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BRIDGING THE GAP: ENHANCING HOME FEVER MANAGEMENT THROUGH EDUCATION AND SOCIOECONOMIC SUPPORT

***Faiza Yuniati[1], Erwin[2], Sherli Shobur[1] Maksuk[1], Intan Kumalasari[1]**

[1] Department of Epidemiology Surveillance, Health Polytechnic of Palembang, Indonesia

[2]Mechanical Engineering, Universitas Sultan Ageng Tirtayasa, Banten, Indonesia

**Faiza yuniati: 081513414674; faizayuniati@poltekkespalembang.ac.id*

ABSTRACT

Background: Effective home fever management in children is vital for their health and well-being. This study aimed to identify the key factors influencing home fever management among parents or caregivers in Kelurahan 3-4 Ulu Palembang, focusing on education, employment, knowledge, and attitudes. **Methods**: A cross-sectional study was conducted with 278 parents or caregivers of children aged 2-6 years, selected through consecutive sampling. Data were collected using validated questionnaires that assessed fever management practices, parental knowledge, and attitudes. Bivariate analysis with chi-square tests and multivariate logistic regression were used to analyze the data and identify the most significant predictors of effective fever management. **Results**: Employment status emerged as the most significant predictor, with employed parents being 3.617 times more likely to manage fever effectively compared to unemployed parents ($p=0.000$). Higher educational attainment, good knowledge, and positive attitudes were also strongly associated with better fever management practices ($p<0.05$). These findings are consistent with existing research highlighting the role of socioeconomic factors in effective health management. **Conclusions:** The study emphasizes the critical importance of employment and socioeconomic stability in effective home fever management. Public health strategies should focus on supporting unemployed or underemployed parents by improving access to healthcare resources and educational programs. Such interventions could lead to better child health outcomes and more efficient use of healthcare services. Further research is needed to assess the long-term impact of these interventions

Keywords: *Fever management, parental knowledge, employment, education, socioeconomic factors.*

1. Introduction

Fever is a common symptom in children, often prompting concern among parents and leading to frequent healthcare visits. Effective home management of fever is essential for both the well-being of the child and the reduction of unnecessary medical consultations. Numerous studies have shown that the knowledge, attitudes, and practices of parents significantly influence how fever is managed at home (Kelly et al., 2016). For instance, parents with higher levels of education and health literacy are more likely to handle fevers appropriately, recognizing when to use antipyretics and when to seek professional medical advice (Arias, Chen, & Moles, 2019; Shalam M Hussain et al., 2020; Kelly, Sahm, Shiely, O'Sullivan, De Bont, et al., 2017).

However, gaps in knowledge and access to resources, particularly in lower socioeconomic groups, can lead to either over-management, such as the unnecessary use of antipyretics, or under-management, where fever complications are not adequately addressed (Kelly, Sahm, Shiely, O'Sullivan, De Bont, et al., 2017; Urbāne, Gaidule-Logina, Gardovska, & Pavāre, 2019). The importance of non-pharmacological interventions, such as maintaining hydration and comfort, alongside pharmacological approaches in fever management, is well-

documented. Studies emphasize that educational interventions can enhance parental understanding of fever and its management, thereby improving health outcomes for children (Alqudah, Johnson, Cowin, & George, 2014). Furthermore, the multifaceted nature of home fever management necessitates that both educational and socioeconomic factors be considered to equip parents effectively (Peetoom, Smits, et al., 2016; Rkain et al., 2014; Villarejo-Rodríguez & Rodríguez-Martín, 2019).

