Adaptation and Evaluation of the Clinical Impairment Assessment to Assess Disordered Eating Related Distress in an Adolescent Female Ethnic Fijian Population

Anne E. Becker, MD, PhD, ScM1,2*
Jennifer J. Thomas, PhD2,3
Asenaca Bainivualiku, BA4
Lauren Richards, BA5
Kesaia Navara6
Andrea L. Roberts, PhD7
Stephen E. Gilman, ScD7,8
Ruth H. Striegel-Moore, PhD9
for the HEALTHY Fiji Study Group

ABSTRACT
Objective: Measurement of disease-related impairment and distress is central to diagnostic, therapeutic, and health policy considerations for eating disorders across diverse populations. This study evaluates psychometric properties of a translated and adapted version of the Clinical Impairment Assessment (CIA) in an ethnic Fijian population.

Method: The adapted CIA was administered to ethnic Fijian adolescent schoolgirls ($N = 215$). We calculated Cronbach’s $\alpha$ to assess the internal consistency, examined the association between indicators of eating disorder symptom severity and the CIA to assess construct and criterion validity, and compared the strength of relation between the CIA and measures of disordered eating versus measures of generalized distress.

Results: The Fijian version of the CIA is feasible to administer as an investigator-based interview. It has excellent internal consistency ($\alpha = 0.93$). Both construct and criterion validity were supported by the data, and regression models indicated that the CIA predicts eating disorder severity, even when controlling for generalized distress and psychopathology.

Discussion: The adapted CIA has excellent psychometric properties in this Fijian study population. Findings suggest that the CIA can be successfully adapted for use in a non-Western study population and that at least some associated distress and impairment transcends cultural differences. © 2009 by Wiley Periodicals, Inc.

Keywords: eating disorder; Clinical Impairment Assessment; distress; cross-cultural; Fiji

Introduction

Eating disorders have well-established public health impact in North American and European populations as evidenced by their association with both high mortality and high suicide rates.1,2 Although eating disorders have been identified among priority illnesses for child and adolescent mental health by the World Health Organization (WHO),3 their contribution to burden of illness in regions outside of Europe and North America is largely unknown. Assessment of distress and impairment attributable to eating disorders is essential to setting priorities for allocation of scarce mental health resources in low and middle income countries where eating disorders may be increasingly common.4–6

A number of disease-specific measures have been developed to assess quality of life and impair-
ment for individuals with eating disorders. Three instruments—the Clinical Impairment Assessment (CIA),7 the Quality of Life for Eating Disorders (QOL ED)9 and the Eating Disorders Quality of Life (EDQOL)9—are brief self-report measures that show promising psychometric properties but have not yet been evaluated in non-Western populations.10 Because social and occupational impairment is relative to the local social context and because both expression and perception of distress are culturally mediated,11,12 it is not clear whether utility of such measures extends across diverse populations.

The primary aim of this study was to evaluate reliability and validity of a measure of distress and impairment for eating disorders, the CIA, which we adapted and translated for use in an ethnic Fijian adolescent population.

Method

Study Site

The study was conducted in two adjoining provinces on the main island in the Republic of Fiji, a lower middle income country undergoing rapid social change. Ethnic Fijians comprise a small-scale indigenous society—traditionally with a subsistence agriculture economy—making up approximately half of Fiji’s population. The gradual economic transition to a wage-based economy accompanied by widespread exposure to Western-based mass media has stimulated consumption of Western food and electronic products.13 There is no indigenous category for an eating disorder in the local nosology despite evidence of symptomatic behaviors becoming more prevalent in the past 10 years.14,15 Although primary health care services are delivered regionally, mental health resources in Fiji are largely centralized in an inpatient facility, St. Giles Hospital, in the major urban center of Suva.

