Psychol Stud (April–June 2020) 65(2):174–181
https://doi.org/10.1007/s12646-020-00550-2

RESEARCH IN PROGRESS

Psychological Distress and Its Associated Factors Among School-Going Adolescents in Tanzania

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Received: 1 May 2019 / Accepted: 4 February 2020 / Published online: 28 March 2020

Abstract The aim of this investigation was to estimate the prevalence of psychological distress and associated factors among in-school adolescents in Tanzania. Cross-sectional data from the 2014 "Global School-based Health Survey" included 3765 students (mean age 14.0 years, SD = 1.7 years) that were representative of all middle school students (grade 6–7 students in primary schools and form 1–3 students in secondary schools) in Tanzania in 2014. The prevalence of single psychological distress was 20.6% and multiple psychological distress 10.3%. In adjusted multinomial logistic regression analysis, the experience of hunger, current tobacco use, bullying victimization and ever had sex was positively associated with single and/or multiple psychological distress. Peer support, school attendance and fruit consumption were protective from single and/or multiple psychological distress. A high prevalence and several factors associated with psychological distress were identified which can help in guiding preventive strategies.

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Keywords Psychological distress · Demographic factors · Environmental stressors · Protective factors · Adolescents · Tanzania

Introduction

"Mental health conditions account for 16% of the global burden of disease and injury in people aged 10–19 years. Half of all mental health conditions start by 14 years of age but most cases are undetected and untreated" (WHO, 2019a, p. 2). "In the general population, mental health is often measured by indicators of non-specific psychological distress, including symptoms of depression, anxiety, stress, and somatic complaints" (Kessler et al., 2003). "Psychological distress covers a wide spectrum, ranging from normal feelings of vulnerability, sadness, and fears to problems that can become disabling, such as depression, anxiety, extensive worries, negative thoughts, or social isolation" (International Encyclopedia of the Social & Behavioural Sciences, 2015). For the prevention of mental health conditions and psychological distress among adolescents, it is important to identify and monitor the prevalence of psychological distress and its correlates in order to better predict mental health risks (Kieling et al., 2011). There are limited data on the prevalence and its correlates of psychological distress among adolescents in Tanzania (Nkuba, Hermenau, Goessmann & Hecker, 2018).

"Using the strength and difficulties questionnaire in a nationally representative sample of 700 Tanzanian secondary school children, 41% of the students reported an elevated level of mental health problems (emotional problems 40%, peer problems 63%, conduct problems 45%, hyperactivity 17%) in the past 6 months" (Nkuba

et al., 2018, p. 699). In the 2006 Tanzania "Global School-Based Student Health Survey (GSHS)", 7.0% of adolescent school-going students reported suicidal ideation (Dunlavy, Aquah & Wilson, 2015).

In a study among school adolescents in India, mild psychological distress (measured with the Kessler Psychological Distress Scale) was reported by 10.5%, moderate distress by 5.4%, and severe distress by 4.9% of students (Jaisoorya et al., 2017). In Zambia, psychosocial distress (3 or more items) was detected in 15.7% of school-going adolescents (Siziya & Mazaba, 2015). Among adolescents in Laos, Mongolia, Nepal and Sri Lanka, about 32.9% reported the presence of (one) psychological distress (Lee, Greene & Shin, 2019), and in a national study among adolescent school children in Thailand, 26.6% had one or more psychological distress (Pengpid & Peltzer, 2013).