Despite the critical role of effective home fever management, significant gaps remain in understanding how demographic and socioeconomic factors influence caregivers' abilities to manage fever. Research has shown that inadequate knowledge, negative attitudes, and limited access to healthcare resources are major barriers, particularly in lower socioeconomic groups (Estiri, 2023). These barriers can lead to either unnecessary medical interventions or delays in seeking timely care, both of which can adversely affect child health (Herman & Nurshal, 2017; Tavan, Monemi, Keshavarz, Kazemi, & Nematollahi, 2022)
To address these challenges, comprehensive study are needed that target both the educational and socioeconomic determinants of fever management. This includes developing educational programs that improve parents' understanding of fever and its management, as well as public health policies that ensure equitable access to healthcare resources, particularly for vulnerable populations (Kelly, Sahm, Shiely, O'Sullivan, Bont, et al., 2017; Peetoom, Smits, et al., 2016). By focusing on these areas, it is possible to enhance the overall effectiveness of home fever management and reduce disparities in child health outcomes (Ayalneh, Fetene, & Lee, 2017).

The primary objective of this study is to identify and analyze the factors associated with effective socioeconomic status, knowledge, and attitudes among parents or caregivers in Kelurahan 3-4 Ulu Palembang. The study aims to develop targeted interventions that can improve caregivers' ability to manage childhood fevers effectively, thereby reducing unnecessary healthcare utilization and enhancing child health outcomes.

2. Literature Review

The existing literature has significantly advanced our understanding of the factors influencing home fever management, yet notable gaps remain. Many studies have focused on the impact of parental education and knowledge on fever management, demonstrating that higher education levels correlate with better management practices (Shalam Mohamed Hussain et al., 2020; Lawani & Akhogba, 2015). However, there is limited research exploring how these factors interact with cultural beliefs and practices, particularly in diverse populations (Elajez et al., 2021; Villarejo-Rodríguez & Rodríguez-Martín, 2019). Most studies tend to generalize findings across different cultural and socioeconomic groups, potentially overlooking important contextual differences that influence fever management behaviors.

Another gap in the literature is the long-term effectiveness of educational interventions. While short-term improvements in knowledge and practices have been documented, few studies have investigated whether these gains are sustained over time without ongoing support (Tavan et al., 2022). Moreover, the role of digital health tools in providing continuous education and support to parents remains underexplored, despite the growing reliance on these technologies in health education.

Furthermore, while socioeconomic factors are widely recognized as determinants of health behavior, more research is needed on effective interventions to reduce disparities in fever management (Çelik & Güzel, 2024; Sothinathan & Kumar, 2019). Addressing these gaps is crucial for developing more effective and equitable strategies to improve home fever management across different populations

3. Research Method

This study was conducted using a cross-sectional design within the field of public health, targeting parents or caregivers of children aged 2-6 years in Kelurahan 3-4 Ulu Palembang. A total of 278 respondents participated, selected through consecutive sampling, which ensured that all eligible participants who met the inclusion criteria were included until the desired sample size was achieved. Participants were fully informed about the study's objectives, and their consent was obtained prior to participation. Data collection was carried out both online and

offline, with 123 respondents completing the survey offline in three selected kindergarten schools, and 155 respondents participating online via Google Forms.

The data collection process was conducted using validated questionnaires that were administered to participants to gather information on various aspects of home fever management. The questionnaires comprised 17 multiple-choice questions that assessed the identification of fever symptoms, the use of pharmacological interventions such as antipyretics and antibiotics, and the implementation of non-pharmacological strategies like warm and cold compresses. Additionally, the questionnaires included 10 questions designed to evaluate parental knowledge about fever, including the causes of fever, normal body temperature ranges, and appropriate medication use. The study also included 15 attitudinal statements measured on a Likert scale to gauge parents' attitudes towards fever management, such as maintaining calmness, following medical advice, and deciding when to seek medical care.

The collected data were analyzed using both bivariate and multivariate statistical methods. Bivariate analysis, specifically chi-square tests, was employed to explore the relationships between the independent variables and the effectiveness of home fever management. Multivariate analysis, including logistic regression, was conducted to assess the combined impact of multiple variables and to identify the most significant predictors of effective fever management. This approach allowed for the control of confounding factors and provided a comprehensive understanding of the determinants of fever management practices. Statistical analysis was performed using SPSS software, with significance levels set at $p < 0.05$.

