

Proactive Detection of People In Need Of Mental Healthcare: Accuracy Of The Community Case Detection Tool Among Children, Adolescents And Families In Sri Lanka

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Abstract

Background

Most children and adolescents in need of mental healthcare remain untreated even when services are available. This study evaluates the accuracy of a new tool, the Community Case Detection Tool (CCDT), which uses illustrated vignettes, two questions and simple decision algorithm to support proactive community-level detection of children, adolescents and families in need of mental healthcare in order to improve help-seeking.

Methods

Trusted and respected community members in the Eastern Province of Sri Lanka used the CCDT in their daily routine. Children and families detected as potentially in need of mental healthcare based on utilizing the CCDT ($N=157$, aged 6-18 years) were invited for a clinical interview by a mental health counsellor using the Mini-International Neuropsychiatric Interview for Children and Adolescents. The CCDT results were compared against the outcomes of the clinical interview. The concurrent validity and performance of the CCDT were also evaluated by comparing the CCDT outcomes against the Strengths and Difficulties Questionnaire (SDQ).

Results

7 out of 10 children and families detected by community members using the CCDT were confirmed to be in need for treatment (positive predictive value = 0.69; 0.75 when compared to the SDQ). Detections based on the family problem vignette were most accurate (PPV=0.76), followed by the internalising problem vignette (PPV=0.71) and the externalising problem vignette (PPV=0.62).

Conclusions

The CCDT is a promising low-cost solution to overcome under-detection of children and families in need of mental healthcare. Future research should focus on evaluating the efficacy, as well as additional strategies to improve help-seeking.

Background

Globally, up to 20 % of all children and adolescents suffer from a mental health condition, yet the majority remain untreated [1, 2]. Although the *treatment gap* between the burden of mental health conditions and engagement with appropriate care is universally large [3], it is particularly true for children and adolescents growing up in conflict affected low- and middle income countries (LMICs) [4]. Exposure to war-related violence, increased rates of poverty, deprived access to basic services, forced displacement, and separation from friends and family negatively affect children's mental health and may continue to impact their lives long after the end of the conflict [5], while services providing mental healthcare for children and adolescents are particularly strained in LMICs [6].

In Sri Lanka, the context of this study, the negative mental health consequences of the civil war and its widespread impact on family structures and community dynamics have been well documented [7]. Recent national data on the prevalence of mental health problems among children and adolescents in Sri Lanka are not available, however a 2004 study showed that nearly one in five children aged 13–18 years had experienced a mental health condition [8]. Furthermore, a study of adults five years after the conflict showed a steady increase in symptoms of depression (10%, 33%, 40%) and anxiety (13%, 23%, 23%) depending on the district and its level of exposure to past conflict (i.e., minimal, moderate, and severe exposure) [9]. Despite a decentralised mental health service structure that includes cadres of supervised community-level mental healthcare workers [10], there is a major mental health treatment gap [11]. Similar to findings from other countries, the most common demand side barriers to seeking help for mental health problems include: a lack of awareness about symptoms or available services; myths about mental health; widespread social stigma; and negative beliefs about seeking help [10].

Help-seeking can be conceptualised as a multi-step dynamic process; from recognising a problem, to seeking help, to (continuous) use of adequate services [12]. Barriers are faced at each step, including the under-detection of mental health-related symptoms. It can be challenging to distinguish between symptomatic and normal behaviour, especially among children and adolescents who also often depend on others to seek help [13]. Time and financial resources associated with existing methods to support detection of mental health problems, such as systematic universal screening conducted with all children in a classroom, community or primary healthcare centre, are major deterrents to feasibility in most LMICs [14]. Furthermore, it excludes most vulnerable children who are out of school or who do not visit a healthcare clinic regularly. We propose proactive community-level case detection as a new feasible method for contexts with limited resources.

A tool developed for this purpose is the Community Informant Detection Tool (CIDT) [14]. It uses paragraph-long illustrated vignettes of the most common manifestations of mental health conditions in culturally acceptable and non-stigmatising language. Trusted and respected lay community members are trained to use the tool in their daily routine to proactively detect people in need of mental healthcare and to encourage help-seeking at available services. The evaluation of the effectiveness of this approach among adults in Nepal demonstrated 46.9% greater help-seeking for mental healthcare in areas randomized to using the CIDT compared to the control arm [15].

Building on this tool and positive findings among adults, a child-focused Community Case Detection Tool (CCDT) was developed and evaluated in schools in Palestine. Using the CCDT, teachers accurately detected children in need of mental healthcare in three of four cases (positive predictive value [PPV] = 0.77) (Van den Broek et al., in press). Drawing on these promising findings, we hypothesised that the CCDT could also be applied to community settings. Furthermore, given the vital impact of the family environment on children's mental health and well-being, an additional version was evaluated that focused on detecting family-related mental health needs.

