Review article

Rating Scales validated for Sri Lankan populations

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Summary

The use of rating scales in psychiatry increased in the late 1950s with the introduction of antipsychotics and antidepressants. Although rating scale are increasingly used in research, only a few scales have been translated and validated in Sri Lankan populations. We searched PubMed, Scopus and Google scholar for rating scales translated and validated for use in Sri Lanka. Through the search strategy detailed above we have identified 55 scales which have been translated into Sinhala and Tamil and used in research with populations in Sri Lanka. Most of the scales have been developed and validated in Western populations. Use of these scales enables comparison of findings from Sri Lanka with those from other countries.

Introduction

The use of rating scales in psychiatry increased in the late 1950s with the introduction of antipsychotics and antidepressants. Initially rating scales were used mainly to evaluate the effectiveness of new medication against placebo. As the need increased for good reliability and validity, further rating scales were developed and these were used not only in clinical trials but also to diagnose and assess the severity and outcome of illness. The rating scales most widely used in the 1960s and 1970s were the Brief Psychiatric Rating Scale (BPRS) to evaluate effectiveness of antipsychotics, and the Hamilton Depression and Anxiety Scales (HAM-D and HAM-A) which were used to evaluate the effectiveness of antidepressants and anxiolytic drugs (1, 2).

Many scales have been created over the years to help diagnose mental illness and assist treatment and follow-up. With the development of such rating scales, the importance of concepts like validity and reliability have been highlighted. The validity of a measurement method is the extent to which it measures what it is supposed to measure. It indicates the degree to which empirical evidence and theoretical rationale support the adequacy and appropriateness of inferences and actions based on test scores or other modes of assessment (3). Several types of validity are described: criterion validity, construct validity, content validity, face validity and discriminant validity. Validation of scales requires empirical evidence. Development of a scale requires inputs from an expert panel, for alignment and rating of items and assessing face validity. Modified Delphi technique is often used for assessing content and consensual validity. Although translation and back translation is used conventionally to translate rating scales, Sumathipala et al. recommended the use of a nominal group to translate and to assess the extent of agreement (consensus measurement) on the appropriateness of the translation and to resolve disagreements (consensus development)(4).

Reliability describes the overall consistency of a measure. Several different types of reliability are used in the psychometric assessment of scales. These include inter-rater reliability which assesses the degree of agreement between two or more raters and test-retest reliability which assesses the degree to which test scores are consistent from one test administration to the next. Internal consistency assesses the consistency of results across items within a test.

Although rating scale are increasingly used in research, only a few scales have been translated and validated in Sri Lankan populations. The aim of this study was to identify scales which have been translated into Sinhala or Tamil and validated in a Sri Lankan population.

Methods

We searched PubMed, Scopus and Google scholar using the following key words; validation, rating scales, Sinhala, Tamil, Sri Lanka, validity, reliability and psychometric properties. We also searched the registry at the Postgraduate Institute of Medicine, University of Colombo, Sri Lanka. We contacted researchers who had used such scales in their research. All relevant publications in journals indexed in pubmed, scopus and Google Scholar were identified. We did not search conference abstracts and dissertations published by institutes other than the PGIM, Colombo. Some scales had been translated and used in research but not been validated for a Sri Lankan population. These scales are described separately. Scales which have been validated but the findings have not been published in a journal indexed in one of the searched databases have not been included in this article.

Results

Rating scales identifying syndromes

Bradford Somatic Inventory

The Bradford Somatic Inventory (BSI) was developed using UK and Pakistani populations, by noting physical

symptoms in the psychiatric case notes of patients with a clinical diagnosis of anxiety, depression, hysteria or hypochondriasis(5). From these, 21 items were selected that differentiated psychiatric from 'organic' patients. This has been translated into Sinhala and used in an epidemiological study (6).

Chalder Fatigue Scale
This scale includes 11 items assessing fatigue, and 2 assessing muscle pain, experienced over the past month (each coded 0-3). The Sinhala translation has been used in epidemiological studies (6, 7).

Clinical Interview Schedule-Revised (CIS-R)
The CIS–R enables the generation of ICD–10 diagnoses and consists of psychiatric status ratings of 14 symptoms addressed by subscales including symptom scores for fatigue, sleep problems, irritability, worry and depression (both depressed mood and depressive thoughts). The interview schedule was translated into Sinhala and modified to include sections introducing each symptom group. It was validated in a clinic setting for adolescents 15–19 years of age in Sri Lanka (8).

Composite International Diagnostic Interview
The CIDI is a comprehensive, fully-structured interview designed to be used by trained lay interviewers for the assessment of mental disorders according to the definitions and criteria of ICD-10 and DSM-IV (9). It is intended for use in epidemiological and cross-cultural studies as well as for clinical and research purposes. Qualitative techniques were used to adapt it and translate it to Sinhala (10). A formal validation was not done. We are unaware of Tamil translations validated for use in Sri Lanka.

General Health Questionnaire (GHQ-30 and GHQ-12)
GHQ is used as a screening instrument in primary care, general medical practice and community surveys to detect minor and non-psychotic psychiatric conditions. The original instrument had 60 items (11). There are several version of GHQ; GHQ-30: a short form without items relating to physical illness, GHQ-28: a 28 item scaled version which assesses somatic symptoms, anxiety and insomnia, social dysfunction and severe depression and a GHQ-12: a quick, screening instrument.

The GHQ-30 has been translated into Sinhala and validated (12). The GHQ-30 contains 30 items scored on a 4-point Likert-type scale ranging from 0 (less than usual) to 3 (much more than usual). It can also be scored as 0-0-1-1. Using this scoring system the authors of the Sinhala translation recommends a cutoff score of 5/6 although the original studies recommended a cutoff of 4/5. Score of more than 15 is taken as evidence of distress while a score of more than 20 suggests severe problems and psychological distress. The GHQ-12 has been translated into Sinhala and validated(13).

