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Validating the Center for Epidemiological Studies Depression Scale for Children in Rwanda

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Abstract

Objective—We assessed the validity of the Center for Epidemiological Studies Depression Scale for Children (CES-DC) as a screen for depression in Rwandan children and adolescents. Although the CES-DC is widely used for depression screening in high-income countries, its validity in low-income and culturally diverse settings, including sub-Saharan Africa, is unknown.

Method—The CES-DC was selected based on alignment with local expressions of depression-like problems in Rwandan children and adolescents. To examine criterion validity, we compared CES-DC scores to depression diagnoses on a structured diagnostic interview, the Mini International Neuropsychiatric Interview for Children (MINI KID), in a sample of 367 Rwandan

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children and adolescents aged 10 through 17 years. Caregiver and child or adolescent self-reports endorsing the presence of local depression-like problems *agahinda kenshi* (persistent sorrow) and *kwiheba* (severe hopelessness) were also examined for agreement with MINI KID diagnosis.

Results—The CES-DC exhibited good internal reliability ($\alpha = .86$) and test-retest reliability ($r = .85$). The area under the receiver operating characteristic curve for the CES-DC was 0.825 when compared to MINI KID diagnoses, indicating a strong ability to distinguish between depressed and nondepressed children and adolescents in Rwanda. A cut point of 30 corresponded with a sensitivity of 81.9% and a specificity of 71.9% in this referred sample. MINI KID diagnosis was well aligned with local expressions of depression-like problems.

Conclusion—The CES-DC demonstrates good psychometric properties for clinical screening and evaluation in Rwanda, and should be considered for use in this and other low-resource settings. Population samples are needed to determine a generalizable cut point in nonreferred samples.

Keywords

CES-DC; depression; Rwanda; validity

Depression is the fourth leading cause of disease burden globally and is estimated to be the leading cause of disability among individuals aged 15 to 44 by 2020.¹ Most mental disorders begin in youth, yet screening and treatment for children and adolescents with depression is nearly nonexistent in most developing countries.² Depression screening tools for children and adolescents have not been validated in most low-income countries, particularly those in sub-Saharan Africa, despite the pressing need to identify and treat cases of depression in these regions.

In the United States and Europe, the Center for Epidemiological Studies Depression Scale for Children (CES-DC) is widely used to screen for child and adolescent depression, and has demonstrated good reliability and validity in a number of settings. Despite its popularity in these higher-resource settings, however, only two studies to date have evaluated the CES-DC for use in low-income and culturally diverse contexts: in the first, Aguilar and Berganza used clinician diagnoses based on *DSM-III-R* criteria as a gold standard to validate the CES-DC in Guatemala.³ They found that a score of 15, which was recommended in the initial validation of the CES-DC,⁴ did discriminate subjects who were depressed; however, an elevated cut point of 21 was shown to have even better discrimination in this setting. In the second, Li *et al.* reported good internal consistency ($\alpha = 0.82$) of the Chinese version of the CES-DC; however, they were unable to examine cut points or criterion validity, having not included a gold standard clinical assessment or diagnostic interview in their study design.⁵

To our knowledge, no study to date has assessed any aspect of validity of the CES-DC in an African setting. We undertook this study to examine the psychometric properties, including criterion validity, sensitivity, and specificity, of a Kinyarwanda version of the CES-DC in a sample of children and adolescents in rural Rwanda. In this article, we describe our mixed methods approach to selecting, adapting, and validating the CES-DC for use with children and youth in Rwanda. Our approach took special care to account for the contextual and

culture-specific factors that influence assessment of mental disorders across different cultural contexts,^{6–9} using methods that reduce the risk of imposing Western-based diagnostic systems or contextually inappropriate criteria in diverse populations.^{10–16} In working with government partners on this project, we were particularly interested to identify screening cut point scores that correspond to clinical thresholds for depression, as screening tools for assessing cases of depression in children and adolescents are sorely lacking in Rwanda. In addition, the validation exercise was situated within a larger services research project, namely, the development of a family strengthening intervention for children and caregivers affected by HIV/AIDS, that will use the adapted and validated CES-DC to evaluate intervention impact on depression-like symptoms, among other outcomes, in participating children and families.

