

Title

Prevalence of depression and its correlates among undergraduates in Sri Lanka

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Abstract

Aims: There is a dearth of mental health research on undergraduates in Sri Lanka. This study examines the prevalence of depression in a sample of Sri Lankan undergraduates, their exposure to threatening life events and related predictors of their depression.

Methods: Responses of 4304 undergraduates were obtained on the Patient Health Questionnaire-9 and a measure of exposure to threatening life events, with binary logistic regression models used to identify the demographic and life event correlates of depression.

Results: Diagnoses of 'Major' and 'Other' depression were obtained by 9.3% and 13.5% of undergraduates, respectively. Differences in likelihood of depression were seen within a number of demographic groupings, including faculty and year of study, age category, residence and ethnicity, although no differences were seen between genders. Those exposed to a higher number of life events had a higher likelihood of depression. [Family deaths, romantic break-ups, problems with a close associate, educational difficulties, unemployment, harassment by another student and domestic violence were all associated with a higher likelihood of depression.](#)

Conclusions: Depression is prevalent in these undergraduates and universities need to develop services to assist them. Services are also needed to assist those dealing with certain life adversities, some of which might be related to the undergraduate experience, as they might be associated with a higher risk of depression among these students.

Key words: depression, prevalence, undergraduate, university, life events, Sri Lanka

Highlights

- Over a fifth of the undergraduate population examined had a diagnosis of depression
- Likelihood of a diagnosis of depression was equal between the genders
- Odds of depression are higher in those exposed to more threatening life events
- A higher likelihood of depression was seen in relation to a number of these events

1. Introduction

The prevalence of depression in undergraduates is high across many countries (Ibrahim et al., 2013; Steptoe et al., 2007) . Despite this, their low rates of help-seeking (Blanco et al., 2008; Eisenberg et al., 2007a; Zivin et al., 2009) and evidence that depression is related to other problems in undergraduates, such as suicidal ideation and attempts (Garlow et al., 2008; Kisch et al., 2005), substance abuse (Buckner et al., 2007; Mushquash et al., 2013), acute infectious illnesses (Adams et al., 2008) and poor academic achievement (Andrews and Wilding, 2004; Hysenbegasi et al., 2005), highlight the need to identify those affected by depression to provide them with appropriate interventions.

In attempting to identify undergraduates at risk of depression, studies have examined if any demographic characteristics such as their gender (Eisenberg et al., 2007b; Said et al., 2013; Wong et al., 2006; Young et al., 2010), age and study level (Ibrahim et al., 2013) or study field (Bayram and Bilgel, 2008; Dyrbye et al., 2006; Ovuga et al., 2006) are correlates of depression. However, these findings are not consistent. The differences in prevalence of depression in undergraduates in various countries, which might be associated with variations in the related cultural beliefs and socio-political and economic situations (Khawaja et al., 2013; Mikolajczyk et al., 2008; Steptoe et al., 2007), highlight that examination of the potential correlates of depression must be considered within the framework of such contextual differences.

The relationship between undergraduate depression and exposure to negative life events has also been extensively examined, with many studies showing higher prevalence and severity of depression in those exposed to such events (Amritha et al., 2013; Clay et al., 1993; Kuiper et al., 1986; McLennan, 1992; Rubio and Lubin, 1986; Vrana and Lauterbach, 1994).

Furthermore, exposure to multiple as opposed to single negative life events is associated with an increased risk of the onset of depression and severity of symptoms (Patton et al., 2003;

Vrana and Lauterbach, 1994). However, the undergraduate's perception of the impact of the event might be a stronger predictor of negative wellbeing than the frequency of event-exposure (Burns and Machin, 2013).

There is a dearth in research examining the mental health of undergraduates in Sri Lanka and their exposure to negative life events. One study found that psychological distress of these undergraduates (40%) was significantly higher than their age-matched peers (26%) (Kuruppuarachchi et al., 2002). High rates of depression symptomatology were also seen in undergraduates in a Sri Lankan university, where their mean depression scores were higher than the standard cut-off for elevated depressive symptoms (Torabi and Perera, 2006). An examination of the first year students in this cohort found that elevated depressive symptoms were extremely high, and significantly higher in medical students (76%) than their non-medical peers (60%) (Perera, 2011). These findings and the scarcity of research highlight the need for more current research examining depression among the general undergraduate population in Sri Lanka. Furthermore, although some studies have examined these undergraduates' exposure to negative life events such as verbal, emotional, sexual and physical abuse (Haj-Yahia et al., 2009; Jayasinghe et al., 2004; McCaslin et al., 2009; Premadasa et al., 2011), these have not examined the effects of such exposure on depression, highlighting another area requiring research. Observations that undergraduates from less developed countries experience more stressful life events further indicate the importance of such an examination (Vázquez et al., 2014; Vazquez et al., 2007).