Study Sample

Study participants (N = 215) were a subset of a larger study population of ethnic Fijian schoolgirls, ages 15–20 enrolled in the 12 secondary schools registered in Fiji’s Ministry of Education for this administrative area when the study was designed. In the latter study, participants responded to a battery of self-report assessments and were weighed and measured. Procedures for translating and adapting the self-report assessment battery and administering it to the larger study sample are described elsewhere.16

Respondents comprised all study participants present in school on the day or days of the site visit following this survey, who had screened positive for symptoms associated with an eating disorder (“symptomatic respondents”) as well as 10%–15% of respondents within each school site who did not screen positive (“asymptomatic respondents”). Asymptomatic respondents were randomly selected for participation within each site among study participants present in school at Time 2.4 For this study, a positive screen was defined as the presence of one or more of the following: (A) any self-reported vomiting or laxative misuse for weight control over the past month on either the EDE-Q or the Global School-based Health Survey (GSHS); (B) eight or more instances of any inappropriate measures to control weight (e.g., excessive exercise, fasting, any purging) on the EDE-Q; (C) eight or more self-reported binge episodes on the EDE-Q; (D) a global EDE-Q score > = 4; and (E) Body Mass Index (BMI) < = 17.5 kg/m.2

Procedure

The primary outcome reported here, eating disorder specific distress and impairment, was assessed by a version of the CIA, adapted as an interview schedule for this study population. The CIA is self-report measure designed to be used as a companion instrument to the EDE-Q. A total of 16 items are scored on a 4-point Likert scale (with response options, “not at all,” “a little,” “quite a bit,” and “a lot”). These responses correspond to numeric values 0 to 3, which are summed to calculate a global score as long as at least 12 of the items have responses.7,17

The CIA was adapted for use in this study population as follows from a previous 22-item version obtained from its authors. Four items that referenced “work” were rephrased to reference school or schoolwork instead after consultation with an author of the CIA (Fairburn, Personal communication, 2007). An additional two items presented a culture-specific content problem. Item 11 that referenced “sex life” was omitted based on ethnographic work by the first author suggesting it could be culturally insensitive in a face-to-face interview and item 16 that referred to feeling “guilty” was rephrased to ask about feeling “like you had done something wrong” because guilt has a jural—but not affective—meaning in the local cultural idiom. The 21 remaining items and their response options were then translated into the vernacular language (i.e., a local dialect understood throughout this area) by the first author, edited by a bilingual native speaker, back-translated into English by another bilingual speaker, and then reviewed to ascertain that versions were comparable and translatable with respect to conceptual content. Study staff administered the CIA orally to the participants in their choice of either English or the vernacular language following an EDE

4In one of the 12 schools, several respondents completed their self-report forms on the last day of site interviews and were thus excluded from the random selection process for asymptomatic respondents because of time constraints.
interview. Respondents could have questions posed or rephrased in the standard Fijian language for clarification if necessary. Although we had collected data for the 21-item version as described earlier, for this analysis we discarded items not in the current version of the CIA and scored the remaining items by summing numeric responses for each of 16 total items—as long as at least 12 items were present—in order to facilitate comparison of our results with other study populations. Questionnaires with missing items were pro-rated through mean replacement to achieve the full range of scores. The retained items for this study analysis are the same as those in the current version of the CIA except for the minor wording changes as described earlier for 2 items.

**Self-Report Assessments**

We chose several self-report assessments relating to disordered eating and body satisfaction to examine their expected correlations with distress and impairment due to eating disorder symptoms. We also selected several proxies for generalized distress (i.e., not specifically related to disordered eating) to examine their correlation with the CIA.

**Eating Disorder Examination Self-Report (EDE-Q).** The EDE-Q, adapted for this study population, was used to assess the presence and severity of disordered eating symptoms in this study. Our adaptation of the EDE-Q demonstrated adequate internal consistency, test-retest reliability, and construct validity in this study population. Global scale scores were used as a measure of symptom severity and presence of any vomiting or laxative misuse to manage weight (including use of traditional purgatives), presence of binge-eating, and presence of fasting were used as indicators of disordered eating.

