

The Validity and Reliability of the Thai Version of Children's Dermatology Life Quality Index (CDLQI)

Wanee Wisuthsarewong MD*,
Rattanavalai Nitiyarom MD*, Parichaya Ngamcherdtrakul MD*

* Department of Pediatrics, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

Objective: To evaluate the validity and reliability of the Thai version of Children's Dermatology Life Quality Index (CDLQI).

Material and Method: CDLQI was translated to Thai and approved by Lewis-Jones MS and Finlay AY. The patients, 4- to 15-year-old, with skin diseases and with problems unrelated to the skin were included to complete this questionnaire. Some patients with skin diseases were randomly selected to complete the CDLQI again seven days later to test the reliability. The time to complete the questionnaire was recorded.

Results: Two hundred six children, which consisted of 113 patients with skin diseases (26 of this group answered the questionnaire twice) and 93 patients without skin diseases, were enrolled in the study. The mean age and sex distribution of the two groups were not statistically different (p 0.84, p 0.60, respectively). The mean CDLQI score of the patients with skin diseases was 7.5 ± 6.1 . The validity of the CDLQI Thai version was $p < 0.001$ by comparing the scores from a variety of skin diseases with controls. Good reliability was demonstrated by assessing repeatability, which showed strong correlation coefficient of test-retest data with Spearman rank correlation coefficient r_s 0.94 ($p < 0.001$). The Cronbach's coefficient alphas showed high internal consistency of the individual item (0.87). The average time to complete all questions was 4.5 ± 2.5 minutes. The younger age group spent longer time than the older age group ($p < 0.001$).

Conclusion: The Thai version of CDLQI has good validity and reliability. It should be used to measure quality of life in the management of skin diseases in Thai pediatric patients.

Keywords: Children's dermatology life quality index, CDLQI, Thai version, Validity, Reliability

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Many chronic diseases affect not only the health but also other non-medical aspects of the patients and their families. Skin diseases cause remarkable changes, so they usually have negative impact on the patients especially effect on physical appearance, psychosocial development, and interpersonal relationship⁽¹⁻⁸⁾. School and daily activities including play, sports, choices of cloth, dressing, bathing, sleep, and treatment procedure may become difficult. They may also influence family lifestyle for example shopping, laundry, meal choice, and holiday activity.

The quality of life (QoL) measurement is required for disease management, therapeutic assessment, clinical decision making, and clinical research. The most important instrument used to evaluate QoL is questionnaire. Many questionnaires explore general health and some specific questionnaires evaluate specific diseases. The children's dermatology life quality index (CDLQI) (download from <http://www.cardiff.ac.uk/dermatology/quality-of-life/>) was

developed in the United Kingdom to assess QoL of 4- to 16-year-old children with skin diseases. It contains 10 questions asking about the children's lives during the last week that can be affected by their skin diseases. Each question has four possible answers, score 0 to 3, giving the maximum overall scores of 30. The high scores indicate the low QoL⁽⁹⁾.

CDLQI is simple and practical to use in wide range of skin diseases with quality impairment; therefore, it was translated into many languages⁽⁹⁻¹⁴⁾. The questionnaire may be appropriate in the culture where it was developed. After translation to other languages and usage in other environments, it should be adapted and validated for the appropriateness because of cultural and linguistic differences between countries^(2,9,12-15).

There is no questionnaire to assess QoL of Thai children with skin diseases. This study was conducted to validate and test the reliability of Thai version of CDLQI.

Material and Method

The permission to translate CDLQI from English into Thai version was allowed by Lewis-Jones MS and Finlay AY. The translation process was

Correspondence to:

Wisuthsarewong W, Department of Pediatrics, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand.
Phone: +66-2-4197000 ext. 5678
E-mail: wanee.wis@mahidol.ac.th

undertaken step-by-step according to the recommendation by the owner. The protocol of the present study was approved by Siriraj Institutional Review Board of the Faculty of Medicine Siriraj Hospital.

The parents of the patients age 4 to 15-year-old attending out-patient dermatology clinic at the Department of Pediatrics, Siriraj Hospital were asked to join the study. All patients were examined by pediatric dermatologist for the diagnosis. The patients without skin lesion who attended general pediatric clinic were asked to join the study as the control group.