Methods

Setting

Sri Lanka is a lower-middle income country in South Asia with a multi-ethnic and multi-religious population of 21.3 million, of whom 38.7% is under the age of 24 and 80% resides in rural areas [17, 18]. The Indian Ocean tsunami in 2004 and three-decades of civil war which ended in 2009, resulted in over 100,000 lives lost and left 300,000 civilians internally displaced [9, 19]. This study was carried out in three divisions in the Eastern Province, with a total population of 25,591 children aged 5-19 years [20]. Despite Sri Lanka's overall economic growth, poverty rates in the Eastern and Northern Province, where most of the armed conflict was concentrated, are far above the national average [19]. There is no available data on the prevalence of mental health problems among children and adolescents in the Eastern Province. A 2011 study conducted in the Northern and Eastern Province showed that 92% of the children experienced life-threatening events such as bombings, attacks on homes and loss of family members during the conflict [21]. Furthermore, a qualitative study in the Eastern Province reported that adolescents perceived disrupted family relationships, separation and migration of parents, violence at home and sexual abuse as the main factors affecting their mental and physical well-being [22].

Design

This study assessed the accuracy of the CCDT in proactively detecting children and families in need of mental healthcare (i.e., CCDT positives). In addition, concurrent validity of the CCDT positives was assessed against the Strengths and Difficulties Questionnaire (SDQ) [23], a widely used alternative instrument to detect mental health problems among children and adolescents. As opposed to universal screening, proactive case detection with the CCDT will not lead to negative cases. A small proportion of CCDT negative cases (i.e., those detected by community members using the CCDT as probably *not* in need of mental healthcare) were therefore only included to avoid confirmation bias.

Instruments

Community Case Detection Tool. The CCDT is a tool for 'community gatekeepers', trusted and respected community members, who do not have any professional mental health background. The tool is developed to support proactive community-level detection of children and adolescents aged 6-18 years and families in need of mental healthcare to encourage help-seeking. It uses an adapted version of the 'prototype-matching approach', originally developed to simplify and standardize diagnosis. It presents related symptoms in a paragraph-length vignette to help recognise mental healthcare needs in daily life [24]. The vignettes are supported by illustrations, two questions and a simple decision algorithm to determine the level of match and decide on the follow-up action. If there is a match with a vignette, the gatekeeper is advised to support the child and family to seek help from available services. Based on qualitative research in Sri Lanka, we developed and evaluated three Tamil versions of the tool: internalising problem vignette, externalising problem vignette and family-related problem vignette (see

Supporting File 1). For the purpose of this study, an identification card was developed for community gatekeepers to administer the version that was used for the identification and their knowledge about the need of mental healthcare prior to the introduction of the CCDT. A positive match with one of the three vignettes was scored as 'CCDT positive'.

Ten Question Screen for Childhood Disability. An abbreviated four-item version of the Ten Questions Screen for Childhood Disability (TQS) was used to assess hearing, speaking, or severe cognitive disabilities prior to participation in the study [25]. Children who scored positive on one of the four items were excluded from the sample as the research methods were deemed inappropriate.

Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI-KID). In this study, we used the Indian Tamil MINI-KID 6.0 to evaluate the mental health of children and adolescents the gatekeepers had detected. The MINI-KID is a short structured clinical interview to assess the presence of current DSM-IV (Diagnostic and Statistical Manual of Mental Disorders) and ICD-10 (International Classification of Diseases) disorders in children and adolescents aged 6-17 years [26]. Each diagnostic module starts with a screener followed by more detailed symptom, severity and functionality questions. The MINI-KID has shown to generate reliable and valid diagnosis [26] and has been used with children in Sri Lanka before [27]. Relevant modules were selected by a child psychologist (MJ), supervising psychiatrist from Sri Lanka (JJ) and Indian child psychiatrist and master trainer (JVK). The selected modules were depression, suicidality, dysthymia, panic disorder, separation anxiety disorder, obsessive compulsive disorder, post-traumatic stress disorder, alcohol and substance dependence, attention deficit hyperactivity disorder, conduct disorder, oppositional defiant disorder, generalized anxiety disorder and adjustment disorder. The modules on suicide, alcohol and substance dependence were only deemed appropriate for children aged 13 years and older. Standard relevant scoring and instructions were used for functional impairment caused by the symptoms and the time frame (i.e., current, past 6 or 12 months).

