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Correlates of Anxiety and Depression among Young Men Living in Dar es Salaam, Tanzania

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Abstract

Depression and anxiety are important sources of morbidity globally, but we have little knowledge of risk groups and risk factors for both classes of disorders in Tanzania and other low-resource settings. We aimed to identify socio-demographic markers and risk and protective factors associated with symptoms of anxiety and depression among 1249 young men belonging to social groups known as “camps” in Dar es Salaam. Anxiety and depression were measured using the HSCL-25. Men living apart from family reported greater symptoms of anxiety and depression than men living with family, and employment was associated with a greater likelihood of clinically significant symptoms of both anxiety and depression. Childhood experience of violence was strongly associated with both anxiety and depression. Social support was associated with lower levels of anxiety and depression, and with a lower likelihood of clinically significant levels of anxiety and depression in this population. Youth not living with family and the working poor may be important populations for future investigation. Interventions targeting survivors of childhood violence and social support-based interventions should be tested to address the burden of anxiety and depression in this setting.

Keywords

Tanzania; mental health; anxiety; depression; men

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Ethical review:

The study was approved by the ethical review committees at the University of North Carolina at Chapel Hill and Muhimbili University of Health and Allied Sciences in Dar es Salaam, Tanzania. Individual written informed consent was obtained from all study participants.

INFORMED CONSENT: All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000 (5). Informed consent was obtained from all patients for being included in the study.

BACKGROUND

Anxiety and depression are among the most important causes of morbidity globally. In 2010, depression disorders were the second leading cause of years lived with disability (YLDs) (Ferrari et al., 2013), while anxiety disorders were the sixth leading cause of YLDs globally (Baxter, Vos, Scott, Ferrari, & Whiteford, 2014). Though there are no national estimates of the prevalence of anxiety and depression in Tanzania, the level of mental health services in Dar es Salaam and indeed throughout Tanzania inevitably cannot adequately address the burden of both classes of disorders in the population; per 100,000 population there are only 2 psychiatric nurses, 0.04 psychiatrists, and 0.005 practicing clinical psychologists (World Health Organization, 2014). Because of the scarcity of mental health resources in Tanzania, we need to understand who is most at risk of anxiety and depression to determine how to best target the existing services to those most in need. Among the few studies of risk factors for anxiety and depression conducted in sub-Saharan Africa, depression has been associated with age (Jenkins, Mbatia, Singleton, & White, 2010; Whittier et al., 2016), marital status (Nseluke & Siziya, 2011; Sipsma et al., 2013; Whittier et al., 2016), education (Sipsma et al., 2013), and employment and income (Jenkins et al., 2010; Sipsma et al., 2013). While there is some evidence from sub-Saharan Africa that women are at greater risk of depression than men (Sipsma et al., 2013; Whittier et al., 2016), there have been few studies aiming to identify determinants of major mental health disorders specific to men in this setting. Research specific to men is needed, as the determinants of anxiety and depression are likely to be different among men than among women (Sipsma et al., 2013; Whittier et al., 2016). The current study aims to identify groups of men in Dar es Salaam who may be at greatest risk for anxiety and depression.

Beyond sociodemographic markers of risk for poor mental health, there is evidence for a number of key developmental and behavioral risk factors for depression and anxiety in the literature from high income populations which merit further investigation in this setting. Individuals who have experienced childhood trauma such as physical, emotional, or sexual abuse may be at greater risk of depression and anxiety in adulthood (Chapman et al., 2004; Hovens et al., 2010). Prolonged stress (Hammen, 2005; McEwen, 2004), including unemployment (Paul & Moser, 2009), is also associated with depression and anxiety. There is also strong evidence linking alcohol (Boden & Fergusson, 2011; Kushner, Abrams, & Borchardt, 2000) and substance abuse (Grant et al., 2004) with depression and anxiety. Finally, people who are more socially isolated, who have fewer social connections and lower quality of social support from these connections, are at greater risk of depression and anxiety (Kawachi & Berkman, 2001; Thoits, 2011). Building on this evidence from high income contexts, we aim to identify risk factors associated with anxiety and depression in this setting.

