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Addressing the mental health needs of children affected by HIV in Rwanda.

VALIDATION OF A RAPID DEPRESSION SCREENING TOOL FOR CHILDREN 7-14 YEARS OLD.

Foreword

Evidence from research have shown that depression is prevalent among pediatric population with HIV in Rwanda and may have long-term effects, not only on children's health but also on their behaviors regarding treatment and HIV prevention (decreased medication adherence and increased transmission risk). To date, there are no other free, open access rapid assessment tools for depression available in Rwanda. Policymakers should be considering the implementation of systematic screening of depression among children living with HIV.

The burden of disease for depression linked to HIV in children is similar to that for cancer, diabetes mellitus, heart disease, asthma, etc. The prevalence of depression has been estimated to be up to four times that in the general population and there are slight variations depending on the time data are collected (from receiving a diagnosis and through stages of disease progression) or the disease considered (Clark and Currie, 2009). The CDST tool can also be used to screen depression among children with other chronic conditions, such as cancer, diabetes, etc.

The co-occurrence of depression and chronic illnesses is an important issue in itself and in the specific context of Rwanda, it is important to note that children and adolescent experiencing depression and mental health challenges associated to chronic diseases also grew up and lives in families and society heavily affected by the 1994 genocide against the Tutsi. The genocide against Tutsi was one of the largest human-made disasters of the 20th century that deeply damaged the fabric of Rwandan society. Over the past two and a half decades, researchers have documented the psychosocial impact of the genocide on the Rwandan population and provided epidemiological evidence on the lasting effects of this catastrophic event among adult population (Munyandamutsa et al, 2012). The genocide profoundly affected lives of genocide survivors but also has been shown to impact their offspring; exacerbating their vulnerability to mental health and psychosocial issues. Several studies provided evidence for the intergenerational transmission of trauma and demonstrated that Rwandan youth born from parents affected by the genocide have significantly poorer mental (Depression, PTSD, Anxiety) compared to those born from parents not exposed (Rieder and Elbert, 2013; Uwizeye, 2020; Perroud et al, 2014). Parental trauma related to genocide and exposures to cumulative stressors throughout the life (including chronic conditions) increase the risk of having poor mental and physical health among the generation born after 1994 (Uwizeye, 2020). Research efforts in Rwanda have provided evidence of epigenetic modification, in particular DNA methylation at sites in glucocorticoid receptor gene (NR3C1) and confirmed that there are differences between the offspring born from parents exposed to extreme trauma such as genocidal rape as compared to control groups (Uwizeye, 2020). These studies highlight the need for interventions targeting children and youth and help to mitigate the impact of intergenerational trauma.

The CDST presents an affordable and easy to use tool to identify and facilitate the following up of children who are at risk of depression whether occurring as a result of HIV infection or other chronic illnesses as well as any other environmental or genetic factors that may predispose a child.

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Content

BACKGROUND

Depression is co-morbid condition to many chronic medical illnesses such as HIV, Cancer, Diabetes, Asthma, etc.[1],[2] . Among HIV-positive patients, the prevalence of depression ranges between 10% and 37 %, depending on the population studied and the methodology of the study [3], [4]. Depression is a distressing and impairing condition that contribute to the burden of HIV: It affects negatively self-care, quality of life, biomedical outcomes and the adherence to ART among people living with HIV[4] .Depression, as reported in literature, also affects children and adolescent living with HIV. Children with HIV/AIDS are at increased risk for depression and poor mental health during childhood and early adolescence, compared with their uninfected peers and the general pediatric population [5] .

The high prevalence of depressive symptoms among children and adolescence living with HIV; its negative impact on biomedical outcomes and adherence to ART underscore the need for increased attention to the psychological well-being of this group to alleviate their suffering as well as to improve their general health status. Evidence from a number of treatment trials suggests that depression in patients with HIV can be effectively treated but significant diagnostic and treatment challenges have been reported[3], [4]. A common challenge in low and middle income settings is that fewer than 25% of affected individuals ever access mental health treatment [6] or have delays in treatment seeking after onset of symptoms [7] . In response to this situation, the World Health Organization recommended to different partners to initiate interventions ensuring early diagnosis and treatment and launched the mental health Gap Action Programme (mhGAP) in 2008 for scaling up services for the people with mental disorders in low- and middle-income countries [7], [8]

In Rwanda, although great progress has been made in pediatric diagnostic care and treatment [9] and in mental health[10] there are still serious gaps, especially in care for children affected by chronic illness. The risk, the diagnostic and the treatment of depression in children affected by chronic illness is largely overlooked due to lack of tools and trained personnel. The HIV positive children at risk of depression are not systematically screened and are not always able to access treatment of depression when needed. It is in that context that a series of studies has been performed in addressing the mental health needs of children affected by chronic diseases in Rwanda targeting a population of HIV infected children.