Different versions of the GHQ have been translated into Tamil and used in Sri Lankan populations but they have not been formally validated. GHQ-12 Tamil translation has been validated in a population in Vellore, India (14).

Hopkins Symptom Checklist–25 (HSCL-25)
The HSCL-25 is a symptom inventory which measures symptoms of anxiety and depression (15). It consists of 25 items: Part I of the HSCL-25 has 10 items for anxiety symptoms; Part II has 15 items for depression symptoms. The scale for each question includes four categories of response ("Not at all," "A little," "Quite a bit," "Extremely," rated 1 to 4, respectively). Two scores are calculated: the total score is the average of all 25 items, while the depression score is the average of the 15 depression items.

This scale has been translated into Tamil and used in an epidemiological study of war related mental health conditions in the Jaffna District. Questionnaire was translated into Tamil and back-translated into English by different translators to ensure accuracy. A formal validation was not carried out (16). The scale has also been translated into Sinhala and used in a study assessing psychological morbidity in snake envenoming (17). It has also been used in an epidemiological study of people affected by the tsunami (18).

Hospital anxiety and depression scale (HADS)
The HADS was originally developed by Zigmond and Snaith (19). It is a reliable instrument for detecting states of depression and anxiety in hospital medical outpatient clinic and in non-psychiatric populations. The anxiety and depressive subscales are also valid measures of severity of the emotional disorder. The scale consists of 14 items (7 each for anxiety and depression). Each item is rated on a four point scale ranging from 0 (not at all) to 3 (very often). Responses are based on the relative frequency of symptoms over the preceding week. Possible scores range from 0 to 21 for each subscale.

The Sinhala translation has been validated and published in dissertations submitted to the PGIM (20, 21). The PROQOLID website reports that Sinhala and Tamil translations of this instrument are available (22). The Tamil translation of this scale has been used in a study in Jaffna which was submitted as a PGIM dissertation (23).

Kessler's psychological distress scale
The K10 and K6 are brief ten-item and six-item questionnaires, respectively, used to measure the extent and the severity of generalized distress in the preceding month (24). The items are scored from 1 to 5 and the total score is the sum of these responses which ranges from 0-40 for the K10 and 0-24 for the K6.

The K10 and the K6 versions of the Kessler's psychological distress scale have been translated to Sinhala and validated in a Sri Lankan population (25).

Ways of coping – Revised scale (WOCS – R)
The Way of Coping Checklist (WCCL) is a widely used measure of coping, and is derived from Lazarus and Folkman's (1984) transactional model of stress. It contains five subscales problem-focused coping,

seek social support, blame self, wishful thinking and avoidance. Participants rate how frequently they use each of the 42 coping responses using a four-point scale. The scale has been translated into Sinhala. Ways of Coping Checklist-Revised (WCCL-R) was validated in a study using 1,314 participants from Indonesia, Sri Lanka, Singapore, and Thailand (26). It has also been validated in a study of patients with schizophrenia (27).

Scales used in identifying depressive disorder

Beck Depression Inventory (BDI)
The BDI–II consists of 21 items to assess the intensity of depression in clinical and normal patients. Each item is a list of four statements arranged in increasing severity about a particular symptom of depression (28).

BDI has been translated into Sinhala and used to identify depression in a group of mothers, but it has not been formally validated (29). BDI has been translated into Tamil and validated in the Northern and Easter provinces of Sri Lanka (30).

Centre for Epidemiological Studies Depression Scale (CES-D)
The Centre for Epidemiological Studies Depression Scale (CES-D) is a short, self-reporting scale designed to measure depressive symptoms in the general population and clinical populations (31). This scale has been translated into Sinhala and validated (32, 33). It has been translated into Tamil and validated in an elderly population in Chennai, India (34).

Depression Anxiety and Stress Scale (DASS)
The DASS is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress for both researchers and scientist-professional clinicians. Each of the three DASS scales contains 14 items, divided into subscales of 2-5 items with similar content. This scale has been translated into Sinhala and validated among University Students(35).

Depression Self-Rating Scale (DSRS)
This is an 18 item scale which employs a 3-point response scale (range 0-36). This has been translated into Tamil and used in a cluster randomized trial in Sri Lanka (36).

Edinburgh Postnatal Depression Scale
The Edinburgh Postnatal Depression Scale (EPDS) is a 10-item questionnaire that was developed to identify women who have postpartum depression. The EPDS can be used within 8 weeks postpartum and it can also be used for depression screening during pregnancy. The Sinhala version of the EPDS has been validated among post natal and pregnant mothers in Sri Lanka in two separate studies (37, 38). A Tamil translation has been validated in a rural population in Tamil Nadu, India (39).

Geriatric Depression Scale – short form (GDS-S)
The GDS long form is a brief, 30-item questionnaire where participants respond by answering yes or no about how they felt over the past week. The short form GDS consists of 15 questions. Questions from the long form GDS which had the highest correlation with depressive symptoms in validation studies were selected for the short version (40). This scale has been translated into Sinhala and validated (41). A Tamil translation of the scale has been used in an epidemiological study in a rural population in Tamil Nadu (42).

Peradeniya Depression Scale (PDS)
PDS is the first screening tool developed in Sri Lanka to detect depression. It has taken cultural and language factors taken into consideration. At a score of 10/25 the PDS showed a sensitivity 88.5% and specificity of 85.0%. This scale has been developed and validated in Sinhala (43).

Patient Health Questionnaire- 9 (PHQ-9)
The Patient Health Questionnaire (PHQ-9) was developed as a screener for depression during the development of the PRIME-MD(44). It is a self-administered tool based on DSM-IV criteria for diagnosing depressive disorder. It can be used to monitor severity of depression by scoring the frequency of each symptom on a scale of 0-3. It can also be used to diagnose major depressive disorder (MDD). It has been translated into Sinhala and validated (45).