METHOD

Phase 1: Identification of Local Mental Health Problems

Culturally relevant indicators of mental health problems in children and adolescents from southern Kayonza District were described in previous qualitative research.¹⁷ In brief, prior analyses identified local mental health problems and their symptoms/indicators using Free Listing (n = 74) and Key Informant Interviews (n = 59). Thematic Content Analysis was then used to distill and classify important symptoms and overarching construct cover terms. Four constructs that approximated internalizing and depression-like mood disorders were identified: guhangayika (anxiety/worry) was explained as quite common among children and adolescents. When left untreated, “guhangayika” was said to sometimes develop into agahinda kenshi (persistent sorrow). Kwiheba (severe hopelessness) was described as an even more serious manifestation of a major depressive state in children and youth. In addition, umushiha (persistent irritability/anger) was described as feeding a cycle of social withdrawal and isolation. Table 1 presents a brief description of these syndromes and their approximate *DSM-IV-TR* correlates based on face validity in review by Rwandan psychologists and U.S.-based research team members trained in *DSM-IV-TR* diagnoses.

Phase 2: CES-DC Selection and Adaptation

We performed an extensive search of child depression screening measures using Ovid’s Health and Psychosocial Instrument database (HaPI), PubMed, Google Scholar, and the reference lists from relevant publications. Search criteria for potential measures included the following: prior cross-cultural application with children, and strong psychometric properties or evidence of validity in low-resource, low-literacy settings. An initial set of six measures was identified. The research team then compared items of each standardized measure to the symptom/indicator list of each depression-like construct. For example, the local construct of *agahinda kenshi* includes symptoms of feeling gloomy (*arijimye*), feeling low in energy (*afite imbarage nke*), and feeling sad (*arababaye*), among others. The items of the CES-DC were examined for conceptual equivalence to these symptoms, and discussion across U.S. and Rwandan research teams ensured agreement between both native Kinyarwanda and native English speakers. The number of local symptoms successfully matched to the standardized scale was divided by the total number of symptoms in the local construct

symptom list to generate a percentage match. A local psychologist familiar with mental health instruments then reviewed the matching results for accuracy and thoroughness.

For depression-like problems *agahinda kenshi* (persistent sorrow) and *kwiheba* (severe hopelessness), the CES-DC was the best conceptual fit, matching 67% of *agahinda kenshi* symptoms and 50% of *kwiheba* symptoms. The Children's Depression Inventory (CDI) also matched at similar rates, but was deemed less feasible for public health application in Rwanda, given proprietary use agreements requiring a fee for administration. The CES-DC was thus chosen as a promising measure for capturing the symptoms of *agahinda kenshi* and *kwiheba*. The adult Center For Epidemiological Studies Depression Scale (CES-D)¹⁸ has also been previously used in Rwanda and has shown evidence of validity with adults.¹⁹

Items on the CES-DC that were not matched to symptoms in *agahinda kenshi* or *kwiheba* were retained to maintain the integrity of the standardized scale, a 20-item self-report measure. We also added locally derived items not originally on the CES-DC to improve the range of variability for evaluation purposes; however, those items are not used in the psychometric analyses presented here, as they are in addition to the standard CES-DC items.

Phase 3: Translation

The CES-DC was translated to the local Rwandan language, Kinyarwanda, according to best-practice protocols.^{20–22} During this phase, two native Kinyarwanda speakers independently forward-translated the CES-DC from source language (English) to target language (Kinyarwanda). Where possible, source language items were first modified to include parenthetical reminders of the conceptually equivalent Kinyarwanda symptom terms that had been identified in the matching exercise. Translators were instructed to incorporate this vocabulary where possible. For example, during Phase 2, the *agahinda kenshi* symptom *aracecetse* (“is quiet”) was matched to the CES-DC item “I was more quiet than usual”; therefore, the source language CES-DC provided to translators was rewritten to read, “I was more quiet than usual (*aracecetse*).” In effect, this process allowed translators to easily use the conceptually equivalent local language distilled from qualitative data. It also helped to prevent use of technical language that might be difficult for a lay population.

During translation, the local research team provided support as needed. When translators disagreed with item matching, the research team provided consultation on the original rationale; when necessary, they also reviewed qualitative transcripts to identify alternative wordings. In some cases, standardized measures used two very similar terms to describe a single concept (e.g., “I feel sad and blue”). To retain consistency in these instances, the research team and translators identified two commonly used and conceptually equivalent items from the qualitative data, for example “*arababaye*” (sad) and “*arijimye*” (gloomy). The research team also assisted in combining the two forward-translated documents into a “best” target language version.

