HHS Public Access

Author manuscript

Clin Psychol Psychother. Author manuscript; available in PMC 2018 January 01.

Published in final edited form as:

Clin Psychol Psychother. 2017 January ; 24(1): 245–254. doi:10.1002/cpp.2008.

Validation of the Client Diagnostic Questionnaire to Assess Mental Health in South African Caregivers of Children

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Abstract

Background—Given the high prevalence of mental health (MH) and substance abuse problems in low-to-middle income countries, the scarcity of MH professionals, and the negative impact of psychiatric disorders on caregivers of young children, there is significant need for brief evidence-based screening tools for lay counselors to assist with MH assessment. This study aimed to validate a brief screening tool to assess psychiatric and substance use disorders, Client Diagnostic Questionnaire (CDQ), in South Africa (SA).

Methods—Data are from a longitudinal study of health and psychosocial needs in preschool children in SA. Participants included 322 Zulu-speaking, female caregivers. Following procedures of the US CDQ validation study, lay counselors interviewed participants using the translated Zulu CDQ. Subsequently a psychologist conducted a full psychiatric assessment guided by the CDQ questions. Analyses examined sensitivity, specificity, and overall accuracy, comparing lay counselor and psychologist assessment.

Results—Sensitivity (73%), specificity (81%), and overall accuracy (79%) were good for the variable indicating presence of “any diagnosis.” Among those cases identified by the psychologist as having any psychiatric diagnosis, over 70% were correctly identified by lay counselors using the CDQ (i.e., positive predictive value was greater than 70%). The false positive rate was

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relatively low (19%). Specificity for “any disorder” (including substance use) and “any psychiatric disorder” were 81% and 79%.

Conclusions—The isiZulu CDQ is a sensitive and valid MH diagnostic screener that can be used by lay counselors with limited MH training to identify those in need of treatment and target extremely scarce MH professionals.

Keywords

Mental health; psychiatric diagnostic screener; South Africa; HIV/AIDS; child caregivers; task-shifting

Worldwide, in 2010, mental health (MH) and substance use disorders (SUD) accounted for more years lived with disability than any other health problem (Whiteford et al., 2013). Globally, lifetime prevalence for any MH disorder or SUD is estimated to range from 12% to 47% (Kessler et al., 2007). South Africa (SA), a country heavily impacted by poverty, violence, and HIV, has a high prevalence of MH and substance abuse problems, with several population-based studies indicating a 12-month prevalence estimate for any DSM-IV psychiatric diagnosis of 16.5% (Williams et al., 2008) and a lifetime prevalence of 30.3% (Stein et al., 2008). Although studies are limited, relatively high levels of depression, post-traumatic stress disorder (PTSD), and alcohol dependence have been reported among South Africans infected with and affected by HIV/AIDS (Freeman et al., 2007; Myer et al., 2008), similar to other parts of the world (Collins et al., 2011). Given that SA is one of the countries most impacted by HIV/AIDS, with 6.3 million people living with HIV in 2013 (UNAIDS, n.d.), the potential burden of MH disorders and SUD is enormous, affecting physical health, overall function, quality of life, and presenting significant barriers to adherence to HIV treatment (Springer, Dushaj, & Azar, 2012).

MH not only affects individuals, but their family members as well, particularly young children (Wachs, Black, & Engle, 2009). Across contexts, including areas with high HIV prevalence rates, children of caregivers with psychiatric disorders have higher rates of emotional and behavioral disturbance (Rutter & Quinton, 1984; Barnes & Stein, 2000; Stein et al., 2014), and delays in multiple developmental, psychological and physical domains (Walker et al., 2007; Lung, Shu, Chiang, & Lin, 2009). Evidence suggests that interventions to address caregiver MH can improve child outcomes. For example, treating mothers’ depression reduced behavior problems in their children (Weissman et al., 2006), and a review of international perinatal interventions delivered by non-professional and community workers showed improvements in child cognitive developmental, growth, and physical health outcomes, as well as maternal health (Rahman et al., 2008). There have been calls in many contexts, including SA, to intervene early with mothers at risk for MH problems for their own and their children’s health and well-being (e.g. Parsons, Young, Rochat, Kringelbach, & Stein, 2011).