The first study of these series was to evidence the presence of depression among children infected by a chronic disease using a population of children infected by HIV. The participants in the first study of this series were HIV-positive children – a proxy of children with chronic illness - aged 7-14 years who were informed of their HIV status and receiving antiretroviral treatment (ART) for at least 6 months. The range of seven to fourteen was chosen because the study consisted of an interview that can be difficult to do with children younger than age seven – seven being considered as the age of reasoning,1 and also because fifteen is the age limit of pediatric care in Rwanda. This first study found a rate of 25% depression among children infected by HIV in Rwanda[9]. This high rate demonstrated the urgent need of special mental health care and treatment for many HIV-positive children, and that clinicians need to systematically screen for depression all children with chronic illness in Rwanda if we want them to exercise fully their right to health. This is particularly important, given that the Rwanda 2018 mental health survey (MoH,2018) revealed that 86 % of people meeting criteria for a mental disorder did not utilize the available mental health services.

Informed by these results, the Rwandan ministry of health changed its policy to address the need of routine screening for depression among children living with HIV. However, because Rwanda does not currently have enough clinicians trained in mental health, children with chronic illness such as HIV cannot benefit, on regularly basis, of a consultation with mental health specialist. Also, the available standardized interview guide in Kinyarwanda for diagnostic of pediatric depression is conceived to be used by mental health professionals, thus presenting implementation barriers because they are few. In an environment of scarce mental health professionals, we needed non-mental health specialist to screen depression and refer the suspect cases to mental health specialists. Presently, depression is diagnosed in Rwanda through a referral process from primary care professionals to clinical psychologists and psychiatrists. This referral is based on primary care provider's observation of clinical signs of depression symptomology.

Because of the current lack of an available, reliable, easy- to-use for depression screening tool adapted for Rwandan children, the current referral process by non-mental health specialist often misses children who need further assessment and treatment. The consequence of this is that depression is not regularly screened for at the primary care level[11].

To contribute to solve this bottleneck in accessing mental health of children with a chronic condition, the second part of the series of studies to address the mental health needs of children affected by chronic illness was to perform a study to validate for the Rwanda context a quick screening tool for pediatric depression. A short form of the Child Depression Inventory (CDI), a widely used screening tool created in the United Stated of America by Maria Kovacs in 1992 that is easy to use accurately for a rapid assessment of the risk of depression in children. The short form of the CDI has 10 items and can be used in less than 5 minutes to evaluate the risk of depression in children and adolescents (ages 7 to 17 years). The solution was to validate the CDI short form in the Rwandan context for children with chronic illness. We did so by screening children infected by HIV, during their ordinary follow up consultations. The validation of the CDI in the Rwandan context was conducted on a randomly selected sample of 100 HIV-Positive in randomly selected 10 health centers across the country and has shown a cut-off of the CDI of 6 in the US, it is 7 [12].

For a proper follow up of depression or the risk of depression in children with a chronic illness, the CDI has to be administrated more than once during the childhood. When seeking authorization to implement the validation research, we discovered that the DCI is copyrighted, with a fee associated with each and every use. In August 2010, we implemented the planned research with the authorization of the owner. However, knowing that a child who is at risk for or presenting with depression should be screened for symptomology several times a year, the cost of the repetitive use of the CDI could make it inaccessible to most Rwandans. Thus, because of this financial barrier the CDI is not a sustainable screening tool to access diagnostic care and treatment of depression, for the majority of Rwandans in need.

There are no other rapid assessment tools for depression previously studied in Rwanda other than the CDI tool. To remove the financial bottleneck, the decision was made to create a new tool for rapid screening of depression in children and make it accessible for all. With experienced psychologist and psychiatrist, the Child Depression Screening Tool (CDST) was developed by the owner Professor Binagwaho and copyrighted as a free open source tool to make it truly free. The development of the CDST is based on WHO and other international tools, as well as the interview guide in Kinyarwanda previously created to standardize interviews for child depression diagnosis.

This study aims to adapt and validate the Child Depression Screening Tool (CDST) to Rwandan context, as a tool that could effectively screen for depression children suffering from HIV and other chronic illness.

METHODS

Participants

The participants are Children infected by HIV considered as a chronic illness. Assuming the population of ~5000 children aged 7 to 14 years infected for HIV on ART in Rwanda, an expected proportion of 25% of depressed children, 7 % absolute precision, the design effect of 1.2 and adjusting for the non-response rate and the expected specificity of 90%, we obtained the final sample size of 283. In order to select the study sites and participants, a list of health facilities per province offering HIV care and treatment services to HIV infected children was extracted from the MoH Health Management Information System. Considering health facilities characteristics, we randomly selected two urban health facilities and three rural health facilities from each of the 5 provinces of Rwanda. A total number of 25 health facilities, five facilities per each of the five provinces of Rwanda were selected. In each facility, a study assistant randomly selected 12 participants. Nurses at health facilities collaborated with the study team to select the participants. Only HIV positive children aged from 7 to 14 years, who know their HIV diagnosis were eligible to participate in the study. The Psychologists and Psychiatrists skilled in pediatric diagnostics and treatment administered the CDST in parallel to the clinical interview guide in Kinyarwanda, so that the efficacy and accuracy of the cut-off can be ensured. The Data collection started from 1st August and ended 5th November 2019.

CDST development process

Review of Current Available Depression Assessment Tools:

A thorough literature review and analysis of the existing validated depression assessment tools presently available around the world, both in terms of their content, availability, ease of use, predictive validity, and cultural sensitivity, was conducted. It was found that the tools presently available are either insufficient or not affordable in the Rwandan context. The decision was taken to create a new screening tool. By creating a screening tool, with the support of the needed skilled and knowledgeable professionals with the assurance that the tool is valid, reliable, affordable, and easy for primary care level providers to use. It also offers a clinically sound, sustainable path forward to support the diagnosis and treatment of child depression in Rwanda.