The best Kinyarwanda version was then back translated by an independent, bilingual reviewer whose native language was English. An expert committee, composed of all three translators and a final bilingual adjudicator (who was knowledgeable of clinical psychological terms, a native speaker of the target language, and familiar with the study

population) assembled to examine the final forward- and back-translated versions. The committee assessed cultural acceptability, resolved discrepancies among translations, and corrected any problems with clarity, comprehension, or language.

Phase 4: Cognitive Testing and Test-Retest Reliability Testing

The final screener used a four-point Likert scale from “not at all” to “a lot,” and instructions that corresponded to the CES-DC. Although the CES-DC is designed as a self-report measure, reading the measure aloud in an interview format (with items remaining in the first person) proved most acceptable and feasible in the Rwandan setting, given the low rates of literacy.

After translation, the CES-DC was pre-tested, or “cognitive tested,” among a small sample of 46 children and adolescents (67.4% female) and 23 adult participants (60.9% female) from Kirehe district, one of the regions served by local collaborators Partners In Health/ Inshuti Mu Buzima. Children and adolescents were selected from local schools. We aimed to cognitive test the measure with a range of ages from 10 to 17 years and a balance of girls and boys to understand how each participant interpreted the assessment items and selected responses. A corresponding parent report derived from the child self-report was tested with caregivers.

Local research assistants (RAs) following cognitive testing guidelines²³ asked a set of structured questions in Kinyarwanda to examine comprehension (respondent interprets the question), retrieval (respondent searches memory for relevant information), judgment (respondent evaluates/estimates response), and response (respondent provides information in the format requested). RAs also attended to any issues with sensitivity of the questions or poor comprehension of the domains assessed. A structured worksheet provided space for RAs to transcribe the child’s response verbatim. These notes were translated by the interviewing RA. This and other phases of the study protocol were approved by both the Rwanda National Ethics Committee and the US-based Institutional Review Board.

The principal investigator and study team reviewed cognitive testing data and discussed items requiring revision. Overall, three items in the adapted CES-DC (items 4, 5, and 20) were found to contain problematic vocabulary, and two items were difficult to understand because of their length or sentence structure (item 1, “I was bothered by things that usually don’t bother me,” and item 3, “I wasn’t able to feel happy, even when my family or friends tried to help me feel better”). Problematic items were modified to improve comprehension; for example, item 1 was rephrased as, “I was bothered by things that I used to consider usual or simple.” Following modification, the five problematic items were tested again. No further discrepancies were indicated.

After cognitive testing, a separate sample of 64 children and adolescents (51.6% female) were enrolled in an exercise to examine CES-DC reliability. These individuals were recruited by official community leaders in villages in Kirehe district and were selected to represent a range of ages from 10 to 17 years. The only exclusion criterion was cognitive impairment that precluded comprehension of the items (as assessed by study psychologists)

and/or refusal of parental consent or child assent. All children and adolescents in this sample were enrolled in school.

Test-retest reliability (i.e., how consistent responses to the instrument are over occasions) was examined in 34 of the children, who were interviewed once and then reinterviewed by the same RA within 1 to 3 days of the original assessment. Interrater reliability was examined in 30 of the respondents; these children and adolescents were interviewed once and then reinterviewed by a different RA within 1 to 3 days of the original assessment.

Demographics of the cognitive testing and reliability testing samples are listed in Table 2.

Phase 5: Validity Study

Sample—Data collection with the main sample (Table 2) took place in 2010 and 2011 in southern Kayonza district, and involved recruitment from a catchment area of an estimated 157,270 residents (Figure 1). Those who were eligible for the study were Rwandan children and adolescents aged 10 to 17 years and their caregivers. The age range was selected by our implementation partner as representing a particularly underserved part of the population for mental health services. Children and adolescents who had lived in the region for less than 1 month, those who did not speak Kinyarwanda, and those with severe cognitive impairment were excluded.

The focus of study recruitment was to identify participants exhibiting symptoms of locally defined mental health syndromes, including *agahinda kenshi*, *kwiheba*, *guhangayika* and *umushiha* as well as participants exhibiting overall good mental health (i.e., none of the aforementioned mental health syndromes). Our intent was to recruit at least 50 participants and their caregiver for each syndrome subgroup and 50 mentally healthy children, as prior experience suggested that this sample size would provide adequate power to distinguish between cases and noncases of various disorders.²⁴ Because of comorbidity between disorders, we anticipated that the same young person could qualify for multiple syndrome subgroups. We also anticipated that children and adolescents referred for being symptom free might actually score positive for a mental disorder, and therefore we planned to continue sampling for this group throughout the study until target numbers were reached.