Unfortunately, throughout low-and-middle-income countries (LMIC), including SA, the relative dearth of MH professionals, poses a challenge for identification of problems and implementation of treatment efforts. A survey of the SA public MH system found a total of 11.95 MH professionals, primarily nurses, per 100,000 people, with less than one

psychiatrist, psychologist, or social worker per 100,000 people, with particularly acute shortages in impoverished and rural or peri-urban communities (Lund et al., 2010).

In SA and other LMIC, “task-sharing” in which “lay counselors” or “community-based workers” assume some of the responsibilities of professionally trained health care workers has become an important strategy for meeting health care needs (Petersen, Lund, Bhana, & Flisher, 2012), with the SA government contributing considerable resources to this effort (SA National Department of Health, 2013a). Recently, calls for use of local lay counselors in assessment and treatment of mental disorders and SUD have increased substantively (Petersen et al., 2012).

Use of lay counselors to identify and treat MH problems has been hindered by a lack of standardized clinical instruments that can effectively be administered by lay non-MH professionals. Among instruments that do exist, there is need for translation and validation in local languages, taking into account cultural differences in the interpretation of items. While there are MH screening tools that have been used in SA, including the K10 (Kessler et al., 2002) and SRQ20 (Harding et al., 1980), these are symptom checklists that measure general psychological distress rather than identifying psychiatric disorders. Validation studies have examined cut points for identifying clinical significance, but validation data for the SRQ20, for example, vary widely with regard to factor structure and cut points for identifying cases of common disorders (Van der Westhuizen, Wyatt, Williams, Stein & Sorsdahl, 2015). Elevated scores on measures of general psychological distress, especially in LMIC, may reflect normal responses to severe environmental stress rather than underlying psychiatric disorders. A diagnostic screener that is consistently scored based on a constellation of symptoms developed from the criteria for separate psychiatric disorders can avoid these limitations.

The Client Diagnostic Questionnaire (CDQ; Aidala et al., 2004), developed and validated in the U.S., is one of the few brief diagnostic MH screening tools designed to be delivered by non-MH professionals in HIV-affected populations. It is based on the PRIME-MD, a MH screening tool developed and validated for use by non-MH providers in primary care settings (Spitzer et al., 1994). The original PRIME-MD screened for depression, panic and other anxiety disorders, alcohol abuse, somatoform, and eating disorders. The range of disorders addressed and the wording of symptom questions were revised to tailor the screening tool to meet the needs of HIV-affected populations (Aidala et al., 2004). In the original U.S. CDQ validation study, comparisons between CDQ screening by lay counselors and by independent MH professionals yielded a sensitivity, specificity, and overall accuracy of 91, 78, and 85%, respectively, for establishing the presence of any psychiatric disorder in HIV-infected adults. A few studies have used the CDQ in LMIC, including Belize (Anastario et al., 2011) and India (Chowdhary & Patel, 2010), although no validation studies in these settings have been published.

To address the significant need for evidence-based, brief screening tools to allow lay counselors to accurately assess psychiatric disorders and SUD in the context of high HIV prevalence, the current study aimed to validate the CDQ in SA following the procedures used in the U.S. study by 1) comparing lay counselor assessments of MH using the CDQ to

that of a MH professional and 2) comparing the CDQ results with those of a standardized and widely used measure that includes an assessment of MH functioning, the SF-36 (McHorney, Ware, & Raczek, 1993; Turner-Bowker, Bartley, & Ware, 2002).

Methods

Study population and recruitment

Data for this paper come from a subset of caregivers who participated in the second phase of Asenze, a longitudinal epidemiologic study of the health and psychosocial needs of preschool children in KwaZulu-Natal, SA (Chhagan et al., 2011; 2013). The province of KwaZulu-Natal has the highest antenatal HIV prevalence in SA (37.4%;South Africa National Department of Health, 2013b) and one of the highest in the world. For Asenze, all households/families with 4–6 year old children in the region were identified in a door-to-door survey and invited to participate. Those who provided informed consent were enrolled and household, caregiver, and child demographic information was collected. Any child in the target age range and their primary caregiver were invited to participate in a full assessment at Asenze research offices. All assessments were administered at two time points: baseline (1436 caregivers of 1581 children; 88% of eligible households) and follow-up approximately two years later (1273 caregivers of 1409 children, 88% of those who participated at baseline). “Primary caregiver” was defined by criteria related to day-to-day care and the ability to make decisions for the child. The CDQ was among the assessments of the caregiver in both Phase 1 and Phase 2.