Creation of Screening Tool:

Based on WHO and DSM-IV diagnostic criteria for Depression and other international tools, with the support of a group of Rwandan Psychologists, psychiatrists and pediatricians the Child Depression Screening Tool (CDST) was developed. They were invited to come together in a workshop to assist in creating the new depression screening tool that is simple, predictive, discriminate and reliable: The Rwandan Child Depression Screening Tool (CDST). The CDST was created in English and is composed of 11 questions with for each four weighted scored answer to assess the mood, interest in leisure, hope of living, fatigue, psychomotor activity, sleep, appetite, concentration, interpersonal relationships, suicidal thoughts or suicide attempts and the feeling of guilty.

Translation of the Tool:

the assistance of three experienced Rwandan Psychologists and Psychiatrists, the CDST has been translated into Kinyarwanda. To ensure the accuracy, the tool has been back translated to English by a different team of Psychologists and psychiatrists. In order to ensure that the questions were correctly translated and articulated, clear, easy to understand, and did not contain ambiguities, a pretest of the consensual version of the CDST was carried out in two randomly selected sites - one urban and the other rural. Based on the results of the pretest, the tool was adjusted into a final version used for data collection. All this was done before the study reported here in 2016.

Clinical interview

The CDST tool was assessed against a gold standard diagnostic interview by mental health Professionals. Participants were interviewed by 5 Mental Health Professional with a clinical experience varying between 5 and 20 years of practice to confirm the diagnosis based on criteria for Major Depressive Disorders from Diagnostic and Statistical Manual of Mental Disorders-4 (DSM-4).

Socio-demographic characteristics and HIV treatment history

Sociodemographic variables collected included age, gender, education, survivorship of parents, person living with the child, etc. Treatment history data were extracted from child patient file.

Analysis

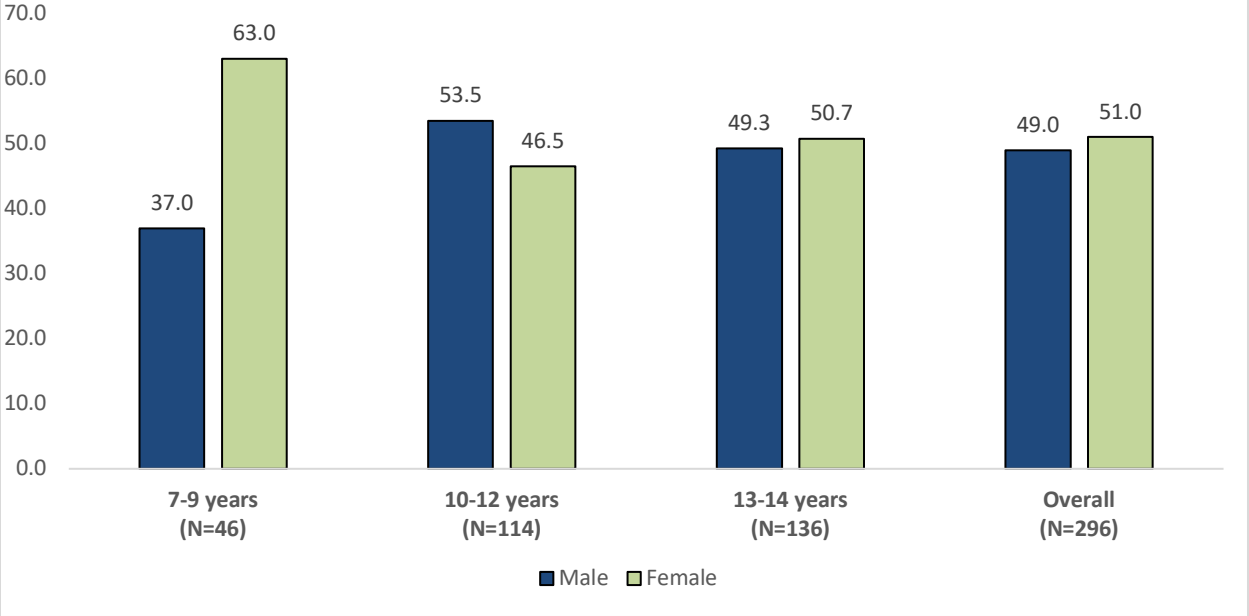
For every sampled child, a score of CDST was calculated, then at every cut-off score, a judgment by a senior psychologist was used as a gold standard to calculate the sensitivity, specificity, positive predictive value, and negative predictive value estimates. Receiver Operating Characteristic (ROC) analysis was performed to determine the recommended cut-off for Rwanda.

