Mental health and associated factors among adolescent boys and girls in Nairobi, Kenya

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Abstract
Worldwide, it is estimated that 10-20% of adolescents experience mental health conditions, yet these remain underdiagnosed and undertreated. The government of Kenya through the Ministry of Health has acknowledged the challenges that adolescents face regarding mental health and is stepping up efforts to address the growing mental health challenge. This paper seeks to understand the prevalence of mental health and the associated risk factors among adolescent boys and girls from three informal settlements in Nairobi, Kenya. Mental health was measured using a depression scale made of 6 items based on self-blame, worry, feeling sad, thoughts of inflicting self-harm, inability to sleep at night due to being unhappy and feeling happy. Generally, girls reported a higher score than boys which is an indication of higher levels of depression among girls. This paper will add to our knowledge and make recommendations to influence policy and interventions targeting adolescents suffering from mental health.

Introduction

Mental health, is a state of well-being whereby individuals recognize and realize their abilities, can cope with the normal stresses of life, work productively and fruitfully, and contribute to their communities (WHO 2013, WHO 2014). Positive mental health includes emotion, cognition, and social functioning and coherence (WHO 2009). Mental health is a key determinant of overall health and socio-economic development. It influences a variety of outcomes for individuals and communities such as healthier lifestyles; better physical health; improved recovery from illness; fewer limitations in daily living; higher education attainment; greater productivity, employment and earnings; better relationships with adults and with children; more social cohesion and engagement and improved quality of life (WHO 2009). Mental health disorders affect all age groups and are a cause for sizeable social and economic costs. Mental health problems and risk behaviours tend to be interrelated (Maria S. 2015). Mental health conditions, which include behavioural and problems like depression, anxiety disorders (including post-traumatic stress disorder), and disruptive behavioural disorders (such as attention deficit hyperactivity disorder, mood disturbances, substance use, suicidal behaviour, and aggressive/disruptive behaviour) are the leading causes of adjustment problems in adolescents and young people worldwide. Mental health conditions have a significant impact on the development of over a billion youth and their social and economic integration, including employability (United Nations 2014).

Globally, many adolescents live in environments in which poverty, conflicts or abuse is common, placing them at risk for developing mental disorders. Adolescence is a time when chronic mental disorders may develop which can place adolescents at further risk for diseases and contribute to poor physical and mental health in later years (Sarah S, et al 2019). It is estimated that 10-20% of adolescents across the world experience mental health conditions, yet these remain underdiagnosed and undertreated. Signs of poor mental health can be overlooked for several reasons, for instance, lack of knowledge or awareness about mental health among health workers, or stigma, preventing them from seeking help (WHO 2018).

Adolescence (10-19 years) is a unique developmental period, studies show that many mental illnesses between 50% and 70% show up before the age of 18 years, so they can have a huge impact on a child's development (Canadain Mental Health Association, 2014). Exposure to multiple physical, emotional and social changes, including exposure to poverty, abuse, or violence, can make adolescents vulnerable to mental health problems. According to a medical study done in Saudi, people who live in poverty are two and a half times more prone to develop major depressive disorders than people living above the poverty level (Halem Alharbi, et al). Additionally, the burden of adolescent mental illness is disproportionately borne by young people living in low- and middle-income countries (Gloria. P. 2019) therefore there is a need to Promote psychological well-being and protect adolescents from adverse experiences and risk factors which may impact their potential to thrive are not only critical for their well-being during

adolescence, but also for their physical and mental health in adulthood (WHO 2018). Mental illness if not treated early can be disruptive to normal development and it can affect one for the rest of their lives (Canadian Mental Health Association, 2014)

The government of Kenya through the Ministry of Health has acknowledged the challenges that adolescents face regarding mental health and is stepping up efforts to address the growing mental health challenge. For instance, the needs of young people are addressed in the Kenya Mental Health policy (2015-2030) to enable the youth to access user friendly targeted interventions to enhance their resilience and mitigate risk factors, such as drug and substance abuse, stigma around mental health diagnosis and treatment as many young people do not seek help for mental health problems due to various personal and structural barriers such as stigma and concerns about confidentiality, lack of knowledge about the services (Gayatri. S, et al, 2018). Despite these efforts, mental health remains a problem among young people with many cases going undetected and untreated. Compounding the problem is also lack of data on the risk factors associated with mental health among adolescents (APHRC 2019). This paper seeks to understand the prevalence of mental health and the associated risk factors among adolescent boys and girls from three informal settlements in Nairobi, Kenya.