Risk factors for psychological distress among adolescents may include sociodemographic factors, environmental stressors and lack of protective factors. Sociodemographic factors associated with psychological distress among adolescents include female sex (Arbour-Nicitopoulos & Faulkner, 2012; Siziya & Mazaba, 2015; Tabak, Jodkowska & Oblacińska, 2008) and older adolescents (Jaisoorya et al., 2017; Siziya & Mazaba, 2015). Environmental stressors associated with psychological distress among adolescents include substance use (Page, Dennis, Lindsay & Merrill, 2011), alcohol use (Arbour-Nicitopoulos & Faulkner, 2012; Balogun, Koyanagi, Stickley, Gilmour & Shibuya, 2014; Jaisoorya et al., 2017; Lee et al., 2019), tobacco use (Arbour-Nicitopoulos & Faulkner, 2012; Jaisoorya et al., 2017; Lee et al., 2019; Siziya & Mazaba, 2015), being bullied (Lee et al., 2019, Siziya & Mazaba, 2015), in physical fight (Sharma, Lee & Nam, 2017; Siziya & Mazaba, 2015), injury (Sharma et al., 2017) and sexual behaviour (Page & Hall, 2009).

Lack of protective factors associated with psychological distress among adolescents includes lack of parental support (Hecker, Hermenau, Salmen, Teicher & Elbert, 2016; Siziya & Mazaba, 2015). Moreover, school truancy was in Nepal associated with psychological distress (Lee et al., 2019), and "meeting physical activity recommendations" was protective from psychological distress (Arbour-Nicitopoulos & Faulkner, 2012; Glozah, Oppong Asante & Kugbey, 2018). Adequate consumption of breakfast and vegetables was protective from psychological distress (Arbour-Nicitopoulos & Faulkner, 2012), and poor dietary behaviour (Glozah et al., 2018) and lack of health education (Lee et al., 2019) were associated with psychological distress.

Limited data exist on the prevalence and correlates of psychological distress among adolescents in Tanzania. This information would be needed in order to better implement evidence-based interventions for the prevention and control of psychological distress and mental illness among adolescents in a low-income country, such as Tanzania. Consequently, this investigation aimed at examining the prevalence, sociodemographic, environmental stressors and protective factors associated with psychological distress among in-school adolescents in Tanzania.

Methods

Sample and Procedure

The study sample consisted of 3765 middle school students (mean age 14.0 years, SD = 1.7) from Tanzania. The proportion of male students was 47.9% and that of female students 52.1%. This analysis utilizes 2014 Tanzania "Global School-based Health Survey (GSHS)" cross-sectional data; more details and the data set can be publicly accessed (WHO, 2019b). The study used a two-stage cluster sampling strategy to produce a nationally representative sample of middle school students (grade 6–7 students in primary schools and form 1–3 students in secondary schools) in Tanzania (Nyandindi, 2017). "At the first stage, schools were selected with probability proportional to enrollment size. At the second stage, classes were randomly selected and all students in selected classes were eligible to participate" (Nyandindi, 2017). Under the supervision of trained survey administrators, students completed a self-administered questionnaire in their language during classroom periods (WHO, 2019c). The study proposal was approved by the Ministry of Health and a national ethics committee, and "necessary approvals and permission were obtained from the participating schools, parents and students before the survey was administered" (Nyandindi, 2017).

Measures

The study questionnaire used was from the GSHS (WHO, 2019c) and is shown in Table 1. "The psychological distress items (no close friends, loneliness, anxiety, suicidal ideation and suicide attempt, details in Table 1) were summed, and grouped into 0 = 0 no, 1 = 1 single and 2–5 = 2 multiple distress", as in previous studies (Pengpid & Peltzer, 2019). Psychological distress items included here were based on the definition psychological distress described earlier. Adequate fruit consumption was classified as "two or more servings in a day and adequate consumption of vegetables as three or more servings a day" (CDC, 2013). Adequate physical activity was defined as "at least 60 min of moderate to vigorous-intensity physical activity daily" (WHO, 2017). "The four items on parental