Scales for assessing suicidal risk

Beck's Scale for Suicidal Ideation
This is a 21-item, interviewer-administered rating scale that measures the current intensity of patients' specific attitudes, behaviors, and plans to commit suicide on the day of the interview. Each item consists of three options graded according to suicidal intensity on a 3-point scale ranging from 0 to 2 (46). This scale has been translated into Sinhala and used in an epidemiological study in Sri Lanka (47).

Columbia suicide severity scale
C-SSRS is a tool for measuring suicidal ideation and behaviour in primary care, clinical practice, surveillance, research and institutional settings in children, adolescents and adults. C-SSRS measures four constructs: the severity of ideation, the intensity of ideation, behaviour and lethality. The website of the Colombia University states that the scale has been translated into Sinhala and Tamil, but we could not find publications detailing the validation of the translations (48).

Pierce Suicide Intent Scale
This is a 12 item scale, items 1-5 gives the circumstances score, 7-10 self-report score and 11 and 12 medical risk score. A total score less than 3 indicates low risk with 4 to 10 indicating medium risk and more than 10 indicating high risk of suicide. The scale has been translated into Sinhala and validated (49).

Psychological Autopsy Checklist
This scale assesses the risk factors and circumstances that has been present prior to a suicide (50). This scale has been translated into Sinhala and used in an epidemiological study(51).

Scales used in assessing psychological trauma

Caretaker Version of the War Trauma Questionnaire (CWTQ-A)

There are two versions of the CWTQ; CWTQ-A and CWTQ-C. The CWTQ-A is administered to parents or caretakers. It inquires about the experiences of children between the ages of 3 and 16 years. The questions in section ONE (General Information) of the CWTQ are coded in relation to the categories included in each adaptation of the measure. In section TWO (War Experiences), the number and type of war-related experiences are calculated for each child. The scale has been translated to Sinhala and Tamil and used in an epidemiological study in Sri Lanka (52).

Child PTSD Symptom Scale (CPSS)

This is a 17-item scale which measures symptoms of PTSD according to the DSM-IV with a 4-point response scale (range 0-51). This has been translated into Tamil and used in a cluster randomized trial in Sri Lanka(36).

Friborg's Resilience Scale for Adult – RSA

The RSA consists of 33 items and was developed to measure intrapersonal and interpersonal protective resources that may facilitate adaptation and tolerance to stress and adverse negative life events This scale has been translated into Tamil and used in a study conducted in Jaffna (53).

Harvard Trauma Questionnaire

The Harvard Trauma Questionnaire (HTQ) is a checklist written by the Harvard Program in Refugee Trauma, similar in design to the HSCL-25 (53). It inquires about a variety of trauma events, as well as the emotional symptoms considered to be uniquely associated with trauma. This scale has been translated into Tamil and used in an epidemiological study of war related mental health conditions in Jaffna District (16). Questionnaire was translated into Tamil and back-translated into English by different translators to ensure accuracy. Traumatic events were adapted for Jaffna. A formal validation is not available.

Impact of Events Scale

This is an 8 item questionnaire which can be used to identify PTSD (54). It has been used in community surveys following major disasters. It has an intrusive sub-scale and an avoidance sub-scale with 4 items each. The scale was translated to Sinhala and validated. The authors concluded that Sinhalese version of the Impact of Event Scale has sound diagnostic accuracy as well as psychometric properties and makes it an ideal measure for epidemiological studies related to natural and man made disasters in Sri Lanka (55). The Tamil translation of this scale has also been validated (52).

Inventory of Complicated Grief

The Inventory of Complicated Grief (ICG) was devised by Prigerson, et al. to assess indicators of pathological grief, such as anger, disbelief, and hallucinations. This scale has been translated into Tamil and used in a study conducted in Jaffna (23).

PTSD Check List - military version (PCL-M) and civilian version (PCL-C)

The PCL-M is the military version of PTSD checklist and questions refer to "a stressful military experience". There are two other versions PCL-S the non-military version and PCL-C the general civilian version. The scoring is the same for all three versions. A total score is computed by adding the 17 items, so that possible scores range from 17 to 85 and a cut-off of 50 on the PCL is a good predictor of a PTSD. The PCL-M has been translated into Sinhala and Validated (56). The Sinhala translation of the civilian version has been used in an epidemiological study in the Sri Lanka Navy (57).

Post-traumatic Stress Symptom Scale – Self Report (PSS–SR)

PSS-SR is a 17-item self-reported questionnaire used to assess symptoms of posttraumatic stress disorder. Each of the 17 items describe PTSD symptoms which respondents rate according to the frequency or severity using a Likert-type scale ranging from 0 (not at all or only one time) to 3 (almost always or five or more times per week). The scale was translated for use in Sri Lanka. It was forward-then back-translated by two independent bi-lingual workers and consensus was obtained on items for content and semiotic equivalence by investigators and stakeholders (18).

Sri Lankan Index of Psychosocial Status - Adult Version (SLIPPS-A)

SLIPPS-A a measure of psychosocial status that could reliably and accurately assess psychosocial functioning in Sri Lankans impacted by traumatic events (58). This is a 26-item measure assessing local indicators of distress, with items placed on a frequency scale from 0 (never) to 4 (6-7 days per week).

Stress impact questionnaire

This was developed by Community Medicine and Psychiatry Departments of the University of Jaffna. It has been used in an epidemiological study conducted in Jaffna(59).

Scales used to assess cognitive functions

Mini mental state examination (MMSE)

MMSE or Folstein test is a brief 30-point questionnaire test that is used to screen for cognitive impairment. A cut off of 24 is used. It is also used to estimate the severity of cognitive impairment and to follow the course of cognitive changes in an individual over time, thus making it an effective way to document an individual's response to treatment. The scale has been culturally adapted, translated into Sinhala and validated (60). Tamil translations have been used in epidemiological studies in South India (42). A Tamil translation is being validated in Sri Lanka.