Ethical consideration

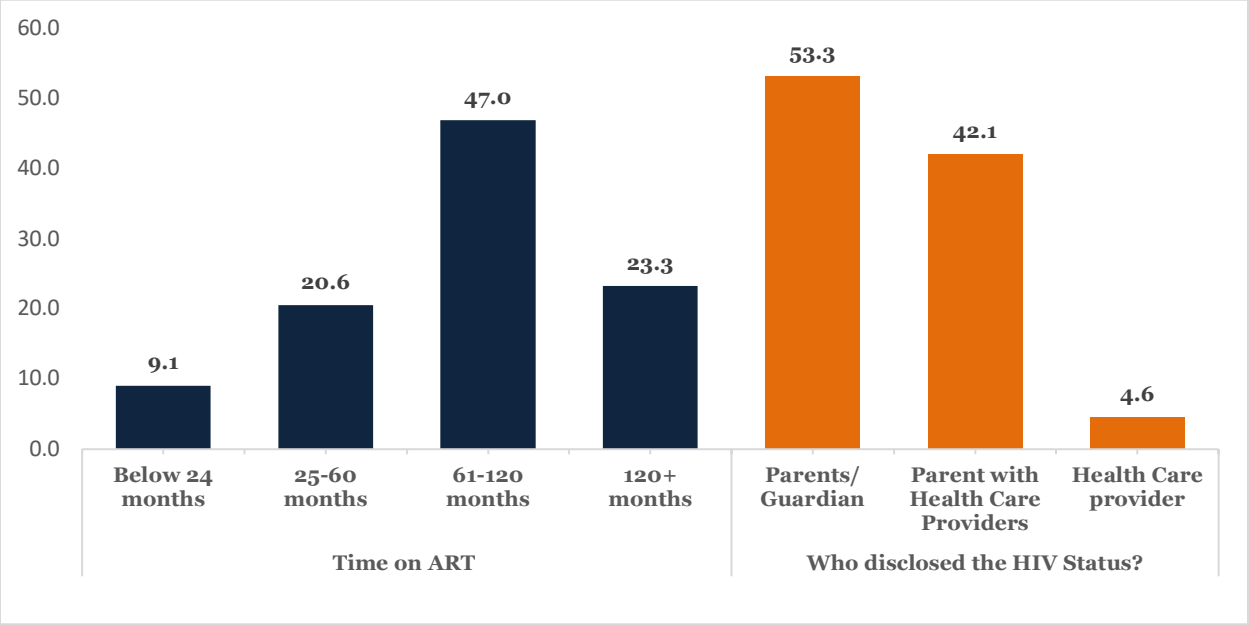
Ethics clearance was granted by the Rwanda National Ethics Committee (No.406/RNEC/2019) and the IRB of University of Global Health and Equity.

RESULTS

A total of 296 children (49% male and 51% female) participated in the study. Their age ranged from 7 to 14 years (the mean age of the sample was 12 years, std: 1.9 year). The age category of 7-9 years' category represents 46(15.5%) of the sample. Also there was a dissimilarity between male (37%) and female in the age group of 7-9 years,



The majority of children had both parents alive (93.6%) and were living with their parents (86.1%) while 13.9% lived with their siblings, relatives or with Guardian. Ninety-four percent (94.2%) attended primary school and 5.8 % attended secondary school. The study recruited only children who were aware of their HIV Status and among them, 53.3 % knew their HIV status from parents/guardian and for 42.1 % the status was disclosed by parent in the presence and with the help of a health care provider.



All children received ART and according to their recent HIV-RNA tests, the majority of children (80%) had a viral load below the threshold of < 1000 RNA copies/ml. Non-suppressed HIV viral load was found in 19 % of the participants.

Prevalence of depression using standard clinical interview

Children were interviewed by practicing clinicians using criteria for Major Depressive Disorders from Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) their standard interview technique for diagnosing depression. Overall, on the basis of the clinical interview, 14.2% (95% CI: 9.6, 20.4) of children were found to have Depression.

Depression was significantly higher in adolescent aged 13-14 years than in children below 10 or those aged 10-12. Children living with their parents and male participants reported lower depressive symptoms than female and those not living with their parents. There was a marginal association between depression and recent HIV-RNA results: Among children with non-suppressed HIV viral load, depression was found to be 16.0 % and 12.3 % in those with viral load suppressed. The prevalence of depression symptoms was approximately similar in rural and urban areas.

Table2: Depression by clinician using standard clinical interview and Socio demographics and HIV characteristics

	Prevalence of depression		
	N	**%**	**95% CI**
Overall	296	**14.2**	[9.6,20.4]
Province			
East	60	11.7	[4.5,27.1]
West	70	24.3	[17.0,33.4]
City of Kigali	57	15.8	[6.3,34.2]
North	53	3.8	[1.2,11.1]
South	56	12.5	[5.4,26.4]
Age of the child			
7-9	46	6.5	[2.2,17.9]
10-12	114	9.6	[5.1,17.5]
13-14	136	20.6	[13.8,29.6]
Sex of the child			
Male	145	11	[6.5,18.0]
Female	151	17.2	[11.3,25.3]
Residence facility			
Urban	146	13.7	[7.5,23.8]
Rural	150	14.7	[9.0,23.1]
Current education level			
Primary	275	14.2	[9.8,20.1]
Secondary	17	17.6	[4.9,47.0]
Parents are alive?			
Both Alive	277	14.1	[9.5,20.4]
One Alive	19	15.8	[3.8,46.8]
Person living with the child when out of school			
Parents	255	13.3	[8.2,20.9]
Siblings/relatives/Guardian	41	19.5	[10.8,32.7]
Time on ART			
Below 24 months	27	14.8	[6.8,29.4]
25-60 months	61	13.1	[6.1,25.9]
61-120 months	139	12.9	[8.0,20.2]
121+ months	69	17.4	[7.8,34.3]
Who disclosed the HIV Status?			
Parents/ Guardian	152	13.8	[9.1,20.3]
Parent &Health Care Providers	120	15.8	[9.3,25.8]
Health Care provider	13	7.7	[0.9,44.4]
Recent viral load suppressed (< 1000 copies)			
No	50	16	[7.7,30.3]
Yes	211	12.3	[8.3,18.0]

Depression symptoms using the CDST tool

We also wished to determine the optimal cut-off point for a diagnosis of depression (a positive screen) using the CDST tool to the same sample. The CDST is made of 11 questions with for each four weighted scored answer (0= absence of symptoms, 1= Symptom sometimes present, 2= Symptom frequently present, 3= symptom always present).