Although not an initial aim of the study, the investigators received supplemental funding for a validation study of the CDQ in the Zulu language with caregivers in SA. All caregiver participants who completed follow-up interviews were eligible for participation in the sub-study. 322 participants were selected sequentially over several months by inviting caregivers attending the study clinic for the Phase 2 follow-up assessment who had morning appointments (the only ones with extra time to complete the additional interview before being driven home) and who came in on one of the days each week that the psychologist was present. The validation sub-study was described to all who were selected, and virtually all were willing to participate and provided written informed consent for an additional interview.

Procedures

As part of Asenze, four lay counselors with research experience with children and families administered the baseline and follow-up assessments, which included the CDQ-lay counselor version. The CDQ was selected because of our previous experience in SA using the PRIME-MD (the basis for the CDQ), the need for a screener that could be administered by lay counselors, and the necessity for a PTSD module, given the high level of trauma in this population.

For this validation study, we followed procedures of the original U.S. validation study (Aidala et al., 2004). After the administration of the lay version of the CDQ, participants met with a bilingual, isiZulu SA clinical psychologist who administered the clinician version of

the CDQ. The vast majority completed these on the same day, with a handful of participants returning within less than a week to complete the clinician interview given their time constraints. On average, it took the lay counselors 15–20 minutes to complete the CDQ, depending on presence of symptoms, and the psychologist, blinded to the results of the lay counselor interview, 35–40 minutes. Lay counselors were trained and supervised by experienced psychologists and physicians. Counselors had been trained in using the CDQ for Phase 1. Additional training was added for the validation study, conducted over 3 partial days focused on didactics regarding mental illness, diagnostic instruments, and administration of the CDQ, and practice sessions using the CDQ with observation and corrective feedback by the trainers. Ongoing weekly supervision included training reinforcement, fidelity checking, and support for handling difficult interviews and distressed caregivers. Moreover, additional retraining was conduced after staff had been in the field for several months reviewing the protocol, CDQ forms and scoring algorithm, and reviewing the meaning of the questions in both phases. Transportation to and from research offices and a light meal were provided to participants. Study procedures were approved by the Biomedical Research Ethics Committee of the University of KwaZulu-Natal, SA and the Institutional Review Board of Columbia University Medical Center, NY. Caregivers, including those in the validation study, screening positive for MH disorders were referred for further assessment and care, as clinically indicated.

Measures

Clinical Diagnostic Questionnaire (CDQ)—Participants were administered the following CDQ modules: major depression syndrome (MDS), other depression (ODS), panic, generalized anxiety, post-traumatic-stress-disorder (PTSD), and SUD, each of which uses DSM-IV criteria to determine the presence of a disorder. “Any mood disorder” was defined as having either MDS or ODS. The psychosis screen was not administered because the Asenze sample was too small for an accurate estimate of the prevalence of psychosis.

The clinician version of the CDQ, developed in the U.S., follows the format of the lay-counselor version, however, it allows for clinicians to ask additional questions about symptoms, prior episodes, treatment experience and rule-out diagnoses, These additional questions were taken from the Structured Clinical Interview (SCID; First et al., 1996), a widely-used, validated psychiatric interview, considered the gold standard for psychiatric assessment and was used originally to validate the PRIME-MD (Spitzer et al., 1994). As with any clinical assessment, the study psychologist was encouraged to probe ambiguous responses and ask additional clarifying questions.

Lay counselor and clinician versions of the CDQ were translated and back-translated into isiZulu following standard procedures for psychometric instruments (Preciago & Henry, 1997). In brief, the CDQ was translated and back-translated by a bilingual isiZulu-English South African lay counselor, with a second back-translation and review conducted by the SApsychologist. The US developers of the CDQ (Mellins and Aidala on this paper), along with the US and SA Principal Investigators (PI) (Davidson and Kauchali) then reviewed discrepancies for meaning and correct diagnostic translation. Corrections were made as needed.

SF-36—As part of Asenze, the lay counselors also administered the isiZulu version (Kuo & Operario, 2011) of the SF-36 version 2 (McHorney et al., 1993) to caregivers. The SF-36 is a 36-item survey on health-related functioning and quality of life with 8 subscales, including a well-validated MH summary score, with higher scores indicating better health functioning (Ware, Kosinski, & Dewey, 2000). The MH subscales encompass depression and anxiety symptoms together with evidence of impaired social functioning. The SF-36 had previously been translated for use in SA in several studies with excellent internal consistency for the subscales, including a study of caregivers of orphans in similar communities in KwaZulu-Natal (Kuo & Operario, 2011). In the validation study, we examined social functioning, emotional functioning, and the MH subscale.