Table 1 Description of variables

Variables	Question	Response options (coding scheme)
Age	"How old are you?"	"11 years old or younger to 18 years old or older"
Sex	"What is your sex?"	"Male, female"
Hunger	"During the past 30 days, how often did you go hungry because there was not enough food in your home?"	"1 = never to 5 = always"
Psychological distress		
No close friends	"How many close friends do you have?"	"1 = 0 to 4 = 3 or more (coded 1 + = 0, 0 = 1)"
Loneliness	"During the past 12 months, how often have you felt lonely?"	"1 = never to 5 = always (coded 1–3 = 0 and 4–5 = 1)"
Anxiety	"During the past 12 months, how often have you been so worried about something that you could not sleep at night?"	"1 = never to 5 = always (coded 1–3 = 0 and 4–5 = 1)"
Suicide ideation	"During the past 12 months, did you ever seriously consider attempting suicide?"	"Yes, no"
Suicide attempt	"During the past 12 months, how many times did you actually attempt suicide?"	"1 = 0 times to 5 = 6 or more times (coded 1 = 0 and 2–5 = 1)"
Environmental stressors		
Past month or current tobacco use	"During the past 30 days, on how many days did you smoke cigarettes/use any tobacco products other than cigarettes, such as tobacco roll, snuff, or chew tobacco?"	"1 = 0 days to 7 = All 30 days (coded 1 = 0 and 2–7 = 1)"
Parental tobacco use	"Which of your parents or guardians use any form of tobacco?"	"Neither, My father or male guardian, My mother or female guardian, Both" (coded 0 = neither and 1 = either)
Secondary smoke	"During the past 7 days, on how many days have people smoked in your presence?"	"1 = 0 days to 5 = all 7 days (coded 1 = 0 and 2–5 = 1)"
Current alcohol use	"During the past 30 days, on how many days did you have at least one drink containing alcohol?"	"1 = 0 days to 7 = All 30 days (coded 1 = 0 and 2–7 = 1)"
Cannabis use	"During your life, how many times have you used marijuana (also called *bangi*)?"	"1 = 0 times to 5 = 20 or more times (coded 1 = 0 and 2–5 = 1)"
Amphetamine use	"During your life, how many times have you used amphetamines or methamphetamines (also called *dawa za usingizi/kulevy)*?"	"1 = 0 times to 5 = 20 or more times (coded 1 = 0 and 2–5 = 1)"
Bullied	"During the past 30 days, on how many days were you bullied?"	"1 = 0 days to 7 = All 30 days (coded 1 = 0 and 2–7 = 1)"
Physically attacked	"During the past 12 months, how many times were you physically attacked?"	"1 = 0 times to 8 = 12 or more times (coded 1 = 0 and 2–8 = 1)"
In a physical fight	"During the past 12 months, how many times were you in a physical fight?"	"1 = 0 times to 8 = 12 or more times (coded 1 = 0 and 2–8 = 1)"
Injury	"During the past 12 months, how many times were you seriously injured?" "(An injury is serious when it makes you miss at least one full day of usual activities (such as school, sports, or a job) or requires treatment by a doctor or nurse.)"	"1 = 0 times to 8 = 12 or more times (coded 1 = 0 and 2–8 = 1)"
Soft drinks	"During the past 30 days, how many times per day did you usually drink carbonated soft drinks, such as such as Coca-Cola, Pepsi, Fanta, Mirinda, or Azam-Cola (Do not include diet soft drinks.)?"	"1 = not in the past days to 7 = 5 or more times per day (coded 1–3 = 0 and 4–7 = 1)"
Fast food	"During the past seven days, on how many days did you eat food from a fast food restaurant, such as a hotel, bar, kiosk, or food vendor?"	"1 = 0 to 8 = 7 days (coded 1–3 = 0 and 4–8 = 1)"
Ever sex	"Have you ever had sexual intercourse?"	"Yes, no"
Protective factors		
Parental supervision	"During the past 30 days, how often did your parents or guardians check to see if your homework was done?"	"1 = never to 5 = always (coded 1–3 = 0 and 4–5 = 1)"
Parental connectedness	"During the past 30 days, how often did your parents or guardians understand your problems and worries?"	"1 = never to 5 = always (coded 1–3 = 0 and 4–5 = 1)"
Parental bonding	"During the past 30 days, how often did your parents or guardians really know what you were doing with your free time?"	"1 = never to 5 = always (coded 1–3 = 0 and 4–5 = 1)"