Methodology

Study design

Data from this study is drawn from the NISITU project, a quasi-experimental study that seeks to compare the differential impact between a girls-only program and girls and boys/young men's programs being implemented in parallel. The program seeks to determine the effect of the intervention on each of the beneficiary groups but will also determine if there is an added benefit for girls on outcomes related to gender norms and experience of sexual and gender based violence when boys and young men in their community are also participating in a program.

Participants and procedure

The quantitative study was conducted in the Eastlands areas in Nairobi County (specifically Kariobangi, Dandora and Mathare) in Kenya. The study was confined to selected geographical locations based on the Kenya National Bureau of Statistics (KNBS) 2009 population census. The KNBS defines administrative units and is the custodian of the national sample. The 2009 Kenya population census data was used to estimate sample sizes using the administrative units pre-devolution and classified as Districts, Divisions, Locations, and Sub-Locations. The three study locations were purposively selected based on having similar socio-economic characteristics and having the target population, girls 10-19 and boys and young men 10-24. These sites were selected based on data from the 2009 Census which provided data segregated by sub-location, age and sex. The four selected sub-locations also had data indicating the number of households, and additionally, the within each smaller enumeration area (EA). These estimates are based on

data from the 2009 census and were obtained prior to the NISITU household listing conducted in 2018.

The primary target population is girls 10-19 and boys and young men 10-24 who were residing within selected study sites at the time of the baseline survey and who were not in boarding school at the time of the listing and/or at the time of the survey. The sample size for girls 10-14 was calculated using estimates of acceptability of violence in at least one situation with a baseline estimate of 50% for girls 10-14 and 10% difference between baseline and endline, power of 80% and a 5% significance level. For girls 15-19 we used estimates of having ever experienced sexual violence (16%) and detecting a 5% difference between program and control groups at endline. For the male sample we calculated using estimates of having perpetrated violence in the past 12 months, assuming a baseline prevalence of 14% and the ability to detect a 10% difference between study groups at endline. Attrition of 20% between household listing and endline was considered in determining the sample sizes needed.

Data collection

A household listing survey was conducted in the three study sites of Kariobangi, Mathare and Dandora between January and February 2018, using maps (that showed the boundaries for enumeration areas) obtained from the Kenya National Bureau of Statistics and with the assistance of local leaders, to identify households with eligible girls between the ages of 10 and 19 and boys and young men of the ages of 10 and 24. The listing was conducted using Open Data Kit (ODK) software on Android tablets using a set of screening questions to ascertain whether there was an eligible participant residing within the household. A total of 49,044 unique households were listed in the three study sites, of these, 8,744 households had at least one eligible participant between the ages of 10 and 19, for girls (7,663) and ages 10 and 24, for boys (5,570) and young men. A random sample of 3,744 for girls and boys was drawn in Kariobangi, of these, 3,653 (98%) were reached by the survey team, where 2,337 (64%) were successfully interviewed. In Mathare, 1,523 (98%) of the of 1,549 participants were reached by the survey and 1,080 (71%) were successfully interviewed. In Dandora, 3,407 were sampled of which, 2,905 (85%) were reached by the survey team and of these, 2,227 (77%) were successfully interviewed. The major reasons given for non response were participants not available after at least three visits to household (11.9%), respondent moving out of the household (8.8%), ineligible participant (7.0%), either due to being out of age range or being in boarding school, household not located (1.6%), refusal by parent/guardian, spouse or respondent (1.6%), and death of a respondent (0.1%).

Baseline quantitative data was then collected on key socio-demographic indicators, as well as mental health, self-efficacy, gender norms, social networks, financial education and income generation, sexual behaviour, and experience and perpetration of sexual and gender-based

violence. The survey included Global Early Adolescent Study (GEAS) questions that have been tested and validated for measuring mental health in adolescence. This paper analyzes data from 4710 boys and girls from three informal settlements in Nairobi and carry out bivariate and multivariate analysis to understand the association between various background factors and the mental health of adolescent girls and boys.

Data analysis

We used the depression scale, consisting of 6 items which were developed, tested and validated by the GEAS as valid measurements for depression among adolescents. The six item scale consisted of the following questions: 1) In general, I see myself as a happy person; 2) I blame myself when things go wrong; 3) I worry for no good reason; 4) I am so unhappy I can't sleep at night; 5) I feel sad; 6) I am so unhappy I think of harming myself. The participants responded to each of these questions on a five-point likert scale; disagree a lot, disagree a little, neither agree nor disagree, agree a little, and agree a lot. Those who responded with a 'don't know' or refuse to answer' were recorded as missing. Responses to 'In general, I see myself as a happy person' were inversely recorded. We generated an index to sum the responses with score ranging from 0 (no symptoms) to 6 (all symptoms). We conducted test of association between the depressive symptoms and gender and further conducted bivariate analysis to determine which factors had an association with selected background characteristics of the adolescents while making comparison by gender.

