

# Identifying mental health needs of children and young people (youth) with skin disease: A systematic review of screening and assessment tools

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## Abstract

### **Aims:**

- 1) To identify patient reported outcome measures (PROMs) which have been used to screen and assess mental health symptoms in studies of youth with skin disease.
- 2) To critically appraise their evidence-base in this population.

**Methods:** A systematic literature search was conducted within PubMed and PsycINFO combining search terms for paediatric populations, dermatology, screening and assessment tools, and psychological and psychiatric conditions, to identify PROMS which screened or assessed for mental health symptoms in youth with skin disease. PROMs which had undergone validation within this population were assessed for quality and evidence-base using the COSMIN risk of bias tool.

**Results:** 111 PROMs which assess mental health symptoms in studies of youth with skin disease were identified. These included generic mental health scales which are extensively validated in different populations. Only one PROM, the 'Skin Picking Scale – Revised' (SPS-R) has undergone specific validation in youth with skin disease. This showed poor quality of evidence for content validity and therefore cannot be recommended.

**Conclusions:** There is an urgent need to identify mental health problems early and treat proactively to improve outcomes in youth with skin disease. This review highlights the current lack of consensus around the best way to assess our patients. It is likely that existing generic mental health methods and PROMS will be appropriate for our needs. More work is required to examine the utility, feasibility, and acceptability of existing generic, validated mental health screening tools in youth with skin disease.

## Background

The prevalence of psychological symptoms and mental ill health in children and adolescents up to age 18 (youth) with skin disease is increasingly recognised. The recent UK All-Party Parliamentary Group on Skin (APPGS) 'Report on mental health and skin disease' highlighted the impact of skin disease on the psychosocial wellbeing of youth, as well as the potential presence of significant mental ill-health, and stressed the need for appropriate services and education of healthcare workers to identify and support the mental health needs of youth with skin disease <sup>1</sup>.

The presence of mental ill health may have implications for diagnosis, treatment and monitoring of skin disease. For example, psychological distress may present as medically unexplained skin symptoms; visible skin lesions may lead to social anxiety; sensory issues accompanying Autism Spectrum Disorder may impact the ability to use creams; and medications, such as isotretinoin for acne, may have effects on mood. Specific psychiatric disorders (e.g. Body Dysmorphic Disorder) present to physical health specialities including dermatology, but effective treatment requires detection and then treatment of the mental health condition <sup>2</sup>.

Despite increased awareness of mental health comorbidity in skin disorders, there is a lack of consensus regarding screening and assessment practices <sup>2</sup>. Patient Reported Outcome Measures (PROMs) are assessment tools which allow patients to self-report on their illness/condition <sup>3</sup>. They are key to informing mental health assessment as they allow patients to report on symptoms which may not be easily observable, including emotions, thought processes, and low mood. Parent and Proxy-Reported Outcome Measures serve a similar purpose, reported by those close to the patient. The questionnaire format allows them to be self-completed electronically or in writing. In a recent study in neurology clinics, 98% of parents found the electronic method of screening acceptable <sup>4</sup>.

A recent survey of members of British dermatologists with 45 respondents (around 6% response rate), identified widespread variation in current practice for assessment of mental health needs in youth. Methods included taking a mental health history, use of screening questions and more than 10 different PROMs, the most common being the Patient Health Questionnaire (PHQ-9) used by 29% and the Generalized Anxiety Disorder questionnaire (GAD-7) by 20% (personal communication, JCR, January 2022).

Similarly, in the USA, only 18% of respondent paediatric dermatologists in a recent report routinely screen youth for appearance related psychosocial distress (likely an over-estimate given only a 2% response rate), and there is a lack of standardisation of tools used <sup>5</sup>.

The aim of this review was a) to identify PROMS which have been used to screen and assess for mental health symptoms in studies of youth with skin disease (including generic mental health and skin specific tools) and b) To critically appraise their evidence-base in this population. The results will be used to inform a consensus project by the BSPD on recommendations for screening and assessment for mental health needs in youth attending paediatric dermatology clinics.

## Materials and Methods

### Protocol

The study protocol was developed by all authors and registered with the International Prospective Register of Systematic Reviews (PROSPERO) CRD42019148890 <sup>6</sup>. This systematic review has been written

in keeping with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement <sup>7</sup>.