Table 3: Ability of the CDST tool in identifying depression among children 7-14 years' old

Category	Responses	n	Percent	95% CI
Mood	I never feel sad without a reason	207	69.9	[61.2,77.5]
	I sometimes feel sad without a reason	54	18.2	[10.7,29.4]
	I frequently feel sad without a reason	27	9.1	[6.5,12.6]
	I always feel sad	8	2.7	[1.2,5.8]
Hope of living	I have hope for the future	255	86.2	[80.8,90.2]
	I sometimes feel hopeless about the future	16	5.4	[3.1,9.3]
	I frequently feel hopeless about the future	11	3.7	[1.8,7.5]
	I never have hope for the future	14	4.7	[2.3,9.6]
Interest in leisure	I always like to play with others	250	84.5	[79.0,88.7]
	Sometimes I do not like to play	26	8.8	[5.9,13.0]
	Frequently/most of the time I do not like to play with others	17	5.7	[3.2,10.1]
	I never play with others	3	1.0	[0.3,3.4]
Sleep	I always fall asleep at night	239	80.7	[73.5,86.3]
	Sometimes I do not sleep during the night	42	14.2	[9.6,20.5]
	Frequently do not sleep during the night	14	4.7	[3.1,7.2]
	I never sleep during the night	1	0.3	[0.0,2.8]
Fatigue	I never feel tired during the day	174	58.8	[52.7,64.6]
	Sometimes I feel tired during the day	95	32.1	[26.4,38.4]
	Frequently I feel tired during the day	22	7.4	[5.4,10.2]
	I always feel tired	5	1.7	[0.7,4.0]
Appetite	I do not have problem of appetite	251	84.8	[81.3,87.8]
	Sometimes I do not have appetite	36	12.2	[9.2,16.0]
	Frequently I do not have appetite	7	2.4	[1.1,5.2]
	I never have appetite	2	0.7	[0.2,3.0]
Concentration	I am always concentrated in class	220	74.3	[67.1,80.4]
	sometimes I am not concentrated in class	46	15.5	[11.9,20.1]
	Frequently I am not concentrated in class	15	5.1	[2.8,9.0]
	I am never concentrated in class	15	5.1	[2.5,10.0]

Distraction/anxiety	I never feel anxious	226	76.4	[68.9,82.5]
	Sometimes I feel anxious	42	14.2	[10.4,19.1]
	Frequently I feel anxious	14	4.7	[2.5,8.7]
	I always feel anxious	14	4.7	[2.5,8.6]
Relationships	I feel loved by my relatives and friends	256	86.5	[82.7,89.5]
	Some people do not like me	30	10.1	[7.4,13.8]
	I feel that many people do not like me	8	2.7	[1.1,6.3]
	No one likes me	2	0.7	[0.2,2.9]
Suicidal thoughts	I never think about killing myself	283	95.6	[92.7,97.4]
	I sometimes have suicidal thoughts	10	3.4	[1.8,6.3]
	I most of the time have suicidal thoughts	3	1.0	[0.4,2.9]
Guilt	I am not a problem to my relatives	270	91.2	[87.2,94.1]
	Sometimes I feel like I am a problem to my relatives	18	6.1	[3.9,9.4]
	Frequently I feel guilty about things happening to my relatives	6	2.0	[0.8,5.0]
	I always feel guilty about things happening to my relatives	2	0.7	[0.2,2.4]

The CDST scores were compared to the results of the clinical interviews to obtain Sensitivity (proportion of children who have depression according to clinical interview and who are correctly identified by CDST) and Specificity (proportion of children without depression and who have been correctly identified as non-depressed by the CDST). A threshold score of 4 was found to identify 95.2 % of children with depression diagnosis, while a 10 cut-off score identified only 40.5 % subjects with depression. Analyzing the CDST specificity at different cut-off score, the specificity was 86.6 % at the 4 cut-off point and 99.6 .4% at the 10 cut-off point. The cut-off of 5 and 6 provided good sensitivity and specificity compared to the rest of the cut-offs.