Though much epidemiological research has been done to understand the burden of anxiety and depression in high income contexts, we need more evidence of the burden and associated risk indicators of anxiety and depression in Tanzania and throughout sub-Saharan Africa. As the experience and psychopathology of mental health, and the societal drivers of poor mental health are highly culturally dependent (Kirmayer & Ryder, 2016), we need contextually specific understanding of these disorders. To address these gaps in the

literature, we assessed the cross-sectional association of symptoms of anxiety and depression with sociodemographic characteristics and empirically supported risk-factors for depression and anxiety among a population of young men living in informal urban settlements in Dar es Salaam. Men living in these settlements may be at particular risk for poor mental health due to environmental stressors such as endemic poverty, violence, poor housing, noise, and crowding (Morello-Frosch, et al., 2011; Wallis, et al., 2010). The results of this study provide much needed exploratory evidence to identify men at risk of anxiety and depression in Tanzania's largest city to inform efforts to target the limited resources available for mental health screening and treatment in this context.

METHODS

Study Context

This study was conducted in the context of an HIV prevention trial, A Multilevel Intervention to Reduce HIV Risk Among Networks of Men in Tanzania (PI: Suzanne Maman; 1R01MH098690), a cluster randomized trial of a microfinance and health leadership intervention to prevent sexually transmitted infections and intimate partner violence (Kajula et al., 2016). For this trial we identified social networks of young men occupying designated venues known as “camps” where men socialize and engage in small scale enterprise (Yamanis, Maman, Mbwanbo, Earp, & Kajula, 2010). Men typically belong to only one camp and pay membership fees to belong to that camp (Yamanis et al., 2010). Most men in the camps are not formally employed and spend several hours each day at their camp (Yamanis et al., 2010).

Recruitment and sampling

We identified camps for inclusion in the study in four wards (which are equivalent to U.S. census tracts) of Dar es Salaam using an adaptation of PLACE (Priorities for Local AIDS Control Efforts) methodology, using community informant and camp verification interviews to identify camps for recruitment (Weir et al., 2003). To be eligible for inclusion, camps had to meet a number of eligibility requirements including having between 20 and 80 members, having been in existence for at least one year prior to the baseline assessment, and reporting no violent incidents during which a weapon was used within the past six months. A total of 303 camps were verified, of which 205 met the eligibility criteria. Geographic Information System (GIS) technology was used to map the coordinates of each camp and to group geographically contiguous camps into 93 clusters prior to random selection. 60 camps were randomly selected for inclusion in the study. One camp was later excluded from the study due to ineligibility for a final sample of 59 camps.

All eligible members of camps selected into the study were invited to participate in the study. To be eligible for participation in the trial at baseline, participants had to: 1) be a registered camp member for at least three months; 2) plan on residing in Dar es Salaam for the next 30 months; 3) be 15 years or older; 4) visit the camp at least once per week; and 5) be willing to provide contact information for themselves and two family members or friends. The final baseline sample was 1,249 men within 59 camps. A full description of recruitment and sampling methods has been published elsewhere (Kajula et al., 2016).

Data collection procedure

Eligible participants were asked to provide written informed consent to participate in the baseline assessment. After random selection and informed consent, consenting participants completed the baseline assessment in fall 2013. The questionnaire was administered by trained Tanzanian interviewers in Kiswahili using computer assisted personal interviewing (CAPI). The behavioral assessment included questions about the following topics: demographics, hope, future orientation, camp social cohesion, camp collective efficacy, anxiety symptoms, depression symptoms, gender equitable men's scale, conflict tactics, HIV stigma, alcohol and drug use, sexual relationships and risk behaviors, attitudes towards HIV risk behaviors, sexual networks, social networks, work, and expenditures. The interviews lasted approximately 60–90 minutes.

Ethical review

The study was approved by the ethical review committees at the University of North Carolina at Chapel Hill and Muhimbili University of Health and Allied Sciences in Dar es Salaam, Tanzania. Individual written informed consent was obtained from all study participants.