### Search Strategy

A systematic literature search was designed by an information specialist and conducted within PubMed and OVID PsycINFO initially on 8th October 2019. Due to a significant period of time elapsed between starting and completing the review, the search strategy was run again through PubMed on 20<sup>th</sup> October 2021 to bring this work up to date. The search strategy (Appendix 1) combined search strings for paediatric population, skin conditions, screening and assessment tools, and psychological and psychiatric conditions. Search terms for each search string used both free text terms and relevant subject headings. There were no restrictions on publication period or language.

### Study Selection Process

Eligible studies were full-text articles which used a patient or proxy-reported (including composite clinician and patient/carer reported) screening tool to assess mental health symptoms in youth with skin conditions. We included systematic reviews of screening tools. Studies which included adults had to report isolated results for the population under 18 years old.

All identified papers were independently assessed for relevance and eligibility by two authors (ER, JCR) using the online platform Rayyan <sup>8</sup>, initially by title screening and then by abstract assessment. All disagreements were resolved on discussion. If it was not clear that a paper met exclusion criteria based on title and abstract, it progressed to full text review. All tools used in these papers were assessed independently by a clinical psychologist and consultant dermatologist with psychodermatology expertise (RA, SB), to identify tools which were PROMs for screening and assessment of mental health symptoms. Decision as to whether a quality-of-life or disease specific impact scale included sufficient assessment of mental health to be included in this review were made based on whether these scales could be used to identify an unmet mental health need.

All papers not meeting inclusion criteria were excluded. Data was extracted from the included studies on mental health assessment tools used, participant skin condition, participant ages, number of participants, article type, country and language by a single author independently (ER).

### Evidence Base Assessment

Papers which developed or validated a relevant PROM in youth with skin conditions were assessed using the Consensus-Based Standards for the selection of health Measurement Instruments (COSMIN) <sup>9 10</sup> risk of bias tool to assess their methodological quality. The studies and PROMS were assessed by two authors using the COSMIN risk of bias checklist. This assesses the evidence for content validity (PROM development and content validity), internal structure (structural validity, internal consistency, cross-cultural validity) and remaining measurement properties (reliability, measurement error, criterion validity, construct validity, responsiveness). PROMs are assessed as having sufficient, insufficient, or indeterminate validity for each property. Where information to make this assessment was missing, the property was graded 'not determined'. Content validity was assessed independently by ER and JCR, and results compared between both assessors. Information on internal structure and other psychometric properties was gathered and assessed by one author and cross-checked by a second. The quality of the evidence to support this assessment is identified as high, moderate, low or very low using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) principles as outlined in the

COSMIN checklist<sup>9 10</sup>. GRADE downgrades evidence based on risk of bias (study quality), inconsistency (between studies studies), imprecision (based on low sample size), and indirectness (difference in study population from the population of interest in the review). A very low grade suggests that authors have very little confidence in the measurement property estimate, and a high grade suggests high confidence.

## Results

### Literature search:

Paper selection is outlined in figure 1. The search strategy identified 17980 individual papers in 2019, with a further 2912 papers when the search was updated in 2021, which were reduced as outlined above to 309 papers which used a relevant PROM in youth with a skin condition (see Figure 1).

### PROMs used in research in youth with skin disease:

The 309 papers between them used 111 different PROMs to assess mental health symptoms. The most used PROMs were versions of Short Form questionnaires, (SF-3, SF-12 and SF-36) in 43 studies, Hospital Anxiety and Depression Scale (HADS), in 41 and the State trait anxiety inventory (STAI) in 40. A list of PROMs which were used in more than 10 studies can be found in Table 1, and a complete list is attached in the appendix. Only one PROM has been validated in youth with skin disease: the Skin Picking Scale-Revised (SPS-R).

### Evidence base for The Skin Picking Scale – Revised

The SPS-R was initially developed for adults, in both an English and German version<sup>11 12</sup>. It is an 8-item scale assessing symptom severity and impairment on a 5-point Likert scale over the last 1 week, taking 5-10 minutes. In 2016, Gallinat et al validated the German version of the SPS-R in 76 adolescents (73 female, 3 male) aged 14-17 including a subgroup with dermatological diseases<sup>13</sup>. The scale was used to screen for skin picking as a primary psychiatric diagnosis within this population. Evidence suggested that content validity was sufficient but the quality of evidence for this was very low based on poor methodological quality and a non-UK patient sample (table 2; full concordance on decision regarding content validity on independent review by JCR and ER). The quality of evidence for construct validity was moderate but showed inconsistent results on hypothesis testing suggesting inconsistent construct validity.