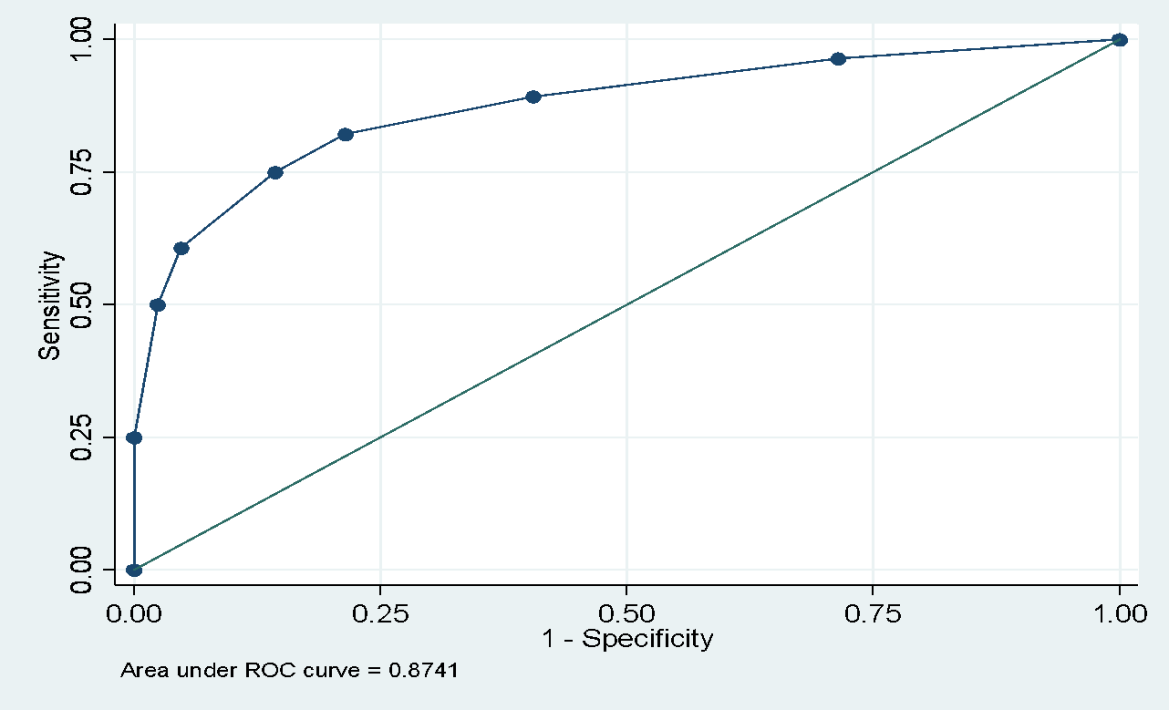
Table 4: Sensitivity and specificity by depression scale

Scale	Sensitivity	Specificity	Area under the curve (AUC)	Positive predictive value	Negative predictive value

Four	95.2%	86.6%	0.909	54.1%	99.1%
Five	92.9%	91.3%	0.921	63.9%	98.7%
Six	**88.1%**	**96.5%**	**0.923**	**80.4%**	**98.0%**
Seven	78.6%	98.0%	0.883	86.8%	96.5%
Eight	73.8%	99.2%	0.865	93.9%	95.8%
Nine	57.1%	99.6%	0.784	96.0%	93.4%
Ten	40.5%	99.6%	0.700	94.4%	91.0%

Finally, a Receiver Operating Characteristic (ROC) analysis was carried out to determine the global functioning of the scale and overall accuracy of diagnosis with the CDST tool. It can be seen that although the sensitivity of the CDST is good with a cut-off point of 5 and 6, the cut-off point of 6 has the highest Area under the curve and also led to a marked increase in specificity. The overall probability that a child with depression is correctly diagnosed is achieved with a 6 cut-off score. [Figure 1]

Figure 1: ROC curve with different cut off points.



DISCUSSION

The goal of the present research was to adapt and test validity of the Child Depression Screening Tool (CDST) to Rwandan context, as a tool that could effectively screen for depression children suffering from HIV and other chronic illness. In our sample of Rwandan children infected with HIV, fourteen percent were screened positive for depression. This sample experienced less depression rate than the estimates generated by Binagwaho et al (2016) (14.2% versus 25.0%)[12]. Our results are however consistent with other studies in children infected with HIV, which show that the prevalence of depression among these children vary from 10 to 37% [4] .

This study found that the prevalence of depressive symptoms was high among HIV-infected children living in the western province compared to other Rwandan provinces. These results corroborate those of a previous study on a sample of children living with HIV ages 7-14 years in Rwanda which reported the highest prevalence of depression in the Western Province[12]. Several factors may contribute to this pattern including, but not limited to, geographical accessibility (mountainous region with limited access to existing primary health facility network)[13]; socioeconomic factors (highest rates of poverty and extreme poverty and malnutrition found in the South and West of the country)[14] historical reasons as impact of genocide[15].

Results of our study indicated that the presence of depressive symptoms was also associated with female gender and the adolescence period - age between 13-15. Regarding the gender difference, some earlier studies from developed countries showed that girls are not more depressed than boys in childhood and prepubescence. However, between 11 and 15 years of age, females become approximately twice as likely as males to experience depression[16,17,18,19] . In fact, girls mature faster than boys and experience pubertal and social transition earlier than boys. Hormonal, emotional and social factors (identity formation, growing concern over body-image, affiliation needs and relationships with peer, new stressful life events) contribute to the gender-linked vulnerability to depressive experiences. The gender gap persists during adulthood where depression affect 1 men for 2 women [16,17,18,19,20].

