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The Role of Mothers as Health Promotion Agents in Improving Healthy Living Behaviour within Families

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ABSTRACT

Mothers play a strategic role as health promotion agents within families because they directly influence the development of healthy living behaviors among family members. This study aimed to analyze the relationship between mothers' roles as health promotion agents and healthy living behaviors in the family environment. A quantitative correlational study with a cross-sectional design was conducted involving 120 housewives selected through simple random sampling. Data were collected using a validated closed-ended Likert-scale questionnaire. Statistical analyses included univariate analysis, Chi-Square testing, and Spearman Rank correlation at a 95% confidence level. The results showed that most respondents demonstrated a good level of health promotion role (60.0%) and good family healthy living behavior (57.5%). A significant relationship was found between mothers' roles as health promotion agents and healthy living behaviors within families (p = 0.000). The correlation was strong and positive (r = 0.682), indicating that stronger maternal involvement in health promotion is associated with better family health practices. These findings highlight the importance of strengthening mothers' capacities through family-based health programs, community health education, and the optimization of integrated health services such as Posyandu. Community health centers are encouraged to implement structured empowerment programs, including health education, family health monitoring, and peer-support activities. In conclusion, mothers' roles as health promotion agents are strongly associated with healthy living behaviors in families.

Keywords: *Health Promotion Agent, Housewife, Family, PHBS, Healthy Living Behavior*

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INTRODUCTION

Family health constitutes the fundamental basis of community health development because the family is the primary environment in which health-related knowledge, attitudes, and behaviors are formed and maintained throughout an individual's life. From a public health perspective, the family functions not only as a social institution but also as a health-promoting environment that shapes healthy lifestyle practices among its members. Healthy family behaviors encompass balanced nutrition, regular physical activity, environmental hygiene, disease prevention practices, and the appropriate utilization of health services. The consistent implementation of these behaviors contributes to improved quality of life, increased productivity, and reduced risk of communicable and non-communicable diseases. Conversely, poor health behaviors within the family can increase vulnerability to obesity, hypertension, diabetes mellitus, and various environmental health problems, thereby affecting overall family wellbeing and community health outcomes (Fadila & Rachmayanti, 2021).

Despite continuous efforts by the Indonesian government to promote healthy lifestyles through programs such as Clean and Healthy Living Behavior (PHBS) and the Healthy Living Community Movement (GERMAS), the implementation of healthy behaviors at the household level remains suboptimal. Various studies indicate that unhealthy dietary patterns, low levels of physical activity, increasing sedentary lifestyles, and inadequate attention to environmental sanitation continue to be prevalent in many households. Rapid technological development and modernization have further contributed to behavioral changes, encouraging greater dependence on passive activities and reducing opportunities for physical exercise. In addition, limited health literacy among family members often hinders the understanding and adoption of preventive health practices, creating challenges for sustainable health behavior change (Manek et al., 2021).

The implementation of healthy living behaviors within families is influenced by multiple interrelated factors, including educational attainment, socioeconomic status, access to health information, and social support systems. Families with better educational and economic resources generally have greater opportunities to access health information, obtain nutritious food, utilize healthcare services, and maintain healthy living environments. Previous research has demonstrated that knowledge and attitudes significantly influence the successful implementation of PHBS within households. However, socioeconomic constraints and environmental conditions may limit the ability of some families to adopt healthy behaviors consistently despite having adequate knowledge regarding health promotion (Fadila & Rachmayanti, 2021; Manek et al., 2021).

Within the family system, mothers occupy a particularly strategic position in promoting and maintaining family health. Mothers are generally responsible for managing daily household activities, including food preparation, childcare, environmental cleanliness, and health-related decision making. Due to their close interaction with family members, mothers exert considerable influence on the development of healthy habits and lifestyle practices within the household. In addition to their caregiving responsibilities, mothers often serve as informal health educators who provide information, guidance, and motivation regarding healthy behaviors to their children and

other family members. Consequently, the quality of maternal health knowledge and awareness substantially affects the overall health status of the family (Putri et al., 2019).