Family functioning. We used an adapted version of the Safe Environment for Every Kid - Parent Questionnaire-R (SEEK) to assess family problems and child protection needs [28]. Relevant items of the SEEK were selected based on the construct captured in the family vignette. The questionnaire was further adapted and translated through a systematic process in which the items were first translated into Tamil. The research team provided feedback to ensure separate items and translations were culturally appropriate, followed by a blind back-translation. The final questionnaire consisted of 14 items that addressed harsh punishment, child neglect, parental stress, intimate partner violence and substance abuse.

Indication for treatment. At the end of the interview, the senior counsellor administering the MINI-KID and SEEK answered a concluding dichotomous question regarding the need for any psychological treatment from a mental health counsellor or psychiatrist or child protection service. This indication for treatment was scored (i.e., yes/no) based on the counsellors' judgement following the information provided in the structured clinical interview, the family assessment.

The Strengths and Difficulties Questionnaire. This study used the Sri Lankan Tamil parent version of the SDQ [29]. This widely used 25-item behavioural screening questionnaire for 3-16 year old children, covers emotional symptoms, conduct problems, hyperactivity/inattention, peer relationships problems and prosocial behaviour. A three point Likert scale allows the respondent to indicate how each item applies to the participating child [23]. All items, except those related to prosocial behaviour, generate a total difficulty score classified as SDQ 'normal' (i.e., a score between 0-13) or SDQ 'borderline' and 'abnormal' (i.e., a score between 14-40).

Training and supervision

This study was carried out through an existing partnership between War Child Holland (WCH), an international non-governmental organisation (NGO) and the Eastern Self-reliant Community Awakening Organisation (ESCO), a local NGO. Community gatekeepers with regular interaction with children and families participated in a two-day training by the research coordinator (RC; PP). The training covered a basic introduction to child and adolescent mental health, the use of the CCDT and ethical considerations related to proactive case-detection such as confidentiality, stigma and child safeguarding.

A master trainer and child psychiatrist (JVK) with extensive experience in conducting the MINI-KID trained a supervising psychiatrist (JJ) and back-up psychiatrist for three days. The supervising psychiatrist subsequently trained five senior community counsellors (four female, and one male) for five days to administer the MINI-KID and the SEEK. Supervision meetings were held with the counsellors for quality control and to support with referrals. Ten research assistants (RA) were trained for six days in research basics, ethics, informed consent and assent procedures, the SDQ, and data management. All research team members were trained in an adverse events reporting mechanism and the supervising psychiatrist followed up on children and families in need of immediate assistance.

Participants and procedures

Community gatekeepers in this study were all female, older than 18 years and included youth club leaders (n=11), women society group members (n=22) and community health volunteers (n=12). Youth club leaders organise recreational and awareness-raising activities in their village, women society group members mobilise women to improve their social and economic conditions, and health volunteers assist midwives and medical health officers to organise monthly health clinics and conduct home visits. They used CCDT for six months during their daily routine activities and detected a total of 238 children aged 6-18 years. After obtaining informed consent and assent, a study ID was created, the TQS was administered and an appointment with the counsellor was arranged by the RA. Within two weeks of identification, the counsellor met with the family at their home or at any other convenient location to conduct the clinical interview and the family assessment. Children aged 13-18 years were interviewed individually, younger children in the presence of their caregiver. The RA followed up within two days after

the counsellors' visit to administer the SDQ with the same caregiver. Direct contact between the counsellors and gatekeepers was limited for potential confirmation bias.

Ethics

Ethical approval was obtained through the Ethics Review Committee of the Faculty of Health-Care Sciences at the Eastern University in Batticaloa. Divisional and district level approval was obtained before the start of this study. Prior to official informed consent and assent procedures, the gatekeepers asked the caregiver whether they were interested in participating in a research study. The identification card was only completed for those families that were willing to participate. All children and families were informed about available and free of charge support, regardless of their participation in the study. Help-seeking was only encouraged, never imposed.

Analyses

The CCDT results and outcomes of the MINI-KID, SEEK and SDQ were analysed using the Statistical Package for Social Sciences (SPSS version 19.0). The interrater reliability (IRR) of the MINI-KID among the five counsellors was assessed using Krippendorff's alpha for dichotomous variables [30]. The IRR was calculated for a selection of the screener, diagnostic, indication for treatment items, and total of these items.

The accuracy of the CCDT was assessed through the Positive Predictive Value (PPV), which is calculated as the percent of children and families detected using the CCDT (i.e., probable positives) who *are* in need of mental healthcare based on the clinical interview and two separate criteria. The primary criterion was the indication for treatment. The secondary criterion was a diagnosis of a psychiatric disorder.