Measures

Anxiety and depression symptoms were measured using a version of the Hopkins Symptom Checklist-25 (HSCL-25) (Parloff, Kelman, & Frank, 1954) previously translated into Kiswahili and validated in Tanzania (Lee, Kaaya, Mbwapo, Smith-Fawzi, & Leshabari, 2008). The HSCL-25 is an inventory of 25 symptoms (10 related to anxiety, 15 to depression) rated on a four-point Likert-type scale. Anxiety scores were calculated as the mean of the 10 anxiety-related items, depression scores as the mean of the 15 depression-related items. The anxiety subscale showed good internal consistency (Cronbach's alpha = 0.94), as did the depression subscale ($\alpha = 0.91$). Where depression and anxiety are described dichotomously in the results, the recommended cutoff of 1.75 was used for clinical caseness (Winokur, Winokur, Rickels, & Cox, 1984).

Socioeconomic status.—Socioeconomic status (SES) was evaluated through an asset index, the Filmer Pritchett Wealth Index (Filmer & Pritchett, 2001). Participants were asked to indicate which of 10 possible assets they owned (e.g. cellphone, television) (Vyas & Kumaranayake, 2006) and a composite score was created by weighting each asset by its factor loading on the first component in a principle components analysis and then placing individuals on a continuous scale of relative wealth (Filmer & Pritchett, 2001). The composite score for each participant was categorized into 33% terciles based on the entire sample.

Work.—Participants indicated whether they had done any paid work over the past seven days. Over the past 30 days, they also reported if they had done any work for a wage from an employer (either formal or informal) and if they had done any work related to their own business or any other form of self-employment.

Childhood experience of violence.—Men were asked about experience of two types of violence before the age of 12: unwanted sexual experiences, and experience of physical violence that resulted in injury, severe pain, or other serious harm.

Substance use.—Men reported whether or not they had ever had 5 or more alcoholic drinks on any one given occasion over the past month (binge drinking). They also reported if they had smoked marijuana over the past 12 months.

Friendship connections.—Men nominated their friends who belonged to their camp by selecting their names from a camp roster list. We calculated a measure of the number of friendship connections adjusted for camp size (in-degree centrality, the proportion of people in the individual's camp network who nominated the individual as a friend (McCulloh, 2013)) using UCINET (Borgatti, Everett, & Freeman, 2002).

Social support.—Men were asked if they had been able to talk about a personal problem over the past 12 months from each of eight possible sources: mother, father, female relatives, male relatives, sexual partner, camp members, other close friends outside of the camp, and others. They were similarly asked if they had received money or other things they needed from each type of person (material support). For each of the two types of support (discuss personal problems and material support), we calculated a continuous score of the number of types of people from whom they had received each kind of support (personal problem and material support; range 0–8). With these continuous scores, we created a dichotomous variable for each type of support wherein a score of 1 or greater sources of support was coded as receipt of this type of support (1), while scores of 0 were coded as lack of receipt of this type of support (0).

All other correlates.—Participants reported their age in years, whether they were currently in school, and indicated the highest grade level they had completed. They also reported if they had ever been married, whether they lived with family members, and if they had any living children.

Analysis

All statistical analyses were conducted in SAS v 9.4 and used a 2-sided significance level of 0.05. First we described demographic characteristics of the participants and levels of variables of interest at baseline and at the follow-up. For all hypothesis tests we used SAS survey procedures to assess the association between each correlate and anxiety and depression, respectively, while accounting for the clustered nature of our data (individuals nested with camps). To compare differences in proportions of clinically significant symptoms of anxiety and depression between levels of categorical correlates, we calculated odds ratios and performed wald chi-square tests using PROC SURVEYFREQ. To compare means of symptoms of anxiety and depression between levels of categorical correlates, and to test the association between continuous correlates and continuous symptoms of anxiety and depression, we conducted tests of significance using PROC SURVEYREG. To assess the association between continuous correlates and clinically significant symptoms of anxiety

and depression, we calculated odds ratios and conducted tests of significance using PROC SURVEYLOGISTIC.

