Trends in Depression Among Undergraduate Students at a South African University, 2016–2019

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Abstract

University students are particularly vulnerable to mood disorders. This vulnerability may be increasing, with recent investigations observing sharp rises in the prevalence of depression and suicidal ideation. Moreover, studies indicate that there are sex differences in students' symptom manifestation (e.g., females are more likely to be diagnosed with depression and exhibit less suicidal ideation than males) and that first-year undergraduates tend to show more depression and suicidal ideation than students in subsequent years. Few studies have focused on trends in depression and suicidal ideation among university students in low- and middle-income countries (LAMICs), such as South Africa. Because students in LAMICs are more likely to be exposed to crime and trauma, and less likely to have easily-accessible mental health services, the risk for depression is high. Hence, there is a need for research investigating depression and suicidal ideation trends in LAMICs. This study aimed to describe these trends, using data from University of Cape Town undergraduate students sampled between 2016 and 2019. We analysed both archival ($n = 2593$) and original ($n = 499$) Beck Depression Inventory-Second Edition (BDI-II) reports. As expected, depression and suicidal ideation scores increased significantly over time. Analyses also detected significant sex differences (e.g., females had higher BDI-II scores across the timespan and within each year). First-year students reported more depression and suicidal ideation than students in subsequent years. These findings suggest that preventative interventions during sensitive periods of undergraduate study are imperative and provide a foundation for treatment strategies tailored to South African students.

Keywords: depression, suicidal ideation, university students, trends, Beck Depression Inventory–Second Edition

The clinical syndrome of Major Depressive Disorder (MDD), commonly referred to as depression, is characterised by the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association [APA], 2013) as consisting of core symptoms of low mood and loss of interest in usual activities, present for most of the day across at least a 2-week period. Globally, depression has the highest prevalence of all psychological/psychiatric disorders (Naghavi, 2019). Moreover, the number of people diagnosed with the disorder appears to be increasing. For instance, estimates from the World Health Organization (WHO) suggest an 18.4% global rise in depression between 2005 and 2015, with approximately 300 million people diagnosed at the end of that period (Bretschneider et al., 2018). South Africa has not been spared this epidemic: A national household survey estimated an increase in the prevalence of depression from 22.31% in 2010 to 26.05% in 2015 (Mungai & Bayat, 2019; Todd & Teitler, 2018).

These statistics have led epidemiologists to predict that depression will be second only to cardiac disease on the International Burden of Disease ranking table by 2020 (Mulder, 2008; Mungai & Bayat, 2019). Research aimed at finding solutions through prevention, increasing numbers of treatment facilities, and de-stigmatisation operations are unable to keep pace with what now appears to be a global mental health crisis (Todd & Teitler, 2018).

The literature reviewed below highlights the general increase in prevalence of depression, with specific reference to its impact on South African university students. In reference to this literature, the purpose of this study was to gain a refined understanding of recent trends in depression at South African universities. We used the particular patterns of symptoms, sex-specific experiences, and relations between year of study and symptomatology as lenses through which to delineate the experience of depression among students.

An Epidemic of Depression

MDD is occasionally termed a "disease of modernity" (Hidaka, 2012, p. 206) as its prevalence has increased over time due to rising life expectancy, especially in highly industrialised countries. These societies are often marked by a noxious environment of economic inequality, social isolation, loneliness, and competition for financial security. Exposure to such environmental factors increases the risk of depression (Bretschneider et al., 2018).

Depression prevalence is amplified further because it is often comorbid with, or a secondary feature of, other psychiatric diagnoses. One such diagnosis that is particularly relevant

in the South African clinical context is posttraumatic stress disorder (PTSD). Because most South Africans will be exposed to at least one traumatic event during their lifetimes, and because rates of violent crime are much higher than international averages, people in this country may be at a relatively higher risk for PTSD, and, concomitantly, higher rates of MDD (Bantjes, Kagee, McGowan, & Steel, 2016; Hatcher et al., 2018; Mall et al., 2018; Todd & Teitler, 2018).

Depression and Suicidal Ideation in University Students

Even within this epidemic of depression among the general population, the vulnerability of university students to mood disorders is concerning. A World Mental Health Survey that gathered data from 17 countries (including Nigeria, Colombia, Germany, and Italy) indicated that the lifetime prevalence of MDD among students was 10–85%, compared to 3–21% for the general population of similarly-aged individuals (Cavanagh, Caputi, Wilson, & Kavanagh, 2016). On a more local level, the Caring University Project found prevalence rates of 24.68% in students from 18 universities across eight African countries (Schreiber, 2018).

University students may be particularly vulnerable to diagnoses of MDD because they face high levels of academic, interpersonal, and financial stress, and may lack sufficient resources (e.g., social support and access to effective coping strategies) to manage those challenges (Bantjes et al., 2016; Ghaedi & Kosnin, 2014; Young & Campbell, 2014). Furthermore, undergraduate students are usually within the age range (18–24 years) that defines a sensitive period within which mood disorders might manifest (Mall et al., 2018). One illustration of this vulnerability, especially at the beginning of university, emerges from a study reporting that one-sixth of first-year students ($N = 686$) from Stellenbosch University reported having experienced depression during the previous year (Mall et al., 2018). Young and Campbell (2014) reported greater overall wellbeing in South African postgraduates compared to undergraduates, also suggesting increased vulnerability in the beginning university years. These studies are indicative of a pattern of increased vulnerability among undergraduates, especially those in relatively early years of study.

Adding to this concern is the well-documented association between depression and suicidal ideation (i.e., cognitions about death and a will to die; Sivertsen et al., 2019). Kirsch, Doerfler, and Truong (2015) reported that 55% of their sample of 540 American university students reported a history of suicidal thoughts, and 12% had attempted suicide. Similarly, Bantjes and colleagues (2016) reported that South African students had a higher than average

(compared to the national population and to international student populations) rate of suicidal ideation (25%), predicted most reliably by depressive symptoms. Additionally, those researchers found an association between prior experiences of trauma and a history of suicidal ideation. Given that South Africans are at high risk, as previously mentioned, for exposure to both interpersonal (e.g., sexual violence) and community (e.g., violent crime) trauma, this association is cause for concern (Hatcher et al., 2018; Mall et al., 2018; Sui et al., 2018; Todd & Teitler, 2018).

Left untreated, depression leads to reduced quality of life. The disorder has cognitive consequences (e.g., deficits in higher-order executive functioning) that might compromise academic performance and lead to increased risk of failing courses or dropping out of university altogether (Cavanagh et al., 2016; Ibrahim, Kelly, Adams, & Glazebrook, 2013; Mungai & Bayat, 2019). It has further negative consequences for psychosocial development and interpersonal relationships and interferes with activities of daily living (Beiter et al., 2014; Cavanagh et al., 2016). Hence, experiencing depression as an undergraduate student can have a lifelong impact on the likelihood of successful social relations and career advancement.

Sex-Specific Experiences of Depression and Suicidal Ideation

A large body of literature suggests depressive symptoms tend to manifest differently depending on sex identity experiences (see, e.g., Cupito, Stein, & Gonzalez, 2014; Lamis & Lester, 2013; Toprak, Cetin, Guven, Can, & Demircan, 2011). The consensus among researchers regarding sex-specific experiences of depressive symptoms is that the important differences do not lie in prevalence rates but are instead observed in patterns of symptom expression (Makhubela & Debusho, 2016; Mungai & Bayat, 2019). Females are more likely to exhibit tearfulness, fear, and appetite changes, as well as negativity across cognitions, self-evaluations, and affect, whereas males tend to exhibit concentration problems and internalised emotional difficulties resulting in avoidance, numbing, and risk-taking behaviour (Cavanagh et al., 2016). These differing patterns mean that, due to the way diagnostic symptom scales are focused and the differences in help-seeking patterns, females are twice as likely as males to be diagnosed with depression (Schreiber, 2018; Tomlinson, Grimsrud, Stein, Williams, & Myer, 2009).

Studies similarly suggest there are sex differences in the presentation of suicidal ideation. Mungai and Bayat (2019) reported that females are at a higher risk of living in fear of victimisation compared to males and are therefore more likely to exhibit suicidal ideation.

