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Youth emotional well-being during the COVID-19-related lockdown in South Africa

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Abstract

The COVID-19 pandemic has not only caused serious threats to people's physical health but has also triggered a wide range of mental health problems. This study sought to assess the prevalence of, and factors associated with depressive symptoms among young people age 18-35 years during the COVID-19 related lockdown in South Africa. An online survey was conducted leading to a sample of 11 700 participants covering all the provinces of the country; of these 5 693 participants responded to all the emotional well-being questions. The 10-item Centre for Epidemiological Studies on Depression Scale (CES-D 10 Scale) was used to establish the prevalence of, and factors associated with depressive symptoms. Our results show a prevalence of depressive symptoms of 72% among the young participants, which is high and worrisome when compared to mental health results among youth gathered outside of the COVID-19 context. When disaggregated by various characteristics, the prevalence of depressive symptoms was found to be higher among older, female, and white youth and those with higher education. Multivariate regression analysis further shows that depressive symptoms were positively associated with being female, being older, having higher education and residing in urban informal areas, while they were negatively associated with being employed and offering family care. These findings suggest that while combating the COVID-19 pandemic, the government needs to pay closer attention to the mental health issues among young people and the effects of lockdown regulations on mental health, to avoid longer-term negative effects of mental ill-health among youth.

Keywords: Youth, Mental health, Depression, CES-D 10, COVID-19.

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1. Introduction

The 2019 novel coronavirus disease (COVID-19) that first broke out in China in December 2019, and quickly spread to other countries has led to multiple and abrupt shocks in young people's lives across the globe. Education came to a halt when schools and universities were closed, and the closure of most businesses led to the loss of income and jobs among many who were employed before lockdown. As a result, young people are experiencing increased levels of insecurity in a context where the majority were already vulnerable and disproportionately affected by unemployment and poverty. In South Africa, more than 7 million (42%)¹ young people aged 18 to 35 were already living in income poverty and close to 10 million (52%) were Not in Education, Employment or Training.² These young people typically experience a multitude of deprivations – such as food insecurity, poor health and geographic exclusion. These deprivations and their intersections – income poverty influences food security, which again impacts on health, for instance – complicate young people's transitions from adolescence to adulthood (De Lannoy et al., 2015). Globally, the pandemic has hit vulnerable groups disproportionately and is likely to exacerbate existing inequalities (OECD, 2020). The pandemic is likely to worsen existing social challenges in South Africa as well, including those of already vulnerable young people (Ranchhod and Daniels, 2020).

At present, South Africa has recorded the highest number of infections in Africa, ahead of Egypt and Nigeria (Johns Hopkins University, 2020). The rapid spread of the virus in the country led the government to implement one of the strictest, nationwide lockdowns globally. The lockdown and the related social distancing measures banned anyone but essential workers from leaving home except to buy food and medicine (Dlamini-Zuma, 2020). The situation drastically altered the life of many people in South Africa in a matter of days. While necessary to slow the spread of the virus and to prevent loss of life, the extreme measures led to significant income and job losses. An online survey by Statistics South Africa (Stats SA) showed that 85.0% of businesses in the country reported below-than normal turnover, with 46.4% indicating temporary closure due to COVID-19, while 36.8% expected their workforce to shrink (Statistics South Africa, 2020a). Another survey by Stats SA indicated that the percentage of participants who reported receiving no income increased from 5.2% before the lockdown to 15.4% during the lockdown, while another 26.0% reported a decrease in income during the lockdown (Statistics South Africa, 2020b). Further, employment declined by 18.0% (3 million) between February and April 2020 (Casale & Posel, 2020) and the proportion of adults who earned an income in February declined by 33.0% in April (Ranchhod and Daniels, 2020).

The income and job losses together with the fear of contracting the virus, breakdown in social interactions, as well as increased uncertainty about the future are likely to trigger a wide variety of mental health problems like panic disorder, anxiety and depression (Wang et al., 2020). Internationally, several studies have shown that financial and job losses during major catastrophic events are indeed associated with mental health problems (Jesus et al., 2016; Hiswåls et al., 2017; Forbes and Krueger,

¹ Based on Statistics South Africa's 2018 upper-bound poverty line an individual is considered to be living in income-poverty if the per capita monthly income of the household he/she lives in is less than 1183 Rands (Statistics South Africa, 2018). The upper-bound poverty line refers to the food poverty line plus the average amount derived from non-food items of households whose food expenditure is equal to the food poverty line. Stats SA estimates the upper-bound poverty line at R1 183 per person per month in April 2018 prices.

² Own calculations using General Household Survey for 2018 and Quarterly Labour Force Survey (QLFS) Q1 for 2020.

2019). Further, studies on mental health issues during previous infectious disease outbreaks, such as the severe acute respiratory syndrome (SARS), also found a high prevalence of mental health problems among different population groups (Wu et al., 2009; Liu et al., 2012). Emerging evidence has linked the current COVID-19 pandemic and its related social isolation and quarantine to poor mental health outcomes as well (Menec et al., 2020; Brooks et al., 2020; Salari et al., 2020). However, the bulk of the existing studies on mental health issues during the current COVID-19 pandemic have so far focused attention on countries in Asia, Western Europe and the United States, with very little research on being conducted for African countries, including South Africa.

This study contributes to the international literature with research results from South Africa. It draws on the responses to a South African, web-based cross-sectional survey using UNICEF's U-report - a social media platform for youth. The survey targeted youth aged 18 to 35 in all South African provinces and aimed to understand youth well-being, including mental health, during the strict lockdown phase in the country. The questionnaire contained a range of questions on general demographics, main activity before lockdown, labour market outcomes, emotional well-being and interventions young people felt they needed during and after the lockdown. This paper reports on the mental health issues (in particular, depressive symptoms) recorded by the survey participants.

The analysis' main objective was to determine the prevalence of, and factors associated with depressive symptoms among young people during the COVID-19-related lockdown in South Africa. To achieve this, we adopt a short 10-item version of the Centre for Epidemiological Studies Depression Scale (CES-D 10). Further, using the derived scale, we conduct a regression analysis to shed light on the individual factors associated with depressive symptoms. The findings also contribute to the body of work aiming to address the issue of depression among young people in South Africa. Thus, the results reported on in this paper aim to inform policymakers and civil society organisations working with and for youth of the seriousness of mental health issues among young people during lockdown. Further, the findings can help strengthen future preparedness to mitigate the impact of similar pandemics on young people's mental health.

2. Mental health problems during the COVID-19 pandemic

Research on various mental health issues during the current COVID-19 pandemic is emerging in real-time. A systematic review of this research is provided by Pappa et al. (2020), Salari et al. (2020) and Luo et al. (2020). The reviews point to significantly high prevalence rates of mental health problems during the current COVID-19 pandemic in various countries. For example, focusing on depression, evidence from these reviews shows overall prevalence rates of depressive symptoms ranging from 23% (Pappa et al., 2020), to 28% (Luo et al., 2020) and 34% (Salari et al., 2020). However, these overall prevalence rates hide substantial heterogeneity among different population groups, with the rate of depressive symptoms higher among patients (55%), compared to healthcare workers (25%) and the general public (27%) (Luo et al., 2020). The prevalence rate of depressive symptoms also varies significantly within and across countries. For example, among the general public, prevalence rates ranged between 9% and 60% in China, 24% in Spain, 25% in Denmark, between 24% and 35% in Turkey and 67% in Italy (Luo et al., 2020; Salari et al., 2020; Pappa et al., 2020).