The patient should complete the Thai version of CDLQI (Fig. 1) by themselves. If they were too young and could not read or understand the questions, their parents or the primary care givers who can read and understand Thai will read the question and check the answers for them. To test the reliability, some patients with relative stable lesions were randomly selected to complete the CDLQI on two occasions, seven days apart. The time spending to complete the questionnaire was recorded.

The differences of the demographic data between patients with and without skin diseases were statistical analysis with Chi-Square test and Mann-Whitney test. The validity to measure the differences in CDLQI scores between these two groups was statistical analysis with Mann-Whitney test. The scores from each question were calculated and analyzed

comparing to the control group. The Kruskal-Wallis test was carried out to find the factors affecting the CDLQI scores and answering duration. Spearman rank correlation coefficient was calculated to confirm the test-retest reliability. The internal consistency of the individual item was analyzed by Cronbach's coefficient alphas.

Results

One hundred thirteen patients (64 girls and 49 boys) with skin diseases and 93 patients (56 girls and 37 boys) without skin diseases were enrolled in the study. The mean age of participants in the skin disease group and in control group was 131.0±36.1 months and 132.6±34.0 months, respectively. There was no statistically significant difference in the sex distribution (p 0.60) and age (p 0.84) between these two groups.

The common diagnoses were eczema (39.8%), collagen vascular diseases (10.6%), and acne (7.1%). All diagnoses were shown in Table 1.

The mean CDLQI score of the patients with skin diseases was 7.5±6.1 (range 0-25) and only 4.4% of the patients gave score 0. The mean CDLQI scores of the control group was 0.7±0.9 (range 0-3) which was statistically significantly different from the patients with skin diseases (p <0.001). The control group showed high percentage of CDLQI scores of zero (53.8%). The results of the CDLQI scores of the

แบบสอบถามวัดคุณภาพชีวิตของผู้ป่วยเด็กโรคผิวหนัง
Children's Dermatology Life Quality Index (CDLQI) Thai Version

ชื่อ..... วันที่.....เดือน.....พ.ศ..... CDLQI score.....
H.N..... การวินิจฉัย.....
อายุ.....ปี ชาย หญิง

จุดประสงค์ของแบบสอบถามนี้เพื่อประเมินว่าเด็กมีผลกระทบกับคุณมากน้อยเพียงใดในช่วงหนึ่งสัปดาห์ที่ผ่านมา กรุณาตอบคำถามโดยทำเครื่องหมาย ✓ ลงในช่องว่างขวามือ