## Discussion

Our review identified 111 different PROMs used to screen and assess mental health symptoms in 309 papers, of which only one PROM, the SPS-R, has undergone formal psychometric validation in youth with skin disease in a way that included results which could be analysed independently for this population. SPS-R is a tool for assessment of skin-picking disorder, and cannot be recommended as it showed poor evidence for content validity.

The number and frequency of different tools used shows the perceived importance of assessing mental health symptoms in this population, but also the lack of clarity around the most appropriate tools to use. This lack of clarity has also been recognised in dermatology clinical practice in the UK and USA<sup>5</sup>. The measures that emerged as the most commonly used in our review have all been validated in multiple studies with various populations including youth populations with high rates of mental health disorders such as epilepsy, chronic pain and chronic fatigue syndrome<sup>14 15</sup>. In addition, they are endorsed by national bodies giving guidance on health outcomes measurement, such as the UK Child Outcome Research Consortium outcomes<sup>16</sup>, and/or the US Patient-Reported Outcomes Measurement Information Systems ('PROMIS') program<sup>17</sup>. These programs recommend measures with good psychometric

properties for use within mental health services and therefore inclusion of measures within these is an indicator of quality. A comprehensive review of such measures is beyond the scope of this paper but is provided by Deighton and colleagues<sup>18</sup>.

In the UK, child mental health services commonly use the Strengths and Difficulties Questionnaire and Revised Children's Anxiety and Depression Scale to assess symptoms of mental health difficulties<sup>19</sup>. The Patient Health Questionnaire adolescent version (PHQ9-A) is also increasingly recognised as helpful due to specific questions about self-harm and suicidal thoughts. Similarly, in the US, the most frequently used measures include the Children's Global Assessment Scale (CGAS), The Achenbach System of Empirically Based Assessment (ASEBA) and the SDQ<sup>20</sup>. Children with skin conditions like other children with physical health needs have increased rates of common mental health difficulties. There is no reason to assume that these well validated generic measures would not be suitable for this population. However, the extent to which these measures are helpful in routine dermatology practice is unknown due to lack of information regarding how effective they would be at identifying mental health disease when administered by dermatologists; onward referral and intervention limitations; time and cost implications; and acceptability to patients.

A strength of our review is the involvement of an information specialist in the creation of the search strategy, identifying over 20,000 papers giving us confidence that relevant papers have not been excluded. We also involved psychologists and consultants with psychodermatology expertise, allowing us to assess hundreds of screening and assessment tools to identify the most relevant scales for our research question. This research has been limited by the small number of validation studies and exclusion of studies due to combined reporting e.g. adults and youth; skin and non-skin conditions.

In conclusion, there is an urgent need to identify mental health problems early and treat proactively to improve outcomes in youth with skin disease. Recommendations for paediatric dermatologists in the use of screening questions and appropriate PROMs may help identify youth who would benefit from ongoing referral to mental health specialists. Standardising the tools used in research will allow better comparison across studies. This review highlights the current lack of consensus regarding screening and assessment methods, and the lack of dermatology specific evidence to guide future recommendations. The British Society of Paediatric dermatology now plans to work with patients, dermatologists and mental health workers to identify best methods of screening youth with skin disease for mental health concerns. This will include looking at the utility, feasibility, and acceptability of existing generic mental health PROMs for youth with skin disease.

**Registration and protocol:** The protocol for this review was registered on PROSPERO on 14<sup>th</sup> October 2019: protocol number CRD42019148890

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**Competing Interests:** No authors have competing interests to declare

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Tables

Scale Name	Frequency	Primary symptom measured	Age group	Further details
<b>Short Form 3/12/36</b>	43	Quality of life (includes mental health subdomain)	16+	3, 12 and 36 item self-report
<b>Hospital Anxiety and Depression Scale</b>	41	Anxiety and Depression	12-65	14 item self-report
<b>State Trait Anxiety Inventory</b>	40	Anxiety	3-18	20 items
<b>Strengths and Difficulties Questionnaire</b>	37	Common mental health difficulties (emotional, conduct, hyperactivity/inattention, peer relationships)	2+	25 items plus impact supplement parent and/or child reported measure
<b>Child Behaviour Checklist (CBCL)</b>	35	Behavioural and emotional problems	2-18	118 item parent-report, together with Teacher's