Table 1 continued

Variables	Question	Response options (coding scheme)
Parental respect for privacy	"During the past 30 days, how often did your parents or guardians go through your things without your approval?"	"1 = never to 5 = always (coded 1–3 = 0 and 4–5 = 1)"
Peer support	"During the past 30 days, how often were most of the students in your school kind and helpful?"	"1 = never to 5 = always (coded 1–3 = 0 and 4–5 = 1)"
School attendance	"During the past 30 days, on how many days did you miss classes or school without permission?"	"1 = 0 days to 5 = 10 or more days (coded 1 = 1 and 2–5 = 0)"
Attending physical education classes	"During this school year, on how many days did you go to physical education (PE) class each week"	"1 = 0 days to 6 = 5 or more days (coded 1–3 = 0 and 4–6 = 1)"
Physical activity	"During the past 7 days, on how many days were you physically active for a total of at least 60 min per day? Add up all the time you spent in any kind of physical activity each day"	"1 = 0 days to 8 = 7 days) (coded 1–7 = 0 and 8 = 1"
Leisure-time sedentary behaviour	"How much time do you spend during a typical or usual day sitting and watching television, playing computer games, talking with friends, or doing other sitting activities, such as playing cards, plaiting hair, or embroidery?"	"1 = less than 1 h per day; 2 = 1–2 h/day; 3 = 3–4 h/day; 4 = 5–6 h/day; 5 = 7–8 h/day and 6 = 8 or more hours per day"
Fruits	"During the past 30 days, how many times per day did you usually eat fruit such as bananas, oranges, pawpaw, mangoes, or pineapples?"	"1 = I did not eat fruit during the past 30 days to 7 = 5 or more times per day (coded 1–3 = 0 and 4–8 = 1)"
Vegetables	"During the past 30 days, how many times per day did you usually eat vegetables, such as amaranth, cassava leaves, pumpkin leaves, cabbage, spinach, okra, or carrots?"	"I did not eat vegetables during the past 30 days to 7 = 5 or more times per day (coded 1–4 = 0 and 5–8 = 1"

or guardian support were summed, and classified into three groups, 0–1 low, 2 medium and 3–4 high support" (Pengpid & Peltzer, 2019).

Data Analysis

Data analysis was done with Stata software version 15.0 (Stata Corporation, College Station, Texas, USA), taking the complex sampling design of the study into account. Data results were described with descriptive statistics. Unadjusted and adjusted multinomial logistic regression was used to estimate associations between independent variables and one and multiple psychological distress, with no psychological distress as reference category. Independent variables, which were significant in univariate analysis, were included in the multivariable multinomial regression model. $p < 0.05$ was considered significant.

Results

Sample Characteristics

The overall study response rate was 87% (Nyandindi, 2017). The prevalence of single psychological distress was 20.6% and multiple psychological distress 10.3%. Further sample characteristics are presented in Table 2.

Associations with Single and Multiple Psychological Distress

In unadjusted multinomial logistic regression analysis, sometimes, mostly or always feeling hungry, current tobacco use, parental tobacco use, secondary smoke, current alcohol use, lifetime cannabis and amphetamine use, bullying victimization, having been attacked, in a physical fight, injury and ever had sex were associated with single and/or multiple psychological distress. Being 15 years of age, parental support, peer support, school attendance and fruit consumption were negatively associated with single and/or multiple psychological distress.

In adjusted multinomial logistic regression analysis, sometimes, mostly or always feeling hungry, current tobacco use, bullying victimization and ever had sex were positively associated with single and/or multiple psychological distress. Peer support, school attendance and fruit consumption were protective from single and/or multiple psychological distress (Table 3).