The primary outcome was the PPV for all CCDT positives, regardless of the vignette used, assessed against the indication for treatment. The secondary outcome was the PPV for the subsample of CCDT internalising or externalising positives against diagnostic criteria. CCDT positives detected using the family vignette or cases detected with multiple vignettes were excluded from this subsample because diagnosis of a mental disorder is not applicable to these cases. Exploratory analyses were done to assess the differences in PPV for each individual vignette (i.e., internalising, externalising and family vignette), for each gatekeeper group separately (i.e., youth club leaders, women society group members and community health volunteers), for different age groups and gender against the indication for treatment. CCDT internalising positive cases were also compared against selected MINI-KID modules representing anxiety, depressive and somatic symptoms and the CCDT externalising positive cases with modules related to impulsive, disruptive conduct, and substance use symptoms. The Negative Predictive Value (NPV), the proportion of the CCDT negative cases that were *not* in need of mental healthcare, was calculated against both criteria.

Since our main sample only included CCDT positives, we could not establish the concurrent validity with a correlation coefficient. It was therefore assessed as the proportion of agreement between the CCDT positives and the SDQ positives, i.e., borderline and abnormal scores. As with other studies in Sri Lanka, we used the internationally applicable original three-band cut-off scores for the SDQ [29]. Additionally, the PPVs of the CCDT were compared to the PPV of the SDQ against the indication for treatment criterion.

Results

A total of 207 CCDT positive children were detected, of whom 27 were excluded because of not providing consent, meeting exclusion criteria based on the TQS or were lost to follow up. Another 23 were excluded from the analysis because the gatekeeper knew about the need for mental healthcare prior to the introduction of the CCDT, which may have influenced the detection (see Fig. 1). Our final sample therefore consisted of $N = 157$ CCDT positives. In addition, 31 CCDT negative cases were detected to avoid confirmation bias by the counsellors, of which two were excluded because of consent.

The average age of our sample was 12.3 years ($SD = 3.3$), with an equal distribution of girls and boys. The specification and frequency of vignettes used and gender distribution are presented in Table 1.

Table 1
Frequencies CCDT positives for Each Vignette Used

Vignette used	Total Sample	Girls	Boys
		<i>n</i> (%)	<i>n</i> (%)
Internalizing problem	58	31 (53.4)	27 (46.6)
Externalizing problem	34	9 (26.5)	25 (73.5)
Family functioning problem	53	32 (60.4)	21 (39.6)
Combination: internalizing and family	8	6 (75.0)	2 (25.0)
Combination: all three vignettes	1	0 (0)	1 (100)
Vignette not specified	3	1 (33.3)	2 (66.7)
Total CCDT positives	157	79 (50.3)	78 (49.7)

The IRR using Krippendorff's alpha was $\alpha = .88$ (95% CI; .82-.92) for the total of the selected screener, diagnostic, and indication for treatment items (32 items). For the 12 screener items $\alpha = .75$ (95% CI; .62-.86), for the 13 diagnostic box items, $\alpha = .94$ (95% CI; .88-.98), and for the seven treatment items $\alpha = 1$.

Of the 157 CCDT probable positives, 109 were indicated for mental health treatment (PPV = 0.694). Analysis against the secondary criterion of psychiatric diagnosis showed that 42 of the 92 CCDT internalising or externalising positive cases were diagnosed with a psychiatric disorder (PPV = 0.457). Exploratory analyses with separate subsamples against the primary criterion showed that detections based on the family vignette returned the least false positives (PPV = 0.755), followed by the internalising

problem vignette (PPV = 0.707) and the externalising problem vignette (PPV = 0.618). Further assessment of the PPV against specific diagnostic criteria showed that 21 of the 58 CCDT internalising positives met the diagnostic criteria of any of the relevant modules related to internalizing disorders (PPV = 0.362) and 7 of the 34 CCDT externalising positives (PPV = 0.206) met the diagnostic criteria of any of the externalizing disorder modules. Of the 29 CCDT negative cases, 21 did not require mental healthcare (NPV = 0.724) and 24 did not meet any diagnostic criteria (NPV = 0.828). The measures of concurrent validity showed that 46.7% of the 92 CCDT internalising or externalising positives returned 'borderline' or 'abnormal' SDQ total difficulty scores. When compared against the same reference standard, there is little difference between the PPVs of the SDQ and the CCDT: of the 67 SDQ 'borderline' or 'abnormal' cases, 50 were indicated for mental health treatment (PPV = 0.746 vs. PPV = 0.674 with the CCDT). Exploratory PPV analyses for each gatekeeper group and vignette separately and by gender are summarized in Table 2.