The role of mothers as health promotion agents has become increasingly important in response to contemporary health challenges. As health promotion agents, mothers are expected to educate family members about healthy living practices, encourage preventive health behaviors, foster healthy dietary habits, support physical activity, and promote the utilization of healthcare services. Through daily interactions and behavioral role modeling, mothers contribute significantly to the formation of sustainable health habits among family members. The effectiveness of this role is influenced by various factors, including educational level, health literacy, socioeconomic conditions, family support, and accessibility of healthcare services (Mufidah et al., 2024).

Several previous studies have highlighted the importance of maternal involvement in improving family health outcomes. Research conducted by Putri et al. (2019) reported that maternal knowledge and attitudes were significantly associated with the implementation of PHBS in households. Similarly, studies by Ostovarfar et al. (2023) demonstrated that maternal role modeling and health-promotive support positively influenced family health climate and healthy behaviors among family members. Furthermore, family-based health interventions have been shown to improve health literacy, self-efficacy, and healthy lifestyle practices among both parents and children (Ling et al., 2024; Jones et al., 2025). These findings suggest that mothers play a crucial role in facilitating sustainable health behavior changes within the family environment.

Nevertheless, existing studies have predominantly focused on child health outcomes, parenting practices, specific health promotion interventions, or health programs implemented through healthcare institutions. Relatively few studies have comprehensively examined mothers as health promotion agents whose influence extends to the overall healthy living behavior of the family. In addition, previous research has tended to emphasize institutional health promotion efforts rather than exploring the internal health promotion mechanisms operating within family systems. This limitation indicates a research gap that warrants further investigation, particularly regarding how mothers perform health promotion functions and contribute to the development of healthy lifestyles among all family members (Simangunsong et al., 2025).

The urgency of this study is reinforced by the increasing emphasis on preventive and promotive healthcare strategies within national health policies. Government initiatives aimed at strengthening PHBS, GERMAS, and community-based health promotion require active family participation to achieve sustainable outcomes. In this context, mothers represent key actors capable of influencing family health decisions and promoting healthy living behaviors at the household level. Strengthening mothers' capacity as health promotion agents may therefore serve as an effective strategy for improving family health resilience and reducing the burden of preventable diseases (Mufidah et al., 2024).

This study offers novelty by positioning mothers not merely as caregivers but as strategic health promotion agents who actively shape healthy lifestyle behaviors within the family environment. By examining the relationship between mothers' health promotion roles and family healthy living behaviors, this study seeks to provide a more comprehensive understanding of

family-based health promotion processes. The findings are expected to contribute both theoretically and practically to the development of effective, adaptive, and sustainable family-centered health promotion programs.

Based on the foregoing discussion, this study aims to analyze the relationship between the role of mothers as health promotion agents and healthy living behaviors within the family environment. Understanding this relationship is essential for developing evidence-based strategies that strengthen family participation in health promotion and support the achievement of broader public health goals.

METHODS

This study employed a quantitative approach with an analytical correlational design using a cross-sectional method. The study aimed to analyze the relationship between the role of mothers as health promotion agents and healthy living behaviors within the family environment. A cross-sectional design was selected because the independent and dependent variables were measured simultaneously at a single point in time without any intervention from the researchers.

The study was conducted in the working area of Bumi Lampung Community Health Center from January to March 2026. The target population consisted of all mothers living with their nuclear families and having at least one child in the study area. The total population was 1200 individuals. Sample size was determined using the Slovin formula with a margin of error of 5%, resulting in a minimum sample requirement of 120 respondents. Respondents were selected using probability sampling with a simple random sampling technique, ensuring that each eligible member of the population had an equal opportunity to participate in the study.

The inclusion criteria comprised mothers who lived with their nuclear families, had children, were willing to participate in the study, and were able to read and understand the questionnaire. Exclusion criteria included incomplete questionnaire responses and respondents who were unable to complete the questionnaire due to health-related or other limiting conditions.