| | | |
|--|--|--|
| 1. ในช่วงหนึ่งสัปดาห์ที่ผ่านมา คุณมีอาการคัน сыดากา แสบ หรือเจ็บปวดที่ผิวหนังมากน้อยเพียงใด | มาก ปานกลาง เล็กน้อย ไม่มีเลย | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 2. ในช่วงหนึ่งสัปดาห์ที่ผ่านมา คุณมีผื่นดำทำให้ถูกผู้อื่นเหยียด หรือ รั่ว รอย กะแวน กะแวน ผุพุด เจ็บ คัน มากน้อยเพียงใด | มาก ปานกลาง เล็กน้อย ไม่มีเลย | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 3. ในช่วงหนึ่งสัปดาห์ที่ผ่านมา คุณมีผื่นแดงของตุ่มมีสะเก็ดหรือสะเก็ดที่ผิวหนังมากน้อยเพียงใด | มาก ปานกลาง เล็กน้อย ไม่มีเลย | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 4. ในช่วงหนึ่งสัปดาห์ที่ผ่านมา คุณมีผื่นแดงของตุ่มทำให้ต้องเปลี่ยนเสื้อผ้า หรือล้างทำความสะอาดที่แขนหรือขาจากเดิม มากน้อยเพียงใด | มาก ปานกลาง เล็กน้อย ไม่มีเลย | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 5. ในช่วงหนึ่งสัปดาห์ที่ผ่านมา ปัญหาผิวหนังของคุณมีผลกระทบต่อการออกไปนอกบ้าน เช่น เล่น หรือทำงานอดิเรก มากน้อยเพียงใด | มาก ปานกลาง เล็กน้อย ไม่มีเลย | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 6. ในช่วงหนึ่งสัปดาห์ที่ผ่านมา ปัญหาผิวหนังของคุณทำให้ต้องหลีกเลี่ยงการว่ายน้ำหรือเล่นกีฬาชนิดอื่นๆ มากน้อยเพียงใด | มาก ปานกลาง เล็กน้อย ไม่มีเลย | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 7. ในช่วงหนึ่งสัปดาห์ที่ผ่านมา เป็น <u>ช่วงที่ไม่ได้อยู่เรียน</u> ในช่วงหนึ่งสัปดาห์ที่ผ่านมา ปัญหาผิวหนังของคุณมีผลกระทบต่อการเรียนมากน้อยเพียงใด | ทำให้ต้องหยุดเรียน มาก ปานกลาง เล็กน้อย ไม่มีเลย | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 8. ในช่วงหนึ่งสัปดาห์ที่ผ่านมา เป็น <u>ช่วงที่ไม่ได้อยู่เรียน</u> ในช่วงหนึ่งสัปดาห์ที่ผ่านมา ปัญหาผิวหนังของคุณมีผลกระทบต่อความสนุกสนานในช่วงวันหยุดของคุณมากน้อยเพียงใด | มาก ปานกลาง เล็กน้อย ไม่มีเลย | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 9. ในช่วงหนึ่งสัปดาห์ที่ผ่านมา คุณมีผื่นแดงของตุ่มมีสะเก็ดหรือสะเก็ดที่ผิวหนังมากน้อยเพียงใด | มาก ปานกลาง เล็กน้อย ไม่มีเลย | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 10. ในช่วงหนึ่งสัปดาห์ที่ผ่านมา การทรีตเมนต์ผิวหนังของคุณทำให้เกิดปัญหาในคุณมากน้อยเพียงใด | มาก ปานกลาง เล็กน้อย ไม่มีเลย | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

กรุณาอย่ากรอกคำตอบโดยใส่เครื่องหมายถูกในช่องว่าง
แบบสอบถามนี้เป็นลิขสิทธิ์ของ © J.S. Lewis-Jones, A.Y. Finlay, May 1993 ซึ่งไม่ได้รับอนุญาตให้มีการเผยแพร่

Fig. 1 Children's Dermatology Life Quality Index (CDLQI) Thai version.

patients in the study are shown in Table 2. There was no difference of the score between both sexes ($p > 0.15$). Score of each individual question showed statistically higher in patients with skin diseases than control in

all 10 questions ($p < 0.01$). The diseases that showed moderate effect on QoL were immunobullous diseases, atopic dermatitis, acne vulgaris, other eczema, collagen vascular diseases, benign tumors, and urticaria.

Table 1. Diagnoses of the patients with skin diseases

| Diagnosis | Number (%) |
|--|-------------|
| Eczema | 45 (39.8) |
| Atopic dermatitis | 15 (13.3) |
| Other eczema: dyshidrosis, hand and foot eczema, etc. | 30 (26.5) |
| Collagen vascular diseases: scleroderma, vasculitis, systemic lupus erythematosus | 12 (10.6) |
| Acne vulgaris | 8 (7.1) |
| Nevus: congenital melanocytic nevi, Becker nevus | 5 (4.4) |
| Urticaria | 5 (4.4) |
| Alopecia: alopecia areata, trichotillomania | 4 (3.5) |
| Vitiligo | 4 (3.5) |
| Psoriasis | 3 (2.7) |
| Skin infections: ecthyma, impetigo, warts | 3 (2.7) |
| Benign tumors: juvenile xanthogranuloma, syringoma, eccrine spiradenoma | 3 (2.7) |
| Immunobullous diseases: bullous pemphigoid, chronic bullous dermatosis of childhood | 2 (1.8) |
| Miscellaneous: neurofibromatosis type I, pityriasis rubra pilaris, vascular malformation, keloid, callus, etc. | 19 (16.8) |
| Total | 113 (100.0) |