Demographics

Data on age, education, and income were collected at the initial door-to-door survey and were available for 286 of 322 caregivers. Other information was obtained by the lay counselors during primary assessments with caregivers. HIV status was obtained through self-report of a previous positive test and/or through rapid testing with appropriate counseling and referral at the Asenze site.

Statistical Analysis

The clinician CDQ interview administered by a MH professional is regarded as the diagnostic criterion standard for assessing the validity of the lay counselor's CDQ evaluation. Five statistics are reported here; 1) *sensitivity*, 2) *specificity*; 3) *positive predictive value*, 4) *negative predictive value*, and d) *overall accuracy*. We also report the kappa statistic, agreement between the lay counselors and the clinician for each diagnosis. The McNemar test was used to assess the significance of the difference between two correlated prevalences of disorder identified by the lay counselor and by the clinician.

The sensitivity and specificity of the CDQ diagnostic categories were assessed, with primary focus on the general categories of "any disorder" (including SUD), "any psychiatric disorder" (not including SUD), and any alcohol or non-alcohol SUD ("any SUD"). These were the strongest variables in the U.S. validation study. Given that the CDQ is a screener to be used by lay staff, the focus of the tool is on identifying significant MH needs that can then be further defined and treated by the more limited numbers of professional staff.

We used the SF-36 scores to explore construct validity of the CDQ. The association between "any psychiatric disorder" on the lay counselor CDQ and the subscales of the SF-36 (i.e., social functioning, emotional functioning, and MH subscale score) was tested using t-tests. We report the difference of the SF-36 scores, their corresponding 95% confidence intervals (CI) and p-values in Table 3.

Results

Descriptive information on the 322 caregivers is presented in Table 1. These caregivers reflected the demographics of those in the larger Asenze study, with 53% between the ages of 25 and 42; 97% women; 69% birth mothers and 17% grandmothers (the rest were female relatives, with only four fathers); and 29% were HIV-infected. Over half had started or

completed secondary school but only 1% had had any further education and 8% no education. Only 11% had steady jobs and over half had no income other than government grants for child support or disability.

Table 2 lists the sensitivity, specificity, positive and negative predictive values, kappa statistics and the prevalence of disorder identified by the lay counselors and the clinician. Sensitivity for “any disorder” (including SUD) and “any psychiatric disorder” was 73% and 74%, respectively. Specificity for “any disorder” and “any psychiatric disorder” were 81% and 79%, respectively, indicating that only one in five persons lay counselors identified as having a disorder did not meet full criteria for a current psychiatric diagnosis by the clinician. Specificity was high across the full range of categories of psychiatric disorders, both general and specific, ranging from 81% to 99%. Sensitivity at the level of broad diagnostic categories varied considerably and was 38% for “any mood disorder,” 86% for “any anxiety disorder,” and 67% for “any SUD.” Sensitivities for the specific diagnoses were also diverse, ranging from 42% (major depression) to 100% (anxiety). The majority of overall accuracy rates across modules and specific diagnostic categories were over 90%. Note that all but one case of SUD represented alcohol abuse and thus there were too few cases to consider non-alcohol drug abuse separately. The low prevalence for several disorders yielded wide confidence intervals for sensitivities and positive predictive values.

The agreement between the lay counselor and the clinician for broad diagnostic categories (e.g. “any mood disorder”) ranged from 0.23 to 0.44, except for any SUD (Kappa=0.74). For specific diagnostic categories (e.g. major depression), the agreement varied from 0.23 (panic disorder) to 0.72 (alcohol abuse or dependence).

Table 2 also shows the prevalence for the different diagnoses based on lay counselor and clinician assessments. There is an overall 11% difference (30% vs. 19%, p-value<0.001) in prevalence rates for “any disorder” comparing lay counselor and clinician assessments. The difference is somewhat greater (14%) for “any psychiatric disorder,” comparing the lay counselor CDQ to the clinician interview (29% vs. 14%, p-value<0.001). Statistically significant differences in prevalence can also be observed in the comparative rates of PTSD, and anxiety disorders. However, the difference in the prevalence for “any SUD,” and diagnoses of major depression, alcohol abuse, and “any mood disorder” are less than 10% and non-significant (see Table 2).