The independent variable in this study was the role of mothers as health promotion agents, while the dependent variable was healthy living behavior within the family. The role of mothers as health promotion agents was assessed through indicators including health education practices, promotion of clean and healthy living behaviors, dietary regulation within the household, encouragement of physical activity among family members, maintenance of household environmental hygiene, and facilitation of healthcare utilization. Healthy living behavior was measured based on household Clean and Healthy Living Behavior (PHBS) indicators, including healthy dietary practices, regular physical activity, environmental cleanliness, utilization of health services, and disease prevention efforts.

Data were collected using a structured self-administered questionnaire developed from family health promotion concepts and household PHBS indicators. The questionnaire employed a five-point Likert scale ranging from strongly disagree to strongly agree. Prior to data collection, the instrument underwent validity and reliability testing on 30 respondents who possessed characteristics similar to those of the study population but were not included in the final sample.

Instrument validity was assessed using the Pearson Product Moment correlation test. All questionnaire items demonstrated calculated correlation coefficients (r-count) greater than the critical r-table value of 0.361 (n = 30; α = 0.05), indicating that all items were valid and suitable for data collection. Instrument reliability was evaluated using Cronbach's Alpha coefficient. The mother's role questionnaire obtained a Cronbach's Alpha value of 0,842, while the healthy living behavior questionnaire achieved a Cronbach's Alpha value of 0,867. Both values exceeded the minimum acceptable threshold of 0.70, confirming satisfactory internal consistency and reliability of the instrument.

Data collection was conducted through direct distribution of questionnaires to respondents who met the eligibility criteria. Prior to participation, respondents received information regarding the objectives, procedures, benefits, and ethical aspects of the study. Written informed consent was obtained from all participants before data collection commenced. Confidentiality and anonymity of participant information were maintained throughout the study.

Data analysis was performed using a computerized statistical software package. Univariate analysis was conducted to describe respondent characteristics and the distribution of study variables using frequencies and percentages. Bivariate analysis was performed using the Chi-Square test to determine the statistical association between categorized maternal health promotion roles and healthy family living behavior categories. In addition, the Spearman Rank correlation test was used to assess the strength and direction of the relationship between the ordinal scores of both variables. The simultaneous use of Chi-Square and Spearman Rank analyses provided complementary information regarding both statistical significance and correlation magnitude. Statistical significance was determined at a 95% confidence level with a p-value threshold of less than 0.05.

This study adhered to the ethical principles of respect for persons, beneficence, and justice. Ethical approval was obtained from 111/PKP/IX/2026. Participation was voluntary, and respondents were informed of their right to withdraw from the study at any stage without consequence. All research data were used solely for academic and scientific purposes.

RESULTS

1. Respondent Characteristics

This study involved 120 respondents who were housewives living with their nuclear families in the study area. Respondent characteristics included age, education level, occupation, and number of children in the family. The distribution of respondent characteristics is shown in the following table.

Table 1. Distribution of Respondent Characteristics (n = 120)

Respondent Characteristics	Frequency (f)	Percentage (%)
Age		
20–30 years	32	26.7
31–40 years	51	42.5
41–50 years	29	24.2

>50 years	8	6.6
Last education		
Elementary School	12	10.0
Junior High School	24	20.0
Senior High School	56	46.7
College	28	23.3
Work		
Housewife	68	56.7
Self-employed	21	17.5
Private employees	19	15.8
civil servant	12	10.0
Number of children		
1 child	27	22.5
2 children	58	48.3
≥3 children	35	29.2

Based on Table 1, it is known that the majority of respondents were in the 31–40 years age range (51 people (42.5%). The educational level of respondents was dominated by high school graduates (56 people (46.7%). The majority of respondents worked as housewives (68 people (56.7%). In addition, the majority of respondents had two children (58 people (48.3%). These data indicate that the majority of respondents were of productive age with a fairly high level of responsibility for family health management.

2. Univariate Analysis

Table 2. Distribution of Mothers' Roles as Health Promotion Agents

Mother's Role Category	Frequency (f)	Percentage (%)
Good	72	60.0
Enough	34	28.3
Not enough	14	11.7
Total	**120**	**100**

Table 2 shows that the majority of respondents (72 respondents, 60.0%) performed well as health promotion agents. This indicates that the majority of mothers were able to carry out their family health promotion functions, such as providing health education, fostering clean and healthy living habits, and maintaining family lifestyles.

