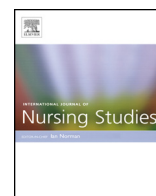




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Evaluating the effectiveness of a family empowerment program on family function and pulmonary function of children with asthma: A randomized control trial



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ABSTRACT

Background: Empowerment can be an effective strategy for changing an individual's health behaviours. However, how to empower whole families to manage their children's asthma is a challenge that requires innovative nursing intervention based on family-centred care. **Aims:** To evaluate the effectiveness of a family empowerment program on family function and pulmonary function of children with asthma compared to those receiving traditional self-management only.

Design: A randomized control trial.

Methods: Sixty-five families were recruited from one asthma clinic in a medical centre in Taiwan. After random assignment, 34 families in the experimental group received the family empowerment program consisting of four counselling dialogues with the child and its family. We empowered the family caregiver's ability to manage their child's asthma problems through finding the problems in the family, discovery and discussion about the way to solve problems, and enabling the family's cooperation and asthma management. The other 31 families received the traditional care in asthma clinics. The Parental Stress Index and Family Environment Scale of family caregivers, and pulmonary function, and asthma signs of children with asthma were collected at pre-test, 3-month post-test, and one-year follow-up. We utilized the linear mixed model in SPSS (18.0) to analyze the effects between groups, across time, and the interaction between group and time.

Results: The family empowerment program decreased parental stress ($F=13.993$, $p<.0001$) and increased family function (cohesion, expression, conflict solving, and independence) ($F=19.848$, $p<.0001$). Children in the experimental group had better pulmonary expiratory flow (PEF) ($F=26.483$, $p<.0001$) and forced expiratory volume in first second (FEV1) ($F=7.381$, $p=.001$) than children in the comparison group; however, no significant change in forced expiratory volume in first second (FEV1)/forced vital

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capacity (FVC) was found between the two groups. Sleep problems did not show significant changes but cough, wheezing, and dyspnoea were significantly reduced by family caregiver's observations.

Conclusion: We empowered families by listening, dialogues, reflection, and taking action based on Freire's empowerment theory. Nurses could initiate the families' life changes and assist children to solve the problems by themselves, which could yield positive health outcomes.

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What is already known about the topic?

- Systematic reviews reveal that self-management programs and personal care plans could lead to better conditions for patients with asthma.
- Parental stress and family dysfunction are associated with the onset and severity of children's asthma symptoms.
- Family-based intervention for children with asthma could increase families' caring skills, medical adherence, medical care utilization, and quality of life of children, as well as parents' well-being.
- Empowerment programs have shown positive effects for parents, children, and adolescents, for example, by improving parents' self-reliance, encouraging breastfeeding, preventing suicide of adolescents, and increasing the health of children with chronic conditions.

What this paper adds

- This result provides evidence that the asthma family empowerment program and combined self-management intervention decreased parental stress compared to self-management only.
- The asthma family empowerment program combined with self-management intervention improved various aspects of family function – cohesion, expression, conflict solving, and independence dimensions – compared to families receiving self-management only.
- The asthma family empowerment program combined with self-management intervention increased children's pulmonary function such as FEV₁ and PEF, and improved asthma symptoms such as cough, wheezing, and dyspnoea compared to families receiving self-management only.

1. Introduction

Childhood asthma is a highly prevalent chronic illness (Chang et al., 2013; Yeh et al., 2011) and affects many families' lives (Svavarsdottir and Rayens, 2005). Complicated asthma management and recurrent asthma exacerbations could disturb family relationships and threaten daily family life (Santer et al., 2014), as well as cause parent-child discord for children with moderate asthma (Chiang, 2005). Parents suffer from high stress as they take on the responsibilities of self-managing asthma care for their children within the context of family life (Brown et al., 2010). Families with higher levels of family dysfunction and chronic family stress have shown that

the children suffer from increased inflammatory production and asthma symptoms (Marin et al., 2009). Family function has also been shown to be a protector and benefit in coping with a childhood chronic illness (Rosland et al., 2010). However, previous interventions for improving the self-management for children with asthma were focused on asthma knowledge and disease management with educational and behavioural interventions (Clark et al., 2010; Guevara et al., 2003). The self-management plan predominantly emphasized a personal action asthma plan (Ring et al., 2007). Most self-management programs (Ahmad and Grimes, 2011; Welsh et al., 2011) emphasize only a caregiver's responsibility of monitoring adherence to treatment and not a comprehensive family care approach to address relieving parental stress or increasing family function (Horner, 1995).

For successful management, a case manager should consistently and patiently meet with the family to build a trusting relationship (Schulte et al., 2004). The major responsibility of paediatric nurses is providing holistic family-centred nursing care to improve family function (Kuhlthau et al., 2011) and to maintain a well-controlled asthma regimen for children to have normal growth and development. Until now, there has been no study implementing family empowerment methods and examining the effects on parental stress, family function, and the asthma conditions of children with asthma.

We developed the Asthma Family Empowerment Program (AFEP) based on Freire's empowerment theory to recruit the whole family with asthmatic children into the nursing intervention.

2. Literature review

2.1. Family function and parental stress

Reviews of parental stress indicated that parental stress increases the risk of childhood wheezing among children with no parental history of asthma (Milam et al., 2008; Yamamoto and Nagano, 2015). Interactively, the family function and parent-child relationships, and management ability also influence the health of children with asthma (Preechawong et al., 2007). Two previous studies that have examined the effects of parental stress on the incidence of childhood asthma and wheezing, indicated that stress preceded the onset of symptoms (Mrazek et al., 1999; Wright et al., 2002). Greater levels of parental stress were associated with a significant increased risk of subsequent wheezing. There is accumulating clinical evidence showing that family dysfunction, stress, and emotional reactions to

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