emotional triggering, collective awareness, and the formation of new social norms as essential

mechanisms for behavior transformation. These principles mirror the finding that attitudes, rather than knowledge alone, are the stronger determinants of adolescent hygiene practices.

The predictive strength of attitudes also implies that health promotion strategies should focus not only on information dissemination but also on fostering positive emotional, cultural, and motivational environments within families. Approaches such as community empowerment, household-based behavior modeling, and value-driven communication may be more effective in influencing adolescent behavior than traditional education alone. International research similarly highlights that experiential and emotionally reinforcing health messages—including parental role modeling—are more effective at changing adolescent health behaviors compared to knowledge-based interventions alone (Ashrafi et al., 2023; WHO & UNICEF, 2023).

Although the regression model explained 32% of the variance in PHBS, a substantial proportion remains unaccounted for. This suggests that adolescent behavior may also be influenced by external factors such as peer groups, school environment, community norms, media exposure, and accessibility of sanitation facilities—factors identified in various international reports on adolescent hygiene behavior. Peer influence, in particular, has been shown to significantly shape adolescents' lifestyle choices, suggesting the need for multilevel interventions that extend beyond the family unit.

Overall, this study reinforces the notion that strengthening family attitudes—through community-based health promotion, participatory education, and consistent modeling—is essential for improving adolescent PHBS. The findings not only contribute to the existing literature but also provide actionable insights for local health authorities in Bangkalan and similar regions seeking to enhance adolescent hygiene and sanitation practices.

CONCLUSION

This study concludes that both family knowledge and family attitudes significantly influence adolescents' Clean and Healthy Living Behavior (PHBS) in Bangkalan Regency. Families with higher levels of PHBS-related knowledge tend to have adolescents who demonstrate better hygiene and health practices, highlighting the importance of cognitive awareness in shaping daily behaviors. However, family attitudes emerged as the dominant predictor, indicating that emotional support, role modeling, and the value families place on health have a stronger impact on adolescents' behavioral outcomes than knowledge alone.

These findings underscore the multidimensional nature of adolescent health behavior and demonstrate that affective and motivational factors within the household environment are critical in promoting consistent, sustainable PHBS practices. While knowledge provides the foundation for understanding health behaviors, it is the internalization of positive attitudes that most effectively drives behavioral adoption. Given that the regression model explains 32% of the variance in adolescent PHBS, external influences—such as peer relationships, school environment, and community norms—also likely contribute and warrant further investigation.

Overall, strengthening family engagement, cultivating supportive attitudes, and fostering health-promotive household environments are essential strategies for improving adolescent PHBS in Bangkalan and similar settings.

SUGGESTION

The findings of this study highlight the need for strengthening family-centered health promotion programs to improve adolescents' Clean and Healthy Living Behavior (PHBS) in Bangkalan Regency. Health promotion initiatives should prioritize enhancing not only family knowledge but also the development of positive attitudes toward hygiene and healthy practices, as attitudes were identified as the strongest predictor of adolescent PHBS. Community health centers (Puskesmas) and schools are encouraged to implement participatory and culturally sensitive strategies such as parental role-modeling workshops, family-based PHBS counseling, and STBM-inspired community triggering activities that emphasize emotional engagement and collective responsibility. Integrating adolescent-focused health education with family involvement may further strengthen behavior adoption. Moreover, local policymakers should consider incorporating family attitude–oriented interventions into existing sanitation and hygiene programs to ensure alignment with regional health goals.

LIMITATIONS

This study has several limitations that should be acknowledged. First, the cross-sectional design restricts the ability to establish causal relationships between family factors and adolescent PHBS, as variables were measured at a single point in time. Second, the reliance on self-reported questionnaires introduces the potential for recall bias and social desirability bias, which may lead participants to overreport positive behaviors. Third, the study was conducted in a specific geographical and cultural context within Bangkalan, which may limit the generalizability of the findings to other regions with different sociocultural characteristics. Additionally, the regression model explained only 32% of the variance in adolescent PHBS, suggesting that other factors—such as peer influence, school environment, media exposure, and accessibility of sanitation facilities—may also play significant roles. Future research should employ longitudinal or mixed-method designs to better explore causal pathways and incorporate broader ecological factors influencing adolescent health behavior.

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