**Body Figure Scale (BFS).** The BFS directs respondents to view 9 female adult figure drawings that range from very thin to obese body size and select the figure that they perceive matches their own body shape as well as the one that matches the body shape they feel is ideal. A discrepancy score can be derived by subtracting the numeric value of the ideal shape from the self-perceived shape value. Scores close to 0 reflect little or no discrepancy; positive values reflect perception of being larger than ideal whereas negative values reflect perception of being smaller or thinner than ideal. The absolute value of discrepancy scores was used as a proxy for body dissatisfaction for this analysis.

**Fijian Body Shape Concern and Dissatisfaction Questionnaire (FBSQ).** The FBSQ is a 6-item self-report measure assessing body dissatisfaction; five items have a Likert format with four response options and one has a forced choice yes/no response option. A previous version of this questionnaire has shown acceptable internal consistency reliability in a similar study population. Higher scores reflect greater shape and weight concerns.

**Body Esteem Scale for Adults and Adolescents (BESAA).** The BESAA is a 23-item self-report questionnaire measuring dimensions of body esteem including feelings about general appearance and bodies. For this study the subscale relating to weight satisfaction was used as a measure of body satisfaction. A low score on the weight esteem subscale is consistent with body dissatisfaction.

**Center for Epidemiologic Studies Depression Scale (CES-D).** The CES-D is a 20-item self-report questionnaire designed to measure depression in the general population. Subjects are asked to indicate how often they have felt a certain way during the past week using a 4-point Likert scale. This measure has been used successfully in adolescent and in culturally diverse populations. The CES-D score was used as a measure of psychopathology related to mood disturbance and, thus, a proxy for generalized psychopathology not specifically related to an eating disorder in this analysis.

**Global Behavioral School-based Student Health Survey (GSHS).** The GSHS is a self-report assessment of health related behaviors in school-going adolescents developed by the WHO in collaboration with the U.S. Centers for Disease Control. The GSHS is comprised of modules relating to health risk behaviors that can be adapted to the needs assessment and local cultural context across global settings. One item from the GSHS module on nutritional behaviors, relating to vomiting or laxative use in the past month was used in combination with similar items from the EDE-Q to identify study participants for eligibility for a CIA interview. In addition, four items from the module on mental health-assessing a 12-month occurrence of loneliness, worry, a 2-week episode of sadness/hopelessness, and suicidal thoughts—were used as measures of generalized distress (that is, distress not specifically related to an eating disorder or disordered eating) in this study.

**Weight Assessment.** Weight was measured on the day of the self-report assessment on an electronic scale with a digital readout in gradations of 0.2 kg. Respondents were asked to remove shoes, sweaters or jackets, and heavy jewelry prior to being weighed in a lightweight school uniform. Measured weight was adjusted by subtracting 0.5 kg to yield an estimate corrected for the average contribution of the clothing. Height was measured to the nearest millimeter (mm) in bare or stocking feet with a portable stadiometer, but rounded to the nearest centimeter for the majority of observations in this analysis. BMI was calculated based on the adjusted weight and height for each respondent as kilograms/m² [correction made here after initial online publication]. Respondents residing in the upper and lower 5th percentiles for age-adjusted BMI were identified by WHO adolescent anthropometric standards for this age group.
pomorphic standard.\textsuperscript{24} Age-adjusted BMI cut points ranged from 16.5 to 17.5 kg/m\textsuperscript{2} for identifying underweight, and 26.3 to 30.0 kg/m\textsuperscript{2} for identifying obesity.

**Statistical Analyses**

Characteristics of the study population were summarized by assessing frequencies and means of demographic covariates, including age, BMI, urban/rural location of school, school form (grade), EDE-Q scores, and CIA scores. Performance of the CIA in this study population was assessed in four domains: (1) feasibility; (2) internal consistency reliability (for both the Fijian and English language versions); (3) criterion validity with regard to participants’ group classification on known measures; and (4) construct validity.