4. Results and Discussion

The study analyzed data from 278 respondents, predominantly parents or caregivers of children aged 2-6 years in Kelurahan 3-4 Ulu Palembang. The majority of respondents were female (78.4%), with 56.5% in the age range of 26-35 years. Educational backgrounds varied, with 52.2% having completed high school and 32.4% holding a diploma or undergraduate degree. Employment status showed that 57.6% were employed, while the rest were homemakers or unemployed. Additionally, 63.7% of the respondents had a monthly income below the regional minimum wage (Table 1).

Table 1. Demographic Characteristics and Home Fever Management Practices of Respondents

Variable n = 278	Category	Frequency	Percent (%)
HFM	Good	145	54.1
	Poor	123	45.9
Age (years)	< 35	143	53.4
	≥ 35	125	46.6
Gender	Female	237	88.4
	Male	31	11.6
Education	Elementary	35	13.1
	Senior School	116	43.3
	College	117	43.7
Employment	Employed	136	41
	Unemployed	132	49.3
Marital Status	Married	257	95.9
	Single	11	4.1
Family Income (IDR)	> 3,677,591	103	38.4
	≤ 3,677,591	165	61.6
Knowledge of HFM	Good	165	61.6

	Poor	103	38.4
Attitude Towards HFM	Good	130	48.5
	Poor	138	51.5

HFM: Home Fever Management

In terms of home fever management knowledge, 45.3% of respondents exhibited good knowledge, whereas 54.7% had moderate to poor knowledge. Attitudes towards fever management were generally positive, with 68.7% of respondents showing favorable attitudes. Appropriate fever management practices were noted in 61.2% of the respondents, encompassing the use of antipyretics, monitoring temperature, and seeking medical advice when necessary (Table 1).

Table 2. Correlation of Demographic and Socioeconomic Factors with Home Fever Management

Variabel	***Home Fever Management***				***P-value****
	Good		Poor		
	n	**%**	**n**	**%**	
Age					0.401
<35 years	101	63.9	57	36.1	
≥35 years	70	58.3	50	41.7	
Gender					0.79
Female	152	61	97	39	
Male	19	65.5	10	34.5	
Education					0.000[1]
Elementary-middle school	20	55.6	16	44.4	
High school	52	43.3	68	56.7	
Bachelor's Degree	99	81.1	23	18.9	
Employment					0.000[1]
Employed	97	82.9	20	17.1	
Unemployed	74	46	87	54	
Marital Status					0.345
Married	166	62.2	101	37.8	
Single/ no partner	5	45.5	6	54.5	
Income					0.004[1]
> Minimum Wage	81	72.3	31	27.7	
≤ Minimum Wage	90	54.2	76	45.8	
Knowledge					0.000[1]
Good	130	72.2	50	27.8	
Poor	41	41.8	57	58.2	
Attitude					0.000[1]
Good	103	73	38	27	
Poor	68	49.6	69	50.4	

*Chi Square test

[1]Significant at P < 0.05

The bivariate analysis (Table 2) reveals several key findings. First, age and gender did not show a significant correlation with home fever management, with p-values of 0.401 and 0.79, respectively. This suggests that age and gender are not decisive factors in determining whether parents or caregivers manage fever effectively at home.

However, educational level, employment status, income, knowledge, and attitude showed significant correlations with home fever management. Respondents with a bachelor's degree were more likely to manage fever effectively (81.1%) compared to those with lower education levels, with a significant p-value of 0.000. Employment status also played a critical role; 82.9% of employed respondents managed fever effectively, compared to only 46% of unemployed respondents (p=0.000). Similarly, income level was a significant determinant, with those earning above the minimum wage displaying better management practices (72.3% vs. 54.2%, p=0.004). Knowledge and attitude towards fever management were also strongly associated with effective management, with those possessing good knowledge and a positive attitude more likely to manage fever well (p=0.000 for both variables).