Regarding the age range between 13-15 significantly associated with higher rates of depression

in our study, previous studies found an increase of rates of depression and behavioral health challenges among adolescent boys and girls with perinatally acquired HIV, leading to decreased medication adherence and increased transmission risk [20,21] This may be partly due to puberty transition and adolescent difficulties that affect both boys and girls but also several other factors such as parents-child relationship and HIV-status disclosure. During the recruitment of participants in this study, we observed that disclosure of the diagnosis of HIV to children remained a challenge for parents and health care providers. More than half of children aged 7-9 years to be recruited were unaware of their HIV status and were excluded in this study. Children are disclosed of their HIV status during the pre-adolescence or adolescence period. The high prevalence of disclosure of HIV status prior or during adolescence period may also affect emotionally and lead to distress and psychological adjustment process among those aged 13- 15.

Regarding the diagnostic ability of the CDST tool to identify depression among children 7-14 years' old, results of this study indicated that the CDST have a high level of validity when compared with the structured clinical interview as gold standard. The CDST had varying ranges of sensitivity and specificity, depending on the cut-off score used. Comparing the results, at the cut-off score of 6, sensitivity was 88.1 %; specificity was 96.5%. Given that the scale of 6 has the highest Area under the curve, we advise to be considered as the cutoff point.

When designing a screening tool, there is always a particular obligation to ensure that the benefit as well as the possible harm (false-negative) or the unnecessary burden to the health system (false-positive) are considered[22]. The cut-off score of 6 proposed in this study allows the best pairs of sensitivity (the likelihood that the CDST will detect depression when it is present) and specificity (the likelihood that the CDST will give a negative result when depression is absent). As such, the tool allow referral of the depressed children correctly detected to mental health specialists and at the same avoid to send to few available mental health professionals children who are not depressed. Thus, the cut off 6 is appropriate as a screening tool in community health centers. Children screened positive for symptoms of depression with CDST would receive a comprehensive service from the non-mental health specialist or could be referred to mental health clinicians for a full depression assessment and further specialized services. This will ensure, an improved access to appropriate mental health prevention, treatment, and support services for child

at risk of suffering of depression.

CONCLUSION

The literature suggests that there is a number of depression screening instruments that proved to be valid in primary care settings, although relatively few of these instruments have been evaluated specifically in LMCS[4] Furthermore, a screening tool to be used in low resource setting must be accessible, less time consuming; easy to score and even simple to interpret[23] There are, however, few studies on accessible and adequately validated screening tool for depression in LMCs.

The majority of children with HIV attend HIV clinics in LMICS, but there is no systematic screening of depressive symptoms in this population. Therefore, some children suffering from depression do not receive a timely treatment. Several studies established that Depression contribute to the burden of HIV and affect the adherence to ART among children and adolescent. The screening, referral and interventions which target depression among children affected by HIV will likely improve the overall wellbeing of children but also improve the adherence to ART.

According to the results of this study, we confirm the CDST's validity in identifying depression among children affected by HIV in Rwanda and can be used by general practionners, nurses and midwives in their clinical practice to improve assessment, referral and treatment of depression among children and adolescent affected by HIV. The CDST proved to be a tool that can help to break existing barriers to pediatric depression diagnosis and treatment, and allow the development of an effective child mental health assessment strategy in Rwanda. Through the use of reliable and accurate assessment tool to identify children at-risk of depression, the mental health referral processes will be strengthened and children suffering from chronic conditions such as HIV will have better access to care and treatment services they deserve.

The CDST was designed to be free of charge and could be implemented at all levels. As a free, open access tool, the CDST can be adapted and used in other LMICS, thus enabling a global advancement of the human rights to health.

Acknowledgments:
We thank the psychologists and nurses from the 25 health facilities for their commitment and contribution to this study. We are grateful to the study participants and to their parents for their time and contribution. We gratefully acknowledge the funding received from University of Global Health and Equity.

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ANNEXE

Child Depression Screening Tool (CDST): URUTONDE RWIBIBAZO BIGAMIJE GUSUZUMA INDWARA Y'AGAHINDA GAKABIJE KU BANA

