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Improving Parental Awareness of HFMD and Hand Hygiene through Community Engagement in West Denpasar

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ABSTRACT

This community engagement program aimed to improve parents' knowledge of Hand, Foot, and Mouth Disease (HFMD) and proper hand hygiene practices in the West Denpasar I Community Health Center area. A total of 57 parents of children under five participated in this program. The intervention consisted of educational sessions and practical training on HFMD prevention and six-step handwashing techniques. A pre-test and post-test design was used to evaluate knowledge improvement. The results showed a 17.7% increase in participants' knowledge scores after the intervention. These findings indicate that community-based health education is effective in enhancing parental awareness and preventive practices against HFMD. This program contributes to improving community health and supports Sustainable Development Goal 3 (Good Health and Well-being).

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INTRODUCTION

The partners in this activity were 57 parents of children under five years old living in the working area of the West Denpasar I Community Health Center. The main problem faced by the partners was the limited knowledge among parents of children under five years old regarding hand, foot, and mouth disease (HFMD), which is commonly known among the public as "Singapore flu." In addition, the partners also had insufficient knowledge and skills regarding proper handwashing techniques using soap and water, which are essential for preventing the transmission of infectious diseases, including HFMD.

Hand, Foot, and Mouth Disease (HFMD), commonly known as Singapore flu, is a highly contagious viral infection that primarily affects children under five years of age, although it can occur at any age. The viruses responsible for this disease belong to the enterovirus family, including Coxsackievirus A16, Coxsackievirus A6, and Enterovirus 71. The disease is characterized by fever, oral ulcers and mouth sores, as well as rashes on the palms of the hands and soles of the feet, which typically appear 3–6 days after viral exposure. HFMD is generally mild and self-limiting, usually resolving within 7–10 days without specific treatment. However, in some cases, it may lead to serious complications, including neurological and cardiopulmonary disorders, particularly in young children (WHO, 2011; Sanjay et al., 2022).

Transmission of this infection occurs easily through direct contact, respiratory droplets, and contaminated surfaces, making it capable of causing outbreaks in environments with high levels of child interaction, such as schools and daycare centers. Therefore, preventive measures, including proper hand hygiene and contact control, are essential to break the chain of HFMD transmission. Prevention efforts can also be strengthened through health education programs for the community, particularly for parents of young children, in order to increase awareness and vigilance toward this infection (WHO, 2011).

Handwashing with soap and running water is one of the most effective preventive measures against the spread of infectious diseases, including diarrheal diseases, respiratory tract infections, and infections transmitted through hand contact, such as HFMD. Handwashing training has also been shown to be effective in preventing the occurrence of traveler's diarrhea, particularly in Bali (Hendrayana et al., 2023). The World Health Organization (WHO), in its global guidelines, emphasizes the importance of hand hygiene practices at critical moments as a primary strategy to reduce the transmission of pathogens in communities and school environments. In the context of HFMD, the disease spreads easily through hand contact contaminated with viruses from surfaces or infected individuals. Therefore, regular and proper handwashing with soap is a crucial measure to break the chain of transmission, particularly among children who represent the most vulnerable group. (Haque, 2020; WHO and UNICEF, 2025).

Health education for parents is a crucial component in the prevention of infectious diseases among children under five, as parents serve as the primary caregivers and key decision-makers in family health behaviors. Numerous studies have demonstrated that providing health education to parents can improve their knowledge, skills, and practices in preventing and managing infectious diseases in children, thereby significantly reducing the risk of infection and improving child health outcomes. For example, health education programs have been shown to enhance parents' understanding of communicable disease prevention and child care following interactive counseling sessions, compared with groups that did not receive educational interventions. This finding highlights that education can serve as a key strategy in the management of infectious diseases at the household level (Gupta, 2024; Mayangsari and Wijayaningsih, 2024).

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Furthermore, epidemiological studies indicate that higher parental education levels are associated with a lower incidence of infectious diseases in children and reduced mortality from preventable diseases, particularly those that can be mitigated through behavioral interventions and early preventive measures. Therefore, strengthening parental education through counseling, informational materials, and effective health communication support should be integrated into promotive and preventive efforts for child health in the community, particularly for children under five years of age (Balaj et al., 2021; Narita et al., 2025).