The findings of this study align with previous research emphasizing the critical role of education and socioeconomic factors in effective home fever management. Studies have shown that higher education levels and better knowledge significantly improve fever management practices (Arias et al., 2019; Hamideh Kerdar, Himbert, Martin, & Jenetzky, 2021a). This study's observation that respondents with higher education and good knowledge manage fever more effectively corroborates these findings. Additionally, the significant impact of employment and income on fever management is consistent with other studies, which found that socioeconomic stability contributes to better health outcomes due to increased access to healthcare resources and information (Peetoom, Ploum, et al., 2016). The absence of a significant relationship between age, gender, and fever management aligns with findings from other researchers, who reported that these demographic factors are less influential than knowledge and education in determining effective fever management (Al Arifi & Alwhaibi, 2021; Kelly, Sahm, Shiely, Sullivan, Bont, et al., 2017).

Illustrated in table 3, the multivariate logistic regression analysis identified significant predictors of effective home fever management among the respondents. Education, employment, knowledge, and attitude were all statistically significant factors. Specifically, respondents with a bachelor's degree were 2.518 times more likely to manage fever effectively compared to those with lower educational attainment (p=0.031). Employment status emerged as the most dominant factor, with employed individuals being 3.617 times more likely to manage fever effectively than unemployed individuals (p=0.000). Knowledge and attitude also played crucial roles, with good knowledge increasing the likelihood of effective fever management by 2.610 times (p=0.001) and a positive attitude by 2.469 times (p=0.003). These findings highlight the multifaceted nature of fever management, where both educational and behavioral factors significantly influence outcomes.

Table 3. Determinants of Home Fever Management Practices

Variabel	B	S.E	Exp (B)	*P-value**	95% C.I	
					Lower	Upper
Education				0,002		
High school	-0.175	0.465	0,840	0.007	0.337	2.091
Bachelor's Degree	0.924	0.429	2.518	0.031	1.086	5.839
Employment	1.286	0.330	3.617	0.000	1.893	6.910
Knowledge	0.959	0.293	2.610	0.001	1.471	4.631
Attitude	0.904	0.303	2.469	0.003	1.363	4,471.000
Constant	-2.504	0.562	0.082	0.000		

*Logistic Regression

The multivariate logistic regression analysis identified significant predictors of effective home fever management among the respondents, with education, employment, knowledge, and attitude being statistically significant factors

(Waly & Bakry, 2022). Specifically, respondents with a bachelor's degree were more likely to manage fever effectively compared to those with lower educational attainment (p=0.031) (Herman & Nurshal, 2017). Employment status emerged as the most dominant factor, with employed individuals being more likely to manage fever effectively than unemployed individuals (p=0.000) (Estiri, 2023)(Urbāne, Likopa, Gardovska, & Pavāre, 2019). Knowledge and attitude also played crucial roles, with good knowledge increasing the likelihood of effective fever management and a positive attitude significantly influencing outcomes (Hamideh Kerdar, Himbert, Martin, & Jenetzky, 2021b).

These findings highlight the multifaceted nature of fever management, where both educational and behavioral factors significantly influence outcomes. The results align with previous research findings on the importance of education and socioeconomic status in health management practices (Al Arifi & Alwhaibi, 2021; Arias et al., 2019). The strong association between higher education levels and effective fever management underscores the need for targeted educational interventions that can enhance parental knowledge and confidence in managing childhood illnesses.

Access to resources and healthcare services is another critical factor influencing fever management. Employed parents generally have better access to healthcare resources, including health insurance, medications, and healthcare facilities, which are essential for effective fever management (Estiri, 2023; Peetoom, Smits, et al., 2016). Employment often provides the financial means to purchase necessary medications, such as antipyretics, and to seek timely medical advice when needed (Rkain et al., 2014; Waly & Bakry, 2022). This access reduces the likelihood of parents resorting to inadequate or unsafe practices due to financial constraints (Urbāne, Likopa, et al., 2019).