Ethical approval

The study was reviewed and approved for compliance by the Population Council Institutional Review Board (p829) and the AMREF Ethics & Scientific Review Committee (P407-2017). In addition, research permit was obtained from the National Council on Science, Technology and Innovation in Kenya (P/18/6952/21227).

Results

There were 1593 (33.8%) boys and 3117 (66.2%) girls of ages 10-19. The mean age for boys was 14.3 and 14.6 for girls. Mental health was measured using a depression scale made using 6 items based on self-blame, worry, feeling sad, thoughts of inflicting self-harm, inability to sleep at night due to being unhappy, and feeling happy. There was an association the individual scale factors and depression as shown in Table 1 below. Generally, majority of the adolescents reported seeing themselves as happy people, although boys (87%) reported being happier than girls (84%). On self-blame when things go wrong, more girls (26%) than boys (20%) agreed a lot that they blamed themselves. Almost twice as many adolescent girls (16% vs 9%) agreed a lot to worrying for no good reason, more girls also agreed a lot to feeling sad and could not sleep at night (6% vs 5%), feeling sad (8% vs 3%) and being unhappy and thinking of harming oneself (4% vs 2%) than their adolescent boys counterparts.

Table 1: Depressive Symptoms among adolescents 10-19 by sex

	male	female	Total	N	P-value
	%	%	%		
I see myself as a happy person					
agree a lot	87	83.7	84.8	3,995	***
agree a little	9	10.7	10.1	475	
neither agree, nor disagree	1.4	1.2	1.3	60	
disagree a little	1.5	2.5	2.2	102	
disagree a lot	0.9	2	1.6	76	
refuse to answer	0.1	0	0	2	
I blame myself when things go wrong					
agree a lot	19.6	26.1	23.9	1,124	***
agree a little	21	20.1	20.4	961	
neither agree, nor disagree	4	2.7	3.1	147	
disagree a little	13.1	12.2	12.5	587	
disagree a lot	42.1	38.9	40	1,885	
refuse to answer	0.3	0.1	0.1	6	
I worry for no good reason					
agree a lot	8.8	15.4	13.1	619	***
agree a little	9.4	13.6	12.2	574	
neither agree, nor disagree	2.3	2.3	2.3	109	
disagree a little	12.6	13.3	13.1	617	
disagree a lot	66.5	55.1	58.9	2,776	
refuse to answer	0.4	0.3	0.3	15	
I am so unhappy I can't sleep at night					
agree a lot	4.6	6.3	5.7	268	*
agree a little	6.2	5.5	5.7	269	
neither agree, nor disagree	1.4	1.5	1.5	69	
disagree a little	9.9	10.1	10	472	
disagree a lot	77.7	76.6	76.9	3,624	
refuse to answer	0.3	0.1	0.2	8	
I feel sad					
agree a lot	3.3	8.1	6.4	303	***
agree a little	6.5	10	8.8	415	
neither agree, nor disagree	1.5	2	1.8	85	
disagree a little	11	10.6	10.7	506	
disagree a lot	77.4	69.3	72	3,393	
refuse to answer	0.3	0.1	0.2	8	
I am so unhappy I think of harming myself					
agree a lot	2.3	4	3.4	161	*
agree a little	2.6	3.8	3.4	159	

neither agree, nor disagree	1.3	1.2	1.2	58
disagree a little	8.8	8.1	8.3	393
disagree a lot	84.7	82.8	83.5	3,931
refuse to answer	0.3	0.1	0.2	8

Further bivariate analysis showed the results presented in table 2 below. Generally, girls reported a higher score than boys which is an indication of higher levels of depression among girls. Older girls reported a higher score (2.19) od depression than the younger girls (1.85). On the other hand, younger boys reported a higher score of 1.71, while older boys reported a depression score of 1.65. Older adolescent girls may be at higher risk of low self-esteem, and thus at a greater risk of depression.