Modified Bristol and Blessed Scales Activities of daily living

This scale measures activities of daily living in the elderly population. The original Bristol and short form of Blessed scales consist of 20 and 11 items respectively. However, the modified Bristol and Blessed scales

consist of 14 and 13 items respectively. The scale was translated into Sinhala, culturally adapted and validated (61).

Montreal Cognitive Assessment Scale (MoCA)

The MoCA (Montreal Cognitive Assessment) was developed as a tool to screen patients with mild cognitive complaints who usually perform in the normal range on the MMSE. It also addresses the difficulties of detecting early dementia as many of these patients score over 26 in
the MMSE. It is able to differentiate between normal and MCI as well as between MCI and early dementia. The scale has been culturally adapted, translated into Sinhala and validated (62). A Tamil translation is being validated in Sri Lanka.

Scales used in Children and Adolescents

Child behaviour Check List (CBCL)

CBCL is widely used to identify problem behavior in children. It is an important measure of children's emotional, behavioural and social aspects of life. The checklist consists of a number of statements about the child's behavior and the responses are recorded on a Likert scale. The scale has been translated into Sinhala and validated (63). This scale has also been translated into Tamil and validate in a population in Tamil Nadu (64).

Child Behaviour Assessment Instrument

This is a 15 item scale which rates externalizing behaviour among the 4-6 year olds. A score of 16 or more is suggestive of externalizing behaviour. A score of > 16 identifies children with behavioural problems. This instrument was developed and validated in Sri Lanka(65).

Child Post-Traumatic Reaction Index (CPTS-RI)

The CPTS-RI (also known as the Reaction Index) is a 20-item interviewer-administered scale for children between ages 6 and 17 that assesses some of the DSM-III-R/DSM-IV symptoms for PTSD as well as guilt, impulse control, somatic symptoms, and regressive behaviors (66). Items are rated on a five-point frequency scale (ranging from "none" to "most of the time"). The CPTS-RI yields total scores ranging from 0 to 80 that reflect the frequency of symptoms. This scale has been validated in Sinhala and Tamil (52).

Child Psychosocial Distress Screener

The Child Psychosocial Distress Screener (CPDS) is a 7-item inventory rated on a 3 point Likert type scale. Its purpose is to measure the level of psychological distress in children aged between 8 and 14, usually following some form of traumatic event or events, such as those associated with war. Four of the seven items should be answered by the child, and three should be answered by the child's teacher. This scale has been validated in a Sri Lankan population (67).

Childhood Trauma Questionnaire

Identify adolescent and adult clients with histories of trauma It consists of five scales which measure physical abuse, sexual abuse, emotional abuse, physical neglect and emotional neglect. This scale has been translated into Tamil and used in an epidemiological study in Northern Sri Lanka(68).

Early Trauma Inventory

The clinician-administered ETI is a 56-item interview for the assessment of physical, emotional, and sexual abuse, as well as general traumatic experience (including items which range from parental loss to natural disaster) (69). This scale has been translated into Tamil and used in an epidemiological study in Northern Sri Lanka (68).

Modified Checklist for Autism in Toddlers (M-CHAT)

The M-CHAT is an autism screening tool designed to identify children 16 to 30 months of age who need a more thorough assessment for possible early signs of autism spectrum disorder (ASD) or developmental delay. This scale has been translated into Sinhala and validated (70).

Parent-Child Conflict Tactics Scale

The parent-child version of the Conflict Tactics Scale obtains information about different manners in which parents have handled the discipline of the child in the past year. The responses are grouped into three types: Verbal reasoning, Verbal aggression, and Physical violence. This scale has been translated into Sinhala, culturally adapted and validated (71).

Strengths and Difficulties Questionnaire (SDQ)

The SDQ is a brief behavioural screening questionnaire for 3-16 year olds measuring 25 attributes, along 5 scales; emotional, conduct, hyperactivity/inattention, peer relationship problems and pro social behaviours. The Sinhala translation has been validated (72, 73). The scale has also been translated into Tamil and validated (74).

The Sri Lankan Index of Psychosocial Status for Children (SLIPSS–C)

The SLIPSS–C is a 49-item measure assessing multiple subdomains of psychosocial distress. The measure was developed in Sinhala and Tamil languages (75).

University of California at Los Angeles Grief Questionnaire

This is a 17-item screening measuring adolescent grief reactions to violent and non-violent bereavement. Items are measured on a five-point Likert-type frequency scale. The scale consists of three subscales theorized to measure three dimensions, both positive and maladaptive, of grief and mourning in bereaved adolescents. The scale has been validated in Sinhala and Tamil (52).

University of California at Los Angeles Posttraumatic Stress Disorder index (UCLA-PTSD Reaction Index)

This is a 48-item semi-structured interview that assesses a child's exposure to 26 types of traumatic events and identifies PTSD according to DSM-IV diagnostic criteria. It includes 19 items to assess the 17 symptoms of PTSD as well as 2 associated symptoms (guilt and

fear of event's recurring). This has been translated into Sinhala (76). The Tamil language translation has also been validated (77, 78).

Scales used to assess substance use

Alcohol Use Disorders Identification Test (AUDIT)
This is a 10 item scale which identifies the level of alcohol use. Score of ≥8 is indicative of hazardous drinking. AUDIT scores of ≥20 is suggestive of alcohol dependence. This scale has been translated into Sinhala and validated (79). It has also been used on a military population in Sri Lanka (80).