However, previous studies have primarily focused on clinical and epidemiological aspects of HFMD, with limited emphasis on community-based educational interventions targeting parents. Therefore, this program aims to address this gap by implementing a structured health education intervention to improve parental knowledge and preventive practices.

METHOD

This community service activity is a collaborative program between the Faculty of Medicine and Health Sciences, Warmadewa University, and the Oxford University Clinical Research Unit (OUCRU) Indonesia/RSCM-FKUI. This study employed a pre-experimental one-group pre-test and post-test design. The questionnaire consisted of 10 multiple-choice questions that were validated by experts before use. Data were analyzed using descriptive statistics to compare mean pre-test and post-test scores. The implementation method of this community service activity was divided into three main stages, namely the preparation stage, implementation stage, and evaluation and monitoring stage. The preparation stage was carried out through a focus group discussion (FGD) between the community service team and the health promotion program officer at the West Denpasar I Community Health Center. This activity aimed to identify the existing problems, explore potential solutions that could be offered, and determine the appropriate schedule for the implementation of the program.

The implementation stage of the activity consisted of a pre-test, delivery of educational materials, training sessions, and the provision of assistance. The pre-test was conducted by administering 10 multiple-choice questions (MCQs) prior to the educational session. The educational materials were delivered using PowerPoint slide presentations and video media. The first topic covered was Hand, Foot and Mouth Disease (HFMD), including its modes of transmission, causative viruses, symptoms, prevention strategies, and case management. The second topic focused on proper handwashing techniques using soap, which included the six-step handwashing procedure, followed by demonstrations and practical training in handwashing conducted by all participants. The assistance provided included one digital sphygmomanometer and packages of liquid hand soap to support proper handwashing practices at the community health center.

The evaluation stage was conducted through a post-test using the same questions as those administered in the pre-test to assess the increase in participants' knowledge. An improvement in the average knowledge score of the participants was expected based on the comparison between the post-test and pre-test results. The monitoring process was carried out through mentoring activities over two months via a WhatsApp group, which included the community service team and the community health center staff. The monitoring focused on the implementation of the materials that had been delivered as well as the utilization of the assistance that had been provided.

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RESULTS AND DISCUSSION

This community service activity was conducted on Friday, August 8, 2025, at the meeting room of the West Denpasar I Community Health Center. The activity involved the community service team and 57 partners, who were parents of children under five years old residing in the working area of the West Denpasar I Community Health Center. The event was also attended by the Head of Administration and health promotion staff from the community health center. The activity began with a pre-test, which was administered directly through 10 multiple-choice questions (MCQs). This was followed by the delivery of educational materials on the introduction and prevention of HFMD. The purpose of this session was to improve parents' understanding and awareness of this infectious disease. The educational session was delivered by the health promotion staff of the community health center using video and PowerPoint slide presentations (Figure 1). The materials covered the viruses responsible for HFMD, modes of transmission, symptoms of the disease, preventive measures, and the management of HFMD infection.

The delivery of the educational material lasted for 30 minutes, followed by a discussion and question-and-answer session. The parents of children under five showed high enthusiasm during the session, as evidenced by the numerous questions raised during the discussion. Many of these questions were related to their personal experiences with HFMD or with other illnesses presenting similar symptoms that had previously affected their children.

FIGURE 1. Presentation of HFMD educational material by the speaker.

The community service activity continued with the delivery of educational material and training on the six-step handwashing technique to prevent the transmission of infectious diseases, conducted by students from the Faculty of Medicine and Health Sciences, Warmadewa University. The objective of this activity was to improve the understanding and skills of parents of children under five regarding proper handwashing techniques, and it was also expected that the parents would be able to teach and encourage their children to practice proper handwashing at home. The educational session was delivered for 30 minutes using PowerPoint slide presentations and video media. The six-step handwashing training was conducted through a simulation using gloves and acrylic paint as a substitute for soap to evaluate whether the handwashing technique had been performed correctly. The acrylic paint served as an indicator to determine whether the handwashing steps allowed the paint to spread evenly across the surface of the gloves (Figure 2).