Table 2 Positive Predictive Values

Positive Predictive Value		
	Indication for treatment	
	<i>n/N</i>	PPV
All CCDT positives	109/157	0.694
Sub samples	<i>n/N</i>	PPV
Vignette(s) used		
Internalizing or Externalizing	62/92	0.674
Family functioning	40/53	0.755
Community Gatekeeper		
Youth club leader	22/29	0.759
Community health volunteer	59/93	0.634
Women group members	28/35	0.80
Total CCDT positives	109/157	–
Gender		
Girls	55/79	0.696
Boys	54/78	0.692
Total CCDT positives	109/157	–
Age groups		
6-9 years	36/47	0.766
10-14 years	49/74	0.662
15-18 years	24/36	0.667
Total CCDT positives	109/157	–

Discussion

Efforts to bridge the treatment gap between children and adolescents in need of mental healthcare need to focus on supply (i.e., availability of services) and demand side factors (i.e., detection and uptake). In this study, we assessed the accuracy of a new method to overcome some of the demand side barriers by supporting community-level proactive detection of children, adolescents and families in need of mental healthcare in Sri Lanka.

Purpose and performance of the CCDT

The CCDT is developed to proactively detect children and families in need of mental healthcare to encourage help-seeking. This may include children experiencing a mental disorder, as well as children not meeting formal diagnostic criteria but in need of mental healthcare. This study demonstrated that just over two-thirds of all children and families detected using the CCDT were correctly detected as in need of mental health treatment based on a clinical interview. This is in line with the results of proactive case detection among adults in Nepal and children in Palestine and can be regarded as a moderate to high PPV since the CCDT was used among the general population (Jordans et al., 2015; Van den Broek et al., in press).

The CCDT vignettes represent generic distress domains (i.e., internalising and externalising) as descriptions of mental health needs. The diagnostic criteria, which are more categorical in nature and do not include children in need of mental healthcare with subclinical levels of symptoms, were therefore used as secondary criteria. As anticipated, the predictive value of the CCDT to detect a diagnosis was lower compared to the indication for treatment. This confirms that the use of the CCDT should be limited to the detection of mental healthcare needs and not for diagnostic purposes. The performance of the CCDT is comparable to the SDQ with regards to detecting need for mental healthcare, which indicates that the CCDT could be used as a low-cost alternative to the SDQ. Even though the CCDT is not meant to detect negative cases and the sample of CCDT negatives was too small to draw conclusions, the NPV of 0.72 shows that the CCDT resulted in a relatively small percentage of false negatives.

Interpretation of these results should take the consequences and potential burden of a false positive CCDT detection in each context into account as it could cause distress among children and caregivers and may pose unnecessary pressure on a service system. Although similar consequences and burden are expected with alternative methods, proactive case detection using the CCDT is only recommended and applicable in places where services of sufficient quality are available and accessible.

Constructs and performance of the CCDT

The family vignette performed best in terms of the accuracy and most cases were detected with this vignette. This could be explained by a rise in reported family-related issues in Sri Lanka in the past years, such as alcohol abuse, maternal migration, domestic violence and child protection issues [31]. This combined with the strong emphasis on the family unit as a central pillar of life in Sri Lanka [32] may have facilitated the accurate detection of family related problems compared to symptoms of internalising or externalising problems among children.

The accuracy of cases detected with the internalising vignette was slightly better compared to the externalising cases. This could be explained by cultural norms with regards to social behaviour and self-presentation. While public behaviours of self-control, obedience, and emotional restraint are important traits in Sri Lanka, behaviours that are more in line with the construct covered by the externalizing

vignette such as overt extensive expression of emotions and children directly confronting an older person, are discouraged [32]. The differences between detecting internalising and externalising problems seem to be in conflict with dominant conceptualisations in other contexts (e.g., from Europe or North America). Here, externalising problems are often perceived as being easier to observe by an outsider and are therefore more likely to be detected and receive treatment compared to internalising problems (e.g., Eklund & Dowdy, 2014). This more developed externalising problem vignette performed slightly better than the results of the CIDT in Nepal [14].

Gatekeepers and performance of the CCDT

Most cases were detected by community health volunteers who were best placed to engage with families because of their regular home visits. However, similar to the findings in Nepal, active women group members slightly outperformed community health volunteers [14]. A likely explanation for this is their more informal contacts within their daily routine and familiarity with families in their village. In our previous study in Palestine, in which teachers used the CCDT, the results were slightly better (PPV=0.769) [16]. While not surprising, given teachers' relevant educational background and training, it does show the importance of the selection of suitable gatekeepers in each new context.