Student Questionnaire
The original SQ contains the following; introduction, background and demographic characteristics, use of cigarettes and alcohol, familiarity with and the use of various controlled substances, age at first use, personal disapproval of use, perceived risk of using, and perceived availability of substances (81). This scale has been translated into Sinhala and validated (82). The Sinhala version was titled Adolescent Substance Use Student Questionnaire (ASUSQ).

Other Scales

New Mexico Refugee Symptom Checklist–121 (NMRSCL–121)
NMRSCL – 121 is a checklist of 121 symptoms with 12 subscales which assesses the range of symptoms experienced by refugees (83). Scoring may be conducted by adding the sum of the scores for each scale (severity scores), or by adding the presence of each symptom in each scale symptom count). This scale has been translated into Sinhala (18).

Personality Assessment Questionnaire
This child version of this scale has been validated among the 12 year olds of Sri Lanka. The cut-off score for the Sinhala version of the Child PAQ was determined as 89, at a sensitivity of 71.1% and specificity of 69.4% (84).

Psychotropic Related Sexual Dysfunction Questionnaire (PRSexDQ)
PRSexDQ consists of 7 items describing sexual dysfunction. The first two items are scored on a scale with two responses; items 3 to 6 on scale of 4 responses and item 7 on a scale of 3 responses. In addition to individual scores for each item, a total score may be obtained as a sum of items 3 to 7. The scale has been translated into Sinhala and validated (85).

Sheehan Disability Inventory
The Sheehan Disability Inventory (SDS) is a brief self-report tool which was developed to assess functional impairment in three inter-related domains; work/school, social and family life. The scale has been translated into Sinhala and used in epidemiological studies (17, 18).

Short Form-36 (SF-36)
The SF-36 is a multi-purpose, short-form health survey with only 36 questions. It yields an 8-scale profile of functional health and well-being scores as well as psychometrically-based physical and mental health summary measures and a preference-based health utility index. The SF-36 has been modified translated and validated in Sri Lanka (86). The mental health sub components have been translated into Sinhala and used in a study of females with infertility (87).

Behavioural inhibition system behavioural activation system (BIS/BAS) scales, sensitivity to punishmentand sensitivity to reward questionnaire (SPSRQ)

Broadly the BAS score can be considered as a measure of impulsivity while the BIS score is a measure of anxiety-related traits. These scales have been translated into Sinhala and validated (87).

Discussion

Through the search strategy detailed above we have identifie 55 scales which have been translated into Sinhala or Tamil and used in research with populations in Sri Lanka. Most of the scales have been developed and validated in Western populations. Use of these scales enables comparison of findings from Sri Lanka with those from other countries.

Outcome of scales used to diagnose conditions such as depressive disorder or assess cognitive functions are influenced by cultural factors and education. Some scales cannot be directly translated into another language as corresponding words may not be available in the native language. There is also concern that concepts such as depression may be expressed differently in different cultures. Therefore when scales developed and validated in Western population are used in other countries, these may require translation, cultural adaptation and validation for that particular population.

Many scales have been translated into Tamil and validated int South India. How ever differences in the dialect may require these translations to be adapted for use in Sri Lanka.

Many of the scales have been translated and back translated but validity and reliability of the translated scales have not been examined. More often than not the translated and culturally adapted scales show the same psychometric properties as the original scales. However, use of scales which have not been validated for that particular population is questioned.

Some of the scales are copyrighted and require users to purchase them. The cost of such scales limit the use of such scales for research in low and middle income countries. We find the practice of limiting access to scientific knowledge unfortunate (88,89).

We have made every effort to identify scales which have been validated for use in Sri Lanka. However publications in grey literature was not included. Even

when a formal validation has not been carried out we have included the scale if the translation has been used in a study published in a peer reviewed journal.

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References

1. Faustman WO. Brief Psychiatric Rating Scale, in The Use of Psychological Testing for Treatment Planning and Outcome Assessment. Edited by Maruish ME. Hillsdale, NJ, Erlbaum, 1994, pp 371–401

2. Hamilton M. The assessment of anxiety states by rating. Br J Med Psychol 1959; 32:50–55.

3. Validity of Test Interpretation and Use [http://eric.ed.gov/?id=ED395031]

4. Sumathipala AMJ. New approach to translating instruments for cross-cultural research: a combined qualitative and quantitative approach for translation and consensus generation. International Journal of Methods inPsychiatric Research 2000; 9: 87-95

5. Mumford DB, Tareen IA, Bhatti MR, Bajwa MA, Ayub M, Pervaiz T. An investigation of 'functional' somatic symptoms among patients attending hospital medical clinics in Pakistan--II. Using somatic symptoms to identify patients with psychiatric disorders. J Psychosom Res 1991, 35(2-3):257-264.

6. Ball HA, Siribaddana SH, Sumathipala A et al. Genetic and environmental contributions to the overlap between psychological, fatigue and somatic symptoms: a twin study in Sri Lanka. Twin Res Hum Genet 2011, 14(1):53-63.

7. Hanwella R, Jayasekera NELW, de Silva VA. Fatigue symptomsin Sri Lanka Navy personnel deployed in combat areas. Ceylon Med j (in press)

8. Wickramasinghe SC, Rajapakse L, Abeysinghe R, Prince M. The Clinical Interview Schedule--Sinhala version: validation in a community setting in Sri Lanka. Int J Methods Psychiatr Res 2002, 11(4):169-177.

9. Demyttenaere K, Bruffaerts R, Posada-Villa J, et al. Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. JAMA 2004, 291(21):2581-2590.

10. Ball HA, Siribaddana SH, Kovas Y, et al. Epidemiology and symptomatology of depression in Sri Lanka: a cross-sectional population-based survey in Colombo District. J Affect Disord 2010, 123(1-3):188-196.

11. Goldberg D, Williams P. A user's guide to the General Health Questionnaire, Windsor:NFER-Nelson,1991

12. Abeysena C, Peiris U, Jayawardana P, Rodrigo A. Validation of the Sinhala version of 30-item General Health Questionnaires. International Journal of Collaborative Research on Internal Medicine & Public Health 2012; 4(7): 1373-1381.