Common factors associated with depressive symptoms, as identified in these reviews (Luo et al., 2020; Salari et al., 2020; Pappa et al., 2020), include gender, age, education, race, student status, socioeconomic status, occupation and location. Being women, having lower socioeconomic status (living in rural areas and having unstable income), social isolation and spending longer time watching COVID-19 related news were all found to be positively associated with depressive symptoms. Results for education level were mixed, with both higher and lower education levels associated with higher levels of depressive symptoms. While the risk factors associated with depressive symptoms were generally similar across studies, the magnitude of the estimated coefficients varied across studies and countries (see Cao et al., 2020; Mazza et al., 2020; Zhou et al., 2020). These differences may be highlighting the heterogeneity of the different population groups studied in the various projects.

Research on this area is still sparse in African countries. In South Africa, existing studies on mental health issues were carried out during 'normal' (i.e. pre-COVID) periods (Hamad et al., 2008; Nduna et al., 2013; Eyal and Burns, 2019). In this paper, we contribute to this literature with survey data collected during the COVID-19 pandemic and lockdown and focus specifically on mental health among youth.

3. Methods

Design and implementation of the survey

To gain an understanding of the mental health issues of young people across South Africa during the first, strict COVID-19 related lockdown, the Southern Africa Labour and Development Research Unit at the University of Cape Town and UNICEF South Africa conducted a web-based cross-sectional survey using UNICEF's U-report, a social media platform for youth. The study took place in partnership with the Centre for Social Development in Africa, University of Johannesburg; the Children's Radio Foundation; Youth Capital; and Naspers Labs. The survey was administered through Facebook Messenger, targeting the existing list of over 90 000 young people registered on UNICEF's U-report platform; participants then self-selected into the survey. To further increase the diversity of the sample, young people beyond the U-report group were also directed to the survey through social media advertisements of the various partners. The survey was conducted between 29 April and 21 May 2020, a period that fell in the country's first strict phase of the COVID-19 lockdown. Ethics approval for the survey was granted by the University of Cape Town's Commerce Faculty's Ethics in Research Committee (Ref. REC 2020/04/022).

The administered questionnaire had 3 main sections: *General information*, *Situation during lockdown* and *Situation after lockdown*. It comprised a range of questions on demographics, main economic activity before lockdown, labour market outcomes before and during the lockdown, emotional well-being during lockdown and interventions needed during and after lockdown. The questionnaire had a total of 22 main questions with structured answers but also room for open-ended answers through the "Other, specify" response option. This option was added to the list of possible responses to give more flexibility to the Messenger-based survey and allow collection of more nuanced information.

A major limitation of the survey, however, is that participants who self-select are not necessarily representative of all young people in South Africa. The issue of self-selection is a common problem in almost all web surveys and has been documented to lead to under-representation of young people who

do not have access to devices that connect to the internet (Bethlehem and Biffignandi, 2012). Apart from the self-selection bias, the U-report platform also has a non-representative gender composition, with more male youths than females registered on the platform. Thus, results from this survey cannot be generalised to the entire youth population in the country. Notwithstanding these limitations, a major advantage of the online survey is that it is an affordable and fast means of collecting a large amount of information and that it is especially useful during a period where face to face interviews are not possible, such as during the COVID-19 induced lockdown. Other advantages of this type of web-based survey are that participants have the flexibility to determine the timing and pace of their responses and can reread questions for better understanding (Bethlehem & Biffignandi, 2012).

While the survey was targeted at young people aged 18-35 years, at the end of the survey, a total of 17 992 individuals of different age groups had responded. As the survey was administered through Facebook Messenger, participants responded in various non-standard ways. For example, some participants responded with numerical numbers, while others responded with numbers in words (e.g. writing age as “18” vs “eighteen”). Others mixed information for a given question with information relevant to other questions, for instance, providing age information together with cellphone number, gender and location. In other cases, where participants were required to provide more than one response, they provided the different responses in one column, mixing numerical numbers and numbers in words; some responded with other characteristics that proved unusable. Still, other participants had missing information as they did not answer all the survey questions.

Given these issues, we followed a systematic and rigorous process of cleaning the data. The first step was to correct obvious inconsistencies and drop all individuals with unclear or unusable information. Then, all young people aged 17 years and below were dropped for data protection reasons. This leaves us with a sample of 11 700 participants, or 65% of the initial participants. A detailed explanation of the data cleaning process of the survey data is provided in Mudiriza and De Lannoy (forthcoming).

Characteristics of survey respondents

Of the 11 700 young people who participated in the survey, a total of 6 371 (54.5%) responded to all the emotional well-being questions. Of these participants, 678 had missing information on some of the demographic characteristics. To ensure that we work with a sample with little missing information, we dropped these 678 participants. Table 1 shows the characteristics of the remaining 5 693 participants, alongside the characteristics of a similar sample of young people captured in the 2017, nationally representative National Income Dynamics Study. The statistics show that the total sample of U-report participants was largely male (61%), black (90%) and aged 20 – 24 years (53%). Further, most participants had a matric or equivalent educational qualification (42%) or had completed only grade 10 or 11 (34%); most lived in urban areas (61%).

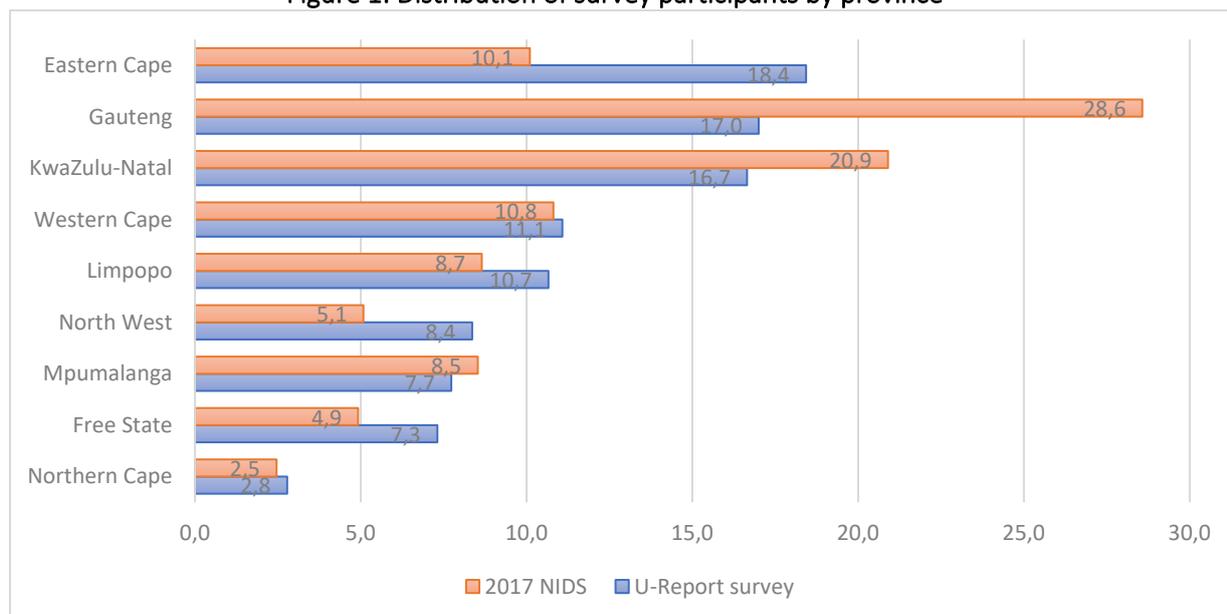
Table 1: Characteristics of the U-report survey and the 2017 NIDS samples