Table 2. Children's Dermatology Life Quality Index (CDLQI) scores of the patients

| | Number of patient | CDLQI score (mean \pm SD) | Range CDLQI | Patient scoring zero (%) |
|--------------------------------|-------------------|-----------------------------|-------------|--------------------------|
| Patients without skin diseases | 93 | 0.7 \pm 0.9 | 0-3 | 53.8 |
| Patients with skin diseases | 113 | 7.5 \pm 6.1 | 0-25 | 4.4 |
| Girl | 64 | 6.9 \pm 6.2 | 0-25 | 4.7 |
| Boy | 49 | 8.1 \pm 5.9 | 0-23 | 4.1 |
| Eczema | 45 | 8.7 \pm 5.7 | 0-22 | 2.2 |
| Atopic dermatitis | 15 | 10.1 \pm 6.3 | 0-22 | 5.3 |
| Other eczema | 30 | 8.0 \pm 5.3 | 2-22 | 0 |
| Collagen vascular diseases | 12 | 8.0 \pm 3.8 | 1-24 | 0 |
| Acne vulgaris | 8 | 8.1 \pm 7.2 | 2-20 | 0 |
| Nevus | 5 | 3.2 \pm 3.9 | 0-10 | 20.0 |
| Urticaria | 5 | 7.2 \pm 3.0 | 3-11 | 0 |
| Alopecia | 4 | 6.5 \pm 3.8 | 2-11 | 0 |
| Vitiligo | 4 | 3.8 \pm 3.6 | 1-9 | 0 |
| Psoriasis | 3 | 4.3 \pm 1.5 | 3-6 | 0 |
| Benign tumors | 3 | 7.3 \pm 8.5 | 1-17 | 0 |
| Skin infections | 3 | 4.3 \pm 1.5 | 3-6 | 0 |
| Immunobullous diseases | 2 | 13.5 \pm 16.2 | 2-25 | 0 |
| Miscellaneous | 19 | 6.5 \pm 6.3 | 0-20 | 15.8 |

When the scores were analyzed according to grouping of questions (Table 3), most skin diseases had high CDLQI scores in the questions related to symptoms and feeling (38.9%), school activities (28.3%), and the treatment effects (23.1%). Atopic dermatitis and other eczema had high CDLQI scores in the questions related to these groups and had sleep problem.

To test the reliability of the questionnaire, 26 of 113 (23%) patients with skin diseases subsequently completed the questionnaire again seven days later. The mean CDLQI scores of the first answer was 8.4 ± 7.3 and second answer was 7.2 ± 6.6 . These data demonstrated good correlation between the test-retest answers with high Spearman rank correlation coefficient (r_s 0.94, $p < 0.001$). The Cronbach's coefficient alphas showed high internal consistency of the individual item (0.87).

The average time to complete 10 questions in all patients was 4.5 ± 2.5 minutes. It showed no statistical difference (p 0.06) between 4.7 ± 2.3 minutes in the skin disease group compared to 4.3 ± 2.6 minutes in the control group (Table 4). Most patients (78.0%) finished all items in 5 minutes. The level of QoL scores did not affect the answering duration (p 0.75). The duration taken to complete the questionnaire was significant difference between different age groups ($p < 0.001$). The younger age group spent longer time to answer the questions than the older age group.

Discussion

The majority of skin diseases are not life-threatening. However, they cause many consequences on the patients and their families^(1,5-8). Most physicians usually evaluate the skin diseases based on severity and extension of the lesions. Only few physicians assess QoL of their patients when they manage the disease. The impact on QoL is often overlooked and underestimated^(1,4). The general QoL questionnaires will evaluate all factors that impact individual's life related to psychological, mental, and social domains. The QoL is good when the patient's needs about the health status and other non-medical issues are satisfied and fulfilled⁽¹⁶⁾. The dermatologic QoL questionnaires measure only the perspectives interfered by skin conditions. The lifestyles of children are markedly different from adults in term of playing, school activity, and treatment method^(7,17). Therefore, the questionnaires used for children are different from adults. The difference between CDLQI and Dermatology Life Quality Index (DLQI) are the questions asking about friendships, school/holiday activity, and sleep problem in children instead of looking after home or garden, working/studying, and sexual difficulties in adults⁽¹⁸⁾. Pediatric patients with chronic skin diseases are likely to have the experience of depression, low self-esteem, sleep problem, poor interpersonal relationship⁽⁷⁾. The appropriate dermatologic QoL questionnaire specific