This study examines the prevalence and demographic correlates of depression among undergraduates at the University of Colombo, one of the largest universities in Sri Lanka (University Grants Commission Sri Lanka, 2013). It also examines the relationship between these undergraduates' exposure to negative life events and a diagnosis of depression.

2. Materials and methods

2.1 Participants

Undergraduates in all years of study at five of the six faculties of the University of Colombo, namely the Faculties of Arts, Management and Finance, Law, Medicine and Science and an affiliated institute of the University, the School of Computing, participated. Data was not collected from the Faculty of Education as second and third year students of this faculty attend lectures at the Faculty of Arts and it was expected that these students would be represented during data collection.

2.2 Measures

This study is part of a larger depression literacy survey done among the study population. The survey questionnaire was in two versions; as English-Sinhala, and English-Tamil, with both versions containing the questions in English and participants able to use the version with their preferred translation. The present study utilised the following measures.

Participant information: Participants' demographic details including gender, age, ethnicity, religion, district and place of residence, faculty and year of study were examined.

Measure of depression: The Patient Health Questionnaire-9 (PHQ-9) a nine-item measure, based on the nine diagnostic criteria for Depressive Disorders in the Diagnostic and Statistical Manual of Mental Disorders-IV, was used (Kroenke and Spitzer, 2002). If, in the preceding 2 weeks, five or more symptoms were present for at least 'more than half of the days' a diagnosis of Major Depression is given, while if this is so for two to four of the symptoms, a diagnosis of 'Other' Depression is given. However, for both diagnoses, either the symptom of depressed mood or anhedonia must be present. Furthermore, if the symptom on suicidal thoughts is at all present, it is considered in the symptom count for a diagnosis. While scores of 1- 4 indicate minimal depression, scores of 5, 10, 15 and 20 represent the minimum thresholds of mild, moderate, moderately severe and severe depression

respectively. The PHQ-9 has been a reliable and valid measure for clinical and general populations (Kroenke et al., 2001; Martin et al., 2006) The Sinhala and Tamil validated versions of the PHQ-9 (Institute for Research and Development, 2007) were used for the two versions of the questionnaire.

Exposure to negative life events: The twelve-item List of Threatening Experiences (LTE) which has good reliability and validity (Brugha et al., 1985; Brugha and Cragg, 1990) was adapted. Items relevant to an undergraduate population (Roberts and Kassel, 1997) and the Sri Lankan context (Catani et al., 2008; Haj-Yahia et al., 2009; Jayasinghe et al., 2004; McCaslin et al., 2009; Miller et al., 2009; Premadasa et al., 2011) were added, leading to an 18-item measure. These additional items included difficulties with studies and exams, abuse by a student or staff member at university and exposure to natural disasters, war, armed conflict or terrorism and domestic violence. A rating scale was incorporated to measure if the events occurred in the past year and how ‘upsetting’ these events were (Roberts and Kassel, 1997), with items rated as follows; did not happen, happened - not upsetting, happened - moderately upsetting, happened - extremely upsetting, not relevant. If an event had occurred more than a year ago but feelings of distress were still present, participants rated how upsetting the event was in the past year.

2.3 Procedure

The composite depression literacy surveys were distributed, completed and returned during lectures.

2.4 Ethics approval

Approval was obtained from the Ethics Review Committees of the Faculty of Medicine, University of Colombo and University of Melbourne.

2.5 Statistical analysis

Missing responses permitted, were 10% (1 item) for the PHQ-9 and 20% (3 items) for the LTE (when using total event count). These were considered to indicate an absence of the relevant symptom or experience.

Mann-Whitney U tests found significant differences ($p < .05 - .001$) in PHQ-9 item-ratings between the Sinhala-English and Tamil-English versions for six of the nine items, including the item on low mood. These differences were not unidirectional; either indicating differences between the item translations or differences in the symptom profiles of the two language groups. There was good internal consistency of the PHQ-9 for both the Sinhala-English and Tamil-English versions, with Cronbach alphas of .86 and .82. The results reported here are for both versions combined, as results were similar even if the Tamil-English version responses ($n=167$) were excluded.