	Indicator	Survey		2017 NIDS	
		Total numbers	Percent	Total numbers	Percent
	Sample size	5693		15864901	
Age group	18-19	1600	28.1	1525929	9.6
	20-24	3041	53.4	4249403	26.8
	25-29	704	12.4	4756288	30.0
	30-35	348	6.1	5333282	33.6
Gender	Female	2221	39.0	7677813	48.4
	Male	3472	61.0	8187088	51.6
Race	Black	5125	90.0	13754670	86.7
	Coloured	300	5.3	1219551	7.7
	Indian/Asian	29	0.5	248642	1.6
	White	239	4.2	642038	4.1
Education level	Grade 9 or less	777	13.7	2661010	16.8
	Grade 10/11	1948	34.2	5959341	37.6
	Matric	2368	41.6	4341016	27.4
	Post-matric	600	10.5	2903534	18.3
Location	Rural	2224	39.1	5311562	33.5
	Urban	3469	60.9	10553339	66.5

Notes: For both the U-report survey and 2017 NIDS, we limited the sample of analysis to young people who responded to all the emotional well-being questions and had complete demographic information. While the statistics from the 2020 U-report survey are not weighted, those for the 2017 NIDS are weighted.

Comparing these statistics with the 2017 NIDS data seems to confirm a bias in our sample (Table 1). Notwithstanding the differences in the time period between the two surveys, we see that relative to NIDS data, the U-report sample has an overrepresentation of participants in the younger age groups (18-19 and 20-24 years). It also has an overrepresentation of male youth and those with matric education. Relative to the provincial distribution within the 2017 NIDS sample, the U-report sample has an overrepresentation of youths in Eastern Cape and an underrepresentation of youths in Gauteng. Figure 1 shows that while young people from all provinces took part in the survey, the highest participation was among youth from the Eastern Cape, Gauteng, KwaZulu-Natal and the Western Cape.

Figure 1: Distribution of survey participants by province



Notes: The figure is based on the sample of young people who responded to all the emotional well-being questions and had complete demographic information in the U-report survey and the 2017 NIDS. While the statistics from the 2020 U-report survey are not weighted, those for the 2017 NIDS are weighted.

Measure of depressive symptoms

Of central interest to us is the proportion of young people with depressive symptoms. We measure depressive symptoms using the Centre for Epidemiological Studies Depression (CES-D) scale. The scale is a self-reported screening instrument used to capture feelings and behaviours associated with depression among study participants (Radloff, 1977). It is one of the most frequently used measures to indicate presence and severity of depressive symptoms in the general population (Radloff, 1977; Santor et al., 2006). While the original CES-D scale developed by Radloff is a 20-item version (Radloff, 1977), several shorter versions of the scale have been developed and validated with the goal of minimising response fatigue (Lee and Chokkanathan, 2008). In this study, we adopt the 10-item version of the scale (CES-D 10), which has been extensively used in the literature and found to be a valid and reliable instrument of measuring depressive symptoms in many countries, including South Africa (Karim et al., 2015; Baron et al., 2017).

The CES-D 10 scale that we adopt consists of 10 items related to a participant's feelings and behaviours in the past week. It reads as follows: (1) I was bothered by things that usually don't bother me, (2) I had trouble keeping my mind on what I was doing, (3) I felt depressed, (4) I felt that everything I did was an effort, (5) I felt fearful, (6) My sleep was restless, (7) I felt lonely and (8) I could not "get going"; as well as positive emotions related to (9) I felt hopeful about the future and (10) I was happy.³ The participant's responses are rated on a 4-point score ranging from 0 "On less than 1 day", 1 "1-2 days", 2 "3-4 days" and 3 "5-7 days" for negative emotional items and for positive emotional items, the scoring is reversed. The overall CES-D score ranges from 0 to 30, with 0 highlighting no depressive symptoms and higher

³ These questions are appealing is that one can collect information on mental health without directly asking specifically about mental health and this is important in South Africa and many other African countries where mental health is not only neglected but also carries stigma and discrimination (Egbe et al., 2014).

scores indicating the presence of greater depressive symptoms. To determine the prevalence of individuals with greater depressive symptoms, studies have utilized varying cut-off scores ranging from 8 to 16 (Andresen et al., 1994; Bradley et al., 2010; Björgvinsson et al., 2013; Baron et al., 2017). For this study, we adopt a cut-off score of ≥ 12 which has been identified as optimal for South Africa when using the CES-D 10 scale (Baron et al., 2017).

4. Empirical strategy

The main purpose of the analysis is to determine the prevalence of, and factors associated with depressive symptoms among young people age 18-35 years during the COVID-19 related lockdown in South Africa. Firstly, we use descriptive analysis to determine the prevalence of depressive symptoms among young people and how it varies across different youth characteristics. Secondly, we utilise multivariate analysis to determine significant factors associated with depressive symptoms among young people. This multivariate analysis enables us to simultaneously explore the effect of one factor while holding the effect of other factors constant. Specifically, we estimate a cross-sectional Ordinary Least Square (OLS) regression model specified as follows:

$$\log CESD_i = \beta_0 + \sum_{i=1}^k \beta_i X_i + \varepsilon_i \quad (1)$$

where i represents individuals, $\log CESD_i$ is the log of the continuous 10-item CES-D score ranging from 0-30; X_i is a set of i individual characteristics likely to influence the prevalence of depressive symptoms among young people who participated in the survey. β_i is a set of parameters to be estimated and ε_i is the random error term. To estimate equation (1), we regress the log of the 10-item CES-D score on the following factors: age group, gender, race, education level, main economic activity and location (rural-urban dummies and provincial dummies).⁴ Our choice of correlates is guided by the reviewed literature and descriptive statistics to be revealed in the next section. While the literature also shows evidence of the importance of household factors, a major drawback of the U-report survey is that it does not have household-level information. This model is estimated first for the whole sample and then separately for female and male youths to check for gender-based differences in the correlates of depressive symptoms. For robustness checks, alternative specifications of equation (1) will be estimated.

⁴ Existing research in South Africa associate depressive symptoms with age, gender, race, education, household income, household size, employment status, marital status, race and poor health (Hamad et al., 2008; Eyal and Burns, 2019). Other factors like sexual abuse, alcohol abuse and relationship conflicts were also found to increase the risk of depressive symptoms among young people (Nduna et al., 2013).

5. Empirical findings

We aim to establish the prevalence and correlates of depressive symptoms among young people in South Africa during the first phase of the COVID-19 related lockdown. To do so, we started by determining the different levels of emotional well-being experienced by young people in our sample, based on the 10 emotional well-being questions discussed above. We then determine the proportion of youths at risk of having depression. Lastly, we examine the individual correlates of depressive symptoms among these young people.