Limitations

Due to the proactive use of the CCDT to detect positives only, the relevant and possible accuracy metrics were limited to PPV. The ratio of CCDT positives and negatives ($N=157$ vs. $n=29$) was not an accurate representation of reality. In addition, analyses were done without prevalence rates and caution should be taken when generalising the results to other settings. Although the Tamil MINI-KID and SDQ parent version have been used in previous studies in Sri Lanka, it has not been validated [27, 29]. Furthermore, the reference standard used to assess psychosocial family problems and child protection needs in the family had never been used in Sri Lanka. Using locally adjusted and validated instruments and cut-off scores would most likely have influenced the results.

Gatekeepers first asked permission to introduce a research team member and the identification card was only completed with their permission. This self-selection might be based on caregivers' accurate estimation that there was no need for any mental healthcare and therefore may have inflated the results. A limited version of the concurrent validity was assessed since this study focused on detecting CCDT positives and therefore also resulted in a single outcome (i.e., CCDT positives).

Conclusions

This study demonstrates that community members using the CCDT, can accurately detect two out of three children and families in need of mental healthcare. The performance of the CCDT was comparable with the SDQ, which provides further evidence of the potential of the CCDT as an alternative scalable method to universal screening to promote help-seeking for mental healthcare. Furthermore, the approach

and tool could optimize the use of limited number of specialized mental health professionals by improving the match between those seeking services and the availability of care.

Overcoming under-detection is only the first step in the process of seeking help. Additional strategies are needed to tackle intersecting demand side barriers to effectively encourage help-seeking behaviour. Future research will therefore focus on the development and evaluation of an additional component of the CCDT: a help-seeking encouragement strategy.

Abbreviations

CCDT: community case detection tool; CIDT: Community Informant Detection Tool; DSM-IV: Diagnostic and Statistical Manual of Mental Disorders; ESCO: Eastern Self-reliant Community Organisation; ICD-10: International Classification of Diseases; MINI-KID: Mini-International Neuropsychiatric Interview for Children and Adolescents; NGO: Non-governmental Organization; LMIC: low- and middle-income countries; PPV: positive predictive value; RA: Research assistant; RC: Research coordinator; SD: Standard deviation; SEEK: The Safe Environment for Every Kid; SDQ: Strengths and Difficulties Questionnaire; TQS: Ten Questions Screen for Childhood Disability; WCH: War Child Holland.

Declarations

Ethics approval and consent to participate

Ethical approval for this study was obtained through the Ethics Review Committee of the Faculty of Health-Care Sciences at the Eastern University in Batticaloa.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on request.

Competing interests

The authors declare that they have no competing interests.

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Not applicable.

Authors' contributions

The authors confirm contribution to the paper as follows: study conception and design: MvdB, MJ, BAK; data collection: PP, JJ, JVK; analysis and interpretation of results: GG, MJ, BAK, MvdB, PP, JVK; draft manuscript preparation: MvdB, MJ, GG, PP, JVK, JJ, BAK. All authors reviewed the results and approved the final version of the manuscript.

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References

1. Morris J, Belfer M, Daniels A, Flisher A, Villé L, Lora A, et al. Treated prevalence of and mental health services received by children and adolescents in 42 low-and-middle-income countries. *J Child Psychol Psychiatry*. 2011;52:1239–46. doi:10.1111/j.1469-7610.2011.02409.x.
2. Kieling C, Baker-Henningham H, Belfer M, Conti G, Ertem I, Omigbodun O, et al. Child and adolescent mental health worldwide: evidence for action. *Lancet*. 2011;378:1515–25. doi:10.1016/S0140-6736(11)60827-1.
3. Wang PS, Aguilar-Gaxiola S, Alonso J, Angermeyer MC, Borges G, Bromet EJ, et al. Worldwide Use of Mental Health Services for Anxiety, Mood, and Substance Disorders: Results from 17 Countries in the WHO World Mental Health (WMH) Surveys. *Lancet*. 2007.
4. Patel V, Saxena S, Lund C, Thornicroft G, Baingana F, Bolton P, et al. The Lancet Commission on global mental health and sustainable development. *The Lancet*. 2018;392:1553–98. doi:10.1016/S0140-6736(18)31612-X.
5. Miller KE, Jordans MJD. Determinants of Children's Mental Health in War-Torn Settings: Translating Research Into Action. *Curr Psychiatry Rep*. 2016;18:1–6. doi:10.1007/s11920-016-0692-3.
6. Rathod S, Pinninti N, Irfan M, Gorczynski P, Rathod P, Gega L, et al. Mental Health Service Provision in Low- and Middle-Income Countries. *Heal Serv Insights*. 2017;10.
7. Somasundaram D, Sivayokan S. Rebuilding community resilience in a post-war context: developing insight and recommendations - a qualitative study in Northern Sri Lanka. *Int J Ment Health Syst*. 2013;7:1–10. doi:10.1186/1752-4458-7-3.