				Report Form (TRF) and the Youth Self-Report (YSR)
<b>Children's Depression Inventory</b>	34	Depression	7-17	27-item version, and the 10-item short-form version
<b>General Health Questionnaire</b>	31	'minor psychiatric disorders'	12+	12 item, 28-item, 30-item and 60-item self-report
<b>PedsQL</b>	27	Health-related quality of life (includes mental health subdomain)	2-18	23-items self-report and parent-report
<b>Beck Depression Inventory</b>	26	Depression	13+	21-item and 13-item self-report
<b>Rosenberg Self Esteem Scale</b>	16	Self-worth	12+	10-items self-report Also a modified version validated for children aged 7-12
<b>Multidimensional Anxiety Scale for Children (MAS-C)</b>	14	Anxiety	8-19	50 item self and parent reports
<b>Child Health Questionnaire</b>	12	Health-related quality of life (includes mental health subdomain)	5-18	Self (87 item and 45 item) and parent -report (50 and 28-item)

Table 1: Most commonly encountered scales in our review

PROM	Psychometric Property	Summary / Pooled result	Overall Rating	Quality of evidence
<b>SPS-R</b>	Content Validity	Relevance (+) Comprehensiveness (+) comprehensibility (+)	Sufficient	Very low
	Internal Structure	Not reported	Not Determined	-
	Internal Consistency	Criteria "at least low evidence of structural validity" not met; $\alpha$ 0.85-0.89	Not Determined	-
	Reliability	Not reported	Not Determined	-
	Hypothesis Testing	Correlated with KPD-38 $r=0.33$ , $p<0.01$ - smaller correlations with psychological impairment, social problems, life satisfaction, social support; No significant difference between patients with skin disease vs those without	Inconsistent	Moderate
	Responsiveness	Not assessed	Not Determined	-

Table 2: Summary of evidence for validity of the SPS-R, rated according to the COSMIN risk of Bias Checklist (sufficient validity, inconsistent, insufficient, not determined), and the methodological quality of the combined evidence assessed by GRADE criteria

## Figure Legends

Figure 1: PRISMA diagram demonstrating original paper selection for this study

## Appendix 1

### Combined Search Strategy for PubMed

("mental disorders"[MeSH Terms] OR "behavioral symptoms"[MeSH Terms] OR "child behavior"[MeSH Terms] OR "adolescent behavior"[MeSH Terms] OR "psychiatry" OR "psychiatric" OR "psychological" OR "psychologic" OR "psychopathology" OR "psychosocial" OR "psycho-social" OR "psychodermatology" OR "psychodermatological" OR "psychodermatologic" OR "psycho-dermatology" OR "psycho-dermatological" OR "psycho-dermatologic" OR "psychometric" OR "psycho-metric" OR "psychometrics" OR "aggression" OR "aggressive" OR "anxiety" OR "anxious" OR "artefacta" OR "artefactual" OR "asperger" OR "aspengers" OR "asperger's" OR "ADHD" OR "attention deficit" OR "autistic" OR "autism" OR "behaviour" OR "behaviours" OR "behavioural" OR "behavior" OR "behaviors" OR "behavioral" OR "body dysmorphia" OR "body dysmorphic" OR "cognitive" OR "compulsive" OR "conduct disorder" OR "conduct disorders" OR "depression" OR "depressed" OR "depressive" OR "depressivity" OR "emotion" OR "emotions" OR "emotional" OR "feelings" OR "hopelessness" OR "hyperactivity" OR "hyperactive" OR "ideation" OR "mental" OR "mood" OR "obsessive" OR "OCD" OR "posttraumatic" OR "post-traumatic" OR "PTSD" OR "self-harm" OR "selfharm" OR "specific learning disability" OR "specific learning disabilities" OR "stress" OR "suicide" OR "suicidal" OR "suicidality" OR "trauma") AND ("surveys and questionnaires"[MeSH Terms] OR "diagnostic screening programs"[MeSH Terms] OR "psychiatric status rating scales"[MeSH Terms] OR "mental status and dementia tests"[MeSH Terms] OR "psychological tests"[MeSH Terms] OR "interview, psychological"[MeSH Terms] OR "assess"[ti] OR "assessment"[ti] OR "assessments"[ti] OR "assessing"[ti] OR "clinical predictor"[ti] OR "clinical predictors"[ti] OR "clinical prediction"[ti] OR "form"[ti] OR "forms"[ti] OR "rate"[ti] OR "rating"[ti] OR "screen"[ti] OR "screening"[ti] OR "severity"[ti] OR "status"[ti] OR "test"[ti] OR "tests"[ti] OR "testing"[ti] OR "check list" OR "check lists" OR "checklist" OR "checklists" OR "index" OR "indexes" OR "indices" OR "instrument" OR "instruments" OR "interview" OR "interviews" OR "inventory" OR "inventories" OR "questionnaire" OR "questionnaires" OR "scale" OR "scales" OR "score" OR "scores" OR "scoring" OR "survey" OR "surveys" OR "tool" OR "tools" OR "validated" OR "validation" OR "Ages and Stages Questionnaire" OR "ASQ-SE" OR "ASQ-3" OR "Alcohol Use Disorders Identification Test" OR "AUDIT" OR "Alcohol, Smoking and Substance Involvement Screening Test" OR "ASSIST" OR "Autism Diagnostic Observation Schedule" OR "ADOS" OR "ADOS-2" OR "Beck Depression Inventory" OR "Beck's Depression Inventory" OR "Becks Depression Inventory" OR "BDI-Y" OR "BDI" OR "Cardiff Acne Disability Index" OR "Child Behavior Checklist" OR "CBCL" OR "Child Depression Inventory" OR "Children's Dermatology Life Quality Index" OR "Children's DLQI" OR "CDLQI" OR "Children's Global Assessment Scale" OR "CGAS" OR "Dermatitis Family Impact Questionnaire" OR "Derriford Appearance Scale" OR "DAS-24" OR "Development and Well-Being Assessment" OR "DAWBA" OR "Dermatology Life Quality Index" OR "DLQI" OR "Dimensional Obsessive-Compulsive Scale" OR "Distress Thermometer" OR "EQ-5D-5L" OR "Family Dermatology Life Quality Index" OR "FDLQI" OR "Fear of Negative Evaluation" OR "FNE" OR "Brief-FNE" OR "General Health Questionnaire" OR "GHQ" OR "GHQ-12" OR "GHQ-30" OR "Generalized Anxiety Disorder Scale" OR "Generalized Anxiety Disorder-7 scale" OR "GAD" OR "GAD-7" OR "Hospital Anxiety and Depression Scale" OR "HADS" OR "Holmes-Rahe" OR "Illness Perception Questionnaire" OR "Brief IPQ" OR "IPQ-R" OR "Kessler Psychological Distress Scale" OR "Kessler 6" OR "Kessler 10" OR ("Kessler" AND "K6") OR