The community service activity concluded with the administration of a post-test consisting of the same 10 questions used in the pre-test, followed by the handover of assistance and a group photo session between the community service team and all participants. The assistance provided consisted of a package containing liquid hand soap to support the handwashing with soap campaign at the West

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Denpasar I Community Health Center (Figure 3). All participants appeared enthusiastic in participating throughout the entire series of community service activities (Figure 4).

FIGURE 2. Handwashing with soap training

FIGURE 3. Handover of assistance to the community health center

FIGURE 4. Group photo of parents of children under five with the community service team

The average pre-test score of the participants before the educational session was 6.5, which increased to 8.3 in the post-test. Based on the comparison between the average pre-test and post-test

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scores, there was a 17.7% increase in participants' knowledge. The comparison of the average pre-test and post-test scores of the participants is presented in Figure 5. The monitoring and evaluation stage was conducted through a WhatsApp group to monitor the implementation of handwashing with soap practices among parents of children under five and their children, as an effort to prevent the transmission of infectious diseases.

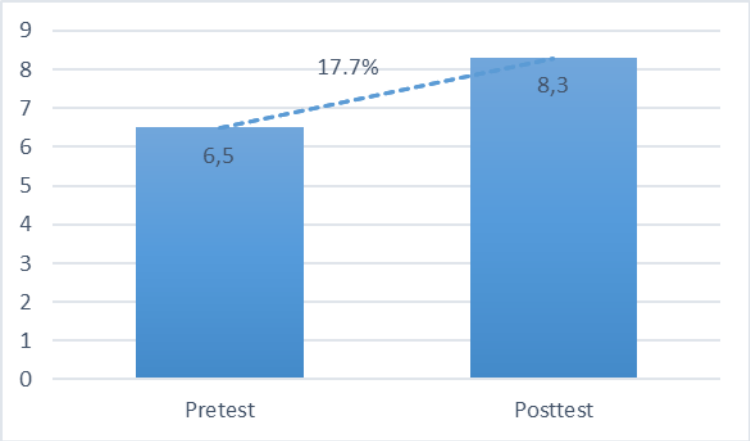

FIGURE 5. Comparison of the average pre-test and post-test scores of the community service participants

The 17.7% increase in knowledge indicates that interactive educational methods, including visual media and practical demonstrations, are effective in improving parental understanding. This finding is consistent with previous studies showing that participatory learning enhances knowledge retention.

This improvement is consistent with the concept that health education is a primary strategy for behavior change, particularly in infectious diseases where transmission is closely associated with personal hygiene. Hand, Foot, and Mouth Disease (HFMD) is caused by enteroviruses and predominantly affects children under five years of age. Transmission occurs through direct contact, respiratory droplets, and contaminated surfaces. To date, no specific effective antiviral therapy is available. Therefore, preventive measures, especially the adoption of clean and healthy behaviors, with an emphasis on proper hand hygiene, are of paramount importance (Guo et al., 2018).

Furthermore, an educational approach that targets parents as the primary audience is highly relevant, given that parents are the main agents in shaping children's health behaviors. Previous studies have demonstrated an association between increased parental knowledge and children's hygiene practices, whereby improvements in parental practice scores contribute to enhanced handwashing practices among children (Shahar and Muthiah, 2022).

However, several studies have shown that increased knowledge does not necessarily translate directly into behavioral change. Research on knowledge, attitudes, and practices (KAP) related to HFMD has identified a gap between adequate knowledge and optimal preventive practices (Wang and Pang, 2022). This suggests that although educational interventions may successfully enhance awareness, additional strategies such as continuous mentoring, motivational reinforcement, and the provision of supporting facilities are required to ensure that behavioral changes are sustained over time.

This community service activity primarily contributes to Sustainable Development Goals (SDGs) Goal 3 (Good Health and Well-Being) by improving parents' knowledge and skills in preventing infectious diseases in children, and also supports Goal 6 (Clean Water and Sanitation) through the promotion of handwashing with soap as a basic hygiene practice.

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CONCLUSION

This community engagement program effectively improved parents' knowledge and skills regarding HFMD prevention and proper hand hygiene, as evidenced by a 17.7% increase in knowledge scores. However, this study is limited by the absence of a control group and short monitoring duration. Future programs should involve larger populations and long-term evaluation to assess behavioral changes and health outcomes.

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