Financial stability, which is often associated with employment, also reduces the stress associated with managing a child's illness. Financially stable parents are less likely to experience economic pressures that can exacerbate the stress of managing a sick child, leading to more rational and informed decision-making regarding fever management (Estiri, 2023; Zyoud et al., 2013). Conversely, unemployed parents or those with insecure employment may face significant stress and anxiety, impairing their ability to manage a child’s fever effectively.

Time availability and work-life balance also play a role in fever management. Employed parents, particularly those in full-time or demanding jobs, may have less time to monitor their child's condition or administer the frequent care that fever management requires (Rkain et al., 2014; Waly & Bakry, 2022).

This time constraint might lead to a reliance on quick solutions, such as frequent use of antipyretics, without fully considering the best long-term management strategies (Bertille et al., 2018). On the other hand, unemployed parents or those with more flexible work schedules may have more time to engage in careful monitoring and apply non-pharmacological interventions, such as maintaining hydration and comfort, which are critical components of effective fever management.

Employed parents often have higher levels of education and knowledge or health literacy, which correlate with better health management practices, including fever management at home (Arias et al., 2019). Knowledge and employment are frequently linked, as those with higher education levels are more likely to be employed in jobs that provide health benefits and stability (Kelly et al., 2016). This relationship enhances their ability to access and understand health information, make informed decisions about their child’s health, and apply best practices in fever management (Bertille et al., 2018).

The significant role of knowledge and attitude in managing fever effectively is supported by studies that found parents with higher levels of knowledge and positive attitudes toward health management are better equipped to handle febrile episodes at home (Arias et al., 2019). Parental knowledge encompasses an understanding of what

fever is, its causes, appropriate temperature ranges, and the correct use of pharmacological and non-pharmacological interventions (Hamideh Kerdar et al., 2021b). Studies have consistently shown that parents with higher levels of knowledge are more adept at managing fever at home, leading to better health outcomes for children.

Parents who are well-informed about the normal temperature range and the role of fever as a natural bodily response are less likely to panic and more likely to engage in appropriate management practices, such as monitoring the child's temperature and providing adequate hydration (Arias et al., 2019). Furthermore, knowledge about the correct use of antipyretics is crucial. Many parents overuse or misuse fever-reducing medications due to a lack of understanding, which can lead to adverse effects, including overdosing or unnecessary medication (Rkain et al., 2014). Proper knowledge enables parents to administer these medications safely, adhering to recommended dosages and understanding when medication is truly necessary (Kelly, Sahm, Shiely, Sullivan, Bont, et al., 2017). Additionally, informed parents are more likely to recognize warning signs that indicate the need for professional medical intervention, thereby preventing the escalation of potentially serious conditions (Bertille et al., 2018). In contrast, a lack of knowledge can lead to inappropriate management of fever. Parents who do not fully understand the nature of fever may either underreact, failing to seek medical advice when necessary, or overreact, leading to the overuse of healthcare resources and unnecessary anxiety (Rkain et al., 2014).

5. Conclusion and Implications

Employment status was the most dominant predictor of effective fever management, with employed parents being significantly more likely to manage fevers effectively compared to unemployed parents. Additionally, higher educational attainment, good knowledge, and positive attitudes towards fever management were also strongly associated with better management practices.

These findings have significant implications for public health strategies aimed at improving home fever management. The strong correlation between employment and effective fever management suggests that socioeconomic factors play a critical role in health-related behaviors. Public health interventions should therefore focus on supporting unemployed or underemployed parents by providing access to healthcare resources and educational programs that enhance their knowledge and skills in managing childhood fevers. Moreover, policies that promote stable employment and provide benefits such as health insurance and paid sick leave could indirectly improve health outcomes for children by enabling parents to manage illnesses more effectively at home.

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