RESULTS

1249 men belonging to 59 “camps” in Dar es Salaam were included in the analyses presented below. Below we present sociodemographic characteristics of the study participants and associations between sociodemographic characteristics, hypothesized risk and protective factors, and symptoms of anxiety and depression. We found that living apart from family, employment, and childhood experience of violence were all associated with greater symptoms of anxiety and depression. We further found that social support was associated with lower levels of anxiety and depression.

Participant Characteristics

Participants included 1249 men with an average age of 26 years (Table 1). Over half had a primary school education or less (57%), a third had graduated from secondary school (31%), and 12% had some secondary school but had not graduated. Eleven percent of men were currently in school. Twenty-two percent of the men had ever been married and 34% had children. Three-quarters (74%) lived with family. About half had worked in the past seven days (58%). Over the past 12 months, two-thirds (67%) had done wage work, 43% had done any self-employed work, a quarter (25%) had done both wage and self-employed work, and 85% had done any type of work.

Men had an average score of 1.4 (range 1 to 4) for both anxiety and depression symptoms. Twenty-two percent reported clinically significant symptoms of depression and 20% reported clinically significant symptoms of anxiety based on a common clinic cutoff (score 1.75 (Winokur et al., 1984)). Sixteen percent of men showed symptoms of both anxiety and depression.

Seven percent of men had experienced physical violence during childhood, and 5% had experienced sexual violence during childhood. Only 3% of men reported binge drinking over the past month, and 17% reported marijuana use over the previous year. Most men had someone to discuss personal problems with (79%), and someone to give them money or materials goods if needed (71%). On average, men had three types of people with whom they had discussed personal problems, and two types of people who could provide material support.

Sociodemographic correlates

In bivariate analyses of sociodemographic correlates of anxiety and depression (Table 2), the strongest correlate of both anxiety and depression was wage work over the past year. Having done wage work was associated with higher levels of depression ($\beta = 0.12$ 95%CI: 0.03, 0.22), and with greater odds of clinically significant symptoms of both anxiety (OR= 1.79 95%CI: 1.13, 2.82) and depression (OR= 2.36 95%CI: 1.47, 3.78). For both scoring methods (continuous symptoms and clinically significant cutoff), wage work was more strongly associated with depression than anxiety. On the other hand, self-employment over the past year was only associated with clinically significant anxiety symptoms (OR= 1.69 95%CI:

1.09, 2.62), and neither depression indicator. Having had any type of employment over the past year was also significantly associated with higher levels of depression ($\beta = 0.16$ 95%CI: 0.05, 0.28) and greater odds of clinically significant symptoms of depression (OR= 2.27 95%CI: 1.16, 4.45) and anxiety (OR= 2.03 95%CI: 1.05, 3.94).

Among all other variables, living with family members was associated with lower levels of both anxiety ($\beta = -0.09$ 95%CI: $-0.17, -0.01$) and depression ($\beta = -0.12$ 95%CI: $-0.20, -0.04$), though not with clinically significant symptoms of either. Having attended secondary school was also associated with lower levels of depression ($\beta = -0.12$ 95%CI: $-0.21, -0.03$) as compared to men with a primary school education or less. No other variables were significantly associated with either anxiety or depression.

Risk and protective correlates

In bivariate analyses of hypothesized risk and protective factors for of anxiety and depression (Table 3), childhood experience of violence was strongly associated with current symptoms of anxiety and depression. Men who had experienced sexual violence had 3.8 times the odds of clinically significant symptoms of anxiety (95% CI: 2.26, 6.43) and 4.5 times the odds of clinically significant symptoms of depression (95% CI: 2.61, 7.86) compared to men who had not experienced sexual violence. Childhood sexual violence was also associated with greater symptoms of both anxiety ($\beta = 0.42$ 95%CI: 0.25, 0.59) and depression ($\beta = 0.37$ 95%CI: 0.23, 0.50). Similarly, men who had experienced physical violence as a child had 3.0 times the odds of clinically significant symptoms of anxiety (95% CI: 1.91, 4.76) and 3.6 times the odds of clinically significant symptoms of depression (95% CI: 2.34, 5.60) compared to men who had not experienced physical violence. Physical violence was also associated with greater symptoms of both anxiety ($\beta = 0.58$ 95%CI: 0.36, 0.80) and depression ($\beta = 0.50$ 95%CI: 0.34, 0.65).