Table 3. Distribution of Healthy Family Lifestyle Behaviors

Healthy Lifestyle Category	Frequency (f)	Percentage (%)
Good	69	57.5
Enough	37	30.8
Not enough	14	11.7

Total	**120**	**100**

Table 3 shows that the majority of families (69 families, 57.5%) have healthy lifestyles in the good category. This indicates that most families have adopted healthy eating habits, maintained environmental cleanliness, engaged in physical activity, and regularly implemented disease prevention efforts.

3. Bivariate Analysis

Table 4. Relationship between the Mother's Role as a Health Promotion Agent and the Family's Healthy Living Behavior

The Role of Mother	Good Healthy Lifestyle Behavior	Healthy Living Behavior is Sufficient	Poor Healthy Living Behavior	Total	p-value
Good	56 (77.8%)	13 (18.1%)	3 (4.1%)	72	0,000
Enough	11 (32.4%)	18 (52.9%)	5 (14.7%)	34	
Not enough	2 (14.3%)	6 (42.9%)	6 (42.8%)	14	
Total	**69**	**37**	**14**	**120**	

Statistical Test: Chi-Square Test

Significance Level: $\alpha = 0.05$

The results of the bivariate analysis using the Chi-Square test showed a p-value of 0.000 (<0.05), thus it can be concluded that there is a significant relationship between the role of mothers as health promotion agents and family healthy lifestyle behaviors. Respondents who have a health promotion role in the good category tend to have better family healthy lifestyle behaviors compared to respondents whose mother's role is in the sufficient or less category.

The results of this study indicate that the more optimal the mother's role in providing health education, controlling diet, maintaining environmental cleanliness, and promoting healthy behaviors within the family, the better the implementation of healthy lifestyles within the family. Conversely, low maternal involvement in family health promotion can lead to low adoption of healthy lifestyles among family members.

Table 5. Spearman Rank Correlation Test Results

Variables	Correlation Coefficient Value (r)	p-value	Interpretation
The Role of Mothers in Family Healthy Living Behavior	0.682	0,000	Strong and positive correlation

The Spearman Rank correlation test showed a correlation coefficient of 0.682 with a p-value of 0.000 (<0.05). This value indicates a strong and positive relationship between the mother's role as a health promotion agent and healthy family behaviors. A positive correlation indicates that the better the mother's role in carrying out health promotion functions, the higher the level of healthy family behaviors.

The use of both Chi-Square and Spearman Rank tests in this study served complementary analytical purposes. The Chi-Square test was employed to determine whether a statistically significant association existed between categorized levels of maternal health promotion roles and healthy family living behaviors. This analysis identifies the presence or absence of a relationship between categorical variables.

Meanwhile, the Spearman Rank correlation test was conducted to evaluate the strength and direction of the relationship between the ordinal scores of both variables. Unlike the Chi-Square test, Spearman correlation provides information regarding how strongly changes in maternal health promotion roles are associated with changes in healthy family living behaviors. Therefore, the combined use of these two statistical tests allows both statistical significance and relationship magnitude to be assessed comprehensively.

DISCUSSION

1. The Role of Mothers as Health Promotion Agents

The results of the univariate analysis in Table 2 show that the majority of respondents, namely 72 people (60.0%), had a role as health promotion agents in the good category. A total of 34 respondents (28.3%) were in the adequate category, and 14 respondents (11.7%) were in the poor category. These data indicate that the majority of mothers in this study were able to optimally carry out their family health promotion function, which includes providing health education, controlling dietary patterns, habituating clean and healthy living behaviors, and assisting in the use of health care facilities.

These results are in line with the Health Promotion Model developed by Pender, Murdaugh, and Parsons (2015), which emphasizes that health-promotive behavior is influenced by individual characteristics, relevant experiences, and specific cognitions and affects toward certain behaviors. In the context of this study, mothers in the productive age group of 31–40 years (42.5%) with a high school education or above (70.0%) had better cognitive capacity in accessing, interpreting, and applying health information in their families' daily lives.

