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ORIGINAL ARTICLE

Effectiveness of Simulation-Based Education on Childhood Fever Management by Taiwanese Parents

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Background: Childhood fever is a common symptom managed by parents at home. Most parents do not know the definition of fever, its effect, or its management. To establish simulation-based education for parents and evaluate its effectiveness for fever management at home are essential for nursing care. This study assesses the long-term effects of simulation-based education on information, motivation, behavioral skills, and behaviors related to parental fever management in Taiwan.

Methods: Cluster random sampling was used to recruit parents having children aged from 3 months to 5 years who were attending kindergartens in Kaohsiung, Taiwan. A total of 160 parents were randomly assigned into experimental (EP) and control (CP) groups equally. Parents in the EP group received simulation-based education with fever education brochures, while the CP group received only the brochure. Data on parental fever information, motivation, behavioral skills, and management behaviors were collected before the 1st day, on the 1st day (except management behaviors), at the 6-month, and at the 12-month marks post-training with a self-developed instrument based on the information–motivation–behavioral skills model.

Results: The results of a generalized estimating equation analysis indicated that the information, motivation, behavioral skills, and management behaviors of all participants had improved at the post-test assessment, with the EP group showing significantly better improvement than

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the CP group. This study supports that simulation-based education effectively enhances fever management of parents for a long period of time.

Conclusion: Simulation-based education, compared to using the brochure, was a better strategy for improving parental information, motivation, behavioral skills, and behaviors regarding fever management. We suggest that providing community-based education on fever with scenario simulation is needed to increase parental competence for child care.

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1. Introduction

Fever accounts for 20–40% of the chief complaints of children seeking medical advice every year.¹ Fever has a protective immune function against invading pathogens and is a sign that the body is fighting against inflammation.^{2,3} However, most parents do not know the definition of fever, its effect, or its management.⁴

When children had fever, parents were concerned that it would cause brain damage, febrile convulsions, and death.^{5–7} A study in Taiwan found that parents managed fever as early as possible to prevent an increase in body temperature and 89.5% provided antipyretics to children before seeking medical advice.⁷ A British study found that parents were afraid of dehydration, vomiting, brain damage, and death if the fever went untreated.⁸ The myth of childhood fever made parents more concerned about it. They worried about the possible complications of fever and actively managed it, resulting in overuse of antipyretics, inappropriate management, and overuse of medical resources.^{4,8,9}

Providing parents with more education about fevers could improve home management and reduce unnecessary medical treatment.¹⁰ In 1996, Kelly et al¹¹ investigated the efficacy of intervention with a health education leaflet about fever. The results of their study showed that knowledge of fever on the part of the major caregivers showed no significant increase 2–4 weeks later, but more of them used the correct dose of antipyretics. Sarrell and Kahan¹² provided reinforced fever education with discussion supported by written and pictorial materials. The results showed that parental knowledge of fever management in children could be significantly improved. In 2003, Broome et al¹³ showed that providing parents with a fever education brochure and a video before a medical consultation, together with the physician reinforcing the content of the materials and answering questions during the consultation, could significantly increase knowledge of fevers by 6 months. Healthcare personnel providing parents with fever education leaflets and related mass media could also make information (I) on childhood fever available, but parents still lacked knowledge about the management of childhood fever.⁷ Care guidance using health education material alone is inadequate. The content and strategy of education must meet the individual needs of learners to increase the efficacy of that education.¹⁴

Clinical simulations are teaching methods that mimic real-life situations and put the learners into them.¹⁵

Simulation learning is based on the philosophical foundation of a contemporary educational theory—constructivism. Learners are able to understand the situations that they might face in the real world with personal experience.¹⁶ Simulation includes experimental and scenario learning about clinical nursing techniques. It provides an opportunity for learners to practice fundamental skills in an environment similar to the real situation.¹⁷ When a child has fever, one-on-one discussion with parents is inadequate because under the stress of worrying about the fever, attention and memory decrease.¹² Simulation scenarios describing the content of health education are better than text descriptions alone. They can enhance memory and improve the efficacy of health education.¹⁸ Converting knowledge to behavior must consider factors affecting cognitive processes and execution of behaviors,^{19,20} because even a person with adequate I and good behavioral skills (Bs) still requires a high level of motivation (M).¹⁹ Although previous studies focused primarily on the efficacy of education about fever on parental knowledge, use of antipyretics, confidence, and satisfaction, a limited number of studies focused on the effect of M and management behaviors (Mb). Therefore, this study assessed the long-term effect of simulation-based education on parental fever management, M, Bs, and Mb.

2. Methods

2.1. Participants

This study received approval from the Institutional Review Board at the National Cheng Kung University hospital, Tainan, Taiwan. The research participants were the parents of kindergarten children aged from 3 months to 5 years, who lived with their children, were their primary caregivers, could communicate in Mandarin or Taiwanese, and were willing to participate in this research. Their children were not currently suffering from fever or other diseases. The number of participants was calculated with G*Power 3.0 (power 0.8, effect size 0.4) to be 64 in each group. In case of loss, 80 participants were accepted for each group.

2.2. Study design

Cluster random sampling was utilized to recruit individuals and randomly assign them into an experimental (EP) and a control (CP) group. Five kindergartens were randomly

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