Prevalence and associated factors of psychological distress among a national sample of in-school adolescents in Bhutan

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Abstract

The goal of the study was to estimate the prevalence and correlates of psychological distress (=PD) among adolescent school children in Bhutan. Nationally representative cross-sectional data were analysed from 7,576 adolescents (16 years median age) that took part in the “2016 Bhutan Global School-Based Student Health Survey (GSHS).” PD was assessed with a 2-item screening measure (BMC Psychiatry. DOI: 10.1186/s12888-020-02888-3). Results indicate that the prevalence of PD was 15.8%, 12.8% among males and 18.4% among females. In the adjusted logistic regression analysis, female sex, having no close friends, older age, bullying victimization, infrequently physically attacked, parental emotional neglect, parents never check home work, passive smoking trouble from alcohol use, ever
having sex, high sedentary behaviour and having sustained single or multiple serious injuries (past year) were associated with PD. In addition, adequate fruit and vegetable consumption are protective against PD. Almost one in six students reported PD and several associated factors were identified which can aid prevention and control strategies.

Key words: Risk behaviour, social factors, psychological distress, adolescents, Bhutan

Introduction
Among adolescents, “mental health conditions account for 16% of the global burden of disease and injury” [1], and the “worldwide pooled prevalence of mental disorders was 13.4%” [2]. “First onset of mental disorders usually occurs in childhood or adolescence” [3]. “Adolescence is a critical period characterised by vulnerability to psychological distress (=PD), and is therefore an important time for the promotion of psychological well-being and early mental health intervention, in order to safeguard against the development of mental health issues” [4] (p. 1011). According to the American Psychological Association [5], PD is “a set of painful mental and physical symptoms that are associated with normal fluctuations of mood in most people. It is thought to be what is assessed by many putative self-report measures of depression and anxiety.”

The prevalence of moderate to severe PD (measured with the Kessler K-10) was 10.5% among school-going adolescents in India [6], and among adolescents in four Asian countries, PD was 32.9% (presence of any item: suicidal ideation, plans and suicide attempts, loneliness, sadness and anxiety) [7]. In a study among adolescents in Afghanistan, the prevalence of PD was 27.7% (≥2 items of no close friends, loneliness, anxiety, suicidal ideation, and suicide attempt) [8], and among adolescents in Iran, 17.7% (≥3 items of worthless, anxious, angerliness, confusion, and insomnia) had PD [9]. In a national survey among persons 15 years and older in Bhutan, the prevalence of PD (measured with the GHQ-12) was 29.3%, 26.9% among 15-24 year olds [10]. In a small study among secondary school students (N=131) in Mongar district, Eastern Nepal, the total mean mental health score (measured with the Mental Health Inventory) was 52.7 (range 0-100, with higher scored showing better mental health) [11]. There is a lack of national data on the prevalence and correlates of PD among adolescents in Bhutan. To prevent and control PD in adolescent populations, it is vital to assess its prevalence and risk factors [12].
Factors associated with PD among adolescents can be divided into social distresses, socio-environmental factors, and health risk behaviours [13], and may include, as reviewed previously [14], sociodemographic factors (older age, female sex), social distresses (interpersonal violence), socio-environmental factors (experience of hunger, low peer and low parental support and school truancy) and health risk behaviours (sedentary behaviour, substance use, sexual behaviour and injury). This investigation aimed at estimating the prevalence and correlates of PD among adolescents in Bhutan.

**Methods**

*Sources of data*

Nationally representative data from the cross-sectional “2016 Bhutan GSHS” were analyzed [15]; the study response rate was 95%; more details [15]. “The Research Ethics Board of Health in Bhutan approved the study and written informed consent was obtained from the participating schools, parents, and students.” [15].

*Measures*

The administered questionnaire items used are shown in Table 1 [15]. PD was assessed with one item on anxiety, “During the past 12 months, how often have you been so worried about something that you could not sleep at night?” and one item on depression, “During the past 12 months, how often have you felt lonely?” Response options included and were coded as “Never=0, Rarely=1, Sometimes=1, Most of the time=2, Always=3” Scores of the two items were summed and scores three or more were defined as PD, in line with previous research [16]. Emotional neglect was defined as never “parental or guardian understanding of your problems and worries? AND never parents or guardians really know what you were doing with your free time when you were not at school or work?” [17].