Social support was also associated with both anxiety and depression. Having someone to discuss personal problems with was associated with 62% lower odds of clinically significant symptoms of anxiety (95% CI: 0.26, 0.58) and 53% lower odds of clinically significant symptoms of depression (95% CI: 0.31, 0.72). Having such a person was also associated with lower levels of both symptoms of anxiety ($\beta = -0.28$ 95%CI: $-0.40, -0.15$) and depression ($\beta = -0.26$ 95%CI: $-0.40, -0.12$). Having more types of people to discuss personal problems with was also associated with lower odds of clinically significant symptoms of anxiety (OR= 0.76 95%CI: 0.65, 0.88) and depression (OR= 0.83 95%CI: 0.72, 0.95), as well as with lower levels of both symptoms of anxiety ($\beta = -0.05$ 95%CI: $-0.07, -0.02$) and depression ($\beta = -0.03$ 95%CI: $-0.06, -0.01$). Similarly, having someone to provide material support was associated with 45% lower odds of clinically significant symptoms of anxiety (95% CI: 0.38, 0.79) and 36% lower odds of clinically significant symptoms of depression (95% CI: 0.45, 0.93). Having such a person was also associated with lower levels of both symptoms of anxiety ($\beta = -0.19$ 95%CI: $-0.29, -0.10$) and depression ($\beta = -0.18$ 95%CI: $-0.28, -0.07$). Having more types of people providing material support was also associated with lower odds of clinically significant symptoms of anxiety ($\beta = 0.78$ 95%CI: 0.67, 0.90) and depression ($\beta = 0.82$ 95%CI: 0.71, 0.94), as well as with lower levels of both symptoms of anxiety ($\beta = -0.04$ 95%CI: $-0.07, -0.02$) and

depression ($\beta = -0.04$ 95%CI: $-0.06, -0.02$). None of the other hypothesized risk correlates were significantly associated with anxiety or depression.

DISCUSSION

In this study of anxiety and depression among young men living in Dar es Salaam, we aimed to identify potential risk and protective factors as well as sociodemographic markers of both symptomologies in this key population. We found employment and living away from family to be sociodemographic markers associated with risk of anxiety and depression. We further found previously documented risk factors for poor mental health from high income contexts – childhood experience of violence and social support – to be associated with anxiety and depression in this population. Wage work was associated with greater risk of both depression and anxiety, and self-employment was associated with higher levels of anxiety. These results are surprising given evidence globally of employment as a protective factor in mental health (Paul & Moser, 2009). Many of the men in this study population are not formally employed, but rather participate in the informal economy. Most of the informal wage work and self-employment in this context may often be short term or unstable, creating a potentially stressful rather than secure livelihood as might be expected in other contexts. Qualitative evidence is needed to understand how working conditions in this context relate to poor mental health. If wage work and self-employment in this context do prove to be important sources of stress, mental health promotion interventions targeting workers in the informal economy should be developed.

We found living with family to be associated with lower levels of anxiety and depression. Given that only 26% of men in our study did not live with family, this group may represent a particularly at-risk group in this setting. Living apart from family is associated with greater psychological distress among adolescent women in Norway (Myklestad, Roysamb, & Tambs, 2012), and less family support is associated with depressive symptoms among youth in Ghana (Roche, Bingenheimer, & Ghazarian, 2016). Future studies should seek to understand why young men may need or desire to live apart from family, and how a non-family living arrangement may relate to poor mental health.