Table 3. Percentage of quality of life (QoL) affected analyzed according to grouping of questions

| Grouping of questions | Skin diseases (number of patients) | | | | | |
|------------------------------|------------------------------------|------------------------|-------------------|---------------------------------|-------------------|-------------------|
| | All (113) | Atopic dermatitis (15) | Other eczema (30) | Collagen vascular diseases (12) | Acne vulgaris (8) | Benign tumors (3) |
| Symptoms and feelings | 38.9 | 57.8 | 46.7 | 26.3 | 48.0 | 30.5 |
| Leisure | 20.8 | 20.8 | 22.2 | 25.9 | 22.2 | 25.9 |
| Activity (school or holiday) | 28.3 | 49.0 | 26.7 | 39.0 | 33.3 | 16.7 |
| Personal relationship | 18.3 | 23.3 | 14.5 | 30.5 | 16.7 | 19.5 |
| Sleep | 20.7 | 31.0 | 26.7 | 11.0 | 12.7 | 0 |
| Treatment | 23.1 | 31.0 | 24.3 | 25.0 | 29.3 | 11.0 |

Table 4. Time spent on answering the questionnaire

| | Average \pm SD (minute) | Minimum-Maximum (minute) | Complete in 5 minutes (%) |
|--|---------------------------|--------------------------|---------------------------|
| Patients with skin diseases | 4.7 ± 2.3 | 2-13 | 72.6 |
| Patients without skin diseases | 4.3 ± 2.6 | 1-15 | 83.9 |
| All patients | 4.5 ± 2.5 | 1-15 | 80.8 |
| Age 4-5 years old (preschool) | 7.1 ± 3.6 | 2-15 | 50.0 |
| Age 6-12 years old (primary school) | 4.6 ± 2.3 | 2-15 | 74.6 |
| Age 13-16 years old (secondary school) | 3.5 ± 1.7 | 1-10 | 90.3 |

for children is valuable. CDLQI is designed specific for children to measure the symptoms, emotional, and functional effects of dermatitis.

The validity of the results of the present study was statistically approved. The CDLQI Thai version can effectively detect the effect of skin diseases. It demonstrated the ability to show the differences between the patients with and without skin diseases. Most skin diseases such as immunobullous diseases, atopic dermatitis, and acne vulgaris cause moderate effect on QoL. They compromised the patients in the aspects of symptoms and feeling, school activities, and effects of the treatment. The result was the same as many previous reports^(3,8), but there were too few patients in each group. Further study including more patients is suggested to see the effects of each disease before conclusion. The high percentage of CDLQI scores of zero in the control group showed that they did not have any problem from their skins.

The evidence of reliability from the strong correlation coefficient of the test-retest data was also observed. It confirmed the reproducibility of the data. Like other versions in different languages^(10-14,18), the Thai version of CDLQI demonstrated that it was the good practical instrument to assess QoL in the pediatric outpatient setting. The time spending on answering the questionnaire was only 4.5 minutes. Short duration will be taken with the parental helps in young patients.

The evidence from the study showed that CDLQI, Thai version, was valid, reliable, practical, and applicable to Thai culture. It can be used to measure the impact of skin diseases and the treatment outcome in Thai children. Therefore, it would be ideally for all physicians to measure QoL as another part of the disease management in their routine clinical practice. The QoL data will provide additional details about the patient's concern and the effectiveness of therapy from their viewpoints. The more understanding and recognition of the problems will improve the patient-clinician relationship, the quality of the therapy and finally the QoL of the patients and their families.

What is already known on this topic?

Chronic skin diseases affect QoL of patients. Measurement of QoL is the important part in chronic disease management. Many countries have the questionnaires in their own languages to evaluate the impact of the skin conditions on their patients' lives. It provides the information in other aspects of treatment.