We assessed feasibility by evaluating the proportion of measures that were ultimately scoreable after accounting for missing data. We then calculated a Cronbach’s \( \alpha \) coefficient, a summary measure of the shared variation among all the CIA items, to evaluate the internal consistency reliability of the CIA total score for both English and Fijian language versions of the interview.

Next, we evaluated criterion validity by dividing the sample into asymptomatic versus symptomatic groups on nine different indices of eating disorder psychopathology, and conducting a series of \( t \)-tests comparing CIA scores across groups. We hypothesized that symptomatic participants would exhibit higher CIA scores, indicative of greater functional impairment and distress, than asymptomatic participants in the following nine comparisons:

1. Respondents with self-reported presence of vomiting or laxative abuse versus those who reported none
2. Respondents with self-reported presence of herbal purgative use versus those who reported none
3. Respondents with self-reported presence of binge eating versus those who reported none
4. Respondents with self-reported presence of fasting versus those who reported none
5. Respondents with global EDE-Q scores \( \geq 4 \) versus scores \(< 4\)
6. Respondents with a discrepancy score \( \geq 2 \) on the Body Figure Scale versus \(< 2 \)
7. Respondents with a BMI at or above the 95th percentile based on WHO guidelines versus those below the 95th percentile
8. Respondents with a BMI at or below the 5th percentile based on WHO guidelines versus those above the 5th percentile
9. Respondents who screened in for an interview based on eating disorders symptoms, low weight, or high EDE-Q global scores versus those chosen randomly who did not meet screening criteria

Lastly, to assess construct validity, we calculated Pearson correlation coefficients to determine the extent to which CIA scores were correlated with measures of both eating pathology (i.e., positively associated with global EDE-Q and FBSQ, and inversely associated with BESAA) as well as proxies for generalized psychopathology and distress (i.e., CES-D and relevant GSHS items). Moreover, we tested the hypothesis that eating disorder psychopathology would be predictive of CIA scores independently from generalized measures of distress not specifically related to disordered eating. We did this by fitting three linear regression models predicting mean CIA scores. In the first model, we included global EDE-Q only; in the second model, we added participant demographic covariates (age, BMI, and language of interview); finally, in the third model we added measures of generalized psychopathology and/or distress (CES-D and GSHS items).

**Ethical Review**

The administration and evaluation of the CIA was a component of a study protocol that was approved by the Fiji National Research Ethical Review Committee (FN-RERC), the Partners Healthcare Human Subjects Committee, and the Harvard Medical School Committee on Human Studies. Parental informed consent and youth assent were obtained for all study participants.

**Results**

**Sample Description**

Of 183 symptomatic study participants selected for an interview, 178 were present in school on the day that interviews were conducted; of these, all completed a CIA interview. Of 37 asymptomatic respondents randomly selected and present in school, all completed a CIA interview. The mean age of the sample was 16.80 years (SD = 1.10 years), and the mean BMI was 24.28 kg/m\textsuperscript{2} (SD = 3.30 kg/m\textsuperscript{2}). Urban/rural distribution, school grade, and other relevant sample characteristics for those meeting symptomatic criteria and not meeting symptomatic criteria are summarized in Table 1.

**CIA Item Completion**

All 215 respondents completed the interview. Of these, 208 completed all 16 items, whereas the remaining seven completed at least 12 items, allowing for the calculation of a global score for every participant. The mean CIA score was 11.57 (SD = 10.92), and scores ranged from 0 to 43.

**Internal Consistency Reliability**

Cronbach’s \( \alpha \) calculated for respondents to both English and Fijian language questionnaires showed
adequate to excellent internal consistency reliability; they were 0.91 for the English language version group, 0.94 for the Fijian language version group, and 0.93 for the entire study sample.