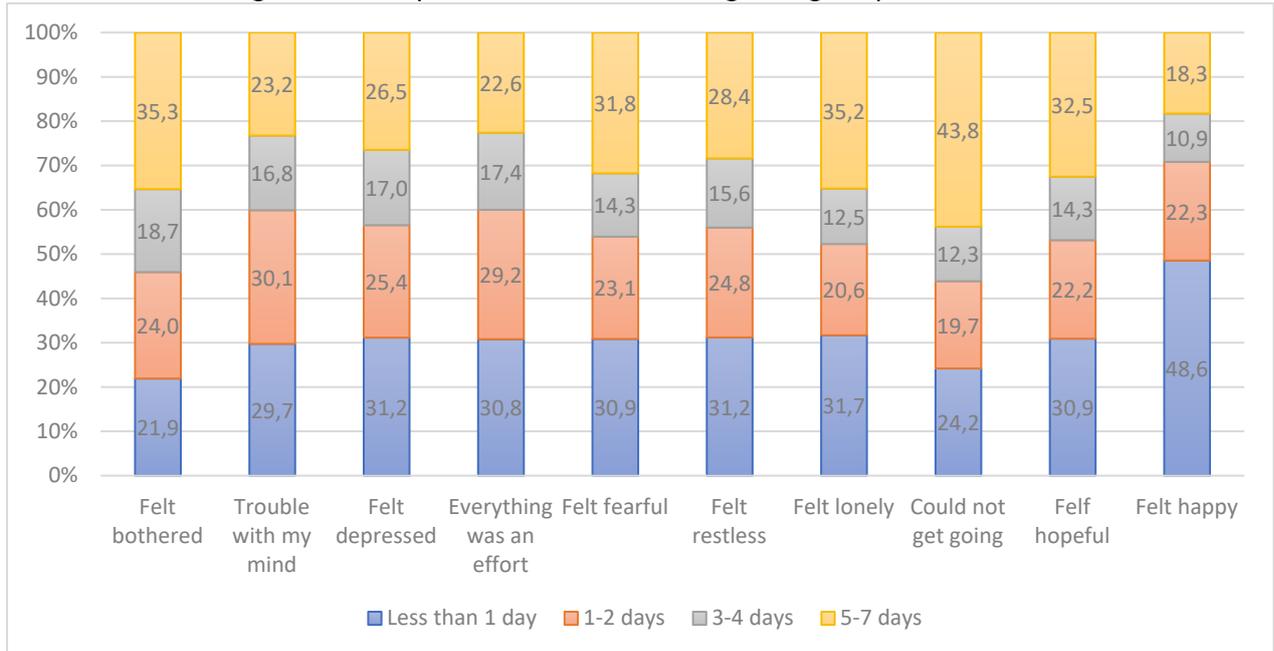
Before presenting our result, we report on the internal consistency of the derived CES-D 10 scale based on the Cronbach's alpha coefficient, which measures how closely related the 10 emotional items are that we aggregated to derive the scale. The alpha coefficient ranges from 0 to 1; the higher the coefficient, the more the items are related and probably measure the same underlying concept. Our derived CES-D 10 scale demonstrates good internal consistency of the items, with Cronbach's alpha of 0.69. This is considered to be a reasonable coefficient in the literature (see Taber, 2018). Moreover, the Cronbach's alphas for each item of the CES-D 10 scale were also high ranging between 0.65 and 0.71. Further, significant positive correlations are observed between the CES-D 10 scale and the 10 individual items, ranging from 0.12 and 0.56 (see Table 4).

Prevalence of depressive symptoms among youths during COVID-19-related lockdown

Figure 2 presents the different levels of emotional well-being experienced by young people in our sample. The results show that 44% of the participants reported that they could not get going, 35% felt bothered/felt lonely, 32% felt fearful, 28% felt restless/troubled and 23% felt depressed for a prolonged period (5 – 7 days). The survey responses also revealed that 49% of the participants felt happy only for a short period of time (less than a day) but 33% of the participants expressed remaining hopeful for a prolonged period (5 – 7 days). While we are not able to determine whether the proportion of participants experiencing low levels of emotional well-being has increased from the period before the lockdown to the period during the lockdown, our findings point to high proportions of youths with significantly low levels of emotional well-being during the strict lockdown phase. This finding is consistent with results from studies conducted elsewhere, during the pandemic and using online survey data (see Eurofound, 2020; McCarthy, 2020; OECD, 2020; Wang et al., 2020).

Contrary to our findings, analysis based on the nationally representative 2017 NIDS data – collected during a “normal” period, i.e. not influenced by a global pandemic - reveal a low proportion of young people aged 18 – 35 years with low levels of emotional well-being. While our findings indicate proportions for negative emotional well-being items that range from 18% to 44% for a prolonged period (5 – 7 days), the proportions based on the NIDS data range from only 4% to 8% for a prolonged period (5 – 7 days). However, our results do corroborate findings from another South African online survey on mental health during the COVID-19 lockdown, conducted by the South African Depression and Anxiety Group (SADAG, 2020). The results from the SADAG survey with 1 214 participants showed that 65% of the participants felt stressed, 55% felt anxiety and panic, 46% felt financial stress and pressure, 40% felt depressed and 12% felt suicidal during lockdown. Our findings, as well as the SADAG ones, cannot be considered representative to allow generalization to the whole South African (youth) population, but the findings of the surveys do point to very low levels of emotional well-being among thousands of surveyed participants across the country, during the lockdown period.

Figure 2: Participants emotional well-being during the pandemic

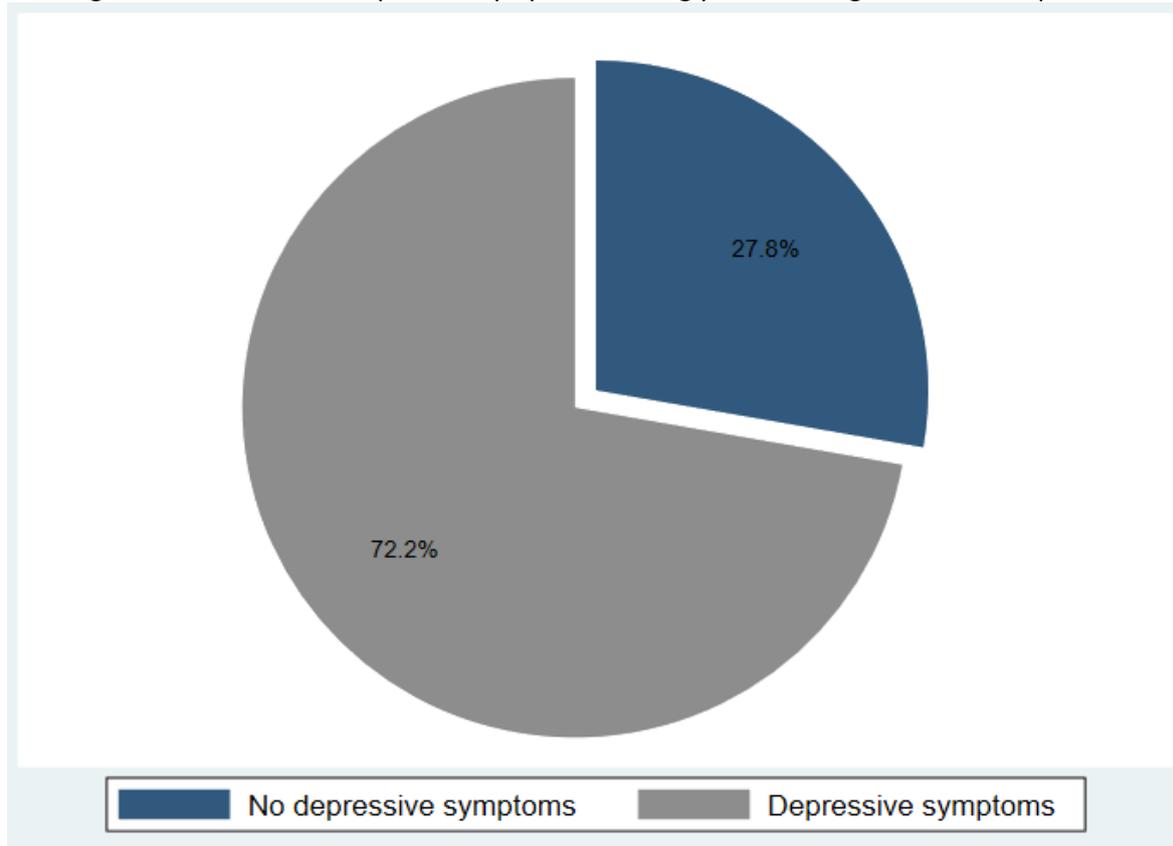


Notes: The figure is based on the sample of young people who responded to all the emotional well-being questions and had complete demographic information.