However, males are more likely to exhibit suicidal intention (Twenge, Cooper, Joiner, Duffy, & Binau, 2019).

Summary, Rationale and Specific Aims

Concerns about the mental health of South African university students have increased in recent years, especially following a series of high-profile campus suicides (Schreiber, 2018). Furthermore, undergraduate education is a particularly sensitive period in an individual's life in terms of predicting short-term academic success and long-term occupational achievement and life adjustment. Nonetheless, few published research studies have focused on depression and suicidal ideation in South African students. As we note in the literature review above, high levels of predisposing factors for depression and subsequent suicidal ideation in South African students mean it is unsurprising that there has been a rise in the prevalence of depression and increased rates of suicidal ideation in that population. Studying trends in students' mental health is crucial for understanding what patterns might exist in prevalence rates and symptom presentation in the South African cohort. Given the intersection of increased stress and demands placed upon students and the increased research into their mental health, it is of paramount importance to gain a nuanced understanding of these experiences. Although a small body of research suggests a higher prevalence of depression in South African students than in the general population, few studies specifically explore year-by-year trends in symptom presentation. This study provides a trends analysis of suicidal ideation alongside depressive symptoms as these have been shown to reliably predict one another. Our study is a multifactor exploration of the patterns of depression across time, sex, symptom clusters, and year of study.

The primary aim of this study was to describe trends in the presence and presentation of depressive symptoms and suicidal ideation in undergraduate students at a South African university over the period 2016–2019. A secondary aim was to investigate how individual differences in self-identified sex and current year of study influence these trends. Although the study is largely exploratory and descriptive, our analyses tested these specific predictions (all of which are based on previous findings in the literature; Bantjes et al., 2016; Mungai & Bayat, 2019; Twenge et al., 2019; Young & Campbell, 2014):

(1) Over the 4-year period, there is an increase in (a) the prevalence of depressive symptoms, (b) the severity of depressive symptoms, (c) the prevalence of suicidal ideation, and (d) the severity of suicidal ideation.

(2) Students who identify as male present with more performance difficulty symptoms (e.g., concentration difficulties) as well as with more suicidal ideation, whereas those who identify as female present with more negative attitude (e.g. pessimism) and somatic complaints symptoms (e.g., crying), and with less suicidal ideation;

(3) Students in their first year of undergraduate study present with more depressive symptoms and suicidal ideation than those in subsequent years of study.

Methods

Design and Setting

The research used a retrospective and cross-sectional exploratory / relational design. We analysed both archival data (i.e., data from University of Cape Town [UCT] research studies that were conducted between 2016 and 2018 and that administered the BDI-II to undergraduate students) and the original data (i.e., data we collected, using online questionnaire administration, from the current [2019] cohort of UCT undergraduate students). The study was granted ethical clearance by the UCT Department of Psychology's Ethics Committee, reference number PSY2019-029 (Appendix A).

Participants

Archival data. We searched the OpenUCT database (http://www.psychology.uct.ac.za /psy/graduate programmes/honours/projects; http://open.uct.ac.za/handle/11427/29115) for postgraduate research conducted by individuals affiliated with the UCT Department of Psychology for studies that administered the BDI-II to UCT undergraduate students. We set the search limits for the period 2016–2018, and used the keywords *depression*, *depression in students*, *Beck Depression Inventory*, and *BDI-II*. Moreover, we manually searched Honours research projects produced within the UCT Department of Psychology since 2016 to determine whether any of those studies used the BDI-II as a screening or assessment measure. We contacted the authors of relevant studies and asked them to share their raw data.

Regarding eligibility criteria, we only gathered data from research studies that (a) were conducted within the UCT Department of Psychology, (b) administered the English version of the BDI-II to undergraduate students, (c) reported item-by-item BDI-II scores, and (d) reported information regarding participants' sex identity and year of study.

Current data. We used convenience sampling, implemented via the UCT Department of Psychology's Student Research Participation Program (SRPP), to recruit 499 undergraduate

students. Our sole eligibility criterion was that all participants were aged 18–24 years. We limited participation to individuals within this age range because this is a sensitive period within which mood disorders commonly manifest (Bantjes et al., 2016; Ghaedi & Kosnin, 2014; Mall et al., 2018; Young & Campbell, 2014). Furthermore, restricting the sample to this age range allowed for comparison with other studies that have been conducted on depression in university students (e.g., Cavanagh et al., 2016; Mall et al., 2018; Schreiber, 2018). We made no exclusions based on race or sex because the BDI-II has shown measurement and factorial invariance across race- and sex-based groups in samples of South African students (Makhubela, 2016; Makhubela & Debusho, 2016).

Power analysis. We used G*Power 3.1. software (Faul, Erdfelder, Buchner, & Lang, 2009) to estimate the appropriate sample size for the current study. Given parameters of analysis = ANOVA: repeated measures, within-between interaction, effect size (f^2) = .15 (small), α = .05, power ($1 - \beta$) = .95, and number of groups = 2 (male, female), number of measurements = 4 (2016, 2017, 2018, 2019), correlation among repeated measures = 0.5, nonsphericity correction = 1, the software suggested a sample size of N = 98 would be sufficient. After accounting for the division of this sample size over the 4 years (2016–2019) under consideration, we needed to recruit 25 participants for 2019. Hence, the study was adequately powered.

Measures

Sociodemographic questionnaire. As part of the current data collection, we administered a short self-report sociodemographic questionnaire which collected information about race, sex, age, language, and education level (Appendix B). Although these data were not used as exclusions or as predictors in the main analysis, other than the fact that only participants from SADC countries were retained, they are useful for further research.

Beck Depression Inventory-Second Edition (BDI-II). This was the main instrument in the study. This 21-item self-report instrument (Beck, Steer, & Brown, 1996; Appendix C) assesses the presence and severity of depressive symptoms in clinical and non-clinical samples. The DSM-5 suggests the BDI-II as the recommended depressive scale (Burneo, Bowden, & Simpson, 2016).

Each of the instrument's items enquires about a specific depressive symptom and consists of four statements. The respondent is asked to choose the statement that most accurately describes their mental state over the previous 2 weeks. A score of 0 (corresponding to no

symptom presence), 1 (symptom present and of mild intensity), 2 (symptom present and of moderate intensity), or 3 (symptom present and of severe intensity) is assigned. Hence, a respondent's total score can range from 0–63. The following cut-off scores were given by Beck and colleagues (1996) to differentiate between severity levels: 0–13 = minimal depression; 14–19 = mild depression; 20–28 = moderate-severe depression, and 29–63 = severe depression.

Regarding psychometric properties, a meta-analysis by Erford, Johnson, and Bardoshi (2016) reported excellent cumulative test-retest reliability (r = .93) and high internal consistency when the BDI-II was administered to clinical (α = .91) and non-clinical (α = .88) samples. The same study found good convergent validity between the BDI-II and 43 other measures of depression (large effect sizes, estimated by Pearson's r correlation coefficient). The instrument appears to retain these excellent psychometric properties when used in samples of South African university students (Cavanagh et al., 2016; Makhubela, 2016; Makhubela & Debusho, 2016; Mall et al., 2018; Schreiber, 2018). For instance, Makhubela and Mashegoane (2016) showed that it displayed high levels of internal consistency reliability (Cronbach's α = .84) when tested in a sample of 919 students (mean age = 21.7 years) from the University of Limpopo and University of Pretoria.

Suicidal ideation measure. Item 9 on the BDI-II measures suicidal ideation. The four statements in response to the symptom 'suicidal ideation' are understood as levels of severity (Bantjes et al., 2016). A score of 0 indicates an absence of suicidal ideation, 1 indicates passive suicidal ideation (i.e., thoughts of killing oneself without an intention to complete the action), 2 indicates suicidal desire (i.e., the wish to commit suicide), and 3 indicates suicidal intention (i.e., if given the chance, the respondent would kill themselves). Bantjes and colleagues (2016) successfully used scores on this item as a predictor of depressive symptoms in South African university students.