("Kessler" AND "K10") OR "Kiddie Schedule" OR "K-SADS" OR "Massachusetts General Hospital Hairpulling Scale" OR "Me and My School" OR "Mood and Feelings Questionnaire" OR "MFQ" OR "Patient Health Questionnaire" OR "PHQ" OR "PHQ-2" OR "PHQ-8" OR "PHQ-9" OR "PHQ-15" OR ("Patient-Orientated" AND "Eczema Measure") OR "POEM" OR "PI-ED" OR "Pediatric Symptom Checklist" OR "Pediatric Symptoms Checklist" OR "PSC" OR "PSC-17" OR "PSC-35" OR "Post-Traumatic Stress Reaction Index" OR "PTSRI" OR "Revised Child Anxiety and Depression Scale" OR "RCADS" OR "Short Mood and Feelings Questionnaire" OR "SMFQ" OR "Skin Cancer Index" OR "Skindex" OR "Skindex-16" OR "Skindex-29" OR "SCQOLIT" OR "Skin Picking Scale" OR "Strengths and Difficulties Questionnaire" OR "SDQ" OR "Trauma Symptom Checklist for Children" OR "TSCC" OR "VitiQoL" OR "Warwick-Edinburgh Mental Well-being Scale" OR "WEMWBS") AND ("dermatology"[MeSH Terms] OR "skin diseases"[MeSH Terms] OR "skin disease" OR "skin diseases" OR "skin condition" OR "skin conditions" OR "skin disorder" OR "skin disorders" OR "dermatology" OR "dermatological" OR "dermatologic" OR "dermatologist" OR "dermatologists" OR "dermatosis" OR "dermatoses" OR psychodermatolog\* OR dermatopatholog\* OR "cutaneous" OR "mucocutaneous" OR "cutis" OR "dermal" OR "keratoderma" OR exanthem\* OR "rash" OR "rashes" OR erythema\* OR "bullous" OR "bullae" OR "bullosa" OR "bullosis" OR blister\* OR pustul\* OR comedon\* OR acne\* OR rosace\* OR eczema\* OR "dermatitis" OR "neurodermatitis" OR psoria\* OR "pustulosis" OR "nevi and melanomas"[MeSH Terms] OR melanoma\* OR "actinic" OR (lymphoma\* AND "skin") OR (lymphoma\* AND "cutaneous") OR "mastocytosis" OR "mastocytoses" OR "histiocytosis"[MeSH Terms] OR "histiocytosis" OR "histiocytoses" OR "hemangiosarcoma"[MeSH Terms] OR angiosarcoma\* OR haemangiosarcoma\* OR hemangiosarcoma\* OR lichen\* OR "hidradenitis" OR prurit\* OR "prurigo" OR "lupus" OR pyoderma\* OR "soft tissue infections"[MeSH Terms] OR "cellulitis"[MeSH Terms] OR "cellulitis" OR "erysipelas" OR "impetigo" OR "ecthyma" OR "folliculitis" OR dermatomyco\* OR "mycosis" OR "mycoses" OR "mycotic" OR dermatophyt\* OR onych\* OR kerion\* OR "molluscum" OR "herpes" OR herpeti\* OR cold sore\* OR wart\* OR verruc\* OR "scabies" OR "louse" OR "lice" OR "cutaneous leishmaniasis" OR "erythrasma" OR urticaria\* OR "stevens-johnson" OR "toxic epidermal necrolysis" OR "angioedema" OR "pityriasis" OR "genodermatosis" OR "genodermatoses" OR albin\* OR "ectodermal" OR "epidermolysis" OR ichthyo\* OR "keratosis" OR xero\* OR "porphyrias"[MeSH Terms] OR porphyria\* OR protoporphyria\* OR "mucinoses"[MeSH Terms] OR mucinos\* OR hyperkerato\* OR "acanthosis" OR "dermatomyositis" OR "scleroderma" OR "scleredema" OR "panniculitis" OR ("cutaneous" AND "vasculitis") OR ("polyarteritis nodosa" AND "cutaneous") OR "lymphedema"[MeSH Terms] OR "lymphoedema" OR "lymphedema" OR (abscess\* AND "cutaneous") OR (abscess\* AND "skin") OR "boils" OR "pilonidal" OR hyperhidro\* OR sweat\* OR nail\* OR "pilar" OR "pilaris" OR "hair"[MeSH Terms] OR "hair" OR "scalp"[MeSH Terms] OR "scalp" OR "trichotillomania" OR hirsut\* OR "hypertrichosis" OR "alopecia" OR "cheilitis"[MeSH Terms] OR "cheilitis" OR "aphthous" OR "skin pigmentation"[MeSH Terms] OR ("pigmentation" AND "skin") OR "hypopigmentation" OR "hyperpigmentation" OR "vitiligo" OR birth mark\* OR birthmark\* OR "nevus"[MeSH Terms] OR "nevus" OR "naevus" OR "nevi" OR "naevi" OR "hemangioma"[MeSH Terms] OR haemangioma\* OR hemangioma\* OR angioma\* OR acrochordon\* OR papilloma\* OR dermatofibroma\* OR "angiokeratoma"[MeSH Terms] OR angiokeratoma\* OR acanthoma\* OR photodermatolog\* OR "dermatologic agents"[MeSH Terms] OR "topical retinoid" OR "topical retinoids" OR "topical corticosteroid" OR "topical corticosteroids" OR "topical steroid" OR "topical steroids" OR "isotretinoin"[MeSH Terms] OR "isotretinoin" OR "dermatologic surgical procedures"[MeSH Terms] OR "skin care"[MeSH Terms] OR "skin tests"[MeSH Terms] OR "Acta Derm Venereol."[Journal] OR "Acta Dermatovenerol Alp Pannonica Adriat."[Journal] OR "Acta Dermatovenerol Croat."[Journal] OR "Actas Dermosifiliogr."[Journal] OR "Am J Clin Dermatol."[Journal] OR "Am J Dermatopathol."[Journal] OR "An Bras Dermatol."[Journal] OR "Ann Dermatol Venereol."[Journal] OR "Arch Dermatol Res."[Journal] OR "Australas J Dermatol."[Journal] OR "BMC Dermatol."[Journal] OR "Br J Dermatol."[Journal] OR "Clin