Discussion

The study aimed to examine the prevalence of psychological distress and associated factors among school children in Tanzania. The prevalence of single psychological

Table 2 Descriptive statistics of independent variables and by psychological distress

Variable (# missing cases)	Total sample	Psychological distress		Multiple psychological distress	
	N (%)	Single %	Multiple %	Boys %	Girls %
Sociodemographics					
All	3765	20.6	10.3	9.9	10.2
Sex (#76)					
Female	1935 (52.1)	20.6	10.2		
Male	1782 (47.9)	20.9	9.9		
Age in years (#28)					
13 or less	1366 (36.3)	20.9	12.0	11.6	11.6
14	705 (18.7)	23.4	9.5	10.7	8.2
15	750 (19.9)	16.1	9.1	7.6	10.5
16 or more	944 (25.1)	21.9	8.6	8.7	7.9
Hunger (#53)					
Never	2769 (74.1)	18.2	8.2	7.5	8.4
Rarely	388 (10.3)	29.5	12.8	11.9	14.2
Sometimes/mostly/always	583 (15.5)	26.2	19.0	19.0	17.1
Environmental stressors					
Current tobacco use (#117)	261 (7.5)	29.1	36.2	31.1	38.2
Parental tobacco use (#35)	418 (11.3)	22.1	17.6	18.3	15.1
Secondary smoke (#45)	1741 (45.2)	22.5	10.8	10.0	10.1
Current alcohol use (#154)	157 (4.5)	25.2	33.9	21.2	40.2
Ever cannabis use (#155)	108 (3.1)	34.6	48.4	38.4	49.0
Ever amphetamine use (#230)	103 (3.1)	32.4	47.7	42.4	44.7
Bullied (#217)	943 (26.8)	26.1	19.5	17.7	20.0
Attacked (#44)	1995 (53.1)	21.5	11.9	10.5	12.5
In physical fight (#63)	1067 (30.1)	25.7	14.0	13.6	13.1
Injury (#620)	1196 (38.8)	22.0	15.2	12.6	16.7
Soft drinks ($\geq$ 2/day) (#21)	759 (20.6)	20.6	12.1	10.5	12.0
Fast food ($\geq$ 3/week) (#21)	580 (16.0)	21.0	12.7	13.2	11.2
Ever sex (#454)	668 (20.0)	23.5	16.6	14.5	18.6
Protective factors					
Parental/guardian support index (#107)					
0–1	1283 (35.3)	23.7	13.9	14.2	12.5
2	1062 (28.7)	17.7	10.0	8.3	11.0
3–4	1341 (35.9)	19.3	6.9	6.7	7.1
Peer support (mostly/always) (#67)	1353 (35.6)	17.5	8.4	7.0	9.9
School attendance (#36)	2716 (72.2)	19.0	8.6	8.1	10.1
Attending physical education classes ($\geq$ 3 times/week) (#108)	1360 (36.5)	19.8	9.5	7.1	12.1
Physical activity (#30)	763 (20.0)	19.9	8.5	6.2	11.4
Sedentary < 3 h (#115)	2939 (80.0)	19.9	10.0	9.9	9.6
Fruit consumption ($\geq$ 2 or more a day) (#33)	1450 (39.1)	18.2	7.7	7.1	7.4
Vegetable consumption ($\geq$ 3 or more a day) (#25)	1093 (28.9)	18.5	10.1	10.6	9.0

CI confidence interval

distress was 20.6% and multiple psychological distress 10.3% (any psychological distress 30.9%), which is similar to psychological distress among adolescents in a previous study in Tanzania (41% "elevated level of mental health problems") (Nkuba et al., 2018) and any psychological distress in adolescents on four Asian low- and