The high proportion of young people experiencing low levels of emotional well-being during the COVID-19 related lockdown are at risk of suffering from depression. Figure 3 presents the prevalence of depressive symptoms for participants in our sample. The results show that no less than 72% of the survey participants had a score of ≥ 12 , hence were classified as having depressive symptoms and at risk of having depression. However, as the CES-D 10 scale mix both negatively and positively worded emotional items, it captures not only the presence of depressive symptoms but also positive well-being. The positively worded emotional items of the CES-D 10 scale have been found not to perform adequately in some populations (Ceng et al., 2006), as they have been found to have extremely low correlation with the CES-D scale and, in some cases, in the wrong direction (Lund and Cois, 2018). A look at the two positive items in our sample equally confirms a low correlation between the CES-D scale and the positive emotional items (felt hopeful 0.119 and felt happy 0.377).⁵

⁵ Table 4 represents the correlation matrix of CES-D 10 scale and the 10 emotional items and its evident that the lowest correlation exist between the two positive emotional items and the CES-D 10 scale.

Figure 3: Prevalence of depressive symptoms among youths during the COVID-19 pandemic



Notes: The figure is based on the sample of young people who responded to all the emotional well-being questions and had complete demographic information. The proportion of participants with depressive symptoms is based on the CES-D 10 scale with a cut-off score of ≥ 12 .

To check the effect of the two positive items, we derive a modified 8-item CES-D scale that includes the negative emotional items only and ranges from 0-24. In line with the reduced items in the scale, we adopt a cut-off score of ≥ 9 for the CES-D 8 scale.⁶ We find that still, 70.2% of the survey participants had a score of ≥ 9 , hence were classified as being at risk of having depression. Thus, regardless of the version of the CES-D scale used, our results confirm a prevalence rate of depressive symptoms among participating youth of over 70%. A sensitivity check based on the CES-D 10 scale using a more stringent cut-off score of ≥ 15 reveals a prevalence of 33%, which is still high.

Analysis of the nationally representative 2017 NIDS data revealed that 12% of young people aged 18-35 years had a score of ≥ 12 , a proportion that is substantially lower than the 72% found in our survey. Other studies in South Africa also found relatively low prevalence of depressive symptoms among their participants (Nduna et al., 2013; Baron et al., 2017; Eyal and Burns, 2019). For example, looking at three different population samples, Baron et al. (2017) found a prevalence rate of depressive symptoms of 6.6% for Zulu, 6.9% for Xhosa and 18% for Afrikaans for people sampled from the City of Cape Town in Western Cape and eThekweni in KwaZulu-Natal. Focusing on young people aged 15-26 years in the

⁶ This decision was informed by the researchers' consultations with Professor Crick Lund and his colleagues at the Alan J Flisher Centre for Public Mental Health.

Eastern Cape, Nduna et al. (2013) found a prevalence rate of depressive symptoms of 21% for female and 14% for male participants.

These huge differences in prevalence rates of depressive symptoms among young people may be explained by differences in the samples. For example, our study focused on young people aged 18-35 years across all provinces; Nduna et al. (2013) focused on a sample of young people aged 15-26 years in the Eastern Cape, while Baron et al. (2017) looked at a sample of the general population from the City of Cape Town in Western Cape and eThekweni in KwaZulu-Natal. The variation observed may also be caused by self-selection by participants in the U-report survey. It might be the case that the bulk of the young people who chose to participate in the survey were those who were already at greater risk of depression or who felt a stronger need to express their sorrows. Further, the discrepancy in prevalence rates of depressive symptoms may of course also be explained by differences in time-periods in which the various sets of survey data were collected: the other studies cited above used data that were collected during a 'normal' period and during which we might expect lower prevalence rates of mental ill-health.

Our survey data, on the other hand, were collected during the catastrophic COVID-19 pandemic that has not only led to high numbers of physical health problems and death but has also caused huge financial and job losses in South Africa (Ranchhod and Daniels, 2020; Jain et al., 2020). Thus, the high prevalence rate of depressive symptoms revealed in our study may be a reflection of the impact of COVID-19 and related lockdown on young people's emotional well-being. This explanation is supported by studies conducted in other countries during the pandemic (Zhou et al., 2020; Mazza et al., 2020).

Given the high prevalence of depressive symptoms among youths in our sample, we look at the characteristics of young people by depressive symptom status in Table 2. Based on the Chi-squared test, except for location (rural, urban formal and urban informal), all the other characteristics illustrate significant differences between youths with depressive symptoms and those with no depressive symptoms. Compared to participants with no depressive symptoms, a significantly high proportion of participants with depressive symptoms were young people age 20-24 years (55% vs 50%), were female (41% vs 34%) and had matric education (44% vs 37%). On the other hand, compared to participants with depressive symptoms, a high proportion of participants with non-depressive symptoms were young people aged 18-19 years (32% vs 27%), were male (66% vs 59%) and had less than grade 9 or less (17% vs 12%).

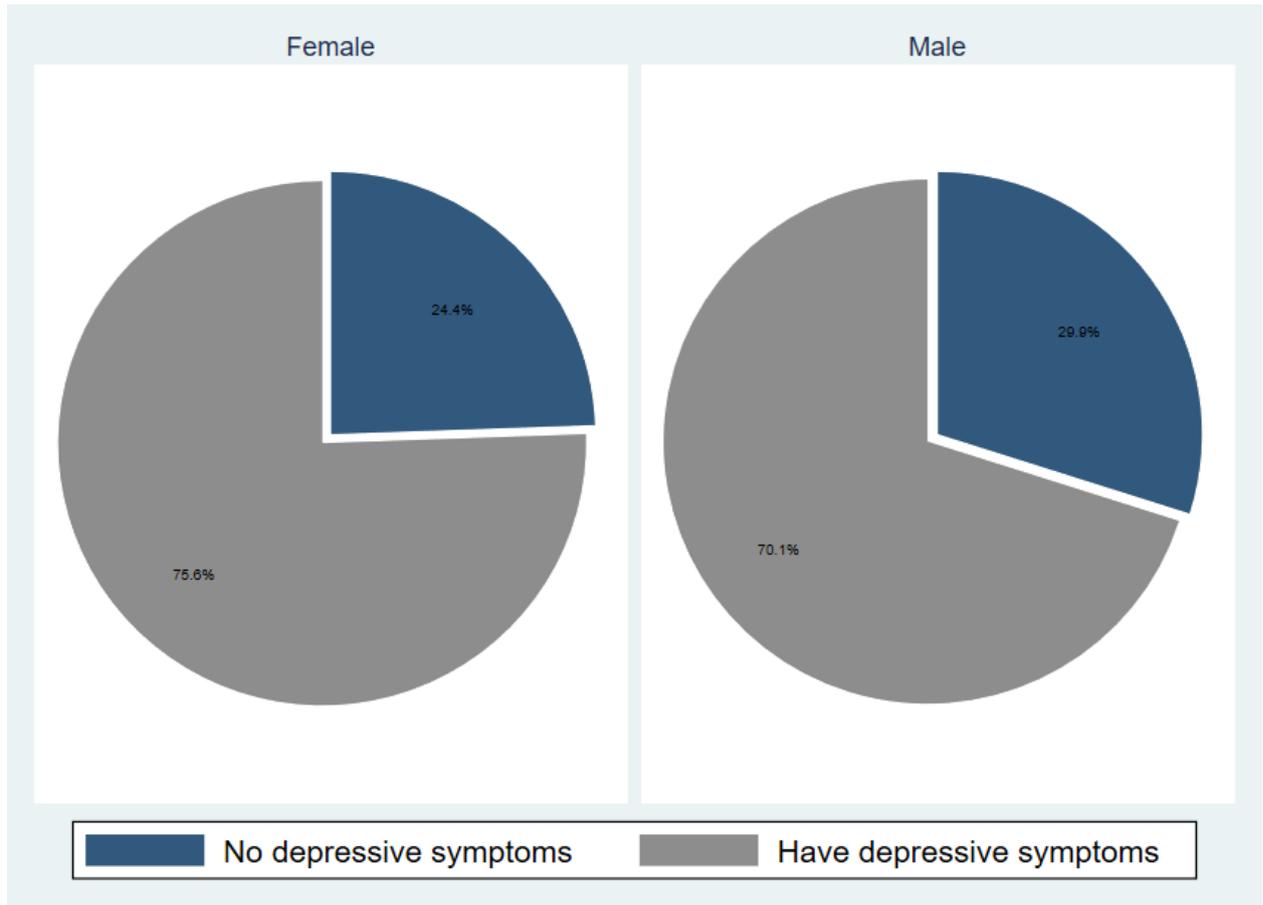
Table 2: Participants characteristics by depressive symptom status