To recruit potential participants, study supervisors asked community health workers, teachers, and health center staff to identify children and adolescents aged 10 to 17 years who were thought to have at least one of the mental health syndromes, as well as those who were thought to have overall good mental health. The breakdown of children and adolescents in the final sample by referral status is presented in the Results section and in Table 2.

Study Protocol

Research Assistants and Supervisors—A team of four local RAs carried out all CES-DC data collection with oversight from local supervisors and study investigators. RAs were Rwandan adults who spoke both Kinyarwanda and English and had, at minimum, a high school education. Supervisors were recruited from the team of interviewers who had participated in the prior qualitative study. All RAs and supervisors received 3 days of intensive training in research ethics, interviewing techniques and questionnaire

administration by the study investigators. Each member of the research team completed and passed a course in human subjects research ethics.

Research Clinicians—Two Rwandan psychologists administered the Mini International Neuropsychiatric Interview for Children and Adolescents (MINI KID),²⁵ the study's clinical gold standard, to participating children and adolescents. The MINI KID is a structured diagnostic interview for children based on *DSM-IV* and the International Statistical Classification of Diseases and Related Health Problems (ICD) 10th Revision (ICD- 10) diagnoses, and was chosen because of its brevity and ability to arrive at *DSM* and ICD-based diagnoses. The Rwandan psychologists were trained in MINI KID administration by a senior psychiatrist and one of the creators of the MINI KID (Dr. Janavs). These psychologists also completed and passed the Collaborative Institutional Training Initiative (CITI) course in human subjects research ethics.

Survey Administration—In this study, the CES-DC was administered as part of a larger mental health assessment survey that included additional measures of other local syndromes and protective constructs, as well as a measure of functioning (the World Health Organization Disability Assessment Schedule Child Version [WHO DAS II]). Assessments proceeded via a two-stage procedure. First, children and caregivers completed the mental health assessment survey, with the parent/caregiver reporting on the child. Children and caregivers also gave report (via simple yes/no response) on whether or not they thought that the index child or adolescent had one of the local syndromes under investigation. Second, children and adolescents were recontacted by study research clinicians within 1 to 3 days of the initial interview for a follow-up MINI KID interview.

All interviews were conducted in private in the participants' homes after caregiver informed consent and child informed assent were provided. Children/adolescents and caregivers were interviewed out of earshot of one another. All RAs and clinicians were blinded to the possible syndrome status of the child. Given the low literacy levels in the region, RAs and clinicians read all survey items out loud to the participants. After completion of study surveys, the participants were presented with a gift of books and pens worth approximately \$2.

Phase 6: Analysis of Psychometric Properties

ROC curve analysis was used to determine sensitivity and specificity trade-offs for cut point choices in using the CES-DC child self-report as a screening tool for major depressive episodes (MDE). MINI KID diagnosis of MDE by a local clinician was used as the gold standard. The percentage of MINI KID cases in which the child or parent self-reported agahinda kenshi or kwiheba was also calculated to assess correspondence between a standard *DSM* diagnostic category and local self-reported mental disorder syndromes. In addition, we examined the correlation between CES-DC scores and child scores on the WHO DAS II, a recently developed measure for children that is adapted from the adult version of the WHO DAS and based on World Health Organization International Classification of Functioning, Disability, and Health-Child and Youth version (ICF-CY) criteria for functional impairment.²⁶ Correlation between CES-DC and WHO DAS II scores

was measured by calculating the Pearson product-moment correlation. Chronbach's alpha values were calculated to measure internal consistency. Intraclass correlation coefficient (ICC) was used to assess interrater reliability, and the Pearson product-moment correlation coefficient was calculated to measure test-retest reliability. All statistical analyses were performed using STATA version 11 software.²⁷

RESULTS

The final sample consisted of 367 youth aged 10 to 17 residing in southern Kayonza district in south-eastern Rwanda. One individual was excluded from the analytic sample because of severe cognitive impairment. Table 2 displays demographic characteristics of the participants.

The Kinyarwanda version of the CES-DC showed good internal consistency with a value of Chronbach's alpha of 0.86. Test-retest reliability ($r = 0.85$), and interrater reliability ($ICC = 0.82$) were also good, as interpreted following guidelines recommended by Spitzer *et al.*²⁸ (values > 0.75 indicate good reliability).

