The Effects of a Humor Intervention on the Physiological, Physical, and Psychological Responses of School-aged Children With Atopic Dermatitis in South Korea: A Pilot Study

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Purpose: We examined the effects of a humor intervention on the physiological, physical, and psychological responses of school-aged children with atopic dermatitis.

Design and Methods: This quasi-experimental study used a nonequivalent control group and a pre- and post-test design. Forty-five schoolchildren participated.

Results: Children in the experimental group (n = 26) received a humor intervention and reported significant differences in physiological response, which was evidenced by heightened salivary immunoglobulin A levels as compared to the control group (n = 19). Additionally, the psychological response of the experimental group was significantly different from that of the control group as evidenced by decreased stress levels.

Conclusion: Humor intervention may be an effective nursing intervention for children with atopic dermatitis.

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Background

Atopic Dermatitis in School-aged Children

Atopic dermatitis (AD) is the most common chronic inflammatory skin disease that occurs during childhood, affecting approximately 10–20% of children and increasing worldwide (Ersser et al., 2014; Wang, Wang, & Yeh, 2016). Per the Korea Ministry of Health and Welfare (2016), the percentage of elementary school students diagnosed with AD has steadily increased since 1995. AD is most common among school-aged children (18.5%) compared to other age groups (Lee, 2012, unpublished data). The increasing prevalence of skin diseases and difficulties that accompany them makes AD worthy of research attention.

AD may be caused by a genetic predisposition and environmental conditions, including hereditary factors, allergens, and immunological factors (Ersser et al., 2014). AD is characterized by itchy, inflammatory skin, which often causes the skin to crease, affecting the quality of life (QoL) of children and their caregivers (Ersser et al., 2014). It is also associated with rhinitis, conjunctivitis, and asthma in 25–80% of children and may persist into adulthood (Cheng et al., 2015; Ricci, Bellini, Dondi, Patrizi, & Pession, 2012). School-aged children with AD are likely to struggle with not only stress, but also considerable absence from school because of execrated symptoms and healthcare expenditures (Wang et al., 2016). This leads to financial and psychosocial burdens on the individuals and society. Clearly, AD is a significant health problem for this age group.

Physiological, physical, and psychological responses to AD can be classified as follows. Physiological responses include immunoglobulin A (IgA) and cortisol levels. IgA is the first line of immune defense; therefore, its deficiency may reflect an immune-regulatory abnormality and is associated with severe infection (Alkhairy & Hammarström, 2015). It also plays a role in defending the skin (Moticka, 2016). Furthermore, saliva cortisol levels are elevated in response to stress.

As a physical response, pruritus is the primary and the most troublesome symptom of AD (Elman et al., 2010). Chronic pruritus, which is the main symptom of AD, significantly reduces QoL due to sleep disturbances, prolonged wound healing, and secondary skin changes due to scratching (Lewis-Jones, 2006; Slattery et al., 2011). However, current treatments depend on inconsistent and partial relief (Kabashima, 2013).
Regarding psychological responses, AD symptoms are often aggra-
vated by stress, which enhances allergen-induced skin wheal responses
(Kimata, 2004b; Liezmann, Klapp, & Peters, 2011; Werfel et al., 2016).
Through these connections, the vicious cycle continues. In addition,
school-aged children in Korea are at an elevated risk for stress because
of the highly competitive atmosphere for test scores or academic
achievement (Koo & Lee, 2015). Problematic symptoms of AD such as
deficiencies in IgA, elevated cortisol, pruritus, depression, and stress
can adversely affect children’s health, which may have a significant det-
rimental impact on a child’s physiological, physical, and psychological
responses. Until now, treatment of AD has typically focused on only
the physical aspects; therefore, the treatment of AD can be as diverse
as the condition itself.

Benefits of Humor Interventions

Humor uses interesting experiences and expressions to provide
amusement by stimulating a playful discovery in one’s everyday life
(Association for Applied and Therapeutic Humor, 2010). Humor pro-
duces laughter and affects stress and behavior caused by physical and
physiological changes (Schanke & Thorsen, 2014). Humor promotes
people’s health and wellbeing by decreasing depression, anxiety, stress,
and pain (George & Jacob, 2014). Previous studies supported the effec-
tiveness of a humor intervention in medical treatments and health pro-
motion for stress reduction, and aids with skin problems such as allergic
dermatitis (Kimata, 2004a; Kong, Shin, Lee, & Yun, 2014). Humor inter-
ventions also play a role in arousal reduction techniques such as relaxa-
tion (Ersser et al., 2014).

Humor interventions are relatively inexpensive, do not take long,
and have no known side effects. Therefore, they can be implemented
easily and cost-effectively as complementary therapy for ill people
(Kong et al., 2014). There is less laughter in the lives of children with
AD than in the lives of children without the disease because of repeated
medical treatments, which lead to anxiety and depression; therefore,
opportunities to promote humor can be strengthened (Sim, 2015).
Moreover, school-aged children are in a developmental period when
their sense of humor is being established; therefore, humor interven-
tions may be more effective in this stage. However, most research exam-
ining AD in children have addressed a limited range of psychological
interventions (Moore, Williams, Manias, Varigos, & Donath, 2009). Ac-
ccordingly, the effectiveness of humor interventions has not yet been
identified.

Theoretical Framework

Hans Selye’s (1974) “Theory of Stress Adaptation Model” was used
as a theoretical framework in this study (Fig. 1). This model explains
that stress occurs as a response to a stressor, and it comprises psycho-
logical, neural, endocrine, and immunological components that can af-
flect negative physiological, physical, and psychological responses.
Psychological problems such as stress may provoke not only physical
symptoms, but also hormonal imbalances and decreased immune
function by overstimulating the nervous system. Humor, which brings
joy to children, encourages them to adopt a positive perspective
(Sim, 2015).

Many people with a disease exhibit similar symptoms due to the ex-
posure to stress. Selye (1974) said that a stressor is an environmental
stimulus that causes stress. Under stress, individuals show varied reac-
tions. In addition, Sim (2015) reported that humor interventions can
be useful in resolving disease-derived problems. We adopted this theo-
ryy because we regarded AD as a stressor for children and they can exhibit
physiological, physical, and psychological reactions.

No known studies included “theoretically based” interventions or
identified the scientific effects of humor for school-aged children with
AD. Previous research examining the processes affecting children’s ad-
justment to AD are also limited (Dennis, Rostill, Reed, & Gill, 2006). Con-
sequently, the focus of our study is to enhance children’s physical and
psychological well-being by utilizing a humor intervention as an effec-
tive nursing intervention.

Purpose

The purpose of this study was to test the effects of a humor interven-
tion on (a) physiological (salivary IgA, salivary cortisol), (b) physical
(pruritus), and (c) psychological (depression, stress) responses in
school-aged children with AD.
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