**Table 1: Description of variables**

| Variables       | Items                                                                 | Responses (coding)                          |
|-----------------|----------------------------------------------------------------------|---------------------------------------------|
| 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”                         |
| Loneliness      | “During the past 12 months, how often have you felt lonely?”          | “1=never to 5=always”                         |
| Age             | “How old are you?”                                                    | “11 years old or younger to 18 years old or older” |
| Sex             | “What is your sex?”                                                   | “Male, Female”                               |
| Social distress | “How many close friends do you have?”                                 | “1 = 0 to 4 = 3 or more (coded 1+=0, 0=1)” |
| No close friend |                                                                      |                                             |
| Bullied         | “During the past 30 days, on how many days were you bullied?”         | “1=0 days to 7=All 30 days”                  |
| Physical attacked | “During the past 12 months, how many times were you physically attacked?” | “1=0 times to 8=12 or more times” |
| Physical fights | “During the past 12 months, how many times were you in a physical fight?” | “1=0 times to 8=12 or more times” |
| Social-environmental factors | | |
| 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=1 to 5=0)” |
| 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=1 and 2–5=0)” |
| Parental emotional neglect | “During the past 30 days, how often did your parents or guardians understand your problems and worries?” | “1=never to 5=always (coded 1=1 and 2–5=0)” |
| Parental disrespect 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)” |
| Passive smoking | | |
| School truancy | “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” |
| Health risk behaviours | | |
| 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 baba, khaine, or raja?” | “1=0 days to 7=All 30 days (coded 1=0 and 2–7=1)” |
| Current cannabis use | “During the past 30 days, how many times have you used marijuana (also called ganja, black, kayana, or weed)?” | “1=0 days to 6=20 or more times (coded 1=0 and 2–6=1)” |
| Trouble from alcohol use | “During your life, how many times have you got into trouble with your family or friends, missed school, or got into fights, as a result of drinking alcohol?” | “1=0 days to 7=10 or more times (coded 1=0 and 2–7=1)” |
| Ever sex | “Have you ever had sexual intercourse?” | “Yes, No” |
| Leisure-time sedentary behavior | “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 listening to music?” | “1=Less than 1 hour per day… 3=3 to 4 hours per day… 6=6 or more hours a day” |
| Fruits | “During the past 30 days, how many times per day did you usually eat fruit such as apples or oranges?” | “1=1 did not eat fruit during the past 30 days to 7=5 or more times per day” |
| Vegetables | “During the past 30 days, how many times per day did you usually eat vegetables, such as cabbage, cauliflower, carrots, or broccoli?” | “1=did not eat vegetables during the past 30 days to 7=5 or more times per day” |
| Injury | “During the past 12 months, how many times were you seriously injured?” | “1=0 days to 8=12 or more times (coded 1=0 and 2–8=1)” |

**Data analysis**

Statistical analyses were done with “STATA software version 15.0 (Stat Corporation, College Station, Texas, USA).” Unadjusted and adjusted (with variables significant in unadjusted analysis) logistic regression analyses were used to assess predictors of PD. Only complete cases formed part of the analyses, and p<0.05 indicated significance.

**Results**

**Sample and psychological distress characteristics**

The participants comprised of 7,576 school adolescents (median, 16 years), 51.9% were female, and 52.1% lived in rural areas. Almost one in ten of the participants (9.1%) had no close friends, 8.5% had frequently been bullied, 24.2% had frequently been assaulted, and 21.0% had frequently been involved in physical fighting. Almost one in three students...
(30.7%) used currently tobacco, 12.6% used cannabis currently, 11.1% had trouble from alcohol use, 50.0% were exposed to secondary smoke, 20.8% had multiple injuries (past year), 18.1% ever had sex, 29.1% engaged in sedentary behaviour (≥3 hours/day), and 28.4% had five or more servings of fruit and vegetables per day. Almost one in ten of the students (7.5%) were frequent school truant, 16.4% had low peer support, 32.8% had parents who never checked on their home work, 8.0% experienced parental emotional neglect, and 12.3% had parents who mostly or always disrespected their privacy. Almost one in six students (15.8%) reported PD, 18.4% among females and 12.8% among males (see Table 2).