The area under the ROC curve for the CES-DC using MINI KID MDE diagnosis as the gold standard was 0.825, indicating a strong ability to distinguish between true cases and noncases (Figure 2).²⁹ Sensitivity and specificity appeared to be optimal for the purposes of depression screening in this sample at a cut point of 30, with sensitivity of 81.9% and specificity of 71.9%. Sensitivity and specificity values of the CES-DC for a range of plausible cutoff values are listed in Table 3.

The Pearson product-moment correlation of the CES-DC with the WHO DAS II was $r = 0.46$, $p < .001$. Cohen's classification of correlations³⁰ was used to understand the magnitude of this relationship. Magnitudes of correlations between 0.30 and 0.49 are considered medium. This correlation suggests convergent validity of the CES-DC with the WHO DAS II, given that individuals with higher CES-DC scores also had increased scores on the measure of functional impairment. Of the MINI KID MDE case individuals, 93% also independently self-reported as having *agahinda kenshi* or *kwiheba*, suggesting that MINI KID diagnosis of MDE is well aligned with local distress categories.

DISCUSSION

This study examines the validity of the CES-DC as a screening tool for children and youth with depression in a resource-poor, rural, sub-Saharan African setting. Uncritical use of standard measures risks selecting tools or using cut points that do not accurately detect locally and clinically meaningful categories of disorder. Often tools are selected based on researcher preference or use in other contexts, and are evaluated only for internal consistency, reliability, and factor structure, without deeper inquiry into the construct validity with respect to local perceptions of disease.

Instead of assuming the fit of standard measures, this study used qualitative methods as a foundational basis for understanding local expressions of internal distress and selecting a screener that reflected those expressions: the CES-DC. Then the criterion validity and

sensitivity and specificity of the CES-DC were assessed not only in terms of the internal structure of the measure but also in relation to an external gold standard: interviews by clinicians aided by the MINI KID as well as youth self-reports and caregiver reports of local depression-like syndromes and their associated symptoms using local language. In addition to supporting good psychometric results, this process may also be replicated in other efforts to select, adapt, and validate mental health measures in diverse cultural settings. We believe that the detailed process of first identifying local syndrome expressions, then describing them systematically, and then comparing them to standard mental health measures bears consideration in other settings.

Some study limitations must be noted. Given that this study recruited participants who were actively exhibiting local indicators of distress, a suggested optimal cut point for this sample based on the ROC curve analysis (≥ 30) is not necessarily reflective of an appropriate cut point for a population sample. In an initial validation study of the CES-DC in the United States, a much lower cut point of 15 was recommended.⁴ However, some subsequent studies have suggested that higher cutoffs are optimal. For example, a study using a large, community sample of high school students in the US found that a cut point of 24 yielded a sensitivity of 83.7% and a specificity of 75.2%.³¹ In Rwanda and other sub-Saharan African settings, similar studies involving community samples are necessary to determine generalizable cut points for the CES-DC.

Inflated levels of depression in our sample may also be associated with use of the WHO DAS II, the usefulness of which, for assessing functional impairment in this population, is not completely known. In general, mental disorders should meet three categories of criteria: illness (subjective experience of distress), impairment (limitations in functioning), and disease (accepted classification based on symptoms).³² Although the illness and disease criteria are well measured by the self-reports and structured diagnostic interview used here, the impairment dimension criteria could be further explored by a deeper examination into the validity of the Kinyarwanda version of the WHO DAS II for measuring functional impairment in children and adolescents. However, CES-DC scores do show a good correlation with overall child WHO DAS II scores. In addition, 47% of depression case individuals, defined as CES-DC score ≥ 30 , responded “Quite a bit” or “Nearly all the time” to the question “Overall, how much did these difficulties interfere with your life?” whereas only 15% of non-case individuals did. These results suggest that depression cases identified by the CES-DC in this population meet the impairment criteria for mental disorders.

The CES-DC displayed good psychometric properties as a screen for depression in children in rural Rwanda and might be an appropriate tool for similar settings. Additional research with representative community samples is needed to establish appropriate CES-DC cut points in this and other sub-Saharan African settings. In future studies on this topic, an important consideration should be the burden of false-positive results, as a large number of false-positive results would place excess burden on the already scarce mental health resources in countries such as Rwanda.

We recommend that future research to adapt and validate the CES-DC in diverse contexts use rigorous translation and pre-testing methods such as those described above, to ensure

cultural acceptability and comprehensibility. In this study, for example, multiple rounds of cognitive testing allowed for the modification and refinement of items even after a careful team-based translation process.