13. Abeysena C, jayawardana P, Peiris U. Factor structure and reliability of the 12-item Sinhala version of General Health Questionnaire. International Journal of Collaborative Research on Internal Medicine 2012, 4:1606.

14. Kuruvilla A, Pothen M, Philip K, Braganza D, Joseph A, Jacob KS: The validation of the Tamil version of the 12 item general health questionnaire. Indian J Psychiatry 1999, 41(3):217-221.

15. Veijola J, Jokelainen J, Laksy K, Kantojarvi L, Kokkonen P, Jarvelin MR, Joukamaa M: The Hopkins Symptom Checklist-25 in screening DSM-III-R axis-I disorders. Nord J Psychiatry 2003, 57(2):119-123.

16. Husain F, Anderson M, Lopes Cardozo B, Becknell K, Blanton C, Araki D, Vithana EK: Prevalence of war-related mental health conditions and association with displacement status in postwar Jaffna District, Sri Lanka. JAMA 2011, 306(5):522-531.

17. Williams SS, Wijesinghe CA, Jayamanne SF, Buckley NA, Dawson AH, Lalloo DG, de Silva HJ: Delayed psychological morbidity associated with snakebite envenoming. PLoS Negl Trop Dis 2011, 5(8):e1255.

18. Hollifield M, Hewage C, Gunawardena CN, Kodituwakku P, Bopagoda K, Weerarathnege K. Symptoms and coping in Sri Lanka 20-21 months after the 2004 tsunami. Br J Psychiatry. 2008 Jan;192(1):39-44. doi: 10.1192/bjp.bp.107.038422.

19. Zigmond AS, Snaith RP: The hospital anxiety and depression scale. Acta Psychiatr Scand 1983, 67(6):361-370.

20. de Silva D. Anxiety disorders in Sri Lanka. Dissertation submitted to the Postgraduate Institute of Medicine, Colombo, Sri Lanka.

21. Dolage N. Dissertation submitted to the Postgraduate Institute of Medicine, Colombo, Sri Lanka.

22. [http://www.proqolid.org/instruments/hospital_anxiety_and_depression_scale_hads]

23. Sivayokan S. The psychological impact of disappearence:a preliminary study among wives of 'disappeared' persons. Dissertation submitted to the Postgraduate Institute of Medicine, Colombo, Sri Lanka.

24. Kessler RC, Andrews G, Colpe LJ, et al.Short screening scales to monitor population prevalences and trends in non-specific psychological distress. Psychol Med 2002, 32(6):959-976.

25. Wijeratne LT, Williams SS, Rodrigo MDA, et al. Validation of the Kessler's psychological distress scale among the Sinhalese population in Sri Lanka. South Asian Journal of Psychiatry 2011 September; 2(2): 21-25.

26. Sawang S, Oei TPS, Goh YW et al. The Ways of Coping Checklist revision-Asian version (WCCL-ASIAN): a new factor structure with confirmatory factor analysis. Applied Psychology 2011; 59(2):202-219.

27. Maduwage SM DeS. Psychosocial problems amoung caregivers of patients with schizophrenia and to develop and assess the effectivenesss of an intervention to improve emotional well- being of caregivers. Thesis for MD (Community Medicine) Postgraduate Institute of Medicine, Colombo, Sri Lanka Available at http://pgim.srilankahealthrepository.org/handle/123456789/18691

28. Beck AT, Steer, R.A., & Brown, G.K: Manual for the Beck Depression Inventory-II. San Antonio, TX. Psychological Corporation 1996.

29. Perera H Mudalige CDK , Karunaweera H M P P et al. Prevalence of depression in mothers of children suffering from psychiatric and physical disorders. Sri Lanka Journal of Child Health 2008, 37:42-47.

30. Jayawickreme N. "How does culture impact psychopathology? A quantitative and qualitative examination of trauma-related anxiety and depression in a non-Western, war-affected population" (January 1, 2010). Dissertations available from ProQuest. Paper AAI3447148. http://repository.upenn.edu/dissertations/AAI3447148

31. Radloff, LS. The CES-D Scale: A self-reportdepression scale for research in the general population. Applied Psychological Measurement, 1977,1(3), 385-401.

32. de Silva VA Ekanayake S, Hanwella R.Validation of the Sinhala version of the Centre for Epidemiological Studies Depression scale (CES-D) in out-patients. Ceylon Med J (in press)

33. Ferdinando KDAR. Prevalence and correlates of depression in adults of 25-45 years in Kalutara DDHS area. Dissertation submitted to the Postgraduate Institute of Medicine, Colombo, Sri Lanka.

34. Chokkanathana S, Mohanty J. Factor structure of the CES-D scale among older adults in Chennai, India Aging & Mental Health 2013, 17:517-525.

35. Rekha A. Adaptation and Validation of the Depression Anxiety and Stress Scale (DASS21) among students in the University of Colombo. Annual research Symposium 2012, University of Colombo

36. Tol WA, Komproe IH, Jordans MJ, et al. Outcomes and moderators of a preventive school-based mental health intervention for children affected by war in Sri Lanka: a cluster randomized trial. World Psychiatry 2012, 11(2):114-122.

37. Rowel D, Jayawardena P, Fernando N. Validation of the Sinhala translation of Edinburgh Postnatal Depression Scale. Ceylon Med J. 2008 Mar;53(1):10-3.

38. Agampodi SB, Agampodi TC. Antenatal depression in Anuradhapura, Sri Lanka and the factor structure of the Sinhalese version of Edinburgh post partum depression scale among pregnant women. PLoS One. 2013 Jul 26;8(7):e69708. doi: 10.1371/journal.pone.0069708

39. Benjamin D Chandramohan A, Annie IK, Prasad J, Jacob KS. Validation of the Tamil version of Edinburgh post-partum depression scale. J Obstet Gynecol India 2005, 55:241-243.