Procedure

Archival data collection. Once we received BDI-II data from researchers willing to share them with us, we collated them in an MSExcel workbook. We found that datasets had different sample sizes and amounts of information to offer with regard to each hypothesis as not all researchers collected the same supporting information alongside BDI-II scores. The minimum information required was BDI-II total score data and the year of data collection.

Current data collection. Undergraduate students were invited to participate via a tab on the SRPP Vula site. Those who indicated an interest in participating received an email invitation (Appendix D). This email contained a link to a survey hosted on the SurveyMonkey platform (https://www.surveymonkey.com/). Participants could access the survey at any time of day, but had to complete it in one sitting and were not be able to exit and re-enter the survey. We ensured that each student could only complete the survey once. The first page of the survey was an informed consent document (Appendix E). The next page was the sociodemographic questionnaire, and the next was the BDI-II. After completing that instrument, the participant was presented with a debriefing form (Appendix F). This form reiterated the purpose of the study and provided contact and support information. After submitting the survey, the participant was emailed a proof of participation slip (Appendix G).

Data Management and Statistical Analyses

Database creation. We entered data related to the main independent variables (year the data were collected; participant's registered year of study and self-reported sex identity). In terms of dependent variables, each source dataset contained a *total BDI-II score* (possible range 0–63) and individual item scores. We used the latter to create four other dependent variables: *performance difficulty (PD) cluster* (sum of items 12–13, 15–16, and 18–20; possible score range 0–21), *negative attitude (NA) cluster* (sum of items 1–3, 7, 9, 11, 14, and 17; possible score range of 0–24), *somatic complaints (SC)* cluster (sum of items 4–6, 8, 10, and 21; possible score range 0–18), and *suicidal ideation* (item 9; possible score range 0–3). These clusters correspond with Beck and colleagues' (1996) proposed BDI-II factor structure.

Data management. We used SPSS (version 25.0) to analyse the data, with the threshold for statistical significance set at $p = .05$ unless indicated otherwise in the Results. Each hypothesis had different sample sizes as not all archival datasets recorded the same sample characteristics. No participants needed to be excluded from the archival data component because the search procedure only selected data that met the same exclusionary criteria as the current data component. No outliers were excluded from archival or current data, as extreme outliers (>3.5 *SD* from the mean of the total sample) comprised less than 1% of the total sample size.

Descriptive analyses. We created a full set of descriptive statistics documenting measures of central tendency and variation for each of the primary outcome variables, for each

year individually and for the entire study period. This description of the data distributions allowed us to test assumptions underlying subsequent inferential statistical tests.

Inferential analyses. We tested Hypothesis 1 (a year-by-year increase in the prevalence and severity of depressive symptoms and suicidal ideation) using one-way ANOVA and chi-squared tests of contingency. For the ANOVAs, which we used to test the prevalence aspect of the hypothesis, the fixed factor was year of data collection (2016, 2017, 2018, 2019) and the dependent variables were total BDI-II score, score on each symptom cluster (PD, NA, SC), and score on BDI-II item 9. We used the chi-squared tests to test the severity aspect of the hypothesis. We expected that students would display more severe depression over time (i.e., over time there would be a greater proportion of BDI-II scores in 29–63 range and a correspondingly smaller proportion in 0–28 range). Hence, the rows of that contingency table were coded as 0 (severely depressed; BDI-II score ≥ 29) and 1 (not severely depressed; BDI-II score < 29) and the columns were the years of data collection (2016–2019). Similarly, we expected that students would display more severe suicidal ideation over time (i.e., over time there would be greater proportion of BDI-II item 9 scores of 3 and a correspondingly smaller proportion of scores ranging from 0–2). Hence the rows of that contingency table were coded as 0 (suicidal intent; BDI-II item 9 score $= 3$) and 1 (no suicidal intent; BDI-II score ≤ 3) and the columns were the years of data collection (2016–2019).

We tested Hypothesis 2 (sex differences in depression symptom presentation and prevalence of suicidal ideation) using a series of 4 (year of data collection: 2016–2019) x 2 (sex: male, female) factorial ANOVAs. The dependent variables were total BDI-II score, score on each symptom cluster (PD, NA, SC), and score on BDI-II item 9. The significance level was adjusted to account for multiple comparisons; the corrected level was $p = .05 / 3 = .016$.

Finally, we tested Hypothesis 3 (differences in symptom prevalence and suicidal ideation across year of study) using an independent samples *t*-test. Here, the independent variable was self-reported year of study (coded as first year or not first year) and the dependent variables were BDI-II scores and item 9 scores.

Results

Sample Sociodemographic Characteristics

The total sample size was 3092 ($n_{2016} = 1260$, $n_{2017} = 956$, $n_{2018} = 377$, $n_{2019} = 499$). Participants had an average age of 20.44 years ($SD = 1.47$). All were from South African

Development Community (SADC) countries, with the vast majority being South African (Table 1). South African students ($M = 12.78 \pm 9.89$) scored significantly higher on the BDI-II than students from other SADC countries ($M = 10.85 \pm 8.76$), $t(2114) = 2.44$, $p = .015$, Cohen's $d = .21$. Across all datasets, we were able to gather (a) sex identity information for 2455 participants, with a female:male ratio of approximately 3:1, and (b) year-of-study information for 676 participants, with less than one-third of those being first-year students.

Table 1
Descriptive Statistics: BDI-II total scores across sex identity, country of origin, and year of study, 2016–2019 (N = 3092)

Variable	f (%)	M	SD
Sex			
Male	611 (24.89)	12.82	8.40
Female	1844 (75.11)	14.45	10.20
Country of Origin			
South Africa	1949 (92.15)	12.78	9.89
Zimbabwe	111 (5.25)	11.05	9.09
Namibia	15 (0.71)	11.47	7.61
Botswana	11 (0.52)	11.55	2.06
Lesotho	9 (0.43)	7.00	5.98
Mauritius	7 (0.33)	9.57	12.90
Swaziland	4 (0.19)	13.50	11.33
Zambia	4 (0.19)	6.75	8.54
Malawi	3 (0.14)	15.00	6.25
Mozambique	2 (0.09)	9.50	4.95
Year of Study			
1st Year	208 (30.77)	16.37	10.22
Not 1st Year	468 (69.23)	14.68	10.32

Note. BDI-II = Beck Depression Inventory - Second Edition.

Testing Hypothesis 1: Trends over time

Prevalence of depressive symptoms. The overall mean BDI-II total score across the years 2016–2019 fell within the range conventionally described as "minimal depression" (Beck et al., 1996). Of note, however, is that the mean score increased from year to year, so that in both 2018 and 2019 it fell within the range conventionally described as "mild depression." This year-on-year increase was statistically significant (Table 2), with post-hoc pairwise comparisons indicating that (a) 2017 scores were significantly higher than 2016 scores, $p = .010$, (b) 2018 scores were significantly higher than 2017 scores, $p = .002$, and (c) 2019 scores were significantly higher than 2018 scores, $p = .006$.

Table 2

Descriptive Statistics and Across-Year Comparisons: BDI-II total, symptom cluster, and suicidal ideation scores, 2016–2019 (N = 3092)

BDI-II Outcome Variable	N	M	SD	F	p	ESE
Total Score				43.71	$< .001$***	.041
2016	1260	10.53	8.65			
2017	956	11.82	9.98			
2018	377	13.89	10.34			
2019	499	16.03	10.39			
Total	3092	12.23	9.77			
Performance Difficulty				29.88	$< .001$***	.030
2016	1260	4.76	3.62			
2017	956	5.58	4.12			
2018	377	5.86	4.05			
2019	499	6.64	4.22			
Total	3092	5.45	3.98			
Negative Attitude				50.11	$< .001$***	.050
2016	1260	2.98	3.29			
2017	956	3.43	3.81			
2018	377	4.43	4.23			
2019	499	5.27	4.13			
Total	3092	3.65	3.81			
Somatic Complaints				34.53	$< .001$***	.030
2016	1260	2.79	2.72			
2017	956	2.81	2.94			
2018	377	3.72	3.13			
2019	499	4.12	2.98			
Total	3092	3.13	2.93			
Suicidal Ideation						
2016	1260	0.17	0.39	243.42	$<.001$***	.191
2017	956	0.17	0.46			
2018	377	0.31	0.57			
2019	499	0.88	0.85			
Total	3092	0.38	0.57			

Note. BDI-II = Beck Depression Inventory - Second Edition.
***$p < .001$. The Bonferroni-corrected p-value is .05 / 3 = .016.