**Criterion Validity**

Participants classified as symptomatic on 7 of 9 indicators of eating disorder psychopathology (i.e., herbal purgative use, binge eating, fasting, elevated EDE-Q, elevated body shape discrepancy, obesity, and symptomatic screening status) scored significantly higher on the CIA than participants not classified as symptomatic (Fig. 1). The only symptomatic groups that did not exhibit elevated CIA scores in comparison to their respective asymptomatic groups were participants who self-reported vomiting/laxative use versus those who did not, and participants whose BMI fell at or below the 5th percentile for height and age versus those whose did not.

**Construct Validity**

CIA scores were positively correlated with measures of eating disorder pathology as expected. Moreover, CIA scores were also correlated with measures of distress unrelated to disordered eating, as expected, with the exception of suicidal ideation, which exhibited only a trend-level correlation with CIA, \( r = .13, p = .06 \). The observed correlations are summarized in Table 2.

Linear regression models of the relation between EDE-Q scores and the CIA are shown in Table 3. EDE-Q significantly predicted CIA scores in all three models, even when demographic covariates and measures of distress unrelated to eating pathology were added in Models 2 and 3, respectively. The standardized regression coefficient for EDE-Q in Model 3 (\( \beta = 0.29 \)) indicated that, independent of demographic characteristics and measures of distress and psychopathology unrelated to

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**TABLE 1.** Demographic characteristics of 215 adolescent Fijian schoolgirls who completed CIA interviews after screening positive or negative for eating disorder symptoms

<table>
<thead>
<tr>
<th></th>
<th>Asymptomatic (n = 37)</th>
<th>Symptomatic (n = 178)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean (SD)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>16.86 (1.21) year</td>
<td>16.78 (1.08) years</td>
</tr>
<tr>
<td>BMI</td>
<td>23.71 (2.86) kg/m²</td>
<td>24.40 (3.38) kg/m²</td>
</tr>
<tr>
<td>EDE-Q Global</td>
<td>1.23 (0.88)</td>
<td>2.26 (1.10)</td>
</tr>
<tr>
<td>CIA</td>
<td>6.11 (7.32)</td>
<td>12.70 (11.21)</td>
</tr>
<tr>
<td><strong>Frequency (Percent)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Population Density</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>19 (51.4)</td>
<td>86 (48.3)</td>
</tr>
<tr>
<td>Rural</td>
<td>18 (48.6)</td>
<td>92 (51.7)</td>
</tr>
<tr>
<td>School Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Form 3</td>
<td>0 (0)</td>
<td>16 (9.0)</td>
</tr>
<tr>
<td>Form 4</td>
<td>10 (27.0)</td>
<td>48 (27.0)</td>
</tr>
<tr>
<td>Form 5</td>
<td>15 (40.5)</td>
<td>56 (31.5)</td>
</tr>
<tr>
<td>Form 6</td>
<td>12 (32.4)</td>
<td>58 (32.6)</td>
</tr>
<tr>
<td>Language of Interview</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>9 (24.3)</td>
<td>65 (36.5)</td>
</tr>
<tr>
<td>Fijian</td>
<td>28 (75.7)</td>
<td>113 (63.5)</td>
</tr>
</tbody>
</table>

BMI, body mass index; EDE-Q, Eating Disorder Examination Questionnaire; CIA, Clinical Impairment Assessment.

**FIGURE 1.** t-tests comparing CIA scores in symptomatic versus asymptomatic groups on nine indices of eating disorder psychopathology.
TABLE 2. Correlations between CIA and continuous measures of eating disorder psychopathology and measures of generalized psychopathology and distress evaluating construct validity in an ethnic Fijian sample