40. Yesavage JA . Geriatric Depression Scale (Short version). Psychopharmacol Bull 1988, 24:709-711.

41. Kulathunga M, Umayal S, Somaratne S, Srikanth S, Kathriarachchi S, De Silva K. Validation of the Geriatric Depression Scale for an elderly Sri Lankan clinic population. Indian J Psychiatry. 2010 Jul;52(3):254-6. doi: 10.4103/0019-5545.70979.

42. Reddy NB, Pallavi M, Reddy NN, Reddy CS, Singh RK, Pirabu RA: Psychological Morbidity Status Among the Rural Geriatric Population of Tamil Nadu, India: A Cross-sectional Study. Indian J Psychol Med 2012, 34(3):227-231.

43. Abeyasinghe DR, Tennakoon S, Rajapakse TN. The development and validation of the Peradeniya Depression Scale (PDS)-a culturally relevant tool for screening of depression in Sri Lanka. J Affect Disord. 2012 Dec 15;142(1-3):143-9

44. Spitzer RL, Williams JB, Kroenke K, Linzer M, deGruy FV, 3rd, Hahn SR, Brody D, Johnson JG: Utility of a new procedure for diagnosing mental disorders in primary care. The PRIME-MD 1000 study. JAMA 1994, 272(22):1749-1756.

45. Hanwella R, Ekanayake S, de Silva VA. The validity and reliability of the Sinhala translation of the Patient Health Questionnaire (PHQ-9) and PHQ-2 screener Depression Research and Treatment.Depression Research and Treatment (in press)

46. Beck, AT, Schuyler D, Herman I. (1974). Development of suicidal intent scales. In A. T. Beck, H. L. P. Resnik, & D. J. Lettieri (Eds.). The prediction of suicide. Bowie, MD: Charles Press.

47. Samaraweera S, Sumathipala A, Siribaddana S, Sivayogan S, Bhugra D. Prevalence of suicidal ideation in Sri Lanka. Crisis 2010, 31(1):30-35. Columbia suicide scale [http://www.cssrs.columbia.edu/translations_cssrs.html]

48. Medagama IR Validation of a rating scale for assessment of suicidal intent in patients presenting with deliberate self-harm to be used in hospitals in Sri Lanka. Dissertation submitted to the Postgraduate Institute of Medicine, Colombo, Sri Lanka Available at http://pgim.srilankahealthrepository.org/handle/123456789/18702

49. Proenca, M. The Psychological Autopsy, Suicide and Parasuicide, April 7, 2001.

50. Samaraweera S, Sumathipala A, Siribaddana S, Sivayogan S, Bhugra D: Completed suicide among Sinhalese in Sri Lanka: a psychological autopsy study. Suicide Life Threat Behav 2008, 38(2):221-228.

51. Chase R, Doney A, Sivayogan S, Ariyaratne, V, Satkunanayaga, P, Swaminathan A. Mental health initiatives as peace initiatives in Sri Lankan schoolchildren affected by armed conflict. Medicine, Conflict, and Survival, 2009,15, 379–390

52. Mollica RF, Caspi-Yavin Y, Bollini P, Truong T, Tor S, Lavelle J. The Harvard Trauma Questionnaire: Validating a Cross-Cultural Instrument for Measuring Torture, Trauma and Posttraumatic Stress Disorder in Indochinese Refugees. J Nerv Ment Disease. 1992; 180:111-116.

53. Horowitz M, Wilner N, Alvarez W: Impact of Event Scale: a measure of subjective stress. Psychosom Med 1979, 41(3):209-218.

54. John PB, Russell PS: Validation of a measure to assess Post-Traumatic Stress Disorder: a Sinhalese version of Impact of Event Scale. Clin Pract Epidemiol Ment Health 2007, 3:4.

55. Semage SN, Sivayogan S, Forbes D, et al. Cross-cultural and factorial validity of PTSD check list-military version (PCL-M) in Sinhalese language. Eur J Psychotraumatol. 2013;4. doi: 10.3402/ejpt.v4i0.19707. Epub 2013 Feb 12.

56. Hanwella R, de Silva V. Mental health of Special Forces personnel deployed in battle. Soc Psychiatry Psychiatr Epidemiol 2012, 47(8):1343-1351.

57. Fernando GA. Assessing mental health and psychosocial status in communities exposed to traumatic events: Sri Lanka as an example. Am J Orthopsychiatry. 2008 Apr;78(2):229-39.

58. Somasundaram DJ, Sivayokan S: War trauma in a civilian population. Br J Psychiatry 1994, 165(4):524-527.

59. de Silva HA, Gunatilake SB. Mini Mental State Examination in Sinhalese: a sensitive test to screen for dementia in Sri Lanka. Int J Geriatr Psychiatry. 2002 Feb;17(2):134-9.

60. Umayal S, Kulathunga M, Somaratne S et al. Validation of a functional screening instrument for dementia in an elderly sri lankan population: comparison of modified bristol and blessed activities of daily living scales. BMC Res Notes. 2010 Oct 26;3:26862.

61. Karunaratne S, Hanwella R, De Silva V. Validation of the Sinhala version of the Montreal Cognitive Assessment (MoCA) in screening for dementia. Ceylon Medical Journal 2011;56:147-153.

62. Senaratna BC, Perera H, Fonseka P. Sinhala translation of child behaviour checklist: validity and reliability. Ceylon Med J. 2008 Jun;53(2):40-4.

63. John PB, Russell S, Russell PS. The prevalence of posttraumatic stress disorder among children and adolescents affected by tsunami disaster in Tamil Nadu. Disaster Manag Response 2007, 5(1):3-7.