We found two main factors (one risk and one protective) to be associated with anxiety and depression: experience of childhood violence and social support. Both experience of childhood sexual and physical violence were strongly associated with anxiety and depression. This echoes previous studies from high income contexts (Chapman et al., 2004; Hovens et al., 2010), suggesting that experience of childhood trauma may be a common element in the etiology of anxiety and depression cross-culturally. Scalable screening and treatment services for childhood violence should be tested in this setting, such as school-based group interventions that have been shown to be effective in reducing depression among children exposed to violence in the United States (Stein et al., 2003). We further found having access to emotional and material social supporters, and quantity thereof, to be negatively associated with anxiety and depression. These results confirm a protective connection between social support and mental health seen in other contexts (Kawachi & Berkman, 2001; Thoits, 2011). Social support may serve to buffer the effect of stress on mental health, by influencing emotional reactions to and coping efforts in response to

stressful events (Cohen & Wills, 1985). Social support may also affect mental health directly by promoting emotional regulation (Lakey & Orehek, 2011). Our results suggest that promotion of social support may be an important component of community mental health promotion in this setting.

The lack of an association between socioeconomic status (SES) and anxiety and depression was unexpected given evidence indicating SES to be an important marker of poor mental health in western populations (Freeman et al., 2016; Hudson, 2005; Lorant et al., 2003). SES may influence mental health directly or indirectly through stressful economic conditions (Hudson, 2005), and poor community resources (Robert & House, 2003). The fact that an association between SES and mental health was not found in this population may simply reflect a relative homogeneity in the SES of men in our study. While men in the study population do vary in level of education and household wealth, they generally share the same position in society. For this reason, lack of significant associations between SES and mental health in this population should not be extrapolated to all men in Dar es Salaam or Tanzania as a whole. National or regional data are needed to better evaluate the association between SES and mental health in this setting.

We also found no association between substance use and anxiety or depression in this population, a stark contrast to findings in other populations (Boden & Fergusson, 2011; Grant et al., 2004; Kushner, 2000). Overall, the level of reported substance use was relatively low, indicating that this particular population may not be the most at risk of comorbidity between substance use disorders and anxiety and depression. Though previous studies have found a connection between the number of social contacts and mental health (Kawachi & Berkman, 2001; Thoits, 2011), we did not find that the number of friends within the camp network to be associated with anxiety or depression. As we did not have information about the strength of each friendship or the quality of support received from each friend, it is possible that friendships represented a wide range of strength and quality of friendship, rendering the importance of a friend count less meaningful. As we did find a connection between different types of social support and anxiety and depression, future studies should seek to understand the comparative importance of quantity and quality of social support for mental health in this population, and to understand the comparative impact of different sources of social support on mental health.

Limitations

There are important limitations to this study which should be considered in the interpretation of our results. The cross-sectional nature of the data presented do not allow us to establish the temporality of the associations tested. In this exploratory study, we were more interested in identifying sociodemographic markers and potential risk factors associated with anxiety and depression for further investigation than in drawing causal conclusions about the associations tested. Further, the HSCL-25 scale which was used to measure anxiety and depression was developed in a different cultural context than the study setting, though the scale version used has been previously validated in Tanzania (Kaaya et al., 2002; Lee et al., 2008). Finally, because of the high correlation between anxiety and depression in this and indeed many other populations (Kessler et al., 2008), the observed association of each

correlate with anxiety or depression may be attributable to a more direct link with the other set of symptoms (depression or anxiety). Future studies should employ longitudinal data to better understand if each potential risk or protective factor identified is more closely associated with depression or anxiety.

Strengths and future directions

The results of this study provide important preliminary evidence of markers of risk for anxiety and depression in a high-risk, low-resource population in Dar es Salaam. Further study of the epidemiology of common mental health disorders in this and similar populations is needed to understand how to best target the scarce screening and treatment services available. As a preliminary indication, this study suggests that youth living apart from family and the working poor may be important identifiable target populations for mental health screening in this context.