8. Perera H. Mental health of adolescent school children in Sri Lanka – a national survey. 2004;81:78–81.
9. Jayasuriya D, Jayasuriya R, Tay AK, Silove D. Associations of mental distress with residency in conflict zones, ethnic minority status, and potentially modifiable social factors following conflict in Sri Lanka: A nationwide cross-sectional study. *The Lancet Psychiatry*. 2016;3:145–53. doi:10.1016/S2215-0366(15)00437-X.
10. Fernando N, Suveendran T, De Silva C. Decentralizing provision of mental health care in Sri Lanka. 2017. <http://www.who-seajph.org>. Accessed 11 May 2020.
11. Department of Census and Statistics. Demographic and Health Survey Report – 2016. 2016. http://www.statistics.gov.lk/social/DHS_2016a/Chapter16.pdf.
12. Rickwood D, Deane FP, Wilson CJ, Ciarrochi J. Young people’s help-seeking for mental health problems. *Aust e-Journal Adv Ment Heal*. 2005;4:218–51. doi:10.5172/jamh.4.3.218.
13. Kazdin AE. Annual Research Review: Expanding mental health services through novel models of intervention delivery. *J Child Psychol Psychiatry Allied Discip*. 2019;60:455–72.
14. Jordans MJD, Kohrt BA, Luitel NP, Komproe IH, Lund C. Accuracy of proactive case finding for mental disorders by community informants in Nepal. *Br J Psychiatry*. 2015;207:501–6.
15. Jordans MJD, Luitel NP, Lund C, Kohrt BA. Evaluation of Proactive Community Case Detection to Increase Help Seeking for Mental Health Care: A Pragmatic Randomized Controlled Trial. *Psychiatr Serv*. 2020;:appi.ps.2019003. doi:10.1176/appi.ps.201900377.
16. Van den Broek M, Hegazi L, Ghazal N, Hamayel L, Barrett A, Kohrt BA, et al. Accuracy of a proactive case detection tool for internalizing and externalizing problems among conflict-affected children and adolescents. *J Adolesc Heal*. (in press).
17. United Nations. *World Population Prospects 2019*. 2019.
18. World Bank. Sri Lanka Overview. 2020. <https://www.worldbank.org/en/country/srilanka/overview>. Accessed 9 Nov 2020.
19. O’Donnell A, Razaak MG, Kostner M, Perumpillai J. *Shadows of Conflict in Northern and Eastern Sri Lanka*. 2018.
20. Department of Census and Statistics. *Statistical Hand Book – 2019*. 2018.
21. Elbert T, Schauer M, Schauer E, Huschka B, Hirth M, Neuner F. Trauma-related impairment in children – A survey in Sri Lankan provinces affected by armed conflict. *Child Abuse Negl*. 2009;33:238–46.
22. ODI. *Adolescent psychosocial wellbeing in the post conflict context of Sri Lanka*. 2014.
23. Goodman R. The Strengths and Difficulties Questionnaire: A Research Note. *J Child Psychol Psychiatry*. 1997;38:581–6. doi:10.1111/j.1469-7610.1997.tb01545.x.
24. Westen D. Prototype diagnosis of psychiatric syndromes. *World Psychiatry*. 2012;11:16–21.
25. Durkin MS, Davidson LL, Desai P, Hasan ZM, Khan N, Shrout PE, et al. Validity of the Ten Questions Screen for Childhood Disability: Results from Population-Based Studies in. *Epidemiology*. 1994;5:283–9.

26. Sheehan DV, Sheehan KH, Shytle RD, Janavs J, Bannon Y, Rogers JE, et al. Reliability and validity of the mini international neuropsychiatric interview for children and adolescents (MINI-KID). *J Clin Psychiatry*. 2010;71:313–26. doi:10.4088/JCP.09m05305whi.
27. Neuner F, Schauer E, Catani C, Ruf M, Elbert T. Post-tsunami Stress: A Study of Posttraumatic Stress Disorder in Children Living in Three Severely Affected Regions in Sri Lanka. *J Trauma Stress*. 2008;21:75–82.
28. Dubowitz H. The Safe Environment for Every Kid model: promotion of children’s health, development, and safety, and prevention of child neglect. *Pediatr Ann*. 2014;43:e271–7. doi:10.3928/00904481-20141022-11.
29. Lukumar P, Wijewardana K, Hermansson J, Lindmark G. Validity and reliability of Tamil version of strengths and difficulties questionnaire self-report. *Ceylon Med J*. 2007;4 September:48–52. doi:10.4038/cmj.v53i2.232.
30. Hayes AF, Krippendorff K. Answering the Call for a Standard Reliability Measure for Coding Data. *Commun Methods Meas*. 2007;1:77–89.
31. Sathiadas MG, Mayoorthy S, Varuni K, Ranganathan SS. Child Abuse in Northern Sri Lanka. *Indian J Pediatr*. 2017;84:128–33. doi:10.1007/s12098-016-2193-0.
32. Abeyasekera AL, Marecek J. Transnational Feminisms and Psychologies: Selves, Suffering, and Moral Personhood in Sri Lanka. *Women Ther*. 2020. doi:10.1080/02703149.2020.1775002.
33. Eklund K, Dowdy E. Screening for Behavioral and Emotional Risk Versus Traditional School Identification Methods. *School Ment Health*. 2014;6:40–9. doi:10.1007/s12310-013-9109-1.