64. Samarakkody D, Fernando D, Perera H, McClure R, De Silva H. The Child Behaviour Assessment Instrument: development and validation of a measure to screen for externalising child behavioural problems in community setting. Int J Ment Health Syst. 2010; 4: 13.

65. Nader K, Pynoos R. The children of Kuwait following the Gulf Crisis. In: Leavitt L, Fox N, eds. Effects of War and Violence in Children . Hillsdale NJ: Laurence Erlbaum, 1993:181-95.

66. Jordans MJ, Komproe IH, Tol WA, De Jong JT. Screening for psychosocial distress amongst war-affected children: cross-cultural construct validity of the CPDS. J Child Psychol Psychiatry. 2009 Apr;50(4):514-23

67. Catani C, Jacob N, Schauer E, Kohila M, Neuner F: Family violence, war, and natural disasters: a study of the effect of extreme stress on children's mental health in Sri Lanka. BMC Psychiatry 2008, 8:33.

68. Bremner JD, Vermetten E, Mazure CM: Development and preliminary psychometric properties of an instrument for the measurement of childhood trauma: the Early Trauma Inventory. Depress Anxiety 2000, 12(1):1-12.

69. Perera H WW, Aluthwelage R: Screening of 18–24-Month-Old Children for Autism in a Semi-Urban Community in Sri Lanka. Journal of Tropical Pediatrics 2009, 55:402-405.

70. de Zoysa P, Rajapakse L, Newcombe PA: Adaptation and validation of the parent-child conflict tactics scale for use in Sri Lanka. Ceylon Med J 2005, 50(1):11-14.

71. Perera S, Thalagala E, Chandrarathna SH, Agampodi TC, Nugegoda DB, Agampodi SB. Factor structure and normative data of the Sinhalese version of self reported Strength and Difficulties Questionnaire (SDQ) for adolescents. Ceylon Med J. 2013 Jun;58(2):66-71

72. Perera H. Mental health of adolescent school children in Sri Lanka – a national survey. Sri Lanka Journal of Child Health 2004, 33:78-81.

73. Lukumar P, Wijewardana K, Hermansson J, Lindmark G. Validity and reliability of Tamil version of Strengths and Difficulties Questionnaire self-report. Ceylon Med J. 2008 Jun;53(2):48-52.

74. Fernando GA, Miller KE, Berger DE. Growing Pains: The Impact of Disaster-Related and Daily Stressors on the Psychological and Psychosocial Functioning of Youth in Sri Lanka. Child Dev. 2010.Jul:81(4):1192-1210

75. Neuner F, Schauer E, Catani C, Ruf M, Elbert T: Post-tsunami stress: a study of posttraumatic stress disorder in children living in three severely affected regions in Sri Lanka. J Trauma Stress 2006, 19(3):339-347.

76. Elbert T, Schauer M, Schauer E, Huschka B, Hirth M, Neuner F: Trauma-related impairment in children--a survey in Sri Lankan provinces affected by armed conflict. Child Abuse Negl 2009, 33(4):238-246.

77. Catani C, Jacob N, Schauer E, Kohila M, Neuner F. Family violence, war, and natural disasters: A study of the effect of extreme stress on children's mental health in Sri Lanka. BMC Psychiatry 2008, 8:33

78. De Silva P, Jayawardana P, Pathmeswaran A. Concurrent validity of the alcohol use disorders identification test (AUDIT). Alcohol Alcohol. 2008 Jan-Feb;43(1):49-50

79. Hanwella R, de Silva VA, Jayasekera NE: Alcohol use in a military population deployed in combat areas: a cross sectional study. Subst Abuse Treat Prev Policy 2012, 7:24.

80. United Nations Office on Drugs and Crime. (2003). Global assessment programme on drug abuse——toolkit module 2: handbook for implementing school surveys on drug abuse. Retrieved October 11, 2004, from http://www.unodc.org/pdf/gap_kit_module 2.pdf

81. Ismail AC, Seneviratne Rde A. Adaptation and validation of a self-report measure to evaluate substance use among Sri Lankan adolescents. Subst Use Misuse. 2010;45(1-2):213-23

82. Hollifield M, Warner T. The New Mexico Refugee Symptom Checklist (NMRSCL) Questionnaire. University of New Mexico, 2000

83. De Zoysa, P., Rajapakse, L. & Newcombe, P. A., 2007. Adaptation and validation of the Personality Assessment Questionnaire on 12-year-old children in Sri Lanka. In: L. S. Boyar, ed. New psychological tests and testing research . New York: Nova SciencePublishers Inc, pp. 955-80.

84. Kulatunga M. Psychotropic related sexual dysfunction among male patients attending psychiatry follow up Clinic at Colombo South Teaching Hospital & National Hospital Sri Lanka- a descriptive study. Dissertation submitted to the Postgraduate Institute of Medicine, Colombo, Sri Lanka. Available at http://pgim.srilankahealthrepository.org/handle/123456789/18700

85. Wijesinghe RS, Wickremasinghe AR: Physical, Psychological, and Social Aspects of Quality of Life in Filarial Lymphedema Patients in Colombo, Sri Lanka. Asia Pac J Public Health 2012. E Pub

86. Lansakara N, Wickramasinghe AR, Seneviratne HR: Feeling the blues of infertility in a South Asian context: psychological well-being and associated factors among Sri Lankan women with primary infertility. Women Health 2011, 51(4):383-399.

87. Dissabandara, L, Loxton N, Dias S, Daglish M, Stadlin A. Psychometric properties of three personality inventories translated to Sinhalese. SL J Psychiatry 2011; 2 (1):13-17

88. de Silva V, Hanwella R: Why are we copyrighting science? BMJ 2010, 341:c4738.

89. Hanwella R, de Silva V. Access to information is crucial for science. Lancet. 2011 Apr 23;377 (9775):1404.