Several previous studies by Ostovarfar et al. (2023) showed that maternal role modeling and promotive support significantly improved Family Health Climate (FHC) and healthy behaviors of family members—a direct line with the findings in Table 2 that 60% of mothers played a good role (Ostovarfar et al., 2023).

In addition, Suryantini (2025) in her research on mothers with toddlers found that the majority of respondents (60%) had positive behavior towards PHBS, with the mother's work, education, and age factors as the main determinants of the success of implementing clean and healthy living in the family (Suryantini, 2025).

Researchers assume that the high proportion of mothers' roles in the good category (60.0%) in this study is influenced by several interrelated factors. First, the predominance of respondents in the productive age group (31–40 years) who are psychologically in the generativity phase according to Erikson's Theory of Development, where individuals have a strong motivation to care for and develop the next generation, including through the habituation of healthy behaviors. Second, the

dominant high school education level (46.7%) provides sufficient health literacy skills to access information and apply it within the family. Third, status as a housewife allows for a higher intensity of interaction with family members so that promotive functions can be carried out more consistently. However, researchers also assume that the 11.7% of respondents who are still in the poor role category may be influenced by factors such as low husband support, limited access to health information, or socio-cultural barriers that still place health as a secondary concern within the family.

2. Healthy Family Lifestyle Behavior

Based on Table 3, the distribution of healthy family behaviors shows that the majority of families, namely 69 families (57.5%), are in the good category. A total of 37 families (30.8%) are in the adequate category, and 14 families (11.7%) are in the poor category. These results reflect that the majority of families in the study area have implemented a balanced nutritional diet, maintained personal and environmental hygiene, engaged in regular physical activity, and utilized health services as per the household PHBS indicators established by the Ministry of Health of the Republic of Indonesia.

In addition, the PHBS theory developed by the Indonesian Ministry of Health (2011) establishes ten indicators of clean and healthy living behavior in the household setting as a standard for measuring the quality of family health. Green's theory (PRECEDE-PROCEED Model) is also relevant in explaining these findings, where family health behavior is influenced by predisposing factors (knowledge, attitudes, beliefs), enabling factors (availability of facilities, access to health services), and reinforcing factors (support from family and community leaders). The proportion of 57.5% of families with good healthy living behaviors indicates that most families have all three factors to an adequate degree.

The results of the study indicate that health promotion strategies, particularly through community empowerment and climate-building approaches, have a significant relationship with improving Clean and Healthy Living Behaviors (PHBS) in the household setting (p-value <0.05). Furthermore, the results of a multivariate analysis indicate that the contribution of health promotion strategies to PHBS reaches 60.5%, while the remainder is influenced by other factors such as education, access to information, and family socioeconomic conditions (Hayati et al., 2023).

Research by Ling et al. (2024) through a cluster randomized controlled trial in parents with preschool-aged children showed that a family-based intervention (FirstStep2Health) involving mothers significantly increased nutritional knowledge (B = 0.87; *p* = 0.009), self-efficacy in physical activity (B = 0.86; *p* = 0.013), and reduced body fat percentage (B = –2.56; *p* = 0.005) and systolic blood pressure (B = –10.98; *p* = 0.005) in parents. This proves that the active involvement of mothers in health promotion programs has a direct impact on improving family healthy behaviors (Ling et al., 2024).

A study by Jones et al. (2025) using a mobile health (mHealth) approach among mothers in Queensland, Australia, found that the Connecting2u intervention, targeting mothers of children aged 0–2 years, successfully increased parenting confidence, encouraged preventative health

behaviors, and achieved 100% complete immunization coverage by the end of the study. Mothers reported that the program provided an "extra layer of support" that encouraged self-care and positive interactions with their children (Jones et al., 2025).