	Indicator	No depressive symptoms		Depressive symptoms		Chi-square test
		1581		4112		
Age group	18-19	511	32.3	1089	26.5	19.890*
	20-24	797	50.4	2244	54.6	
	25-29	188	11.9	516	12.6	
	30-35	85	5.4	263	6.4	
Gender	Female	543	34.4	1678	40.8	20.014*
	Male	1038	65.7	2434	59.2	
Race	Black	1448	91.6	3677	89.4	12.647*
	Coloured	84	5.3	216	5.3	
	Indian/Asian	5	0.3	24	0.6	
	White	44	2.8	195	4.7	
Education level	Grade 9 or less	274	17.3	503	12.2	50.427*
	Grade 10/11	593	37.5	1355	33.0	
	Matric	581	36.8	1787	43.5	
	Post-matric	133	8.4	467	11.4	
Location	Rural	632	40.0	1592	38.7	4.259
	Urban formal	631	40.0	1589	38.6	
	Urban informal	318	20.0	931	22.6	

Notes: Information is based on the sample of young people who responded to all the emotional well-being questions and had complete demographic information. * significant at <0.01 level.

We turn back to the sample of young people with depressive symptoms and document the prevalence of depressive symptoms across different youth groups. Figure 4 shows the prevalence of depressive symptoms disaggregated by gender, indicating a higher prevalence of depressive symptoms among female participants (76%) than among male participants (71%). This finding is in line with previous studies conducted in South Africa (Tomlinson et al., 2009; Nduna et al., 2013) and other countries (Luo et al., 2020; Salari et al., 2020). The higher risk of depression among women has been attributed to factors specific to their position in society, as well as biological, and hormonal factors (Altemus et al., 2014; Albert, 2015).

Figure 4: Prevalence of depressive symptoms during the COVID-19 pandemic by gender

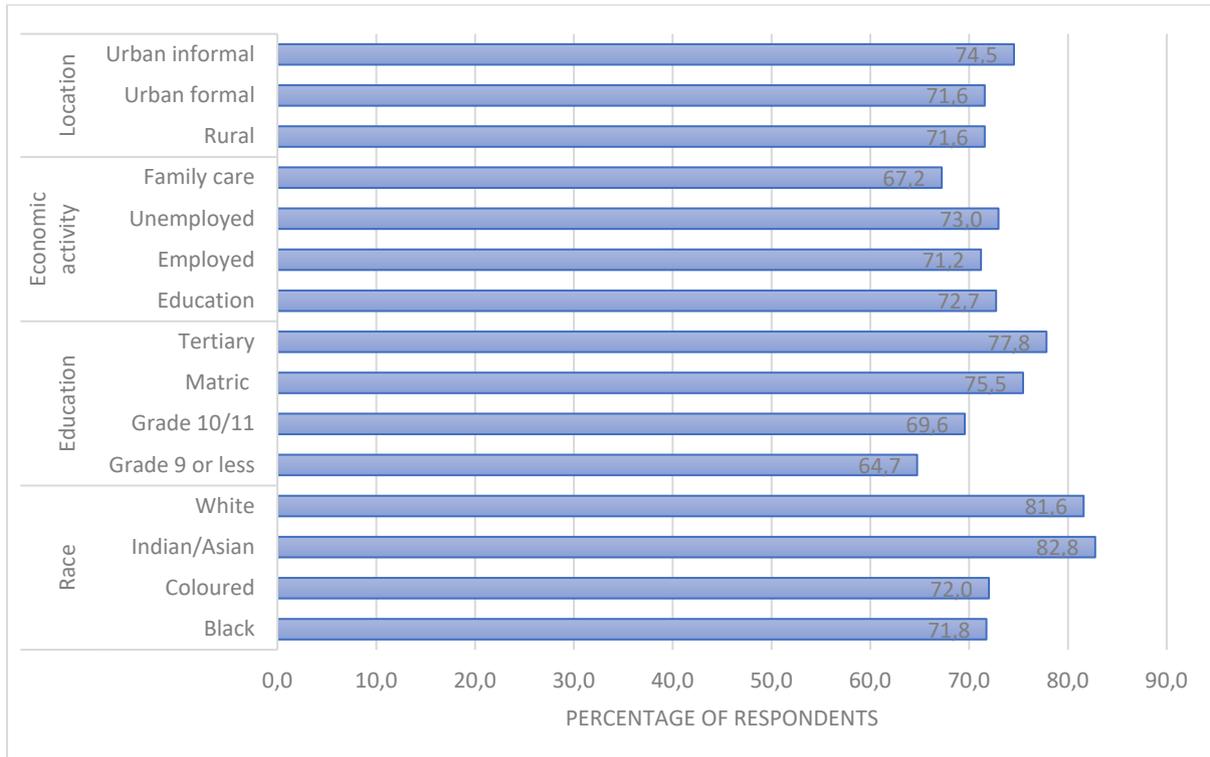


Notes: The figure is based on the sample of young people who responded to all the emotional well-being questions and had complete demographic information. The proportion of participants with depressive symptoms is based on the CES-D 10 scale with a cut-off score of ≥ 12 .

Figure 5 shows the prevalence of depressive symptoms disaggregated by other youth characteristics (race, education, main economic activity and location). The analysis shows that the prevalence was highest among indian participants (83%), followed by white (81%), black (77%) and coloured (76%) youth.⁷ The risk of having depressive symptoms increases with the level of education, with the prevalence rate highest among participants with tertiary education (80%) and lowest for participants with grade 9 or less education (71%). Further, the results show a slightly higher prevalence for those who were employed, unemployed and in education just before lockdown (73%) compared to those who were responsible for providing family care (75%).

⁷ We interpret our results for indian and white participants with caution as these findings might be an outcome of the small sample size of these two groups.