Prevalence of depression was estimated using percent frequencies and 95% confidence intervals. Separate binary logistic regressions were used to examine the relationship between a diagnosis of depression (DV) and participants' demographic variables and exposure to life events (IVs). Life events were analysed in relation to, 1) total frequency of exposures (dummy code of 0 for no exposure) and 2) exposure to each event, while controlling for demographic variables. Life event-gender interactions were then entered into the latter model. Subsequently, a gender-wise analysis of the relationship between life events and depression was performed (controlling for demographic variables).

Results

2.6 Demographic characteristics

Almost all of those who were approached for the survey participated. A total of 4304 valid responses were obtained for the PHQ-9. Table 1 presents the respondents' demographic information.

2.7 Depression in undergraduates

A diagnosis of 'Major Depression' was obtained by 9.3% of respondents (95% *CI* [8.4, 10.2], *n*= 401) while 13.5% (95% *CI* [12.5, 14.5], *n*= 581) obtained a diagnosis of 'Other Depression'. From those who obtained either diagnosis, levels of depression severity in the sample (*n*=4304) were minimal for 0.2% (*n*=9) mild for 7.6% (*n*=326), moderate for 8.6% (*n*=368), moderately severe for 4.4% (*n*=190) and severe for 2.1% (*n*=89).

2.8 Correlates of depression

Table 1 shows the demographic predictors of a depression diagnosis ('Major' and 'Other' combined). There were higher odds of depression in Law and Management and Finance Faculty students (compared to Arts, including Education), in second year students (compared to first year), in those aged 24 and above (compared to 18-20 years) and those living in a hostel (compared to at home). Odds of depression were lower in fourth year students and those of Tamil ethnicity (compared to Sinhalese; However, such lower odds of depression was not significant when only the Sinhala-English version was analysed). There was no association between gender and a diagnosis of depression.

2.9 Exposure to negative life events

Likelihood of depression was significantly higher in those exposed to single or multiple events, increasing by 2.06 (95% *CI* [1.41, 2.99], *p*< .001) for single event-exposures and by 7.15 (95% *CI* [4.16, 12.31], *p*< .001) when exposed to more than 50% of the events. Figure 1

shows a relatively steady increase in the likelihood of depression with increased event-exposure, except in instances of exposure to nine events.

Table 2 presents the degree to which respondents were upset by each experience (instances of exposure) and the likelihood of depression in instances of event-exposure. While educational difficulties were upsetting for more than 30%, it was associated with higher odds of depression, as for family deaths, romantic break-ups, problems with a close associate, domestic violence, unemployment and harassment by another student. Significant gender-life event interactions were only seen for unemployment (OR=0.37, 95% CI [0.16, 0.84], $p=.02$) and harassment by another student (OR= 0.64, 95% CI [0.42, 1.00], $p=.049$), with there being significant, higher odds of depression in males exposed to both the former (OR= 3.67, 95% CI [2.09, 6.46], $p<.001$; females, OR= 1.36, 95% CI [0.73, 2.55], $p=.33$) and latter (OR= 1.78, 95% CI [1.24, 2.55], $p<.002$; females; (OR=1.19, 95% CI [0.91, 1.54], $p=.20$) events. Problems with the law and the death of a close relative were associated with lower odds of depression, despite the latter event being distressing for over a quarter of respondents. Financial difficulties were also upsetting for almost a quarter of respondents although it was not associated with a significantly increased likelihood of depression.

3. Discussion

3.1 Depression in undergraduates

Over 20% of the undergraduates had depression as per the PHQ-9, with over 9% obtaining a diagnosis of Major depression, supporting previous findings indicating high levels of psychological distress and depression symptomatology in undergraduates in Sri Lanka (Kurupparachchi et al., 2002; Torabi and Perera, 2006). Such a situation and the lack of formalised mental health services for undergraduates in Sri Lankan universities stress the

urgent need for developing appropriate response mechanisms to identify and assist distressed undergraduates.

Unlike the many studies showing a higher prevalence of depression among females (Ibrahim et al., 2013; Said et al., 2013; Steptoe et al., 2007; Young et al., 2010) the present study supported the absence of such a difference (Eisenberg et al., 2007b; Ovuga et al., 2006). This is in line with previous findings of no difference in psychological distress or elevated depressive symptomatology in undergraduates in Sri Lanka (Kuruppuarachchi et al., 2002; Torabi and Perera, 2006), suggesting that both males and females are equally at risk of depression in this population.

However, findings that depressive symptomatology is higher in Medical as compared to Humanities students (Torabi and Perera, 2006) was not supported. Instead, likelihood of depression was higher in those in the Faculties of Law and Management and Finance. These findings should be explored further.