Researchers assume that the proportion of healthy family behaviors in the good category (57.5%) is lower than the proportion of mothers' roles in the good category (60.0%) reflecting a gap between intentions and actions in the context of family health behaviors. This indicates that although mothers have carried out their health promotion roles well, there are other factors that influence the implementation of healthy lifestyle behaviors at the family level, such as father involvement, family economic conditions, local culture, and the availability of sanitation infrastructure. Researchers also assume that the 11.7% of families in the poor category are likely concentrated in groups with low incomes and low maternal education levels (elementary/junior high school 30.0%), which directly limits access to health resources and information needed to optimally implement PHBS.

3. The Relationship between the Role of Mothers as Health Promotion Agents and Family Healthy Living Behavior

The results of the bivariate analysis in Table 4 using the Chi-Square test show a p-value of 0.000 ($p < 0.05$), which means there is a statistically significant relationship between the mother's role as a health promotion agent and family healthy lifestyle behaviors. Cross tabulation shows a consistent pattern: of the 72 respondents with a good maternal role, 56 families (77.8%) have healthy lifestyle behaviors in the good category. Conversely, of the 14 respondents with a poor maternal role, only 2 families (14.3%) have healthy lifestyle behaviors in the good category, while 6 families (42.8%) are in the poor category. This distribution shows a strong tendency that a better maternal role is closely related to a higher quality of healthy lifestyle behaviors in the family.

Furthermore, the Health Promotion Model (Pender, 2015) explains that health-promoting behaviors undertaken by individuals directly influence the health outcomes of their surrounding environment, including the family. Mothers who actively carry out the functions of education, habituation, supervision, and facilitation of healthy behaviors within the family contribute directly to the formation of a family health culture. Family Systems Theory (Bowen, 1978) is also relevant in explaining that changes in the behavior of one member of the family system, especially a figure with a significant influence such as the mother, will impact changes in the behavior of the entire family system as a whole.

Participatory research by Bektas et al. (2023), published in an international journal, showed that a Participatory Action Research (PAR) approach involving mothers as co-designers in developing health promotion actions successfully empowered mothers, increased their sense of pride in their role in the community, and resulted in a sustainable initiative called Mama's World Exercise Club. This success was attributed to close collaboration between researchers and mothers, as well as support from local stakeholders (Bektas et al., 2023).

Research by Rechberg et al. (2023) in Germany developed a theoretical model of pregnant women's and young families' access to health promotion programs. This model identified three main access pathways: enculturation, motivation, and recommendation. These findings emphasize the

importance of tailoring approaches to mothers' sociocultural contexts to increase their participation in health programs (Rechberg et al., 2023).

The researchers assumed that the significant relationship found between the mother's role and family healthy lifestyle behaviors (p = 0.000) does not only reflect a one-way causal relationship, but also a dynamic and mutually reinforcing relationship. Mothers who have a good health-promotive role will consistently build a family environment conducive to the implementation of healthy lifestyle behaviors. At the same time, the healthy behaviors formed by family members will provide positive feedback that strengthens the mother's motivation to continue carrying out this promotive function. The researchers also assumed that the group with a less maternal role who still has sufficient (42.9%) and good (14.3%) healthy lifestyle behaviors may be influenced by external factors such as exposure to health education programs from community health centers, mass media, or positive social environmental influences. This indicates that although the mother's role is a very significant factor, it cannot be seen as the sole determinant of family healthy lifestyle behaviors.

4. Strength and Direction of the Relationship between the Mother's Role and Family Healthy Living Behavior

Table 6 shows a significant association between educational level and diabetes prevention behaviour (p = 0.010). The observed pattern is a positive gradient, whereby the higher the educational level, the greater the proportion of respondents exhibiting good prevention behaviour. Among respondents with a high level of education, 60 out of 80 people (75 per cent) exhibited good preventative behaviour, compared with those with a medium level of education (70 out of 130 people, 53.8 per cent), and only 20 out of 90 people (22.2 per cent) with a low level of education. This gradient indicates that education plays a significant structural role in determining an individual's health literacy.

