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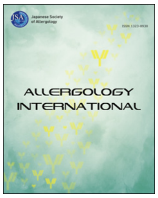

Original article

# Development of a Japanese Culturally Modified Version of the Childhood Atopic Dermatitis Impact Scale (JCMV-CADIS)

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| AD | atopic dermatitis |
| CADIS | Childhood Atopic Dermatitis Impact Scale |
| JCMV-CADIS | Japanese Culturally Modified Version of the CADIS |
| SCORAD | Severity Scoring of Atopic Dermatitis |

ABSTRACT

*Background:* The Childhood Atopic Dermatitis Impact Scale (CADIS) was developed to measure the impact of AD on QoL in both affected children and their families. However, no scale of this kind exists in Japan. The aims of this study were to validate the Japanese Culturally Modified Version of the CADIS (JCMV-CADIS) and to describe the family impact of children with AD in a Japanese context.

*Methods:* Participants included primary-caregivers for children with AD between 2 and 6 years of age. Interviews were conducted, and new items for the Japanese version were drafted. Reliability and validity were evaluated and compared with the original CADIS, and unique features of the Japanese version were analyzed.

*Results:* Exploratory factor analysis revealed the following factors: "Symptoms" and "Activity Limitations and Behavior" in the Child domain, and "Emotions Related to Social Factors," "Emotions Related to the Child's Condition," "Family and Social Function," "Complexity of Care," and "Approaches to Management of AD in Daily Life" in the Parent domain. The latter two factors were unique to the JCMV-CADIS and were not derived from the Original. "Emotion" was split into two independent factors. All factors showed good reliability (internal consistency and stability) and validity (concurrent validity and discriminant validity), except for the concurrent validity of "Approaches to Management of AD in Daily Life." This factor seemed to reflect characteristics similar to the family-related function.

*Conclusions:* The JCMV-CADIS is a QoL scale developed for Japanese children with AD and their families. Further evaluation of clinical applicability is needed.

## Introduction

Atopic dermatitis (AD) is a chronic, pruritic inflammatory skin disease that occurs most frequently in children (17% of American children), but that also affects many adults.[1,2] In Japan, 12.8% of 4-month-old children, 9.8% of 18-month-old children, and 13.2% of 3-year-old children are affected by AD[3] and the incidence appears to be increasing.

AD influences physical health as well as emotional and social well-being,[4–7] and is documented to influence the daily lives of parents and caregivers. Faught *et al.* found that the impact on the daily lives of caregivers of children with eczema, especially in terms of parenting stress, was comparable to that on the daily lives of individuals raising children with other chronic maladies, such as diabetes or deafness.[8] Chamlin *et al.* reported that AD influences the sleep patterns of both affected children and their parents.[9] A study by Moore *et al.* revealed that parents of children with AD reported significantly more sleep disorders than parents of children with asthma.[10] They also found that the severity of parents' sleep disruption correlates with anxiety and depression in mothers and with anxiety in fathers.

Although a number of quantitative measures of the impact of AD on the QOL of children and their parents have been developed,

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comprehensive measures of the impact of AD on the family as a whole are limited to the Dermatitis Family Impact (DFI)[11] and the Childhood Atopic Dermatitis Impact Scale (CADIS).[7,12] Compared to the DFI, the CADIS includes a greater number of items, likely reflecting a more comprehensive measurement of QoL. Although the concurrent validity of the CADIS and other existing measures of QOL has not been verified and this tool has yet to be used in clinical research,[13,14] its value lies in the ability to comprehensively measure the QoL effects of both children with AD and their parents. Of note, Neri *et al.* developed the Italian version of the CADIS.[15]

The aims of this study were to validate the Japanese Culturally Modified Version of the CADIS (JCMV-CADIS) and to describe the family impact of AD in the Japanese context by comparing the JCMV-CADIS to the original version.

## Methods

### *Study design*

This study began with the creation of a direct Japanese-language translation of the original CADIS. First, three Japanese individuals with numerous years of experience living in the United States translated the original CADIS into Japanese. Next, it was back-translated into English and the equivalence of the back-translation and the original CADIS was verified by an American linguist. Next, a native Japanese-speaking linguist checked the validity of the Japanese-language version.