In comparison to the first years, the higher likelihood of depression among second years but the lower likelihood among fourth years, aligns with many previous studies (Ibrahim et al., 2013), showing a trend of higher rates of depression among junior as compared to senior undergraduates. However, our findings that likelihood of depression is higher in older undergraduates, contrasts with previous findings in Sri Lanka (Torabi and Perera, 2006) . This suggests examining the impact of two different categories of life stressors on undergraduate depression. Firstly, the effects of the numerous life transitions confronting these undergraduates during their early years of study, including adjusting to a new environment and social network, changes in the education system and medium of instruction from Sinhala or Tamil to English, might explain the higher likelihood of depression among junior undergraduates. Secondly, the effects of distress about future prospects and economic

stability, which might be more of a concern for older undergraduates, might be relevant when examining their higher likelihood of having depression.

Depression being more likely in those living in hostels, also observed previously (Kurupparachchi et al., 2002; Torabi and Perera, 2006), suggests examination of whether the array of stressors that undergraduates face when living away from their home negatively impact their mental health. As many undergraduates reside in hostels maintained by the university, it is necessary for university authorities to be vigilant of the mental health status of these students.

Given that only 50% of respondents of the Tamil-English version were Tamil, with 41.6% being Sri Lankan-Moor, and the absence of any significant difference in the likelihood of depression in the latter group (compared to the Sinhalese), suggests that the lower odds of depression among the Tamil respondents might not be due to differences in the Sinhala and Tamil translations of the PHQ-9, but due to ethnic differences in depression. However, as such significantly lower odds of depression in Tamil respondents is not evident when only analysing the Sinhala-English responses (52.8% of them responded to this version), where it is likely that they only relied on the English version of the PHQ-9, further exploration of whether there are in fact ethnic differences in depression is recommended.

3.2 Depression and exposure to life events

This study demonstrates the increased risk of depression among undergraduates exposed to multiple adversities (Figure 1). While depression in these undergraduates was associated with many life events, the findings caution university authorities that stressors which could be regarded as common to this cohort, such as educational or romantic relationship difficulties, are also associated with a higher risk of depression. Hence, timely assistance for those showing high levels of distress due to these problems is needed. The incidence of harassment

of students in Sri Lankan universities through ragging (Premadasa et al., 2011) and the higher likelihood of depression among those harassed by other students, is another matter requiring immediate attention.

The findings support research demonstrating that mostly, gender does not influence the relationship between event-exposures and depression (Kendler et al., 2001). However, males were more vulnerable to depression in instances of unemployment and harassment by another student. Hence, there might be certain events, that are linked to gender-related roles and traits, which make a particular gender more vulnerable to depression. More research on the existence of such a gender-event-mental health relationship (Gore et al., 1993; Kessler and McLeod, 1984), would guide the development of strategies for helping these undergraduates to cope with their stressors, which might be gender-dependant. For example, males may deal with harassment by other students differently from females.

Limitations

These findings must be considered in light of the limitations of the study. The cross-sectional design does not allow for any causal interpretations of depression in undergraduates.

Furthermore, our knowledge is limited about whether depression was present in undergraduates prior to university admission or if there were temporal changes, or whether negative life events preceded depression. The methodology was limited in the ability to rule out if there were physical causes of depression, normal bereavement or a history of a manic episode, which is required prior to making a clinical diagnosis of depression. Contextually, the university and the country were facing a dengue epidemic at the time of data collection, with several students becoming ill and a second year student of the Law Faculty passing away. Furthermore, this study was only conducted among undergraduates of one university in Sri Lanka. Despite these limitations, the large sample used, including students from diverse

disciplines, all years of study and provinces in the country, and its reflection of the demographic composition of the undergraduate population in Sri Lanka (University Grants Commission Sri Lanka, 2013), suggest that these findings can serve as a useful estimate of depression in this population cohort.

4. Conclusions

Universities need to respond to depression in undergraduates, present in more than one fifth of the population and with similar likelihood of occurrence in both genders. *While a number of adversities were associated with depression*, some of these might be directly or indirectly associated with the university experience, highlighting the need for services to help undergraduates to resolve these problems. Furthermore, those distressed by issues such as educational or romantic difficulties must not be disregarded as experiencing normal life stressors, as they might be at higher risk of depression.

Conflict of interest

None

Contributors

SDA was the primary investigator and designed the study, managed data collection and analysis under the guidance and supervision of AFJ and NJR. SDA prepared the manuscript with inputs from AJM and NJR. [All authors have approved the final manuscript.-to be added]

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Tables and figure captions



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