Taken alone, the high burden of likely cases of anxiety and depression in this population highlights the need for low-resource screening and treatment strategies to be tested in this setting. Promising models of mental health promotion which may be scalable in this setting include training nurses to implement mental health screening and treatment (Pappin, Wouters, Booysen, & Lund, 2015; Wagner et al., 2014), or training lay people to screen for common mental health disorders and make referrals to counseling (Chibanda et al., 2011; Iheanacho et al., 2015; Petersen, Hancock, Bhana, & Govender, 2014). While there are promising interventions to address depression in low-resource contexts (Gaynes et al., 2015; Wagner et al., 2014), we need more efforts to address anxiety disorders in these settings. Further, given the connection we found between social support and anxiety and depression, mental health promotion interventions leveraging the power of social support should be tested in this setting. Peer support group-based interventions have been shown to be comparable in efficacy to group-based cognitive behavioral therapy in reducing depression (Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011). Given the potential low cost and scalability of such interventions, the feasibility and efficacy of peer support groups should be evaluated in this setting. Finally, given the strong association of childhood violence with anxiety and depression, efforts to improve mental health outcomes among child survivors of physical and sexual violence should be a priority. One effective intervention model which may be translatable is the Cognitive-Behavioral Intervention for Trauma in Schools, a school group-based intervention for children exposed to family violence (Jaycox, Kataoka, Stein, Langley, & Wong, 2012).

Conclusions

This study provides important preliminary evidence of markers of risk for anxiety and depression among socioeconomically disadvantaged men living in Dar es Salaam. Our exploratory results suggest that youth not living with family, the working poor, and survivors of childhood violence may be important populations for future investigation and intervention. Qualitative evidence is needed to better understand the connection between employment, family residential status, and mental health in this population. Given the scarcity of mental health treatment resources in this context, lay counselor and social

support-based interventions should be tested to address the burden of anxiety and depression.

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Table 1.**Participant Characteristics (n=1249)**

	Mean $\pm$ SD or No. (%)
Age (y)	26.0 $\pm$ 7.2
Currently in school	132 (10.6%)
Education level (ref = less than primary school completed)	
<i>Primary school or less</i>	707 (56.8%)
<i>Some secondary school</i>	147 (11.8%)
<i>Secondary school completed or greater</i>	391 (31.4%)
Socioeconomic status	
<i>Lowest</i>	395 (31.7%)
<i>Middle</i>	460 (36.9%)
<i>Highest</i>	393 (31.5%)
Ever married	278 (22.3%)
Has children	423 (33.9%)
Lives with family	929 (74.4%)
Employment	
Any work in past 7 days	726 (58.2%)
Any wage work past 12 months	597 (66.8%)
Any self-employed work past 12 months	385 (43.1%)
Both wage and self-employed work 12 months	220 (24.6%)
Any employment past 12 months	762 (85.2%)
Mental Health	
Depression score	1.4 $\pm$ 0.6
Anxiety score	1.4 $\pm$ 0.5
Depression (score $\geq$ 1.75)	278 (22.3%)
Anxiety (score $\geq$ 1.75)	248 (19.9%)
Both depression and anxiety (both scores $\geq$ 1.75)	202 (16.2%)
Childhood experience of violence	
Sexual violence	65 (5.2%)
Physical violence	92 (7.4%)
Substance use	
Binge drinking in past month	38 (3.0%)
Marijuana use past 12 months	210 (16.8%)
Social support - number of supporter types	
Count: People discuss personal problems with	3.0 $\pm$ 2.4
Any: People discuss personal problems with	983 (78.7%)
Count: People giving material support	2.3 $\pm$ 2.2
Any: People giving material support	891 (71.3%)

Table 2.

Sociodemographic Correlates of Anxiety and Depression (n=1249)