Table 3 Associations with psychological distress

Variables	Single psychological distress CRRR (95% CI)	Multiple psychological distress CRRR (95% CI)	Single psychological distress ARRR (95% CI)	Multiple psychological distress ARRR (95% CI)
Sociodemographics				
Sex				
Female	1 (reference)	1 (reference)	–	–
Male	1.02 (0.82, 1.26)	0.97 (0.72, 1.30)		
Age in years				
13 or less	1 (reference)	1 (reference)	1 (reference)	1 (reference)
14	1.12 (0.83, 1.52)	0.79 (0.55, 1.14)	1.30 (0.93, 1.84)	0.81 (0.49, 1.34)
15	0.69 (0.51, 0.95)*	0.68 (0.47, 0.98)*	0.88 (0.62, 1.27)	0.85 (0.51, 1.43)
16 or more	1.02 (0.76, 1.36)	0.70 (0.49, 1.00)	1.11 (0.76, 1.63)	0.91 (0.57, 1.47)
Hunger (mostly/always)				
Never	1 (reference)	1 (reference)	1 (reference)	1 (reference)
Rarely	2.08 (1.49, 2.89)***	2.00 (1.45, 2.76)***	1.50 (0.91, 2.47)	1.27 (0.68, 2.39)
Sometimes/mostly/always	1.93 (1.50, 2.50)***	3.12 (2.16, 4.49)***	1.66 (1.08, 2.55)*	1.99 (1.30, 3.10)**
Environmental stressors				
Current tobacco use	3.09 (2.09, 4.58)***	8.84 (5.68, 13.74)***	2.19 (1.04, 4.60)*	4.43 (2.08, 9.44)***
Parental tobacco use	1.27 (0.93, 1.65)	2.17 (1.48, 3.16)***	0.84 (0.59, 1.21)	1.06 (0.68, 1.66)
Secondary smoke	1.25 (1.02, 1.55)*	1.17 (0.92, 1.50)	1.11 (0.87, 1.42)	0.86 (0.62, 1.19)
Current alcohol use	2.13 (1.41, 3.23)***	6.49 (3.60, 11.70)***	0.58 (0.25, 1.37)	0.62 (0.27, 1.46)
Ever cannabis use	7.23 (3.80, 13.75)***	22.77 (13.72, 37.81)***	1.03 (0.25, 4.23)	2.25 (0.46, 10.96)
Ever amphetamine use	5.88 (2.56, 13.51)***	18.89 (8.77, 40.65)***	3.75 (0.78, 17.80)	2.04 (0.36, 11.71)
Bullied	1.93 (1.58, 2.34)***	4.26 (3.24, 5.60)***	1.50 (1.12, 2.01)**	2.90 (1.99, 4.23)***
Attacked	1.18 (0.92, 1.53)	1.51 (1.07, 2.15)*	1.15 (0.86, 1.53)	1.04 (0.69, 1.58)
In physical fight	1.67 (1.38, 2.01)***	1.95 (1.37, 2.77)***	1.09 (0.83, 1.44)	0.99 (0.59, 1.67)
Injury	1.36 (1.08, 1.71)**	2.58 (1.86, 3.59)***	1.03 (0.78, 1.36)	1.03 (0.70, 1.51)
Soft drinks (≥ 2/day)	1.03 (0.78, 1.36)	1.27 (0.93, 1.73)	–	–
Fast food (≥ 3/week)	1.08 (0.82, 1.43)	1.36 (0.94, 1.96)	–	–
Ever sex	1.56 (1.24, 1.97)***	2.76 (2.15, 3.54)***	1.31 (0.99, 1.74)	1.91 (1.30, 2.88)**
Protective factors				
Parental/guardian support index				
0–1	1 (reference)	1 (reference)	1 (reference)	1 (reference)
2	0.65 (0.50, 0.83)***	0.63 (0.49, 0.80)***	0.79 (0.55, 1.11)	0.85 (0.56, 1.29)
3–4	0.69 (0.54, 0.88)**	0.42 (0.33, 0.54)***	0.94 (0.70, 1.27)	0.93 (0.67, 1.30)
Peer support (mostly/always)	0.72 (0.60, 0.87)***	0.67 (0.55, 0.81)***	0.77 (0.60, 0.98)*	0.77 (0.54, 1.10)
School attendance	0.64 (0.52, 0.78)***	0.49 (0.38, 0.64)***	0.76 (0.57, 1.01)	0.89 (0.59, 1.36)
Attending physical education classes (≥ 3 times/week)	0.91 (0.74, 1.13)	0.86 (0.66, 1.12)	–	–
Physical activity	0.93 (0.70, 1.22)	0.76 (0.51, 1.14)	–	–
Sedentary < 3 h	0.84 (0.69, 1.03)	0.88 (0.64, 1.19)	–	–
Fruit consumption (≥ 2 or more a day)	0.74 (0.64, 0.86)***	0.57 (0.42, 0.77)***	0.62 (0.47, 0.82)***	0.59 (0.52, 0.84)**
Vegetable consumption (≥ 3 or more a day)	0.82 (0.66, 1.04)	0.93 (0.71, 1.22)	–	–