Table 2: Association between depression and selected factors among adolescents

	female	**male**
	Mean (SD)	**Mean (SD)**
Age		
10-14	1.85 (0.02)	1.71 (0.03)
15-19	2.19 (0.03)	1.65 (0.03)
Schooling status		
In-school	1.95 (0.02)	1.68 (0.02)
Out-of-school	2.23 (0.04)	1.72 (0.06)
Drug use		
Use	2.23 (0.08)	1.76 (0.07)
Non-use	2.00 (0.02)	1.67 (0.02)
I can rely on someone if I needed money		
Yes	2.02 (0.02)	1.68 (0.02)
No	2.04 (1.00)	1.89 (0.15)
I can rely on someone if in emergency		
Yes	2.03 (0.02)	1.62 (0.02)
No	2.00 (0.06)	1.89 (0.05)
Site		
Kariobangi	2.00 (0.03)	1.73 (0.03)
Mathare	2.02 (0.03)	
Dandora	2.05 (0.03)	2.05 (0.03)
Ever had sex		
Yes	2.00 (0.02)	1.68 (0.03)
No	2.26 (0.04)	1.75 (0.05)
Caregiver type		
Mother	1.97 (0.02)	1.71 (0.03)
Father	2.07 (0.06)	1.62 (0.05)
Other	2.09 (0.05)	2.09 (0.05)

No caregiver	2.25 (0.07)	2.25 (0.07)

Considering schooling status, adolescents who had dropped out of school reported higher levels of depression compared to their in-school counterparts. Within gender comparison reveal even higher depression levels among out-of-school adolescent girls, 2.23 compared to out-of-school adolescent boys, 1.72. Adolescents who reported drug use reported higher levels of depression, although adolescent girls who reported drug use had higher levels of depression than adolescent boys also reporting drug use.

Adolescent girls and boys who reported not having anyone they could rely on when they needed money reported higher levels of depression. While there was an almost similar level of depression among adolescent girls who reported either having or not, someone they can rely on incase of an emergency. For adolescent boys, those who reported not having someone they can rely on in case of an emergency reported higher level of depression than those who had someone they can rely on. Generally, across the three informal settlements, adolescent girls reported higher levels of depression although there were similar levels of depression among adolescents in Dandora. Adolescent girls in Kariobangi had slightly higher levels of depression than the boys.

Adolescent girls and boys who had reported never having sex reported higher levels of depression compared to those who reported ever engaging in sex. The presence of a caregiver in the life of the adolescent also had a significant impact of levels of depression with adolescents reporting having no caregiver reporting the highest levels of depression, and this level was similar for adolescent boys and girls. Among adolescent girls, depression was least among those who reported having their mother as their primary caregiver, for boys, depression was least among those who reported having their father as the primary caregiver.

Discussion

This paper adds to our knowledge on mental health and associated factors among adolescent boys and girls from three informal settlements in Nairobi. It is evident that depression was generally high among adolescent girls across all background factors. The observed differences could be due to several reasons. First, between ages 10-14, girls and boys have almost similar levels of depression, however, that changes as they transition into older adolescence with more girls reporting depression. Studies have confirmed an association between depression and hormonal changes in women, particularly during puberty, and just before menstruation. The fluctuations in hormonal levels are likely to trigger depression hormones and therefore the higher levels of depression reported among girls than boys.

The differences among adolescent girls and boys could also be due to gender norms that shape the expectations of behaviour among girls and boys in society. Society driven risk factors for depression in women likely have a biological origin, such as differences in physical strength and personality traits, leading to a higher prevalence of depression (Paul R. Albert 2015). Additionally, girls are expected to carry themselves out in a certain manner and be of the best behaviour while such expectations may not be on the boys and these are likely to contribute to higher levels of depression among girls. We hope to conduct further analysis to understand the depression among adolescent boys and girls living in informal settlements and make recommendations to influence policy and interventions that will target adolescents and ensure timely detection and treatment of cases of depression and mental health among adolescents.

Recommendations

While we did not measure the contribution of physical activity on mental health, studies have reported that physical inactivity is associated with mental health problems. An increase in the physical activity is proven to decrease the level of psychopathology in all evaluated perimeters (Maria Sarmento, 2015). Additionally, failure to seek help for negative social and emotional problems can further complicate the issues around mental health. While the adolescents reported having social networks for support, these networks are important as they help lessen the problems associated with mental health. Additionally, help can be sought from professional sources to help adolescents cope with the reported mental health challenges.

Developing skills to improve interpersonal relationships is also highly relevant for improving adolescent mental health outcomes. Identifying program components of interventions to promote mental health and prevent mental disorders and risk behaviors during adolescence are key in helping solve mental health issues during adolescence (Skeen et al. 2019). Having programs that encompass mental health literacy (MHL), which is defined as the "knowledge and beliefs about mental disorders which helps in their recognition, management or prevention" will be greatly beneficial. It encompasses the knowledge about mental health which allows a person to take action to improve their own mental health or that of others. MHL involves the recognition of mental disorders to facilitate prompt help-seeking; knowledge of professional help, treatments available, and effective self-help strategies; skills to give psychological first aid to others; and knowledge of how mental disorders can be prevented. Given the high rates of mental health disorders among young people and their unique vulnerabilities, there is a pressing need to study MHL in this age group (Gayatrie S, et al. 2018).

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