Figures

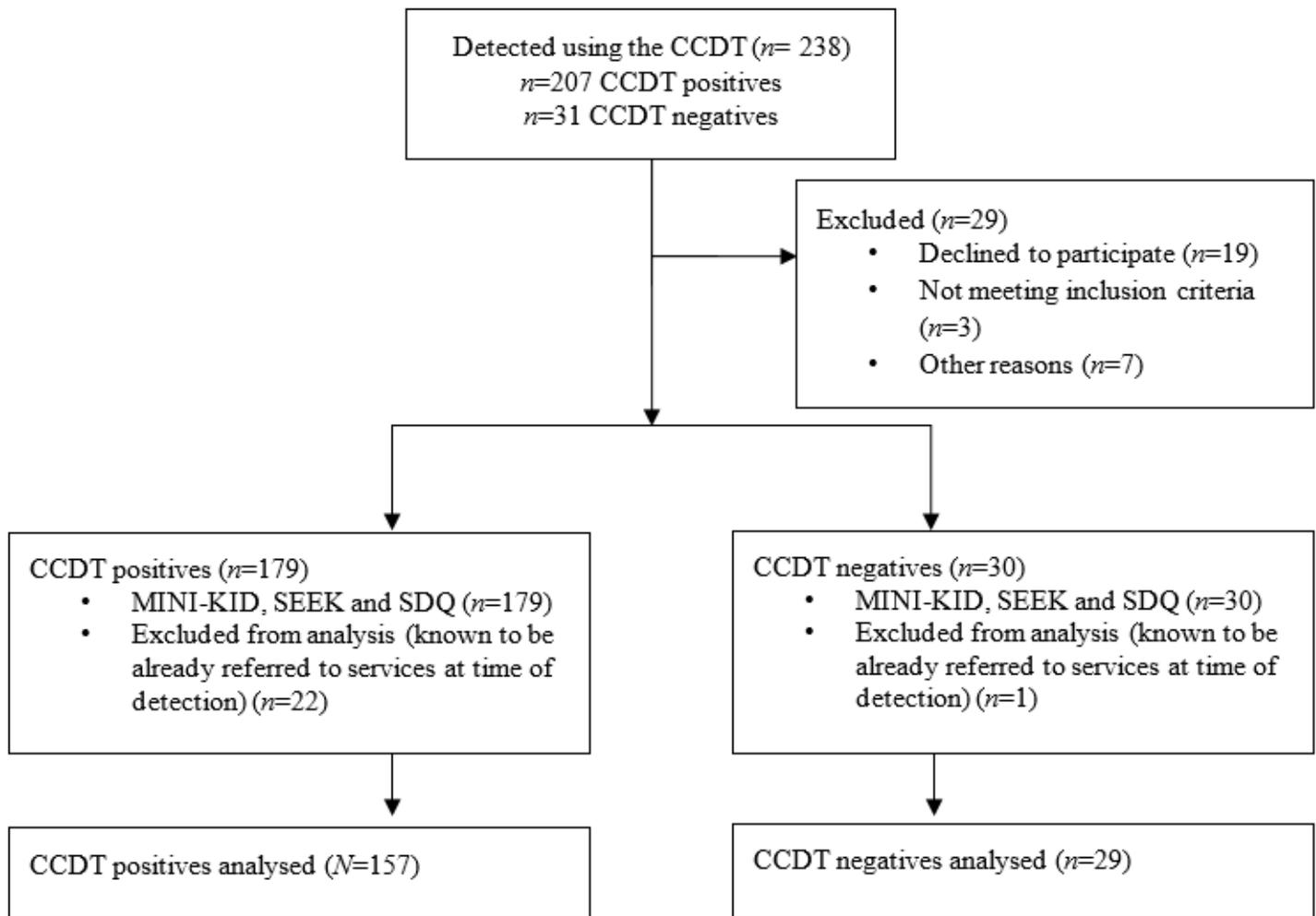


Figure 1

Participant Flowchart

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