Participants with “any disorder” identified by lay counselors on the CDQ also had significantly lower scores on three SF-36 subscales compared to those without diagnosis (Table 3), including MH (mean difference=−15.11, 95% CI=(−19.87, −10.35), p<0.001), social functioning (mean difference=−8.80, 95% CI=(−15.07, −2.54), p=0.006), and emotional functioning (mean difference=−11.94, 95% CI=(−17.05, −6.83), p<0.001). Comparisons between participants with and without any psychiatric disorder diagnosis by lay counselors on the SF-36 yielded similar findings (mean difference in MH subscale scores =−15.23, 95% CI=(−20.08, −10.38), p<0.001, in social functioning scores =−9.43, 95% CI=(−15.82, −3.04), p=0.004, and emotional functioning scores=−12.57, 95% CI=(−17.77, −7.37), p<0.001).

Discussion

To our knowledge, the isiZulu CDQ is the first brief psychiatric diagnostic screening tool designed specifically for use by non-MH staff to assess both psychiatric disorders and SUD among adults seen in high HIV prevalence settings in SA. This validation study provides considerable support for the validity of the isiZulu CDQ as a screener. Sensitivity, specificity, and overall accuracy are good for the primary variable of interest, indicating whether or not participant had “any disorder.” Over 70% of cases identified by the clinician as having any psychiatric diagnosis were correctly identified by lay counselors using the CDQ and the rate of false positives was relatively low. Similar to the U.S. version, the sensitivity and specificity of the subcategories for the CDQ varies by diagnostic category, ranging from poor for “other depression” to excellent for “any anxiety.” The isiZulu CDQ identified a high number of caregivers of young children who met screening criteria for any disorder, providing further evidence of the need for psychiatric screeners and MH treatment to promote caregiver and child MH and wellbeing.

The CDQ was developed to provide a brief instrument for use by non-MH professionals to detect MH and SUD needs that may otherwise go unrecognized. The screener does not contain questions to facilitate differential diagnosis when symptoms of multiple disorders are reported. Symptoms can contribute to more than one screening diagnosis. This maximizes sensitivity, but can result in lower specificity for individual diagnoses. Positive screening diagnosis for “any disorder,” as well as symptoms reported on the CDQ within diagnostic categories, provides guidance for best use of scarce professional MH resources needed to identify the exact nature of psychopathology.

There was only one person who screened positive for drug abuse or dependence, and thus we could not assess validity of the CDQ for assessment of drug abuse disorder separately from the larger category of “any SUD.” Given that 100% of adults in this study had young children in their care, it is not clear if this is an accurate assessment of use or related to social desirability, as has been seen in other settings (Johnson & Fendrich, 2005; Mellins et al., 2008).

The prevalence of disorders reported by lay counselors was higher than that reported by the clinician. This was to be expected in that the CDQ screening tool was designed to err on the side of over identifying cases with probable disorder in need of referrals for clinical evaluation, rather than missing identification of individuals with MH needs. Differences in lay counselor and professional prevalence rates were greatest for PTSD and other anxiety disorders. One reason for this may be that trauma, including loss of a child, is so prevalent in this population that the mental health provider may have interpreted symptom reports as “normative responses” to difficult circumstances and determined with additional questions that functioning was not impaired. The lay counselors could not probe to fully evaluate symptoms, thus they were not able to assess the extent of possible impairment. Prior to this study they had worked as child development assessors, dealing primarily with the socio-emotional and cognitive assessment of children and psychosocial assessment of caregivers, but not assessment of psychiatric disorders. Additional training in adult psychopathology

should be considered for future studies involving the CDQ with lay counselors and may result in the application of more stringent criteria to their diagnoses.

Regardless, the vast majority of individuals who screened positive on the lay counselor CDQ but did not receive a clinician diagnosis reported many psychiatric symptoms likely to interfere with their management of HIV or other health conditions, and which might also negatively impact their ability to care for their children. Even those that did not meet diagnostic criteria may be experiencing clinically significant symptoms, which could warrant some type of MH service. An important area for future study is determining the impact of sub-threshold symptoms on ability to function and care for children.