Table 2: Sample and psychological distress characteristics among adolescents in Bhutan, 2016

| Variable                             | Sample | Psychological distress |
|--------------------------------------|--------|------------------------|
|                                      | N (%)  | %                      |
| **Socio-demographics**               |        |                        |
| All                                  | 7576   | 1201 (15.8)            |
| Age in years                         |        |                        |
| 14 or less                           | 2110 (29.1) | 256 (12.4) |
| 15-16                                | 2681 (34.7) | 413 (15.4) |
| 17 or more                           | 2761 (36.2) | 530 (18.9) |
| Gender                               |        |                        |
| Female                               | 4105 (51.9) | 748 (18.4) |
| Male                                 | 3384 (48.1) | 435 (12.8) |
| Locality                             |        |                        |
| Urban                                | 3629 (47.9) | 542 (15.1) |
| Rural                                | 3947 (52.1) | 659 (16.7) |
| **Social distress**                  |        |                        |
| No close friends                     | 689 (9.1)  | 204 (29.8) |
| Bullied in past month                |        |                        |
| 0 days                               | 5433 (73.9) | 705 (13.0) |
| 1 or 2 days                          | 1279 (17.6) | 265 (20.2) |
| 3-30 days                            | 608 (8.5)  | 179 (29.9) |
| Physically attacked in past year     |        |                        |
| 0 times                              | 4694 (61.6) | 639 (13.6) |
| 1 time                               | 1068 (14.1) | 189 (17.3) |
| 2 or more times                      | 1801 (24.2) | 371 (20.5) |
| In physical fight in past year       |        |                        |
| 0 times                              | 4636 (61.1) | 645 (13.9) |
| 1 time                               | 1353 (17.9) | 218 (16.3) |
| 2 or more times                      | 1557 (21.0) | 334 (21.0) |
| **Social-environmental factors**     |        |                        |
| Low peer support                     | 1223 (16.4) | 275 (22.2) |
| Parental emotional neglect           | 604 (8.0)  | 153 (24.7) |
| Parents never check home work        | 2530 (32.8) | 501 (19.7) |
| Parents disrespect privacy           | 903 (12.3)  | 169 (18.3) |
| Passive smoking in past week         | 3665 (50.0) | 674 (18.2) |
School truancy (past month)

| Days       | 0 days | 1-2 days | 3 or more days |
|------------|--------|----------|----------------|
|            | 5645 (74.8) | 1307 (17.8) | 550 (7.5) |
|            | 820 (14.5)  | 253 (19.0)  | 119 (22.1) |

Health risk behaviours

| Behaviour            | Unadjusted | Adjusted |
|----------------------|------------|----------|
| Current tobacco use  | 2226 (30.7) | 424 (18.6) |
| Current cannabis use | 916 (12.6)  | 177 (19.1) |
| Trouble from alcohol use | 788 (11.1) | 197 (25.1) |
| Ever sex             | 1256 (18.1) | 256 (20.4) |

Leisure time sedentary behaviour/day

| Hours | Unadjusted | Adjusted |
|-------|------------|----------|
| <3    | 5389 (70.9) | 787 (14.5) |
| 3-4   | 1285 (17.2) | 220 (16.8) |
| 5-8   | 580 (7.9)   | 111 (19.2) |
| > 8   | 296 (4.0)   | 76 (26.8)  |

Injury in past 12 months

| Times | Unadjusted | Adjusted |
|-------|------------|----------|
| 0     | 3909 (56.2) | 459 (11.7) |
| 1     | 1561 (23.0) | 273 (17.0) |
| 2 or more | 1422 (20.8) | 347 (24.6) |

Fruit and vegetable intake

| Serving/day | Unadjusted | Adjusted |
|-------------|------------|----------|
| <1          | 1199 (15.8) | 227 (19.2) |
| 1 or 2      | 2102 (27.8) | 345 (16.2) |
| 3 or 4      | 2111 (28.0) | 284 (13.7) |
| 5 or more   | 2103 (28.4) | 330 (15.3) |

Associations with psychological distress

In the adjusted logistic regression analysis, female sex, having no close friends, older age, bullying victimization, infrequently physically attacked, parental emotional neglect, parents never check home work, passive smoking, trouble from alcohol use, ever having sex, high sedentary behaviour, and having sustained a single or multiple serious injuries (past year) were associated with PD. In addition, adequate fruit and vegetable consumption was protective against PD (see Table 3).