These findings are consistent with the WHO's perspective on the social determinants of health, which identifies education as one of the key structural determinants shaping an individual's life opportunities and choices. Education not only enhances literacy skills, but also broadens access to health information, strengthens decision-making capacity, and shapes the values and norms associated with healthy living. Within the framework of the PRECEDE Model, educational attainment functions as a predisposing factor that directly influences an individual's knowledge, attitudes and, ultimately, health behaviour. Individuals with higher levels of education tend to have greater awareness of the risks of non-communicable diseases and are better able to access and interpret health information from various sources, including digital media.

The findings of this study are supported by several recent studies. A population-based study in the United States in 2025 found that an educational deficit was significantly associated with a lower prevalence of diabetes-preventive behaviours, such as increased physical activity (Prevalence Ratio/PR = 0.88; CI 0.82–0.94) and efforts to reduce fat or calorie intake (PR = 0.89; CI 0.83–0.95) in the prediabetic population (Egede et al., 2025). Kindarara & Murondere (2025) also demonstrated that a higher level of education has a significant impact on the level of knowledge about diabetes, although the study also highlighted that increased knowledge is not automatically followed by good

self-care practices (Kindarara & Murondere, 2025). This underscores the existence of a gap between knowledge and practice, which is consistent with the findings of this study.

The researchers assumed that the relationship between education and diabetes prevention behaviour is strongly mediated by health literacy, which encompasses the ability to read, understand and apply health information in everyday life. The observed gradient pattern—whereby preventative behaviour increases with higher levels of education—reflects the still significant inequalities in access to health education within heterogeneous urban communities. The implications of these findings are that community-based health promotion programmes need to be designed inclusively, with approaches and communication media tailored to the literacy levels of the target population. For groups with low educational attainment, visual, contextual and peer-based interventions are considered more effective than conventional text-based informative approaches. The community-based health promotion model developed from this research should incorporate the improvement of health literacy as an integrated core component.

CONCLUSIONS

The findings of this study demonstrate that mothers play a strategic role as health promotion agents in shaping healthy living behaviors within the family environment. Most respondents exhibited a good level of health promotion practices, which was accompanied by a predominance of healthy living behaviors among families. Statistical analysis confirmed a significant and strong positive relationship between the role of mothers as health promotion agents and family healthy living behaviors, indicating that families with mothers who actively perform health promotion functions are more likely to adopt and maintain healthy lifestyle practices. These findings highlight the importance of maternal involvement in health education, healthy behavior modeling, environmental hygiene management, and disease prevention efforts within the household.

The study implies that strengthening mothers' capacities through family-based health promotion programs, community health education, and the optimization of primary healthcare services such as Puskesmas and Posyandu may contribute substantially to improving household health behaviors. Therefore, health promotion policies should place mothers as key partners in community empowerment strategies aimed at fostering sustainable healthy lifestyles. Future studies are recommended to employ longitudinal or mixed-method designs to better understand causal relationships and explore additional factors influencing family health behaviors, including paternal involvement, family socioeconomic conditions, health literacy, social support, and access to healthcare services.

REFERENCES

Bektas, G., Boelsma, F., Seidell, J., & Dijkstra, C. S. (2023). Development of a health promotion action with mothers aiming to support a healthy start in life for children using Participatory Action Research. *International Journal Of Qualitative Studies On Health And Well-Being*, *18*. https://doi.org/10.1080/17482631.2023.2223415

Egede, C., Campbell, J. A., Wang, X., Thorgerson, A., Walker, R. J., & Egede, L. E. (2025). Examining the relationship between social risk factors, diabetes prevention recommendations, and behaviors among US adults with prediabetes. *BMC Public Health*, *25*(1). https://doi.org/10.1186/s12889-025-24551-w

Fadila, R. A., & Rachmayanti, R. D. (2021). Patterns of Clean and Healthy Living Behavior in Household Settings in Surabaya City, Indonesia. *Media Gizi Kesmas*, *10*(2), 213. https://doi.org/10.20473/mgk.v10i2.2021.213-221

Hayati, M., Nababan, D., & Manurung, J. (2023). The Relationship Between Health Promotion Strategies and the Level of Clean and Healthy Living Behavior (PHBS) in Household Settings in Silih Nara District, Central Aceh Regency, Indonesia. *Prepotif : Jurnal Kesehatan Masyarakat*, *7*(1), 383–392. https://doi.org/10.31004/prepotif.v7i1.13711