Figure 1 is a graphic depiction of this trend. Of note is that the increase from 2017 onwards is relatively steeper than that from 2016 to 2017.
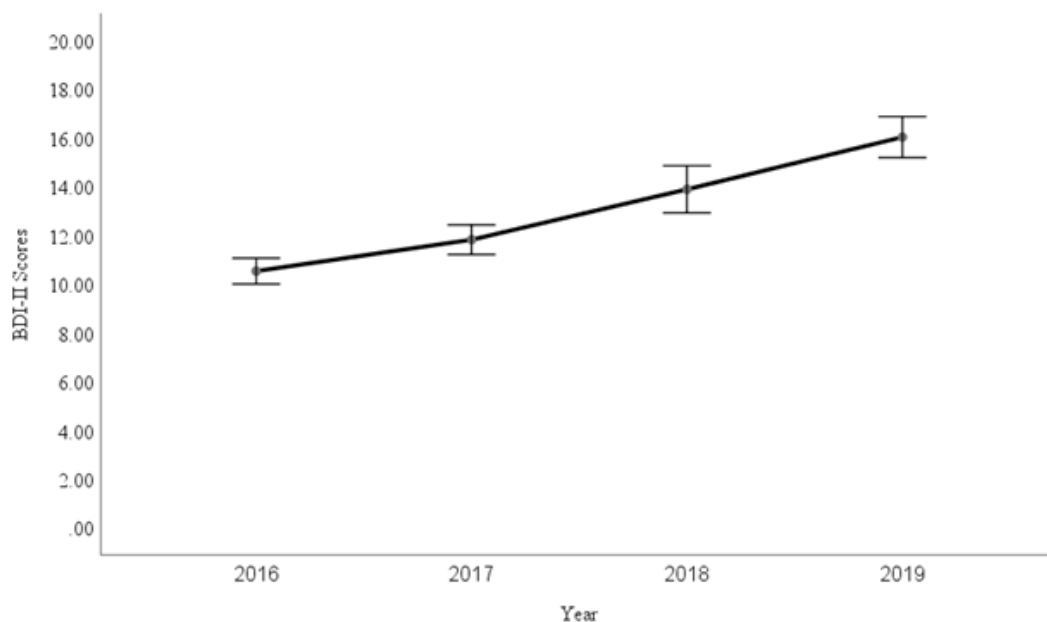
Figure 1. Beck Depression Inventory-Second Edition (BDI-II) total scores, 2016–2019 (n_{2016} = 1260, n_{2017} =956, n_{2018} = 377, n_{2019} = 499). Possible score range = 0–63. Error bars are 95% confidence intervals.

The descriptive data presented in Table 2 suggests a mean score increase from year to year in the PD, NA, and SC clusters. Analyses confirmed this trend was statistically significant for all three outcome variables. Post-hoc pairwise comparisons for PD indicated that (a) 2017 scores were significantly higher than 2016 scores, $p < .001$, (b) 2019 scores were significantly higher than 2018 scores, $p = .023$, and (c) 2018 scores were not significantly higher than 2017 scores, $p = 1.00$. Post-hoc pairwise comparisons for NA indicated that (a) 2017 scores were significantly higher than 2016 scores, $p = .030$, (b) 2018 scores were significantly higher than 2017 scores, $p = .001$, and (c) 2019 scores were significantly higher than 2018 scores, $p = .001$. Post-hoc pairwise comparisons for SC indicated that (a) 2018 scores were significantly higher than 2017 scores, $p < .001$, but that (b) 2017 scores were not significantly higher than 2016 scores, $p = 1.00$, and (c) 2019 scores were not significantly higher than 2018 scores, $p = .235$.

Severity of depressive symptoms. Figure 2 depicts the distribution of prevalence across severity ranges for the period under consideration. The proportion of students reporting minimal depressive symptoms declined from 69.44% in 2016 to 45.89% in 2019, whereas the proportion reporting severe symptoms increased from 3.81% in 2016 to 12.63% in 2019. Analyses

confirmed that this change in severity across time was statistically significant, $\chi^2(3) = 46.63$, $p < .001$.
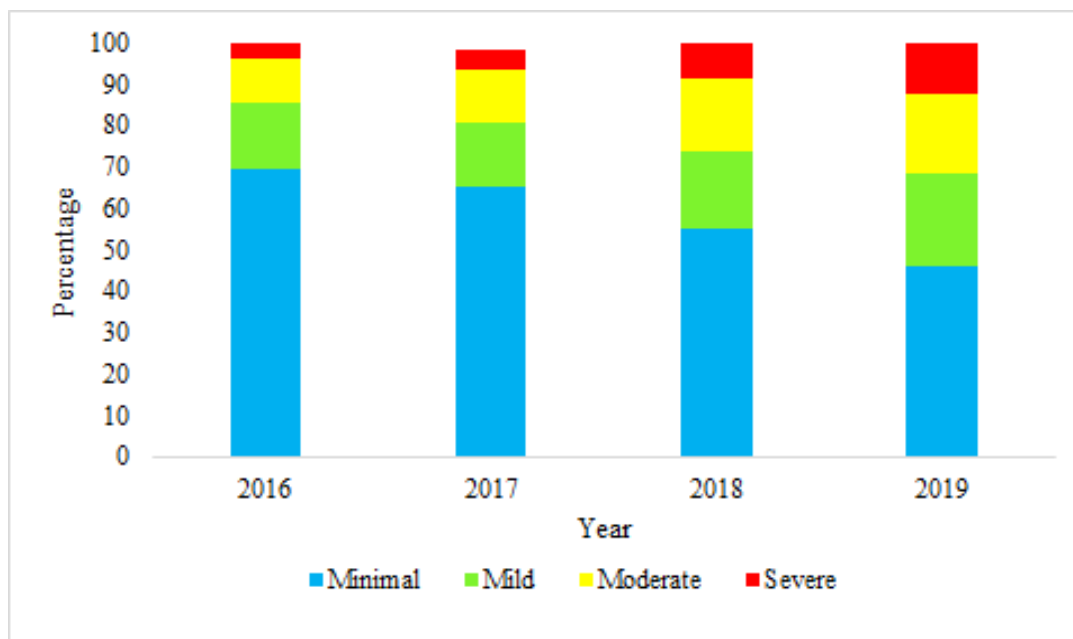

Figure 2. Distribution of BDI-II total scores for the period 2016–2019, categorized by the conventional score ranges: minimal depression = 0–13; mild depression = 14–19; moderate depression = 20–28; severe depression = 29–63 ($n_{2016} = 1260$, $n_{2017} = 956$, $n_{2018} = 377$, $n_{2019} = 499$).

Prevalence of suicidal ideation. The overall sample mean score on item 9 of the BDI-II indicated that, on average, participants in this sample did not self-report suicidal desire or suicidal intent (see Table 2). However, using the data presented in that table, the omnibus ANOVA detected a significant main effect of year on this score, $F(3, 3088) = 243.42$, $p < .001$, $\eta_p^2 = .191$. Post-hoc pairwise comparisons indicated that suicidal ideation scores were not significantly different in 2016 and 2017, but increased significantly from 2017 to 2018 and from 2018 to 2019, $p < .001$ in each case.