To verify face validity, the Japanese-language version was checked by five Japanese family members of children with AD, and the wording of some items was changed based on their feedback.

Qualitative, open-ended interviews were then conducted with the same five Japanese primary caregivers of children with AD, and new items for the Japanese version were created. Items in the modified scale were compared to those of the original version, and the unique features of the Japanese version were examined.

### *Participants*

Participants were the caregivers of children aged between 2 and 6 years old who had been diagnosed with AD were recruited at 30 Japanese hospitals or clinics. In this study, the reasons that the age of participants of children with AD was set to 2–6 years old are as follows; We set the age over 2 years old because children eat baby food until around 2 years old. In the Family Impact of AD, we assumed that diet would be a difficulty, but that baby food preparations would be equally difficult for children with or without AD. Also, difficulties of child care that did not relate to the presence of the disease were predicted in the stages of development from 0 to 1 year old, when the primary caregiver must see to all aspect of child care regardless of the presence of AD. Thus, in this study, we limited the age of participants of children with AD to 2 years old or older. The reason we limited the study to pre-school children is because it is thought that characteristics of development are different from schoolchildren.

Disease severity was measured by a pediatric allergist using the Severity Scoring of Atopic Dermatitis (SCORAD) Index. Only native Japanese speakers with the ability to complete a written survey were selected.

### *Ethical considerations*

The interview participants received either verbal or written explanation before the research and provided written informed consent. The questionnaire respondents received written explanation, and if they sent the completed questionnaire, consent was considered obtained.

The explanation was as follows: Participation in this study is based on the free will of the person. There are no disadvantages to not participating in the study. Participant's personal identifying information will be made indistinguishable. The data will be kept secure, and will not be used for purposes other than for this study.

This study was approved by the ethics committee at Nagoya University Graduate School of Medicine (Approval Nos. 9-165 and 11-135).

### *Instruments*

The following scales were administered to all participants:

***Childhood Atopic Dermatitis Impact Scale (CADIS)***;
***Severity Scoring of Atopic Dermatitis (SCORAD)*** for evaluation of the severity of AD;
***Dermatitis Family Impact (DFI)*** for evaluation of impact on the family;
***Parenting Stress-Short Form (PS-SF)*** for evaluation of parenting stress; and
***Family Assessment Inventory (FAI)*** for evaluation of family function

#### *Childhood Atopic Dermatitis Impact Scale (CADIS)*[7,12]

Chamlin *et al.* developed a measure of the impact of AD on the QOL of both affected children and their families. Altogether, five subdomains are included: the Child domain consists of “Symptoms” and “Activity Limitations and Behavior,” while the Parent domain consists of “Family and Social Function,” “Sleep,” and “Emotions.” The total score ranges from 0 to 180, with 0 for “Never” to 4 for “All the Time” for each of the 45 items. The lower the total score, the lower the impact of AD

#### *Severity Scoring of Atopic Dermatitis (SCORAD)*[16,17]

SCORAD is a set of international criteria to assess the severity of eczema. The Japanese Dermatology Association cites the Japanese-language version of SCORAD in its AD guidelines.[18]

#### *Dermatitis Family Impact (DFI)*[11]

This instrument measures the impact of a condition on the QOL of the family, just as the CADIS does. The DFI is a disease-specific instrument with verified validity and reliability. A lower score indicates lower impact. Ohya *et al.* developed a Japanese-language version of the instrument.[19]

#### *Parenting Stress-Short Form (PS-SF)*[20,21]

The Parenting Stress Index (PSI) is an instrument that measures many facets of childcare stress, such as social factors affecting parents, parents' personalities, and character traits of children. This instrument is divided into subscales for parents and children. Narama *et al.* developed a Japanese-language version of this instrument.[20] This study used an abbreviated Japanese-language version, the PS-SF.[21] A lower score indicates lower parenting stress.

#### *Family Assessment Inventory (FAI)*[22]

The FAI was developed with the goal of understanding the functional status of family systems, and consists of subscales of “Family Communication,” “Family System Flexibility,” “Family Rules,” “Family Evaluation,” and “Family Cohesion.” A lower score indicates lower family functionality.