Figure 5: Prevalence of depressive symptoms by participants characteristics

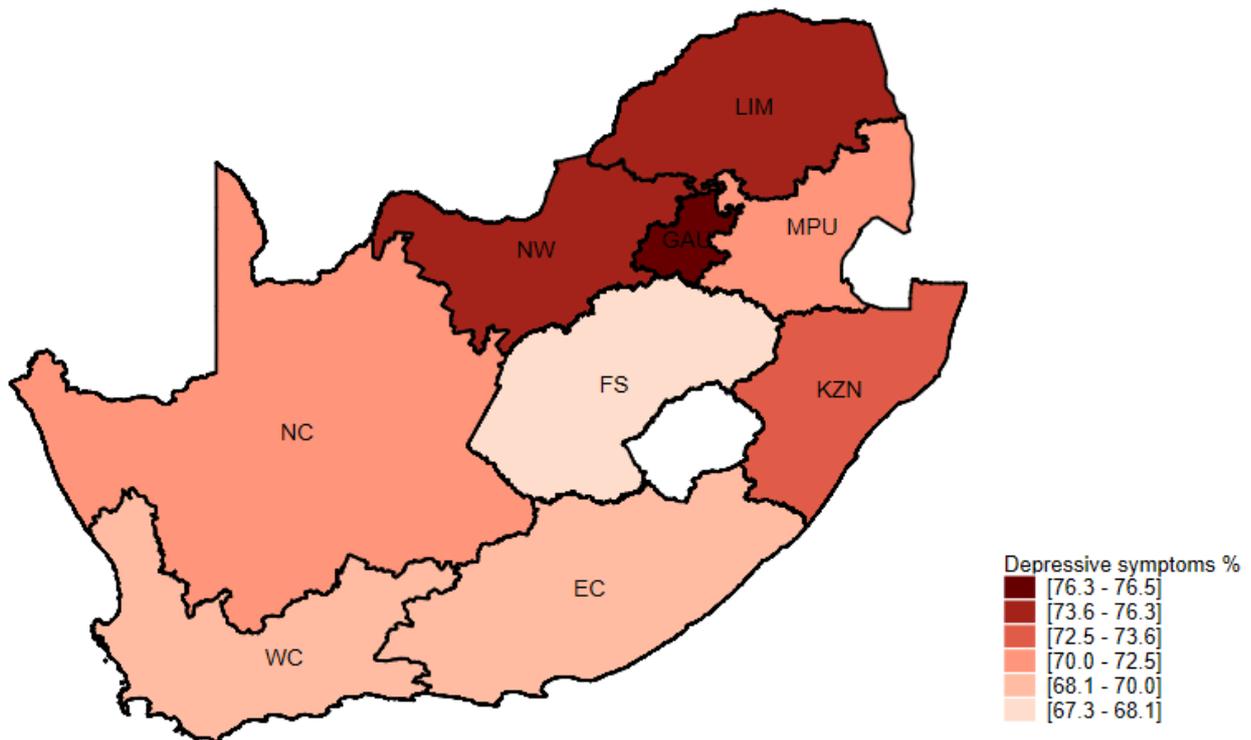


Notes: The figure is based on the sample of young people who responded to all the emotional well-being questions and had complete demographic information. The proportion of participants with depressive symptoms is based on the CES-D 10 scale with a cut-off score of ≥ 12 .

The high prevalence among those who were employed or in education here might be highlighting the impact of the COVID-19 induced lockdown on the emotional well-being of young people who saw their normal routines and paths towards aspired futures disrupted. In addition, depressive symptoms were also slightly higher among participants in urban informal areas (75%) compared to participants in urban formal and rural areas (72%). The high rate of depressive symptoms among participants in urban informal might be driven by their fear and high probability of contracting the virus due to dense living conditions and poor sanitation in these areas. These conditions make social distancing and handwashing difficult, thereby increasing the risk of infection (Gibson and Rush 2020).

Finally, Figure 6 presents the spatial distribution of young people with depressive symptoms across provinces. The map clearly shows that the prevalence of depressive symptoms varies across provinces (darker colours show high prevalence rates of depressive symptoms and lighter colours show low rates). A high proportion of young people with depressive symptoms is found in Gauteng (77%), North West (76%) and Limpopo (74%), while lower proportions are found in Free State (67%), Eastern Cape (68%) and Western Cape (70%). These geographical differences warrant further investigation.

Figure 6: Spatial distribution of young people with depressive symptoms across provinces



Notes: The figure is based on the sample of young people who responded to all the emotional well-being questions and had complete demographic information. The proportion of participants with depressive symptoms is based on the CES-D 10 scale with a cut-off score of ≥ 12 .

In summary, the descriptive analysis in this section confirms a high prevalence rate of depressive symptoms among young people who took part in the survey but with significant differences among different groups of participants. Prevalence was higher for participants who were older, female, had higher education and lived in urban informal areas.

Correlates of depressive symptoms among participating young people

Table 3 presents the regression results for the correlates of depressive symptoms among the participants. The first six regressions explore the bivariate associations between the log of the CES-D 10 score and different individual factors. Column (7) is the regression for the multivariate association between the log of the CES-D 10 score and all the individual factors, while the last two are the multivariate regressions for male and female participants separately. Robust standard errors are reported as we correct for heteroscedasticity among participants. Before interpreting our results, it is important to point out that all our regressions have significantly low R-squared values, suggesting that these regression models performed relatively poor. This highlights that we are possibly missing other important factors that are associated with depressive symptoms. Nevertheless, our results reveal important associations between depressive symptoms and a number of factors worth explaining.

Table 3: Individual correlates of depressive symptoms among participating young people

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
20-24 years	0.059*** (0.013)						0.045*** (0.014)	0.046** (0.018)	0.043** (0.021)
25-29 years	0.062*** (0.019)						0.068*** (0.020)	0.072*** (0.026)	0.065* (0.033)
30-35 years	0.076*** (0.027)						0.091*** (0.028)	0.109*** (0.036)	0.065 (0.048)
Female		0.066*** (0.011)					0.052*** (0.011)		
Coloured			-0.004 (0.027)				-0.001 (0.029)	-0.002 (0.044)	-0.011 (0.036)
Indian			0.181*** (0.059)				0.139** (0.057)	0.122 (0.090)	0.119 (0.075)
White			0.171*** (0.031)				0.112*** (0.034)	0.081 (0.070)	0.080** (0.040)
Grade 10/11				0.061*** (0.017)			0.050*** (0.017)	0.027 (0.021)	0.093*** (0.029)
Matric				0.121*** (0.016)			0.099*** (0.017)	0.064*** (0.022)	0.163*** (0.029)
Tertiary				0.174*** (0.023)			0.127*** (0.024)	0.070** (0.033)	0.217*** (0.035)
Employed					-0.007 (0.015)		-0.030* (0.017)	-0.047** (0.022)	0.001 (0.026)
Unemployed					-0.000 (0.013)		-0.018 (0.014)	-0.014 (0.018)	-0.024 (0.022)
Family care					-0.039* (0.023)		-0.037* (0.023)	-0.044 (0.031)	-0.025 (0.032)
Urban formal						0.027** (0.013)	0.005 (0.014)	-0.015 (0.017)	0.038* (0.022)
Urban informal						0.032** (0.014)	0.029* (0.015)	0.031 (0.020)	0.027 (0.024)
Constant	2.676*** (0.011)	2.694*** (0.007)	2.712*** (0.006)	2.631*** (0.014)	2.723*** (0.009)	2.702*** (0.009)	2.568*** (0.025)	2.588*** (0.031)	2.573*** (0.041)
Province dummy	No	No	No	No	No	No	Yes	Yes	Yes
Observations	5,693	5,693	5,693	5,693	5,567	5,693	5,567	3,396	2,171
R-squared	0.004	0.006	0.008	0.015	0.001	0.001	0.034	0.019	0.053
RMRE	0.415	0.415	0.415	0.413	0.416	0.416	0.409	0.415	0.400
F	7.893	35.08	13.41	28.58	1.091	3.404	8.657	3.276	5.737

Notes: The dependent variable is log of the continuous 10-item CES-D score variable ranging from 0-30. For age groups, the base group is 18-19 years, for gender is male, for education is grade 9 or less, for economic activity is education and for location is rural areas and Western Cape. For all the regression that includes main economic activity, the total number of observations is less than 5693 because we have some participants who did not provide information on the main economic activity they were involved in. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Our results show that increasing age, being female, being white and indian, increased levels of education and residing in urban areas are significantly associated in bivariate analysis with depressive symptoms while taking care of family members was negatively associated. Further, no significant difference was evident between black and coloured youth nor between those in education and those in employment or unemployment.