Dermatol."[Journal] OR "Clin Exp Dermatol."[Journal] OR "Contact Dermatitis."[Journal] OR "Curr Probl Dermatol."[Journal] OR "Cutan Ocul Toxicol."[Journal] OR "Cutis."[Journal] OR "Dermatitis."[Journal] OR "Dermatol Clin."[Journal] OR "Dermatol Online J."[Journal] OR "Dermatol Surg."[Journal] OR "Dermatol Ther."[Journal] OR "Dermatology."[Journal] OR "Eur J Dermatol."[Journal] OR "Exp Dermatol."[Journal] OR "G Ital Dermatol Venereol."[Journal] OR "Hautarzt."[Journal] OR "Indian J Dermatol Venereol Leprol."[Journal] OR "Int J Cosmet Sci."[Journal] OR "Int J Dermatol."[Journal] OR "J Am Acad Dermatol."[Journal] OR "J Cosmet Dermatol."[Journal] OR "J Cosmet Laser Ther."[Journal] OR "J Cosmet Sci."[Journal] OR "J Cutan Med Surg."[Journal] OR "J Cutan Pathol."[Journal] OR "J Dermatol Sci."[Journal] OR "J Dermatol."[Journal] OR "J Dermatolog Treat."[Journal] OR "J Drugs Dermatol."[Journal] OR "J Dtsch Dermatol Ges."[Journal] OR "J Eur Acad Dermatol Venereol."[Journal] OR "J Invest Dermatol."[Journal] OR "J Investig Dermatol Symp Proc."[Journal] OR "J Tissue Viability."[Journal] OR "JAMA Dermatol."[Journal] OR "Lasers Surg Med."[Journal] OR "Lasers Med Sci."[Journal] OR "Melanoma Res."[Journal] OR "Pediatr Dermatol."[Journal] OR "Photodermatol Photoimmunol Photomed."[Journal] OR "Photodiagnosis Photodyn Ther."[Journal] OR "Pigment Cell Melanoma Res."[Journal] OR "Semin Cutan Med Surg."[Journal] OR "Skin Pharmacol Physiol."[Journal] OR "Skin Res Technol."[Journal] OR "Skin Therapy Lett."[Journal] OR "Skinmed."[Journal]) **AND** ("pediatrics"[MeSH Terms] OR "pediatricians"[MeSH Terms] OR "nurses, pediatric"[MeSH Terms] OR "pediatric nursing"[MeSH Terms] OR "hospitals, pediatric"[MeSH Terms] OR "child"[MeSH Terms] OR "adolescent"[MeSH Terms] OR "minors"[MeSH Terms] OR "puberty"[MeSH Terms] OR paediatric\* OR pediatric\* OR peadiatric\* OR "child" OR "children" OR "childhood" OR "schoolchild" OR "schoolchildren" OR "school aged" OR "school age" OR "preschool" OR "pre-school" OR "kid" OR "kids" OR toddler\* OR adoles\* OR teen\* OR "juvenile" OR "boy" OR "boys" OR "girl" OR "girls" OR "minors" OR "young people" OR "young person" OR "young persons" OR pubert\* OR pubescen\* OR prepubescen\*)