The construct validity of the CDQ is supported by the association between the lay counselor CDQ diagnoses with significant impairment on the SF-36. Item analysis indicates strong relationships between the CDQ screening diagnosis and client self-rated symptom severity and functional impairment associated with social and emotional role functioning. The SF-36 has been validated globally and in SA as a measure of MH functioning (Turner-Bowker, Bartley, & Ware, 2002; Kuo & Operario, 2011), however the SF-36 does not allow assessment of disorder, nor does it include assessment of SUD or post-traumatic stress symptoms and diagnoses. In a country seriously affected by HIV, poverty, and a history of racism and discrimination, PTSD is an important MH category to assess. Importantly, PTSD was the most frequent screening diagnosis and would be missed by most symptom checklists.

There are several limitations to this study. Study participants did not represent a probability sample; they were almost exclusively women who were recruited from among participants in an ongoing, geographically limited, population-based study of children and their caregivers and the lay counselors' lack of experience with asking about mental illness was a drawback, although the measure is intended for staff with limited professional experience. Participants had no trouble in answering the CDQ questions, often welcoming the chance to share difficult experiences, but we found that support and ongoing supervision was essential for the lay counselors using the CDQ as they interacted with participants who were experiencing ongoing stress and high rates of trauma. This likely improved the skills of the lay counselors and supported them in what would be emotionally difficult work for anyone. The lay counselors who administered the CDQ in this study reported that receiving regular feedback and seeing that participants received appropriate assistance as a result of the CDQ interview was a very positive experience.

The validation study examined only an isiZulu version of the CDQ, not that of other SA languages. Sample sizes for specific disorders were relatively small and not all types of disorder were seen in sufficient numbers for analysis, particularly drug use. In general, statistical comparisons of validity indicators for specific diagnoses with less than 5% prevalence or approximately 15 cases identified by clinician assessment (such as "any mood disorder," major depression disorder, generalized anxiety disorder, other anxiety disorder, "any substance abuse disorder," and alcohol abuse/dependence) should be viewed with caution. To improve statistical precision for estimates of sensitivity (i.e., to produce narrower confidence intervals), a larger sample size yielding a larger minimum number of positive

patients would be needed for future studies. Another limitation of this study was the use of only one clinician, precluding comparison across clinical validators. Unfortunately there was a dearth of Zulu speaking psychologists at the time of this study. Although the psychologist was supervised by one of the CDQ developers and the PI of the study who reviewed symptoms, and diagnoses with her to ensure accurate diagnoses, it will be very important for future studies to examine comparisons among multiple clinicians, particular as the numbers of Zulu speaking psychologists increase. Any bias the one clinician may have had could not be examined.

In spite of the limitations, our study indicates that the isiZulu CDQ is a sensitive and valid MH diagnostic screener that lay-counselors with little formal MH training can use effectively. The CDQ is brief and can be used in a diverse range of service settings to identify persons in need of MH treatment. In a country, such as SA, with significant need, but relatively few MH professionals, this tool could make a substantive contribution. The results of this study are consistent with other research that has found that rates of psychiatric disorder are relatively high in SA (Myer et al., 2008). As SA continues to put resources into training and supporting lay or community health workers (South Africa National Department of Health, 2013a), the use of the CDQ screening tool can increase the capacity of service providers to more effectively target scarce MH resources and reduce the negative impact of unrecognized disorder on the health and well-being of individuals and the children in their care.

Acknowledgments

The Asenze Study was funded by NIDA 5 R01 DA023697 as part of the Fogarty Global Brain Disorders Program. The research was also supported by an NIMH center grant to the HIV Center for Clinical and Behavioral Studies at the New York State Psychiatric Institute and Columbia University (P30-MH43520;PI: Remien). We acknowledge the assistance of Sean Sullivan for preparing Table 1 and assisting with data management, the lay counselors who administered the CDQ, Matilda Ngcoya, Cynthia Memela, Nozipho Sibiya and Nothando Memela, Julie Manegold for supporting the lay counselors, and the study participants. We also acknowledge the significant contribution of our collaborator and friend, Meera Chhagan*, whose life ended much too soon. This work could not have been done without her, and we dedicate this article to her.