	Anxiety		Depression	
	Score (β)	Criterion (OR) [†]	Score (β)	Criterion (OR) [†]
Age (y)	0.00 (0.00, 0.01)	1.01 (0.99, 1.03)	0.00 (0.00, 0.01)	1.01 (0.98, 1.03)
Currently in school	-0.04 (-0.14, 0.05)	0.72 (0.42, 1.21)	-0.03 (-0.13, 0.07)	0.84 (0.52, 1.37)
Education level				
<i>Primary school or less (ref)</i>	--	--	--	--
<i>Some secondary school</i>	-0.08 (-0.17, 0.01)	0.65 (0.38, 1.09)	-0.12 (-0.21, -0.03) [*]	0.62 (0.38, 1.03)
<i>Secondary school completed or greater</i>	-0.06 (-0.12, 0.01)	0.71 (0.50, 1.01)	-0.03 (-0.10, 0.03)	0.72 (0.51, 1.00)
Ever married	0.00 (-0.08, 0.08)	1.06 (0.72, 1.54)	0.01 (-0.06, 0.08)	1.12 (0.84, 1.71)
Has children	-0.02 (-0.08, 0.04)	0.90 (0.64, 1.27)	-0.03 (-0.10, 0.04)	0.98 (0.71, 1.35)
Lives with family	-0.09 (-0.17, -0.01) [*]	0.73 (0.51, 1.04)	-0.12 (-0.20, -0.04) [*]	0.76 (0.57, 1.02)
Socioeconomic status				
<i>Lowest (ref)</i>	--	--	--	--
<i>Middle</i>	-0.04 (-0.11, 0.02)	0.95 (0.65, 1.41)	-0.02 (-0.09, 0.06)	0.98 (0.68, 1.41)
<i>Highest</i>	0.00 (-0.07, 0.08)	1.32 (0.89, 1.97)	0.00 (-0.09, 0.08)	1.10 (0.75, 1.61)
Work				
Wage work over past 12 months	0.07 (0.00, 0.15)	1.79 (1.13, 2.82) [*]	0.12 (0.03, 0.22) [*]	2.36 (1.47, 3.78) ^{**}
Self-employed work over past 12 months	0.04 (-0.02, 0.10)	1.69 (1.09, 2.62) [*]	0.05 (-0.02, 0.12)	1.15 (0.80, 1.65)
Any work over past 7 days	-0.04 (-0.09, 0.02)	1.08 (0.79, 1.47)	-0.01 (-0.08, 0.05)	1.13 (0.84, 1.51)
Any work over past 12 months	0.08 (-0.03, 0.18)	2.03 (1.05, 3.94) [*]	0.16 (0.05, 0.28) [*]	2.27 (1.16, 4.45) [*]

*
p<.05;**
p<.001;***
p<.0001[†]Based on cutoff score of 1.75 indicating likely clinical case

Table 3.

Risk Factor Correlates of Anxiety and Depression (n=1249)

	Anxiety		Depression	
	Score (β)	Criterion (OR) [†]	Score (β)	Criterion (OR) [†]
Childhood experience of violence				
Sexual violence	0.42 (0.25, 0.59) ***	3.81 (2.26, 6.43) *	0.37 (0.23, 0.50) ***	4.53 (2.61, 7.86) **
Physical violence	0.58 (0.36, 0.80) ***	3.02 (1.91, 4.76) *	0.50 (0.34, 0.65) ***	3.62 (2.34, 5.60) **
Substance use				
Binge drinking in past month	0.11 (-0.09, 0.30)	1.46 (0.70, 3.06)	0.13 (0.12, 0.38)	1.09 (0.53, 2.24)
Marijuana use past 12 months	0.03 (-0.04, 0.10)	0.94 (0.67, 1.32)	0.075 (-0.02, 0.17)	1.08 (0.76, 1.52)
Friendship connections (centrality)	-0.05 (-0.24, 0.15)	0.94 (0.32, 2.82)	0.03 (0.19, 0.25)	0.67 (0.25, 1.78)
Social support - number of supporter types				
Count: People discuss personal problems with	-0.05 (-0.07, -0.02) **	0.76 (0.65, 0.88) **	-0.03 (-0.06, -0.01) *	0.83 (0.72, 0.95) *
Any: People discuss personal problems with	-0.28 (-0.40, -0.15) ***	0.38 (0.26, 0.58) **	0.26 (-0.40, -0.12) **	0.47 (0.31, 0.72) *
Count: People giving material support	-0.04 (-0.07, -0.02) ***	0.78 (0.67, 0.90) *	-0.04 (-0.06, -0.02) *	0.82 (0.71, 0.94) *
Any: People giving material support	-0.19 (-0.29, -0.10) **	0.55 (0.38, 0.79) *	-0.18 (-0.28, -0.07) *	0.64 (0.45, 0.93) *

*
p<.05;**
p<.001;***
p<.0001[†] Based on cutoff score of 1.75 indicating likely clinical case