Severity of suicidal ideation. Figure 3 depicts the distribution of prevalence across severity ranges for the period under consideration. The proportion of students reporting no suicidal ideation declined from 84.13% in 2016 to 39.28% in 2019, whereas the number reporting suicidal intent increased from 0.08% in 2016 to 3.61% in 2019. Analyses confirmed that this change in severity across time was statistically significant, $\chi^2(3) = 43.55$, $p < .001$.
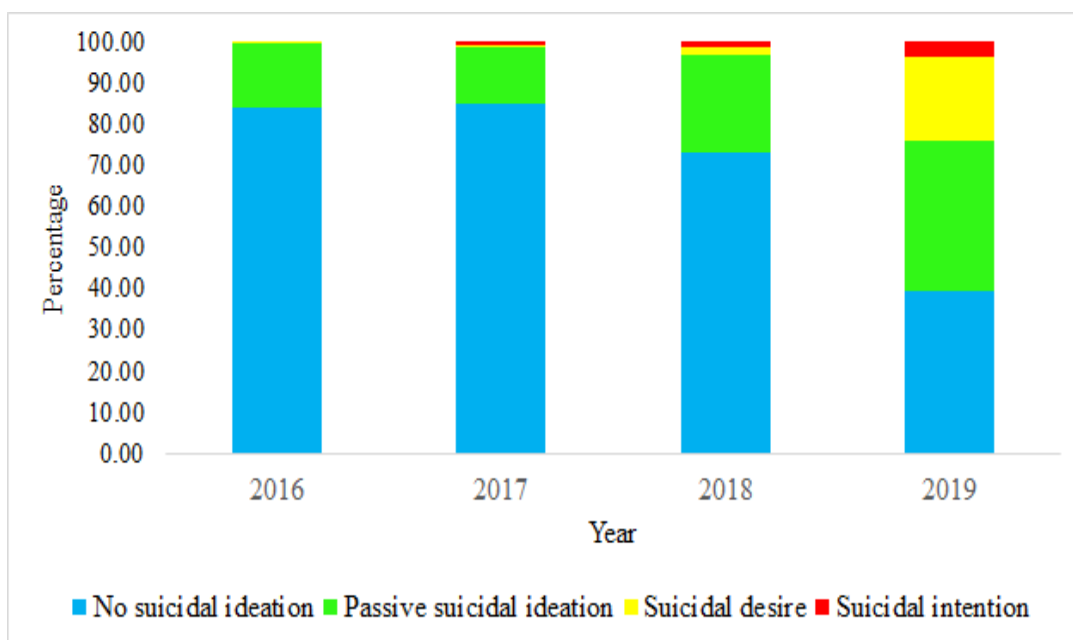
Figure 3. Distribution of suicidal ideation scores for the period 2016–2019, categorized by the conventional severity ranges: no suicidal ideation = 0; passive suicidal ideation = 1; suicidal desire = 2; suicidal intent = 3 (n_{2016} = 1260, n_{2017} = 956, n_{2018} = 377, n_{2019} = 499).

Testing Hypothesis 2: Sex differences

Depressive symptomatology. Given that we have already presented data suggesting a year-on-year increase in BDI-II scores, and that the factorial ANOVAs detected no significant Year x Sex interaction effects for any of the outcome variables (ps > .183), here we report only on results related to the main effect of Sex. In any event, these results speak directly to our hypotheses.

For the period 2016–2019, females scored significantly higher than males on three of the five BDI-II outcome variables (total score, PD score, SC score; Table 3). Although descriptive data tended to suggest that females also scored higher on the NA cluster and on the suicidal ideation item, this sex difference was not statistically significant.

Table 3

Descriptive Statistics and Between-Sex Comparisons: BDI-II total, symptom cluster, and suicidal ideation scores, 2016–2019 (N = 2455)

	Male			Female			ANOVA		
	N	*M*	*SD*	*N*	*M*	*SD*	*F*	*p*	ESE
BDI-II Total							5.48	.019	.002
2016	459	9.80	8.00	801	10.95	8.98			
2017	57	12.93	10.24	301	15.74	10.92			
2018	24	15.17	7.89	314	14.62	10.13			
2019	71	13.37	7.46	428	16.47	10.75			
Performance Difficulty							4.98	.030	.002
2016	459	4.39	3.31	801	4.97	3.77			
2017	57	6.26	4.27	301	7.04	4.20			
2018	24	6.17	3.46	314	6.17	3.88			
2019	71	5.65	3.40	428	6.80	4.32			
Total	611	4.78	3.49	1844	5.94	4.09			
Negative Attitude							3.72	.050	.002
2016	459	2.65	3.15	801	2.87	3.37			
2017	57	3.02	4.07	301	3.94	4.29			
2018	24	4.04	3.57	314	3.96	4.25			
2019	71	3.41	3.45	428	4.24	4.21			
Total	611	3.11	3.35	1844	4.15	4.00			
Somatic Complaints							4.90	.030	.002
2016	459	2.76	2.60	801	3.11	2.79			
2017	57	3.65	2.93	301	4.76	3.38			
2018	24	4.96	2.84	314	4.50	3.11			
2019	71	4.31	2.14	428	5.43	3.09			
Total	611	2.83	2.61	1844	3.55	3.07			
Suicidal Ideation							.00	.956	.000
2016	459	.14	.37	801	.18	.40			
2017	57	.22	.54	301	.27	.56			
2018	24	.46	.59	314	.31	.57			
2019	71	.83	.76	428	.89	.87			
Total	611	.24	.51	1844	.38	.66			

Note. BDI-II = Beck Depression Inventory - Second Edition.
***$p < .001$. The Bonferroni-corrected p-value is .05 / 3 = .016.

Of interest is that whereas BDI-II total scores for females tended to fluctuate from year to year, male scores increased steadily (Figure 4). As noted earlier, however, this interaction effect did not reach the threshold for statistical significance.
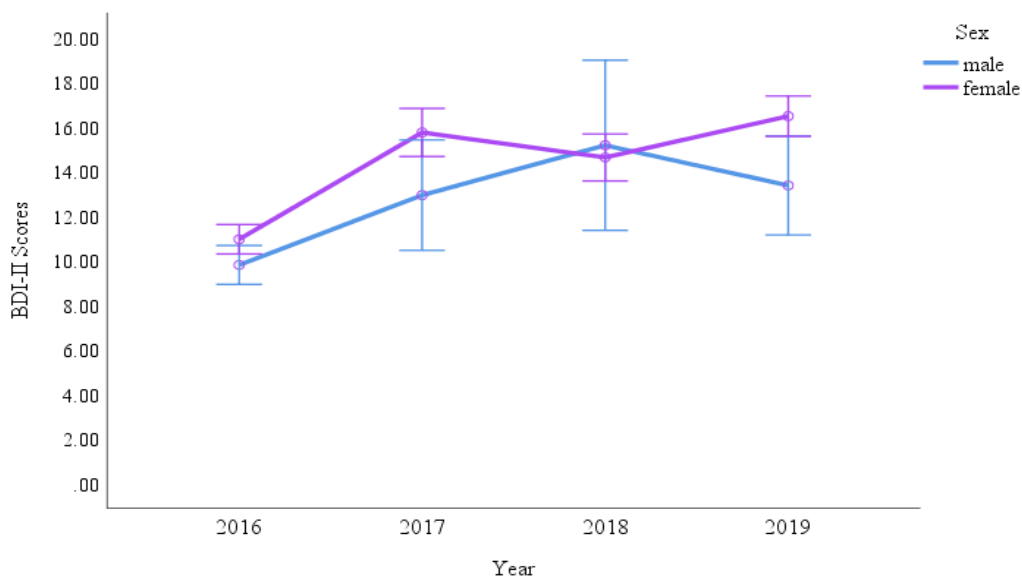
Figure 4. Beck Depression Inventory- Second Edition total scores for males and females, 2016–2019 (n_{2016} = 1260, n_{2017} =956, n_{2018} = 377, n_{2019} = 499). Error bars represent 95% confidence intervals.

Testing Hypothesis 3: Differences across year of study

This hypothesis was partially supported. On average, first-year students had higher total BDI-II scores and higher suicidal ideation scores than students in subsequent years of undergraduate study. The former result approached statistical significance, and the latter was statistically significant (Table 4).