What this study adds?

The Thai version of CDLQI is the valid and reliable instrument to assess QoL effect on children with skin diseases in Thailand. The study showed the evidence that it was simple and practical to use. It provides useful data about the effect of dermatological conditions on QoL from the children's viewpoint. The information gathered from this questionnaire will improve the disease management.

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Potential conflicts of interest

None.

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การศึกษาความตรงและความเที่ยงของแบบสอบถามวัดคุณภาพชีวิตของผู้ป่วยโรคผิวหนังในเด็กไทย

วณีย์ วิสุทธิเสวีวงศ์, รัตนาวัลย์ นิตยารมย์, ปรัชญา งามเชิดตระกูล

วัตถุประสงค์: เพื่อทดสอบความตรง (validity) และความเที่ยง (reliability) ของแบบสอบถามวัดคุณภาพชีวิตของผู้ป่วยเด็กโรคผิวหนัง (Children's Dermatology Life Quality Index: CDLQI) ฉบับภาษาไทย

วัสดุและวิธีการ: นำแบบสอบถามวัดคุณภาพชีวิตผู้ป่วยเด็กโรคผิวหนังฉบับภาษาไทยซึ่ง Lewis-Jones MS และ Finlay AY เจ้าของลิขสิทธิ์อนุญาตให้แปล และรับรองให้ใช้สอบถามผู้เข้าร่วมการศึกษาซึ่งเป็นเด็กอายุ 4-15 ปี ที่มาตรวจที่โรงพยาบาลศิริราช โดยแบ่งเป็น 2 กลุ่ม คือผู้ป่วยโรคผิวหนัง และโรคทั่วไป ผู้ป่วยโรคผิวหนังจำนวนหนึ่งจะถูกสุ่มเลือกมาทำแบบสอบถามซ้ำอีก 7 วันถัดมา ระยะเวลาในการทำแบบสอบถามจะถูกบันทึก

ผลการศึกษา: ผู้ร่วมการศึกษาจำนวน 206 ราย เป็นผู้ป่วยโรคผิวหนัง 113 ราย ซึ่งมีการตอบแบบสอบถามซ้ำจำนวน 26 ราย และผู้ป่วยโรคทั่วไป 93 ราย ผู้ป่วยทั้ง 2 กลุ่มมีอายุและเพศไม่แตกต่างกันทางสถิติ ($p > 0.05$, $p > 0.60$ ตามลำดับ) ผลการทดสอบพบว่าแบบสอบถามวัดคุณภาพชีวิตฉบับนี้มีความตรงมากทางสถิติ ($p < 0.001$) และความเที่ยงสูง โดยค่าความสัมพันธ์ (correlation coefficient) ของการประเมินซ้ำ (test-retest) พบว่าคะแนนคุณภาพชีวิตที่ประเมินทั้งสองครั้งมีความสัมพันธ์ในทิศทางเดียวกัน และอยู่ในระดับดีมากอย่างมีนัยสำคัญทางสถิติ ค่า Spearman rank correlation coefficient: $r_s = 0.94$ ($p < 0.001$) และมีความสอดคล้องกันภายในข้อคำถามสูง ค่าความเชื่อมั่น Cronbach's coefficient alphas 0.87 ผู้ป่วยเด็กสามารถตอบแบบสอบถามทั้งหมดได้ครบถ้วนโดยใช้เวลาน้อยกว่า 4.5±2.5 นาที โดยกลุ่มเด็กอายุน้อยใช้เวลานานกว่า ($p < 0.001$)

สรุป: แบบสอบถามวัดคุณภาพชีวิตของผู้ป่วยเด็กโรคผิวหนังฉบับภาษาไทยมีความตรงและความเที่ยงสูง จัดเป็นเครื่องมือวัดคุณภาพชีวิตของผู้ป่วยเด็กโรคผิวหนังที่มีคุณภาพ สมควรนำมาใช้ให้เกิดประโยชน์ต่อไปในการดูแลผู้ป่วยแบบองค์รวม