## Appendix 2

### Full List of PROMs used

Scale Name	Frequency
Adolescent version of the Autism Quotient (AQ)	1
Adult ADHD Self-Report Scale version	1
Ages and Stages Questionnaire	2
Anxiety Inventory for Children	1
Anxiety state index	1
Automatic Thoughts Scale	1
Beck Anxiety Inventory	6
Beck Depression Inventory	26
Berlin mood questionnaire (BMQ)	1
Birleson Depression Self-Rating Scale	3
Body Cathexis Scale	1
Body consciousness questionnaire PBC subscale (Private Body Consciousness)	2
Body Dysmorphic Disorder Examination (BDDE)	1
Body Dysmorphic Disorders Questionnaire	10
Body Esteem Scale for Adolescents and Adults	2
Body Image Concern Scale	1

<b>Body Image Satisfaction Scale</b>	1
<b>Body Image Scale</b>	1
<b>Body Image States Scale</b>	2
<b>Body Self Questionnaire</b>	1
<b>Brief Problem Checklist</b>	1
<b>Brief Symptom Inventory</b>	3
<b>Carroll Rating Scale for Depression</b>	1
<b>CEA-HP: Specific Questionnaire for Anxiety in Primary Hyperhidrosis</b>	1
<b>Centre for Epidemiological Studies - Depression</b>	8
<b>Child Adjustment and Parent Efficacy Scale</b>	1
<b>Child Behaviour Checklist</b>	35
<b>Child Health Questionnaire</b>	12
<b>Child mental health brief questionnaire</b>	1
<b>Childhood Psychopathology Measurement Schedule</b>	2
<b>Childrens Depression Inventory</b>	34
<b>Children's Depression Rating Scale</b>	2
<b>Childrens Depression Scale</b>	3
<b>Children's Manifest Anxiety Scale</b>	4
<b>Child's Report of Parental Behaviour Inventory</b>	1
<b>Clinical Psychological Diagnostic System (KPD-38)</b>	1
<b>Clinician Global Assessment of Severity Scale</b>	1
<b>Columbia Impairment Scale</b>	1
<b>Computer-assisted CIDI 3.0</b>	1
<b>Conners 3 rating scales</b>	7
<b>Coopersmith Self-Esteem Inventory</b>	4
<b>Depression Anxiety and Stress Scale</b>	3
<b>Depressive Symptomatology-Self Report (IDS-SR)</b>	1
<b>Derriford Appearance Scale</b>	1
<b>Early Childhood Inventory-4 (ECI-4)</b>	2
<b>Early School Personality Questionnaire</b>	1
<b>Emotion Regulation Checklist</b>	2
<b>Family Assessment Inventory</b>	1
<b>FSCS (Public Self-consciousness and Social Anxiety sub-scales)</b>	1
<b>Generalised Anxiety Disorder (GAD)-7</b>	5
<b>General Health Questionnaire</b>	31
<b>Hamilton Anxiety Rating Scale (HAM-A)</b>	7
<b>Hamilton Depression Rating Scale (HAM-D)</b>	8
<b>Health and Behavior Questionnaire (HBQ)</b>	1
<b>Hospital Anxiety and Depression Scale</b>	41
<b>Hopkins Symptom Checklist</b>	6
<b>Impairment severity score [German BSS]</b>	1

<b>Internalized Stigma Scale</b>	2
<b>Inventory of Statements about Self-Injury (ISAS)</b>	1
<b>Kessler Psychological Distress Scale</b>	2
<b>KIDSCREEN</b>	10
<b>Leyton Obsessional Inventory - Child version</b>	1
<b>Liebowitz social anxiety scale</b>	5
<b>MacArthur Health Behavioral Questionnaire (MacArthur HBQ) Inattention and Impulsivity subscales</b>	1
<b>Major Depression Inventory (MDI)</b>	3
<b>Manifest Anxiety Scale</b>	1
<b>MGH-Hair Pulling Scale</b>	5
<b>MINI-KID</b>	1
<b>MINI-OCD (Item H)</b>	1
<b>Multidimensional Anxiety Scale for Children (MAS-C)</b>	14
<b>Multiple Affect Adjective Checklist Revised (MAACL-R)</b>	1
<b>Obsessive-Compulsive Scale by Maudsley</b>	1
<b>Ontario Child Health Study</b>	1
<b>Paediatric Symptom Checklist</b>	1
<b>Patient Health Questionnaire</b>	8
<b>PedsQL</b>	27
<b>Personality Inventory for Children (PIC)</b>	1
<b>Perceived Stigmatisation Questionnaire (PSQ)</b>	3
<b>Piers-Harris Self-Concept Scale</b>	6
<b>Pediatric Symptom Checklist</b>	2
<b>PROMIS scales</b>	3
<b>Psychiatric Status Rating Scale for Body Dysmorphic Disorder (BDD-PSR)</b>	1
<b>Revised Children's Anxiety and Depression Scale</b>	2
<b>Reynolds adolescent depression scale</b>	1
<b>Rosenberg Self Esteem Scale</b>	16
<b>SAS (self rating anxiety scale)</b>	5
<b>SCARED</b>	6
<b>Strengths and Difficulties Questionnaire</b>	37
<b>Self Injurious Behaviours</b>	1
<b>Self-Perception profile for children</b>	2
<b>Sense of Stress Questionnaire (KPS)</b>	1
<b>Short Form 3/12/36</b>	43
<b>Short Mood and Feelings Questionnaire</b>	2
<b>Short Sensory Profile (SSP)</b>	1
<b>Skin Picking Scale - Revised</b>	4
<b>SNAP-IV Teacher and Parent Rating Scale</b>	2
<b>Social Activity Questionnaire</b>	1
<b>Social Anxiety Scale for Children-Revised</b>	4

<b>Social Phobia Scale</b>	5
<b>State Trait Anxiety Inventory</b>	40
<b>Symptom Check List (SCL-90)</b>	7
<b>The Personality Inventory for Children</b>	1
<b>The Tennessee Self-Concept Scale:2</b>	1
<b>Trichotillomania Impact Scale</b>	8
<b>Trichotillomania Scale for Children</b>	10
<b>Trichotillomania Symptom Severity Scale (NIMH-TSS)</b>	4
<b>UCLA Lonliness Scale</b>	2
<b>Vanderbilt ADHD Diagnostic Rating Scale</b>	1
<b>Yale Brown Obsessive Compulsive Scale</b>	6
<b>Yale Children's Inventory</b>	1
<b>Youth Self Report</b>	2