Table 3: Associations with psychological distress among adolescents in Bhutan

| Variable                      | Unadjusted Odds Ratio (95% CI) | Adjusted Odds Ratio (95% CI) |
|-------------------------------|--------------------------------|------------------------------|
| **Socio-demographics**        |                                |                              |
| Age in years                  |                                |                              |
| 14 or less                    | 1 (Reference)                  | 1 (Reference)                |
| 15-16                         | 1.69 (1.52, 1.89)***           | 1.36 (1.13, 1.64)**          |
| 17 or more                    | 2.64 (2.20, 3.15)***           | 1.79 (1.34, 2.38)***         |
| Gender                        |                                |                              |
| Female                        | 1 (Reference)                  | 1 (Reference)                |
| Male                          | 0.61 (0.55, 0.68)***           | 0.49 (0.40, 0.58)***         |
| Locality                      |                                |                              |
| Urban                         | 1 (Reference)                  | 1 (Reference)                |
| Rural                         | 1.12 (0.89, 1.42)              | 1.07 (0.85, 1.34)            |
| **Social distress**           |                                |                              |
|                                      | Unadjusted OR (95% CI) | Adjusted OR (95% CI) |
|--------------------------------------|------------------------|----------------------|
| No close friends                     | 2.78 (2.40, 3.22)***   | 2.52 (1.92, 3.31)*** |
| Bullied in past month                |                        |                      |
| 0 days                               | 1 (Reference)          | 1 (Reference)        |
| 1 or 2 days                          | 2.02 (1.80, 2.27)***   | 1.35 (1.06, 1.71)*   |
| 3-30 days                            | 4.45 (3.86, 5.12)***   | 2.14 (1.56, 2.94)*** |
| Physically attacked in past year     |                        |                      |
| 0 times                              | 1 (Reference)          | 1 (Reference)        |
| 1 time                               | 1.62 (1.41, 1.86)***   | 1.29 (1.00, 1.66)*   |
| 2 or more times                      | 2.08 (1.85, 2.33)***   | 1.18 (0.89, 1.56)    |
| In physical fight in past year       |                        |                      |
| 0 times                              | 1 (Reference)          | 1 (Reference)        |
| 1 time                               | 1.19 (1.05, 1.34)      | 1.07 (0.85, 1.35)    |
| 2 or more times                      | 1.71 (1.50, 1.95)***   | 1.20 (0.93, 1.56)    |
| Social-environmental factors         |                        |                      |
| Low peer support                     | 1.54 (1.41, 1.69)***   | 1.19 (0.97, 1.47)    |
| Parental emotional neglect           | 1.83 (1.60, 2.09)***   | 1.51 (1.15, 1.99)**  |
| Parents never check home work        | 1.65 (1.45, 1.87)***   | 1.41 (1.19, 1.67)*** |
| Parents disrespect privacy           | 1.29 (1.17, 1.43)***   | 1.29 (0.96, 1.73)    |
| Passive smoking in past week         | 1.22 (1.11, 1.33)***   | 1.19 (1.02, 1.40)*   |
| School truancy (past month)          |                        |                      |
| 0 days                               | 1 (Reference)          | 1 (Reference)        |
| 1-2 days                             | 1.43 (1.31, 1.57)***   | 1.01 (0.81, 1.26)    |
| 3 or more days                       | 2.31 (1.96, 2.72)***   | 1.15 (0.83, 1.60)    |
| Health risk behaviours               |                        |                      |
| Current tobacco use                  | 1.76 (1.55, 2.00)***   | 1.15 (0.90, 1.46)    |
| Current cannabis use                 | 2.16 (1.76, 2.67)***   | 0.86 (0.62, 1.20)    |
| Trouble from alcohol use             | 2.46 (1.99, 3.05)***   | 1.38 (1.02, 1.87)*   |
| Ever sex                             | 1.55 (1.29, 1.85)***   | 1.30 (1.07, 1.57)**  |
| Leisure time sedentary behaviour/day |                        |                      |
| <3 hours                             | 1 (Reference)          | 1 (Reference)        |
| 3-4 hours                            | 1.39 (1.25, 1.56)***   | 1.10 (0.95, 1.27)    |
| 5-8 hours                            | 1.89 (1.70, 2.10)***   | 1.21 (0.88, 1.66)    |
| > 8 hours                            | 2.71 (2.34, 3.15)***   | 1.58 (1.08, 2.31)*   |
| Injury in past 12 months             |                        |                      |
| 0 times                              | 1 (Reference)          | 1 (Reference)        |
| 1 time                               | 1.76 (1.60, 1.93)***   | 1.41 (1.09, 1.82)**  |
| 2 or more times                      | 2.86 (2.57, 3.18)***   | 1.75 (1.41, 2.18)*** |
| Fruit and vegetable intake           |                        |                      |
| <1 serving/day                       | 1 (Reference)          | 1 (Reference)        |
| 1 or 2                                | 0.70 (0.60, 0.81)***   | 0.91 (0.71, 1.17)    |
| 3 or 4                                | 0.55 (0.47, 0.64)***   | 0.82 (0.63, 1.06)    |
| 5 or more                             | 0.71 (0.61, 0.83)***   | 0.73 (0.56, 0.96)*   |