#	Urutonde	Score	Ibibazo
1	Amarangamutima	0	Sinjya numva mbabaye nta mpamvu?
		1	Rimwe na rimwe numva mbabaye nta mpamvu
		2	Kenshi numva mbabaye nta mpamvu
		3	Buri gihe numva mbabaye
2	Ibyiringiro byo Kubaho	0	Mfite icyizere cy'ejo hazaza
		1	Rimwe na rimwe numva nta cyizere cy'ejo hazaza
		2	Akenshi numva nta cyizere cy'ejo hazaza
		3	nta cyizere na gito cy'ejo hazaza mfite
3	Kwishimira gukina	0	Buri gihe nkunda gukina na bandi
		1	Rimwe na rimwe sinkunda gukina
		2	Kenshi sinkunda gukina n'abandi
		3	Sinjya nkina n'abandi
4	Ibitotsi	0	Buri gihe nsinzira neza nijoro
		1	Rimwe na rimwe mbura ibitotsi nijoro
		2	Kenshi mbura ibitotsi nijoro
		3	Sinjya nsinzira nijoro
5	Umunaniro	0	Sinjya numva naniwe ku manywa
		1	Rimwe na rimwe ku manywa numva naniwe
		2	Kenshi ku manywa mba numva naniwe
		3	Buri gihe numva naniwe
6	Gushaka kurya	0	Nta kibazo cyo kurya ngira
		1	Rimwe na rimwe numva ntashaka kurya
		2	Kenshi numva ntashaka kurya
		3	Sinjya numva nshaka kurya
7	Gukurikira	0	Biranyorohera gukurikira mu ishuri/urusengero/ibiganiro
		1	Rimwe na rimwe sinkurikira mu ishuri /urusengero/ibiganiro
		2	Kenshi simbasha gukurikira mw'ishuri /urusengero/ibiganiro
		3	Sinkurikira mu ishuri /urusengero/ibiganiro
8	Kutaguma hamwe	0	Mpora numva ntuje muri jye
		1	Rimwe na rimwe numva ntatuje muri jye
		2	Kenshi numva ntatuje muri jye
		3	buri gihe numva ntatuje muri jye
9	Imibanire n'abandi	0	Abantu tubana numva bankunze
		1	Bamwe mu bantu tubana numva batankunda
		2	Abantu benshi tubana numva batankunda
		3	Nta muntu n'umwe unkunda
10	Ibitekerezo byo kwiyahura	0	Sinjya ntekereza kwiyahura
		1	Rimwe na rimwe ntekereza kwiyahura
		2	Kenshi na kenshi ntekereza kwiyahura
		3	Buri gihe numva nakwiyahura

11	Kwiciraho urubanza	0	Ntabwo ndi ikibazo muryango wanjye
		1	Rimwe na rimwe numva ndi ikibazo ku muryango wanjye
		2	Kenshi na kenshi numva ari jye uteza ibibazo ku muryango wanjye
		3	Burigihe mba numva ari jye uteza ibibazo ku muryango wanjye

Annexe 2:

Ibibazo bibazwa mu bushakashatsi kuri "depression" mu bana

No	**Ibibazo**	**Code**	Ibisubizo
I.1	Izina ry' ubaza		
I.2	Intara		
I.3	Akarere		
I.4	Imiterere y'aho ikigo nderabuzima giherereye	0	Umujyi
		1	Icyaro
I.5	Izina ry' ikigo nderabuzima		_____
I.6	Ubazwa yigeze abazwa kuri CDST mbere?	0	Yego
		1	Oya
I.7	Wavutse ryari ?		DD/MM/YYYY
I.8	Ufite imyaka ingahe?		|___||___|
I.9	Igitsina	0	Gabo
		1	Gore
I.9	Amashuri wigamo ubu	1	Abanza
		2	Ayisumbuye
		3	Ay' imyuga
I.10	Umwaka yigamo ubu		1 2 3 4 5 6
I.11	Wiga utaha mu rugo cg uba ku ishuli ?	0	Niga mba ku ishuli
		1	Niga ntaha mu rugo
I.12	Ese ababyeyi bawe bariho?	1	Bombi bariho
		2	Umwe niwe uriho
		3	Bombi barapfuye
I.13	Muri iki gihe ubana nande (Iyo utari ku ishuli) ?	1	Ababyeyi
		2	Abo tuvukana
		3	Abo dufite icyo dupfana cya hafi
		4	Abandera
		5.	Orphelinat
I.14	Ese hari ikintu cyaba cyarakubayeho cyakubabaje muri byumweru bibiri bishize?	1	Yego
		2	Oya
Ibibazo bijyanye na HIV			
II.1	Ese umwana afata imiti igabanya ubukana bwa VIH?	0.	Yego
		1.	Oya
II.2	Niba ari Yego, Umwana afata iyihe miti?	1	TDF+3TC+NVP
		2	TDF+3TC+EFV
		3	TDF+3TC+LPV/r
		4	ABC+3TC+NVP
		5	ABC+3TC+EFV
		6	ABC+3TC+LPV/r
		7	AZT+3TC+NVP

		8	AZT+3TC+EFV
		9	AZT+3TC+LPV/r
		10	D4T+3TC+LPV/r
		11	D4T+3TC+NVP
		12	D4T+3TC+EFV
		13	OTHER, Specify _____
II.3	Niba uyifata ufata imara igihe kingana gute?	1	Ukwezi kumwe
		2	Amezi 2
		3	Amezi 3
II.4	Niba ari yego, yayitangiye ryari?		DD/MM/YYYY
II.5	Niba ari yego yari afite imyaka ingahe?		Imyaka : |_____|
			Amezi : |_____|
II.6	CD4 yari afite atangira imiti		
II.7	WHO stage yatangiranye imiti		
II.8	Umwana yapimiwe mu yihe service		PMTCT- EID
			VCT
			PIT
			Ahandi_ Havuge
II.9	Wamenye ute ko ufite Virusi itera Sida ?	1.	Nabibwiwe n' ababyeyi/ abandera
		2.	Nabimenyeye kwa Muganga najyanye n' ababyeyi/abandera kwipimisha
		3.	Nabibwiwe na muganga nijyanye kwipimisha
		4.	Ibindi, bivuge…
II.10	Andika Viral loads z' umwana aheruka		|_____|Copies/ml
II.11	Itariki Viral load yafatiweho		DD/MM/YYYY
II.12	Wigeze usiba imiti mu minsi 30 ishize?	1	Yego
		2	Oya
II.13	Niba ari yego, wayisibye kangahe?		

--- END ---