Table 4
Descriptive Statistics and Between-Group Comparisons: BDI-II total and suicidal ideation scores, 2016–2019 (N = 704)

BDI-II variable	*n*	*M*	*SD*	*T*	*p*	ESE
Total score				1.98	.05	.160
First year	208	16.37	10.22			
Not first year	468	14.68	10.32			
Item 9 (suicidal ideation)				3.38	.001**	.280
First year	208	0.89	0.87			
Not first year	468	0.66	0.80			

Note. BDI-II = Beck Depression Inventory - Second Edition; ESE = effect size estimate (Cohen's *d*). Possible score range for total score is 0–63, and for item 9 is 0–3.
**p < .01. All reported *p*-values are two-tailed.

Discussion

The main aim of this research was to describe, across the period 2016–2019, trends in the prevalence and manifestation of depressive symptoms and suicidal ideation in undergraduate students at a South African university. The secondary aim was to investigate how individual differences in self-identified sex and current year of study influenced these trends. We tested these specific hypotheses: (1) Over the 4-year period, there is an increase in (a) the prevalence of depressive symptoms, (b) the severity of depressive symptoms, (c) the prevalence of suicidal ideation, and (d) the severity of suicidal ideation; (2) Students who identify as male present with more performance difficulty (PD) symptoms (e.g., concentration difficulties) as well as with more suicidal ideation, whereas those who identify as female present with more negative attitude (NA; e.g. pessimism) and somatic complaints (SC) symptoms (e.g., crying), and with less suicidal ideation; and (3) Students in their first year of undergraduate study present with more depressive symptoms and suicidal ideation than those in subsequent years of study. Below, we discuss the findings with regard to each of these hypotheses and place those findings in the context of previously published research. We conclude by describing the limitations of the current study and making recommendations for future research.

Hypothesis 1: Increasing depression and suicidal ideation in students

Our statistical analyses confirmed the first part of this hypothesis. On average, BDI-II total scores, as well as the scores for each of the three symptom clusters (performance difficulty, negative attitude, somatic complaints), increased significantly over the 4-year period under consideration. Of interest here is that, of the three symptom clusters, the average score for only PD increased significantly year-on-year. This piece of data suggests that PD symptoms involving concentration difficulties, changes in appetite and indecisiveness may be a particular point of concern in undergraduates. The second part of the hypothesis was also confirmed. The proportion of students reporting minimal depression declined significantly from 2016–2019, whereas the proportion reporting severe symptoms increased significantly over the same period.

Our findings are consistent with previous foreign and South African studies that describe a rise in the prevalence and severity of depressive symptoms among university students (Beiter et al., 2014; Cavanagh et al., 2016; Mungai & Bayat, 2019; Twenge et al., 2019). In that sense, then, the current findings are unsurprising, and the trends we observed are likely explained by the same underlying factors as identified in previous studies. These factors include the facts that

depression is considered a disease of modernity (Hidaka, 2012), and that university students have a particular vulnerability to the negative impacts of said modernity (Bantjes et al., 2016; Ghaedi & Kosnin, 2014; Hidaka, 2012). Contemporary society, especially in industrialized countries, is characterised by an unhealthy environmental mix of financial insecurity, sleep deprivation, and loneliness. In many low- and middle-income countries, including South Africa, modernization is accompanied by further socioeconomic inequality, pervasive violent crime, and a relatively high likelihood of exposure to traumatic events (Hatcher et al., 2018; Mall et al., 2018; Todd & Teitler, 2018).

The university environment is a concentrated amalgam of these toxic characteristics (Bretschneider et al., 2018). For example, the increased availability of technology and social media use are risk factors for depression. Technology is correlated with less social interaction, sleep deprivation, and a sedentary lifestyle (Hidaka, 2012). These habits are particularly popular among younger cohorts; for instance, students use technology for coursework and are more likely than middle-aged and older adults to interact via social media (Twenge et al., 2019). Sleep deprivation is frequently observed in samples of university students and is a risk factor in the maintenance of severe and chronic depression (Lawson, Wellens-Mensah, & Nantogma, 2019; Peltzer, Pengpid, Sodi, & Taloza, 2017; Wei-Lin & Jen-Hao, 2019).

Early adulthood is accompanied by increased pressures and requirements, and therefore mood disorders are characteristic of this period, particularly in early years (Bantjes et al., 2016; Mall et al., 2018). Furthermore, multiple studies have illustrated that stressors accompanying the transition from secondary to tertiary education further contribute to the risk of depression (see, e.g., Ibrahim et al., 2013; Sivertsen et al., 2019; Young & Campbell, 2014). Particular challenges in undergraduate study include academic stress, lack of familiar social support structures, increased cognitive demands and concerns about prospects for postgraduate study (Bantjes et al., 2016; Beiter et al., 2014; Hidaka, 2012). This is seen in a study at Stellenbosch University whereby 78.6% of students rated academic stress as their most concerning stressor (Mall et al., 2018). These stressors are risk factors not only for depression, but also for suicidal ideation.

A slightly different, but complementary, explanation for the trends we observed is that university students are more likely than people in the general population of their same age to have mental health literacy and be living in an environment where there is less stigma associated

with reporting being depressed (Saw & Zane, 2015). Hence, students may recognise and report depressive symptoms at a higher rate (Bretschneider et al., 2018).

Our statistical analyses also confirmed the third and fourth parts of this hypothesis. On average, suicidal ideation scores, as estimated by item 9 of the BDI-II, increased significantly over the 4-year period under consideration (and especially from 2017 to 2019). Moreover, the proportion of students reporting no suicidal ideation declined significantly from 2016–2019, whereas the proportion reporting suicidal intent increased significantly from 2016–2019.

This result is consistent with numerous studies suggesting that recent modernizing trends have had a particularly significant effect on suicidal ideation in younger cohorts, particularly at student age (Naghavi, 2019). Common risk factors for suicidal ideation and intention (e.g., early adulthood adjustment, exposure to illicit substances, and relationship changes) are often a part of the normal student experience (Taliaferro & Muehlenkamp, 2015; Tesfaye, Derese, & Hambisa, 2014). This is consistent with the report by Sivertsen and colleagues (2019) who analysed data from a national health survey for higher education and found increasing prevalence of suicidal ideation among Norwegian university students for the period from 2010–2018.

Although the raw numbers suggest that the actual prevalence of suicidal ideation in the sample is quite low (for instance, even at its highest point in 2019, only 18 students self-reported the presence of frank suicidal intent, and across the period 2016–2019 the average score for the BDI-II suicidal ideation item was much closer to 0 [no suicidal ideation] than to 3 [suicidal intent]), we suggest that one should not underestimate the significant trends observed in our data. Bantjes and colleagues (2016) encountered a similar phenomenon and, as they did, we submit that despite low average scores and low raw numbers, the increasing frequency of students reporting suicidal intent is concerning. Not only should any report of suicidal ideation, at any level, be taken as an indication of severe mental distress, but any cognition surrounding suicide is predictive of later suicide attempts and death by suicide (Sivertsen et al., 2019).

Hypothesis 2: Sex-specific experiences of depression and suicidal ideation

Our statistical analysis partially confirmed the hypothesis. There was a significant main effect of sex on BDI-II total score and on score for each symptom cluster. Females scored significantly higher than males on BDI-II total scores, PD and SC symptoms, and were approaching significance for higher NA symptoms. Regarding suicidal ideation, analyses detected no significant sex differences. Higher NA and SC symptoms in females is in agreement

with the hypothesis, however the rest of the findings for sex differences are contrary to the hypothesis.

An extensive literature on depression has established that sex differences lie in experiences of the disorder rather than prevalence rates (see, e.g., Cupito et al., 2014; Makhubela & Debusho, 2016; Mungai & Bayat, 2019). Males usually present with more PD symptoms and suicidal ideation, whereas females usually present with more NA and SC symptoms and less suicidal ideation. However, the current findings stand in contrast to this literature. In our sample, females displayed more suicidal ideation and depressive symptoms than males, regardless of the type of symptom.

Despite this variation from the hypothesis, we did find some similarities with other researchers. For example, Schreiber (2018) and Tomlinson and colleagues (2009) similarly found that females are more likely to be diagnosed with depression. Our findings may be explained by the tendency of females to be more likely to report suicidal ideation than males (Mungai & Bayat, 2019), and of males to underreport the level of their depression (Cavanagh et al., 2016). In agreement with Sivertsen and colleagues (2019), we found increased suicidal ideation in both males and females over time.