***P<.001; **P<.01; *P<.05; CI=Confidence Interval

**Discussion**

This national study showed for the first time, the prevalence and correlates of PD in school adolescents in Bhutan. The prevalence of PD (15.8%) in this study was higher than in a study among adolescents in India (10.5%) [6], similar to Iran (17.7% ≥3 items of worthless, anxious, angeriness, confusion, and insomnia) had PD [9], but lower than in 15 years and older
persons in Bhutan (29.3%) [10], in four Asian countries (Laos, Mongolia, Nepal, and Sri Lanka) (32.9%, presence of any item: suicidal ideation, plan and suicide attempt, loneliness, sadness and anxiety) [7], among adolescents in Afghanistan (27.7%: ≥2 items of no close friends, loneliness, anxiety, suicidal ideation, and suicide attempt) [8]. PD seems to be common in Bhutan, calling for strategies and programmes to prevent and control PD within this adolescent population in Bhutan.

The study showed that being female increased the likelihood of PD, which was also found in some previous investigations [16,18]. Generally, “girls are more likely than boys to report internalising problems such as PD, depression, and anxiety.” [4,19]. The study showed that older age increased the likelihood of PD. Similar results were found in a study among adolescents in India [6]. Possible reasons for higher PD among older than younger adolescents include increasing demands, physical and psychosocial changes [4,20].

In line with former research findings [7,8,21], this survey showed that having social distress, such as having no close friends, bullying victimization and infrequently physically attacked increased the odds for PD. Students exposed to interpersonal violence victimization may worry about further or future victimization increasing PD. In addition, our study findings demonstrate that students who had been frequently bullied had the second highest odds for PD, which concurs with former research [22]. This finding may highlight the relevance of anti-bullying programme activities to ameliorate PD.

Several social-environmental factors (parental emotional neglect, parents never check home work, and passive smoking) were found associated with PD. These results are consistent with various previous investigations [7,14,23,24] and call for programmes improving parental support. A previous review provides evidence that “parental training and school-based interventions can reduce symptoms of common mental disorders in adolescents” [25].

In terms of health risk behaviours, trouble from alcohol use, ever having sex, high leisure-time sedentary behaviour, infrequent fruit and vegetable consumption, and having experienced single and multiple serious injuries increased the likelihood of having PD. These findings concur with previous studies [14,18,26-31]. Since this study did not assess the type of sedentary behaviour, for example, social media use, we are not able to show the potentially negative effects of social media use on PD [32]. In a systematic review among adolescents [33] (p.18) found that sedentary behaviour was associated with poor mental health and PD, which may be explained by “beneficial pathophysiological, social and general health effects of being active may be omitted when sedentary, which may have a negative impact on mental
health.” Another possible mechanism by which sedentary behaviour may increase PD is via inflammatory processes [34]. Possible reasons for the protective effect of fruit and vegetable consumption against PD may lie in the antioxidant and anti-inflammatory components of fruit and vegetables enhancing well-being [26,31]. The association between injury occurrence in the past 12 months and PD in the past 12 months may be explained by “the injury occurrence being considered a particularly impactful stressful life event, and experiences of stressful life events have been strongly associated with prospective anxiety symptom development” [35]. Based on a systematic review, “psychological and psychosocial interventions” might be effective in reducing PD among adolescents in low- and middle-income countries [36].

**Study limitations**

Study limitations include the self-report of the data, cross-sectional design, and the focus on school adolescents. An additional limitation was that the GSHS in Bhutan only assessed PD with two items which may not reflect a standardized scale nor a diagnostic interview.

**Conclusion**

Almost one in six participants reported PD in a nationally representative sample of school adolescents in Bhutan. Several risk factors, including female sex, having no close friends, older age, bullying victimization, infrequently physically attacked, parental emotional neglect, parents never check home work, passive smoking trouble from alcohol use, ever having sex, high sedentary behaviour, having sustained single or multiple serious injuries (past year) and inadequate fruit and vegetable consumption, were identified for PD, which can facilitate school health promotion.

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