Jones, L. I., Dyer, B., Wedemeyer, A., Vorage, L., Wiseman, N., Philipson, A., Frazer-Ryan, S., Resetti, A., & Harris, N. (2025). Using mHealth to Support Queensland Mothers and Children From Birth to Two Years: A Longitudinal Study of Connecting2u. *Health Promotion Journal of Australia : Official Journal of Australian Association of Health Promotion Professionals*, *36*(4), e70117. https://doi.org/10.1002/hpja.70117

Kindarara, D. M., & Murondere, J. B. (2025). Diabetes Knowledge and Self-Care Practices Among Patients With Type 2 Diabetes Mellitus in Uvira, Kiliba, Sange, and Luvungi, South Kivu Province of the Democratic Republic of Congo. *The Science of Diabetes Self-Management and Care*, *51*(2), 141–155. https://doi.org/10.1177/26350106251323611

Ling, J., Kao, T.-S., Robbins, L., Kerver, J., Zhang, N., & Shi, Y. (2024). Effects of the dyadic FirstStep2Health intervention on parents' behaviour and anthropometric outcomes: a secondary analysis of a cluster randomised trial Original research. *BMJ Open*, *14*(12), 81578. https://bmjopen.bmj.com/content/14/12/e081578

Manek, B. D., Rian, M. B., & Bilimangngi, A. (2021). Relationship between social economic status and family's clean and healthy behavior (PHBS) in Tesa Village, Laenmanen District, 2020. *Jurnal Ners Dan Kebidanan Indonesia* , *9*(1). https://ejournal.almaata.ac.id/index.php/JNKI/article/view/1486

Mufidah, A. N., Al Isyrofi, A. Q. A., & Abdullah, A. (2024). The Effectiveness of Health Promotion Media on Clean and Healthy Living Behavior (PHBS). *Deleted Journal*, *2*(1), 160–172. https://doi.org/10.61132/vitamin.v2i1.111

Ostovarfar, J., Kaveh, M. H., Vardanjani, H. M., Ghahramani, L., Karimi, M., Asadollahi, A., & Zare, R. (2023). Improving family health climate, effect of role modeling and maternal support in female students. *BMC Primary Care*, *24*(1), 70. https://doi.org/10.1186/s12875-023-02015-7

Putri, R. M., Rosdiana, Y., & Nisa, A. C. (2019). Application of Clean and Healthy Living Behavior (PHBS) From The Household Knowledge and Attitude Study. *Journal of Nursing Practice*, *3*(1), 39–49. https://doi.org/10.30994/jnp.v3i1.64

Rahmawati, A., Nurmawati, T., & Arsa, S. A. W. (2022). Health Education about Behaviour of Clean and Healthy Life (PHBS) in Household and School. *Journal of Community Service for Health*, *3*(1), 019–024. https://doi.org/10.26699/jcsh.v3i1.1127

Rechberg, K.-H., John, D., & Przybyl, K. (2023). Access Paths to Health Promotion Programs for Pregnant Women and Young Families at District Level Using the Example of the HealthdistrictPlus Fürth. *Gesundheitswesen (Bundesverband Der Arzte Des Offentlichen Gesundheitsdienstes (Germany)*, *85*(11), 982–988. https://doi.org/10.1055/a-1955-9937

Simangunsong, L., Sitorus, R. S., & Sinaga, M. H. (2025). The Role Of Health Promotion in Achieving Household Clean And Healthy Living Behavior (Phbs) With Polling Mothers At UPT Puskesmas Balige. *JURNAL KESMAS DAN GIZI (JKG)*, *7*(2), 383–392. https://doi.org/10.35451/jkg.v7i2.2265

Suryantini, N. P. (2025). Clean and Healthy Living Behavior (PHBS) Among Mothers with Children Under Five Years of Age. *Ezra Science Bulletin*, *3*(1), 49–54. https://doi.org/10.58526/ezrasciencebulletin.v3i1.208