The difference in finding compared to most research on sex differences can be explained by the nature of the current findings, as well as the context of the study. The current findings found a low overall mean, and a low mean for both males and females, that falls within the mild category of severity for BDI-II total scores. Ibrahim and colleagues (2013) found that differences are more likely to be found in severely depressed samples than in minorly depressed samples. This explains the lack of sex-specific differences in experience found in this sample. The context of the current study is important considering the high rates of crime and violence in SA which act as a predictor for depression (Sui et al., 2018). Significantly, 70.6% of South African university students have experienced a traumatic event (Bantjes et al., 2016). Further, the finding of higher rates of depression in females can be explained by the fact that female students are at a higher risk of living in fear and of being victimised as a group (Mungai & Bayat, 2019; Schreiber, 2018). This explains why females have higher rates of depression.

Hypothesis 3: Early undergraduate vulnerability

Our statistical analyses partially confirmed this hypothesis. On average, first-year undergraduate students had higher total BDI-II scores and higher suicidal ideation scores than

students in subsequent years of study. However, while the latter between-group difference was statistically significant, the former only approached significance. Our findings agree with existing research on the increasing prevalence and severity of suicidal ideation in students (Bantjes et al., 2016; Mall et al., 2018; Sivertsen et al., 2019).

As noted earlier, undergraduate students face multiple stressors, both in terms of developmental period and the demands of the university environment (see, e.g., Ghaedi & Kosnin, 2014; Hurst, Baranik, & Daniel, 2012; Pluut, Curseu, & Ilies, 2015). For many students, these stressors are particularly salient in the first year of undergraduate study when they are, for instance, facing adjustment problems before having developed the requisite coping skills, and while they may be less certain of their future and more concerned about postgraduate study than students in subsequent years of study (Mall et al., 2018; Young & Campbell, 2014).

Limitations and Directions for Future Research

The limitations described below may limit the strength of inferences one can draw from the study's findings. First, the sample consisted of three times more females than males. The most likely explanation for this discrepancy is that most participants were students in the UCT Department of Psychology, and there are many more female than male students in that Department (personal communication, M. Karriem, October 12, 2019). However, regardless of why the discrepancy arose, the fact that it did means that females were overrepresented in the sample and therefore the study might not have adequately captured male experiences of depression. We recommend that future studies purposively recruit equal numbers of males and females in order to allow more accurate representations of sex-specific experiences of depression and suicidal ideation.

A second limitation is that we only analysed data from UCT psychology students. Hence, one might question whether the sample is representative of the entire UCT campus, or of the South African student population. Future research should aim to recruit students from multiple faculties across multiple universities. This would necessitate a more large-scale research study.

A third limitation centres on the fact that both archival and original data were collected using convenience sampling (i.e., studies recruited volunteers from the UCT Department of Psychology). Because students that are more depressed are less likely to volunteer, this sampling method may not yield representative prevalence rates (Ibrahim et al., 2013). As Sivertsen and colleagues (2019) suggest, a reliance on convenience sampling may explain lower prevalence

rates than actual prevalence rates in student populations. This is particularly true for males who are less likely to report depressive symptoms, and for suicidal ideation across sexes.

A fourth limitation is that all of our data were based on a self-report instrument, the BDI-II. Although this instrument is widely used across the globe and is the recommended self-report depressive scale for DSM-5 major depressive disorder (APA, 2013), the fact that it is a self-report scale means it may not yield the most accurate behavioural data (Althubaiti, 2016; Lipinska & Thomas, 2017). Moreover, students may underreport what they are experiencing on a forced-choice questionnaire. Hence, we recommend that future studies of similar student samples retain the BDI-II but supplement it with an in-person structured clinical interview (if not for the entire sample, then certainly for a representative sub-sample) and perhaps a series of focus groups that could seek to gather more of an in-depth understanding of the qualitative experience of depression and suicidal ideation in university students.

A fifth limitation is that we cannot be certain that some BDI-II reports had been completed by the same individual (e.g., a student who had participated in multiple studies in different years). Identifying information for participants was not consistently available in our archival dataset due to ethical considerations surrounding confidentiality and anonymity. Although our data may therefore violate assumptions regarding independent observations, we argue that, for our purposes in this trends-focused study, the time at which the data were collected is more important than who provided the data.

Summary and Significance of Findings

This research contributes to the scientific literature describing an increasing prevalence of student mental health difficulties. We analysed depression and suicidal ideation prevalence, manifestation, severity, sex differences, and vulnerability across level of study in a sample of South African university students. Results suggest that the prevalence and severity of both depression and suicidal ideation increased during the time period under consideration (2016–2019). Females reported more depressive symptoms (both overall and within each of the performance difficulty, negative attitude, and somatic complaints clusters) and higher levels of suicidal ideation than males. First-year students reported marginally higher rates of depression and significantly higher rates of suicidal ideation than students in subsequent years of study.

Our finding of increasing depression and suicidal ideation in students is consistent with previous research and confirms the need for concern about the mental health of undergraduate

students, especially first-years. Both our research and those of others in the field (e.g., Bantjes et al., 2016; Sivertsen et al., 2019; Twenge et al., 2019) emphasise that student mental health should be a point of public health concern due to its adverse and potentially lethal consequences. For example, mental health problems have the propensity to hinder the academic and social success of university students and to promote unhealthy behaviours such as poor sleep habits, lack of exercise, and noncompliance with treatment recommendations (Cavanagh et al., 2016). The more severe the symptoms, the greater the negative effects on both short- and long-term quality of life.

More than simply reaffirming the results from previously published studies, our research is novel and significant. The major sources of novelty are that we analysed a large sample of four-year longitudinal data within a LAMIC, whereas most existing studies on depression and suicidal ideation in students have been cross-sectional in design and conducted in high-income countries of the global north. The primary significance, to our mind, is that our results have the potential to provide a foundation for treatments tailored to the needs of South African students. Cluster-specific, level of study-specific and sex-specific findings can be used to design sample-specific interventions. The findings of early undergraduate vulnerability should alert policymakers that, rather than focusing on curative interventions, there is an urgent need for preventative interventions that increase awareness and support.

Acknowledgements

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Appendix A

Ethical Approval Form

UNIVERSITY OF CAPE TOWN

Department of Psychology

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Telephone (021) 650 3417
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11 June 2019

Kim-Louise Rousseau and Sabrina Thompson
Department of Psychology
University of Cape Town
Rondebosch 7701

Dear Kim-Louise and Sabrina

I am pleased to inform you that ethical clearance has been given by an Ethics Review Committee of the Faculty of Humanities for your study, Trends in Depression Among South African University Students. The reference number is PSY2019-029.

I wish you all the best for your study.

Yours sincerely

Lauren Wild (PhD)
Associate Professor
Chair: Ethics Review Committee

University of Cape Town
PSYCHOLOGY DEPARTMENT
Upper Campus
Rondebosch

Appendix B

Socio-Demographic Questionnaire

1. Information for SRPP point allocation	
1.1. What is your student number?	
1.2. What email address would you prefer to be contacted on?	
1.3. Which course would you like this SRPP point to be allocated to?	
2. **Demographic information**	
2.1. How old are you?	
2.2. What year of study are you in?	
2.3. Which sex do you identify with, if any?	
2.4. Which race group do you identify with, if any?	
2.5. What are your parents'/guardians' occupations?	
2.6 What is your suburb of residence during the semester?	
2.7 What is your household's approximate monthly income?	

Appendix C

Beck Depression Inventory – Second Edition (BDI-II)

You will be asked to read 21 groups of descriptions. Please choose the statement from each set of descriptions that most accurately describes your feelings and thoughts in the past 2 weeks, including today. If you find that more than one statement applies to you, please choose the one that is the most applicable.

Item 1: Sadness
    0   I do not feel sad.
    1   I feel sad much of the time.
    2   I am sad all of the time.
    3   I am so sad or unhappy that I can't stand it.