<table>
<thead>
<tr>
<th>Construct</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating Disorder Psychopathology</td>
<td></td>
</tr>
<tr>
<td>Global EDE-Q</td>
<td>.46**</td>
</tr>
<tr>
<td>Discrepancy Between Ideal and Actual Shape on BFS</td>
<td>.21*</td>
</tr>
<tr>
<td>FBSQ</td>
<td>.38**</td>
</tr>
<tr>
<td>BESAA—Weight Subscale</td>
<td>–.34**</td>
</tr>
<tr>
<td>Generalized Distress and Psychopathology</td>
<td></td>
</tr>
<tr>
<td>CES-D</td>
<td>.32**</td>
</tr>
<tr>
<td>GSHS Loneliness</td>
<td>.26**</td>
</tr>
<tr>
<td>GSHS Sleeplessness due to Worry</td>
<td>.24**</td>
</tr>
<tr>
<td>GSHS Sadness/Hopelessness</td>
<td>.19*</td>
</tr>
<tr>
<td>GSHS Suicidal Ideation</td>
<td>.13</td>
</tr>
</tbody>
</table>

CIA, Clinical Impairment Assessment; EDE-Q, Eating Disorder Examination Questionnaire; BESAA, Body Esteem Scale for Adults and Adolescents; CES-D, Center for Epidemiologic Studies Depression Scale; GSHS = Global School-Based Student Health Survey.

* p < .05, ** p < .001

disordered eating, a one standard deviation increase in EDE-Q scores (reflecting eating disorder symptoms) was predictive of approximately a 1/3 standard deviation increase in CIA scores (reflecting eating disorder-specific impairment). Furthermore, in Model 3 the standardized regression coefficient for EDE-Q (β = 0.29) was approximately 60% larger than the standardized regression coefficient for CES-D (β = 0.18), indicating that eating disorder severity was a stronger predictor of CIA scores than was psychopathology unrelated to an eating disorder. Moreover, generalized distress (as measured by the GSHS items) was not a predictor of high CIA scores in this fully adjusted model.

Discussion

Assessment of distress and impairment specific to eating disorders is critical to identifying appropriate clinical services and therapeutic strategies for individuals in need of treatment. Moreover, clarification of disease-specific burden of illness can inform health care policy decisions so that scarce mental health resource allocation most effectively meets local needs. Although eating disorders may be increasingly prevalent in populations undergoing economic transition and have been designated as priority disorders by the WHO for child and adolescent mental health, little is known about the burden they impose in populations in developing areas of the world. Thus, measurement of distress and impairment specific to eating disorder symptoms can make an important contribution to the knowledge base for local mental health needs.

Our results demonstrate that the CIA is feasible, internally consistent, and informative for this ethnic Fijian adolescent female study population. Notably, the CIA measured distress related to a measure of eating disorder symptom severity (the EDE-Q global score) even when adjusted for generalized distress. The CIA also successfully discriminated between symptomatic and asymptomatic respondents for almost all of the categories examined. Reliability was comparable for the CIA in English and Fijian versions. This evidence supports the validity of the CIA as a measure of the distress and impairment associated with eating disorder pathology in this study population, even when adjusted for generalized distress and psychopathology. An illness-specific measure of distress and impairment can be a useful tool for health care providers in Fiji in assessing need for intervention in a setting in which mental health services are scarce and difficult to access. We believe that, in some cases, CIA data could also be potentially informative to educators in identifying and addressing antecedents to poor school performance. The demonstrated feasibility, reliability, and validity of the measure in a small-scale indigenous population without indige-

TABLE 3. Linear regressions evaluating whether eating pathology predicts CIA scores when controlling for demographic covariates and generalized psychopathology and distress

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDE-Q</td>
<td>0.45**</td>
<td>0.40**</td>
<td>0.29**</td>
</tr>
<tr>
<td>Demographic Covariates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>–0.02</td>
<td>–0.06</td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>0.08</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>Language of Interview</td>
<td>0.07</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Generalized Psychopathology and Distress</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CES-D</td>
<td>0.18*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GSHS Loneliness</td>
<td>0.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GSHS Sleeplessness due to Worry</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GSHS Sadness/Hopelessness</td>
<td>0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GSHS Suicidal Ideation</td>
<td>0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous Model</td>
<td>0.20</td>
<td>0.21</td>
<td>0.27</td>
</tr>
<tr>
<td>Model F</td>
<td>F(1, 211)</td>
<td>F(4, 207)</td>
<td>F(9, 202)</td>
</tr>
<tr>
<td>= 52.30**</td>
<td>= 13.64**</td>
<td>= 8.27**</td>
<td></td>
</tr>
<tr>
<td>Change from Previous Model</td>
<td>0.009</td>
<td>0.061</td>
<td></td>
</tr>
<tr>
<td>F Change from Previous Model</td>
<td>F(3, 207)</td>
<td>F(5, 202)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= 0.50</td>
<td>= 3.35*</td>
<td></td>
</tr>
</tbody>
</table>