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Key Practitioner Messages

- South Africa (SA), a country heavily impacted by poverty, HIV, and the legacy of Apartheid, has a high prevalence of mental health (MH) and substance abuse problems.
- In SA and other low-and-middle-income-countries (LMIC) there is a dearth of MH professionals.
- This study examined use and validity of the Client Diagnostic Questionnaire (CDQ), a brief diagnostic MH screening tool designed for use by lay counselors in HIV-affected populations.
- Comparing lay counsellor diagnoses on the CDQ to clinician assessment, sensitivity, specificity, and overall accuracy were good at the level of “any diagnosis.”
- The CDQ can be used effectively in SA and other LMIC with limited MH services to enable appropriate and efficient referral of individuals in primary care settings,

Table 1

Demographic Characteristics for Primary Caregivers in the CDQ Validation Study

Characteristic	**N**	**%**
Age, years (Mean±SD: 35.4±12.5; Range: 18–74)		
≤25	69	24
26–42	150	53
≥43	67	23
Gender		
Female	278	97
Primary Caregiver Relationship to Child		
Mother	196	69
Grandmother	49	17
Other relative	5	14
Caretaker Highest Educational Level		
None	22	8
Grades 1–8	79	28
Over Grade 8	170	59
Unknown/Missing	15	5
Main Income Source for Caregiver (can have multiple sources)		
Formal (regular salary)	31	11
Informal	52	18
Child Support Grant	143	50
Other (Pension, Government Grants)	22	8
No income	25	9
Unknown/Missing	24	9
HIV Status (self-report or test result)		
Positive	82	29
Negative	195	68
Unknown	9	3

(N=286 participants whose demographic information was available)

Table 2

Measures of diagnostic accuracy: Sensitivity, Specificity, Predictive Value of the CDQ Lay Counselor Version compared to the CDQ Clinician Version

(All reported values are in percentages, except the kappa statistic)									
	Sensitivity	**Specificity**	**Positive predictive value**	**Negative predictive value**	**Overall accuracy**	**Kappa**	**Lay prevalence**	**Clinician prevalence**	**p-value[2]**
Any disorder (including any substance use disorder)[3]	73%	81%	47%	93%	79%	0.44	30%	19%	<0.001
Any psychiatric disorder[3]	74	79	39	95	79	0.39	29	15	<0.001
Any mood disorder[3]	38	96	39	95	91	0.34	7	7	0.999
Major depression disorder	42	96	28	98	94	0.30	5	4	0.263
Other depression disorder	24	98	46	95	93	0.28	3	6	0.052
Generalized anxiety disorder	86	90	15	100	90	0.23	12	2	<0.001
Panic disorder	83	91	15	100	91	0.23	10	2	<0.001
Post-traumatic stress syndrome	56	83	28	94	80	0.27	21	10	<0.001
Other anxiety disorder[3]	100	95	89	100	95	0.19	5	1	<0.001
Any substance abuse disorder[1,3]	67	99	86	98	98	0.74	4	5	0.289
Alcohol abuse/dependence[3]	65	99	85	98	98	0.72	4	5	0.289

[1] Includes one caregiver who screened positive for drug abuse by both lay counselor and MH professional assessment.

[2] p-values are corresponding to the McNemar test comparing the prevalence identified by lay counselor and clinician.

[3] Findings from these variables should be viewed with caution due to low prevalence.

Table 3

Difference in Mean SF-36 Subscale Scores by Diagnosis Status

SF-36 Subscales (scale range from 0 to 100) Mean (±SD)				
	Diagnosed Any Disorder by Lay Counselors (N=98)	**Not Diagnosed Any Disorder by Lay Counselors (N=234)**	**Difference (95% Confidence Interval)**	**p-value**
Social Functioning	83.29 (±28.49)	92.09 (±20.27)	−8.80 (−15.07, −2.54)	0.006
Emotional Functioning	82.40 (±23.51)	94.34 (±15.53)	−11.94 (−17.05, −6.83)	<0.001
Mental Health	64.59 (±21.69)	79.70 (±15.26)	−15.11 (−19.87, −10.35)	<0.001

	Diagnosed Any Psychiatric try Disorder by Lay Counselors (N=95)	**Not Diagnosed Any Psychiatric Disorder by Lay Counselors (N=237)**	**Difference (95% Confidence Interval)**	**p-value**
Social Functioning	82.76 (±28.78)	92.19 (±20.16)	−9.43 (−15.82, −3.04)	0.004
Emotional Functioning	81.84 (±23.67)	94.41 (±15.44)	−12.57 (−17.77, −7.37)	<0.001
Mental Health	64.37 (±21.85)	79.60 (±15.28)	−15.23 (−20.08, −10.38)	<0.001