Item 2: Pessimism
    0   I am not discouraged about my future.
    1   I feel more discouraged about my future than I used to be.
    2   I do not expect things to work out for me.
    3   I feel my future is hopeless and will only get worse

Item 3: Past Failure
    0   I do not feel like a failure
    1   I have failed more than I should have.
    2   As I look back, I see a lot of failures.
    3   I feel I am a total failure as a person.

Item 4: Loss of Pleasure
    0   I get as much pleasure as I ever did from the things I enjoy.
    1   I don't enjoy things as much as I used to.
    2   I get very little pleasure from the things I used to   enjoy.
    3   I can't get any pleasure from the things I used to enjoy.

Item 5: Guilty Feelings
    0   I don't feel particularly guilty.
    1   I feel guilty over many things I have done or should have done
    2   I feel quite guilty most of the time.
    3   I feel guilty all of the time.

Item 6: Punishment Feelings
- 0   I don't feel I am being punished.
- 1   I feel I may be punished.
- 2   I expect to be punished.
- 3   I feel I am being punished.

Item 7: Self-Dislike
- 0   I feel the same about myself as ever.
- 1   I have lost confidence in myself.
- 2   I am disappointed in myself.
- 3   I dislike myself.

Item 8: Self-Criticism
- 0   I don't criticise or blame myself more than usual.
- 1   I am more critical of myself than I used to be.
- 2   I criticise myself for all my faults.
- 3   I blame myself for everything bad that happens.

Item 9: Suicidal Thoughts or Wishes
- 0   I don't have any thoughts of killing myself.
- 1   I have thoughts of killing myself, but I would not carry them out.
- 2   I would like to kill myself.
- 3   I would kill myself if I had the chance

Item 10: Crying
- 0   I don't cry any more than I used to.
- 1   I cry more than I used to.
- 2   I cry over every little thing.
- 3   I feel like crying, but I can't.

Item 11: Agitation
- 0   I am no more restless or wound up than usual.
- 1   I feel more restless or wound up than usual.
- 2   I am so restless or agitated that it's hard to stay still.
- 3   I am so restless or agitated that I have to keep moving or doing something.

Item 12: Loss of Interest
- 0   I have not lost interest in other people or activities.
- 1   I am less interested in other people or things than before.
- 2   I have lost most of my interest in other people or things.
- 3   It's hard to get interested in anything.

Item 13: Indecisiveness
- 0   I make decisions as well as ever.
- 1   I find it more difficult to make decisions than usual.
- 2   I have much greater difficulty in making decisions than I used to.
- 3   I have trouble making any decisions.

Item 14: Worthlessness
- 0   I do not feel I am worthless.
- 1   I don't consider myself as worthwhile and useful as I used to be.
- 2   I feel more worthless as compared to other people.
- 3   I feel utterly worthless.

Item 15: Loss of Energy
- 0   I have as much energy as ever.
- 1   I have less energy than I used to have.
- 2   I don't have enough energy to do very much.
- 3   I don't have enough energy to do anything.

Item 16: Changes in Sleeping Pattern
- 0   I have not experienced any change in my sleeping pattern.
- 1a   I sleep somewhat more than usual.
- 1b   I sleep somewhat less than usual.
- 2a   I sleep a lot more than usual.
- 2b   I sleep a lot less than usual.
- 3a   I sleep most of the day.
- 3b   I wake up 1-2 hours early and can't get back to sleep.

Item 17: Irritability
- 0   I am no more irritable than usual.
- 1   I am more irritable than usual.
- 2   I am much more irritable than usual.
- 3   I am irritable all the time.

Item 18: Changes in Appetite
- 0   I have not experienced any changes in my appetite
- 1a   My appetite is somewhat less than usual.
- 1b   My appetite is somewhat more than usual.
- 2a   My appetite is much less than usual.
- 2b   My appetite is much more than usual.
- 3a   I have no appetite at all.
- 3b   I crave food all the time.

Item 19: Concentration Difficulty
    0   I can concentrate as well as ever.
    1   I can't concentrate as well as usual.
    2   It's hard to keep my mind on anything for very long.
    3   I find I can't concentrate on anything.

Item 20: Tiredness or Fatigue
    0   I am no more tired or fatigued than usual.
    1   I get more tired or fatigued more easily than usual.
    2   I am too tired or fatigued to do a lot of the things I used to do.
    3   I am too tired or fatigued to do most things I used to do.

Item 21: Loss of Interest in Sex
    0   I have not noticed any recent change in my interest in sex.
    1   I am less interested in sex than I used to be.
    2   I am much less interested in sex now.
    3   I have lost interest in sex completely.

Total score out of 63:

Appendix D

SRPP Advertisement

Dear students

You are invited to participate in our research study which investigates symptoms in depression amongst students. We are Honours students interested in the trends in these symptoms.

Please read this entire announcement carefully before deciding whether to participate.

For this research study you will complete an online survey which will take 20-30 minutes to complete. The survey involves questions surrounding your recent thoughts, feelings, and behaviour. This information will be kept confidential and anonymous.

You can participate if you are a UCT undergraduate student and between the ages of 18 and 24.

Please follow the link below to complete the survey: (insert link here)

Thank you in advance for taking the time to participate in our study.

Regards
Kim Rousseau and Sabrina Thompson

Appendix E

Consent Form

Trends in Depression Among South African University Students Consent Form

Purpose: The purpose of this study is to investigate the trends in depression among South African undergraduate university students over the past 6 years.

Inclusion/exclusion criteria: To participate in this study, you need to be an undergraduate that is between 18 and 24 years old.

Procedure: If you agree to participate in this study, you will take part in an online survey that will take 20-30 minutes in total, and you will be compensated with 1 SRPP point.

Benefits/Risks: Participants will benefit from this study through the compensation of 1 SRPP point. The questions in the BDI-II may reveal sensitive information about your mental state, and therefore pose a possible risk of emotional discomfort resulting from being made aware of potential symptoms of depression. Therefore, support contacts will be made available following the survey.

Voluntary Participation/Confidentiality: Participation in this study is voluntary and you are free to withdraw at any point throughout the study without penalty. The results of your survey will be kept confidential as your name will not be linked to your results. Only the researchers will have access to the results. Data will be kept in a secure place on a password protected computer.

Questions: Please ensure you understand fully before beginning the survey. Any questions you have must be answered.

Statement of Consent: I have read and understood the above information regarding the requirements and procedure of this study. I am fully aware of my responsibilities as a participant and all my questions have been answered. I consent to participate in this study.

Name of Participant: _____   Student number: _____
Age: _____   Course code (SRPP points): _____   Date: ___/___/___
Clicking 'Next' indicates that you agree with the above statement of consent to participate in the survey.

Contacts and Queries: If you have any queries or questions about the process or the study, please feel free to contact us. Contact the researchers (Kim Rousseau and Sabrina Thompson) directly via bdithesis2019@gmail.com or contact the supervisors via kevin.thomas@uct.ac.za or mhmish@gmail.com.

Appendix F

Debriefing Form

- The questions that I had have been answered. I am aware that if I have further questions I can contact the researchers via email.
- I am aware that my participation is voluntary and that I am free to request that my data be withdrawn from the study at any point.
- It has been ensured that my participation is anonymous and that my personal information and scores will be kept strictly confidential.
- I acknowledge that I will receive 1 SRPP point for participating in this study, and am aware that I may contact the researchers if the point does not reflect in my gradebook.
- As this study looks into depressive symptoms, I have been made aware that if I should experience, or feel as though I may be experiencing depressive symptoms, I can contact student wellness for further assistance.

Please indicate that you agree with all of the above by clicking 'OK'.

Contacts and Queries: If you have any queries or questions about the process or the study, please feel free to contact us. Contact the researchers (Kim Rousseau and Sabrina Thompson) directly via bdithesis2019@gmail.com or contact the supervisors via kevin.thomas@uct.ac.za or mhmish@gmail.com.

Appendix G

Proof of Participation Slip

Trends in Depression Among South African University Students Proof of Participation

The researchers of this study (Kim Rousseau and Sabrina Thompson) confirm that the following participant completed the BDI-II survey. This entitles them to receive one point towards their SRPP requirements.

Participant's student number: _____ ____

Psychology course: _____