BMI, body mass index; CES-D, Center for Epidemiologic Studies Depression Scale; GSHS, Global School-Based Health Student Survey; EDE-Q, Eating Disorder Examination Questionnaire.

* p < .05, ** p < .001
ous categories for eating disorders suggests that
the CIA may also be useful across diverse popula-
tions, although further investigation is required
before generalization can be made.

Measurement of illness-related distress in this
particular cultural context also raises concerns
about whether distress and impairment for mental
illness relate to a universal standard or rather can
best be understood relative to their local cultural
context. For example, several findings in our study
were unexpected. Specifically, low weight and
vomiting and laxative use were not significantly
related to CIA scores (although symptomatic par-
ticipants did endorse higher CIA scores than
asymptomatic participants in both instances)
whereas high weight and traditional herbal purga-
tive use were. One possible explanation is that the
CIA failed to identify distress related to low weight,
vomiting, or laxative misuse. Another explanation-
one that we find more plausible, is that social
norms and cultural experience moderate distress
and thus attenuate the relation between these
symptoms and expressed distress. For example,
social advantages of low weight may offset distress
in this social environment. Individuals may per-
ceive that thinness enhances social opportunities
or may elicit relatively greater social support.13,14
Alternatively, purging may represent a somatic
idiom of distress that replaces verbal communica-
tion in this population in which direct expression
of complaint is discouraged for girls and women.25
If this is the case, then socially disenfranchised
respondents may not recognize or report the rela-
tion of symptoms to distress. Future research that
examines the impact of social environment on dis-
tress will be necessary to address whether and how
expression and experience of distress is moderated
by social norms.

There are several limitations of our study. First,
the CIA was administered here as an investigator-
based interview rather than as a self-report. In
some cases, it was desirable to offer phrasing in a
related (standard) Fijian language. As such, phras-
ing may have varied across raters and interviews
and may have been subject to bias if the respond-
ent had difficulty with the local vernacular lan-
guage. Although we believe these elements of our
protocol would have enhanced the way respond-
ents understood the questions, it is possible that
social desirability biased results in an unknown
direction (i.e., either to minimize or amplify actual
experience of distress). We did not assess either
inter-rater or retest reliability of the CIA in this
study population. Restricting our interviews to
respondents present on the day of the site visit was

The authors gratefully acknowledge the assistance of
Dr. Lepani Waqatakirewa, CEO-Fiji Ministry of Health
and his team; Fiji Ministry of Education; Joana Rokoma-
mu, the Tui Sigatoka; Dr. Jan Pryor, Chair of the FN-
RERC; Professor Paul Geraghty, Dr. Tevita Qorimasi, Pro-
fessor Jane Murphy, Dr. Deborah Blacker, and members
of the Senior Advisory Group for the HEALTHY Fiji Study
(Health-risk and Eating attitudes and behaviors in Ado-
lescents Living through Transition for Healthy Youth in
Fiji Study), including Professor Bill Aalbersberg (Chair),
Nisha Khan, Alumita Taganesia, Livinai Masei, ASENACA
Bainivualiku, Pushpa Wati Khan, and Fulori Sarai. Finally,
they thank all the Fiji-based principals and teachers who
facilitated this study. The content is solely the responsibility of the authors and does not necessarily reflect the official views of the National Institutes of Health or other consultants.

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