CRRR crude relative risk ratio, *ARRR* adjusted relative risk ratio, *CI* confidence interval

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

middle-income countries (Nepal, Laos, Mongolia and Sri Lanka) (32.9%) (Lee et al., 2019), and lower than in Zambia (79.5%) (Siziya & Mazaba, 2015). Contrary to some previous studies (Arbour-Nicitopoulos & Faulkner,

2012; Siziya & Mazaba, 2015; Tabak et al., 2008), this study did not find sex differences in the prevalence of psychological distress.

Consistent with previous studies (Arbour-Nicitopoulos & Faulkner, 2012; Jaisoorya et al., 2017; Lee et al., 2019; Siziya & Mazaba, 2015), several environmental stressors (current tobacco use, being bullied and ever sex) increased the odds for psychological distress. As this is a cross-sectional study, the direction of the associations is not clear. For example, it is also possible that psychologically distressed adolescents turn to substance use and sexual activity in order to cope with distressed feelings such as loneliness, anxiety or suicidal ideation (Page & Hall, 2009). The correlation between various environmental stressors, such as substance use, interpersonal violence, sexual behaviour and psychological distress, may refer to a clustering of health risk behaviours. These health risk behaviours may need to be targeted in health promotion intervention in a combined fashion, rather than addressing individual risk behaviours in preventing psychological distress.

Unlike some previous studies (Lee et al., 2019; Siziya & Mazaba, 2015), this study did not find an association between lack of parental or guardian support and psychological distress. However, peer support and adequate fruit consumption was protective from single and/or multiple psychological distress. Various studies, e.g. Hong and Peltzer (2017), have shown the protective effect of adequate fruit and vegetable consumption on mental or psychological distress. Evidence from a review shows that parental training and school-based interventions can reduce symptoms of common mental disorders in adolescents (Klasen & Crombag, 2013).

Study Limitations

The cross-sectional study was limited to school-going youth and precludes causative conclusions and generalizations for all youth. The GSHS content was assessed by self-report, which could lead to bias in reporting.

Conclusions

A high prevalence of psychological distress was observed among school-going adolescents in Tanzania. Several risk factors, including hunger, tobacco use, bullying victimization and ever had sex, as well as protective factors, including peer support, school attendance and fruit consumption, were identified for psychological distress. These risk factors should be targeted and protective factors utilized in health promotion school programmes, so as to prevent psychological distress among adolescents in Tanzania.

Acknowledgements We thank the World Health Organization for making the data available for data analysis (https://www.who.int/ncds/surveillance/gshs/tanzaniadataset/en/) and the country coordinator from Tanzania (Dr. Ursuline S. Nyandindi) for the assistance in GSHS data collection.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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