In addition, we also recommend that selection of the CES-DC for use in any particular setting be driven by qualitative data on local indicators of distress. In this study, we were able to review conceptual equivalence between local symptom terms and CES-DC items.⁷ These methods extend far beyond standard translation processes, and may be replicated for the selection, adaptation, and evaluation of a range of measures of child and adolescent mental health problems as well as other constructs in diverse cultural settings.

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Clinical Guidance

- The CES-DC displayed good psychometric properties as a screen for depression in children and adolescents in rural Rwanda, and might be an appropriate tool for similar settings.
- Methods used in this study can serve as a model for tool validation in other cross-cultural measures development work.
- Additional research with representative community samples is needed to establish appropriate CES-DC cut points.

FIGURE 1.

Recruitment and assessment process for participants in receiver operating characteristic curve (ROC) analysis. Note: CES-DC = Center for Epidemiological Studies Depression Scale for Children; MINI KID = Mini International Neuropsychiatric Interview for Children and Adolescents.

FIGURE 2. Receiver operating characteristic curve (ROC) for the Center for Epidemiological Studies Depression Scale for Children (CES-DC).

TABLE 1

Local Mental Health Problems

Name	Defining Symptoms	Similar <i>DSM-IV</i> Syndrome
<i>Guhangayika</i>	<ul style="list-style-type: none"> • State of constant worry or stress • Person is never at ease • Overthinking of problems without being able to find a solution • Unwillingness to interact with others 	Generalized anxiety disorder [300.02]
<i>Agahinda kenshi</i>	<ul style="list-style-type: none"> • State of persistent sadness or sorrow • Loneliness • Unhappiness and low morale • Crying 	Dysthymia [300.4]- Major depressive disorder [296.3]
<i>Kwiheba</i>	<ul style="list-style-type: none"> • Severe hopelessness • Suicidal ideation • Feeling that life is meaningless • Uninterested in interpersonal interactions 	Severe Major depressive disorder [296.3]
<i>Umushiha</i>	<ul style="list-style-type: none"> • Persistent irritability or anger • Grouchiness; rudeness • Prone to quarreling 	Dysthymia [300.4]

TABLE 2

Demographic Characteristics of Child Participants for Cognitive Testing, Reliability Testing, and the Receiver Operating Characteristic Curve (ROC) Analysis

Demographic	Cognitive testing (n = 46) n (%)	Test-Retest (n = 34) n (%)	Interrater (n = 30) n (%)	ROC Analysis (n = 367) n (%)
Sex				
Male	15 (32.6)	15 (44.1)	18 (60.0)	217 (59.1)
Female	31 (67.4)	19 (55.9)	12 (40.0)	150 (40.9)
Age (y)				
10	7 (10.1)	6 (17.6)	8 (26.7)	40 (10.9)
11	5 (7.2)	4 (11.8)	4 (13.3)	45 (12.2)
12	6 (8.7)	4 (11.8)	4 (13.3)	51 (13.9)
13	7 (10.1)	4 (11.8)	7 (23.3)	53 (14.4)
14	6 (8.7)	5 (14.7)	2 (6.7)	59 (16.1)
15	5 (7.2)	8 (23.5)	4 (13.3)	40 (10.9)
16	4 (5.8)	2 (5.9)	1 (3.3)	29 (7.9)
17	6 (8.7)	1 (2.9)	0 (0)	50 (13.6)
School status				
In school	46 (100)	34 (100)	30 (100)	278 (75.7)
Not in school	0 (0)	0 (0)	0 (0)	89 (24.3)
Referral status				
<i>Agahinda Kenshi/Kwiheba</i>	N/A	N/A	N/A	58 (15.4)
<i>Guhangayika</i>	N/A	N/A	N/A	94 (25.0)
<i>Umushiha</i>	N/A	N/A	N/A	50 (13.3)
<i>Uburara</i>	N/A	N/A	N/A	51 (13.6)
Good mental health	N/A	N/A	N/A	123 (32.7)

Note: N/A = not available.

TABLE 3

Sensitivity and Specificity of the Center for Epidemiological Studies Depression Scale for Children (CES-DC) at Selected Cut Points

Cut Point	Sensitivity	Specificity
24	89.52	57.03
25	89.52	60.64
26	88.57	63.05
27	87.71	65.46
28	85.71	65.46
29	82.86	69.8
30	81.90	71.89
31	74.29	73.09
32	71.43	74.3
33	70.48	75.5
34	67.62	78.71