In the multivariate analysis in column (7) the positive and significant association between age, being female, education levels and depressive symptoms was maintained when the different individual

factors were simultaneously controlled for. The estimates indicate that being in the 20-24, 25-29 and 30-35 age groups was associated with a 4.5%, 6.8% and 9.1% increase in the depressive symptom score, respectively. Thus, compared to being young (18-19 years), being older (20-35 years) increased the prevalence of depressive symptoms, with the effect greatest for the 30-35-year-olds. The observed increase in depressive symptoms with increasing age conforms to the pattern found by other studies (Buber and Engelhardt, 2011), but during the current COVID-19 pandemic, depressive symptoms are significantly higher among 21 – 40 year-olds (Salari et al., 2020). It has been suggested that this might be due to concerns this age group has over the future consequences and economic challenges caused by the pandemic (Ahmed et al, 2020).

Being female was associated with a 5.2% increase in the depressive symptom score, implying that female participants were at greater risk of having depressive symptoms compared to their male counterparts during the first lockdown phase in the country. The finding on the gender dimension is consistently supported by international studies (Wang et al., 2020; Qiu et al., 2020). While there was no significant difference between black and coloured youth, in contrast to being black, being indian and white increased the depressive symptom score by 13.9% and 11.2%, respectively.⁸

Relative to having a grade 9 or lower level of education, having grade 10/11 was associated with a 11.2% increase in the depressive symptom score while having a matric was associated with a 5% and having tertiary education was associated with a 9.9% increase. This finding contradicts existing evidence in South Africa that finds higher education to be positively associated with good mental health (Tomlinson et al., 2009; Eyal and Burns, 2018).⁹ International studies also confirm evidence of a positive association between higher education and good mental health (Kate et al., 2017). However, our results are consistent with findings from another study conducted during the current COVID-19 pandemic (Moghanibashi-Mansourieh, 2020). The positive association between prevalence of depressive symptoms and higher education has been attributed to a higher self-awareness about health (Zhang and Ma, 2020) and higher rate of following COVID-19 news that is generally distressing (Moghanibashi-Mansourieh, 2020) among those with higher educational attainment. Further, the high prevalence of depressive symptoms among those with higher education might be due to their fear of seeing their future plans disrupted indefinitely. This result suggests that a shock event like the COVID-19 pandemic has a harsher effect on those with higher levels of education versus the protection factor of higher education in “normal” times.

Compared to being in education before lockdown, being employed reduced the depressive symptom score by 3%, while providing family care reduced it by 3.7%. These results are to be expected given the protective effects of being employed, while those offering family care may not experience the disruption of lockdown as severely as those who saw their educational trajectory interrupted. The analysis shows no significant difference between those in education and those unemployed. Living in

⁸ The small number of indian and white participants with depressive symptoms might be influencing these estimates. Hence, we report these results with caution.

⁹ Of these studies, Tomlinson et al. (2009) found that the prevalence of depression was significantly higher among those with low levels of education (Grade 1 – 11) than among those with higher levels of education (Matric and higher). This study looked at a nationally representative sample of 4 351 adult South Africans of all racial groups.

rural areas and urban formal had no significant difference but compared to living in rural areas, residing in urban informal was associated with a 2.9% increase in the depressive symptom score.¹⁰

In column 8 and 9, we present results for the multivariate regressions for male and female separately. The analysis shows that as with the full sample, depressive symptoms were significantly associated with increasing age as well as increasing education for both male and female participants. Compared to being 18-19 years, being 20-24, 25-29 and 30-35 years was associated with a 4.6%, 7.2% and 10.9% increase in the depressive symptom score for male participants. For female participants, relative to being 18-19 years, being 20-24 and 25-29 years was associated with a 4.3% and 6.5% increase in the depressive symptom score. Thus, the association of age and depressive symptoms was slightly stronger for male participants than female youth. While there was no association between race and depressive symptoms for male participants, for females, compared to being black, being white was associated with an 8% increase in the depressive symptom score.¹¹ Compared to having grade 9 or less, having grade 10/11 was associated with a 6.4% increase in the depressive symptom score for male participants, while having tertiary education was associated with a 7% increase. For female participants, relative to having grade 9 or less, having grade 10/11, matric and tertiary education was associated with a 9.3%, 16.3% and 21.7% increase in the depressive symptom score. This shows that education had a stronger association with depressive symptoms for female participants than male.

Economic activity before lockdown had no association with the depressive symptom score for female participants but for male participants, being employed reduced the score by 4.7%. While residing in rural vs urban areas had no association with depressive symptoms for male participants, for females, compared to living in rural areas, residing in urban formal was associated with a 3.8% increase in the depressive symptom score.¹²

To check the robustness of our regression results, we estimate three alternative multivariate models. Instead of using the log of the CES-D scale as the dependent variable, we first estimate an OLS model where we use the CES-D 10 scale in levels, we then estimate a Linear Probability Model (LPM) and a logistic regression model using a dummy for the depressive symptom score as the dependent variable (the dummy is based on the CES-D 10 score with 1 if ≥ 12 and 0 otherwise). The results are represented in Table 5. For the full sample, age, gender, education, main economic activity before lockdown and residing in an urban informal area remains significant in all the 3 models. In particular, depressive

¹⁰ While we did not present the estimates for province dummies, the results indicate that young people living in KwaZulu-Natal, North West, Gauteng and Limpopo were at greater risk of having depressive symptoms compared to young people in the Western Cape. Being in these provinces was associated with between 3.9% (KwaZulu-Natal) and 6.3% (Gauteng) increase in the depressive symptom score. No significant difference was evident for young people in the Western Cape and other provinces like Eastern Cape, Northern Cape, Free State, and Mpumalanga.

¹¹ The small number of white participants with depressive symptoms might be influencing these estimates. Hence, we report these results with caution.

¹² Looking at the provincial dummies, for females, compared to being in Western Cape, being in Free State reduced the prevalence of depressive symptoms by 7%, while the estimates of all the other provinces were not significant. Similar to the full sample, relative to being in Western Cape, being in KwaZulu-Natal, North West, Gauteng and Limpopo increased the depressive symptom score by between 5.4% (KwaZulu-Natal) and 8.2% (Gauteng) for male participants. No significant difference was evident for young male in the Western Cape and other provinces.

symptoms increased with age, being female, having higher education and residing in an urban informal area, while they decreased with being employed and providing family care. For gender, as with the full sample age, education, main economic activity before lockdown and urban informal residency remain significant in all the 3 models for male, while for female youth, some of the factors lose their significance.

Notwithstanding these slight changes, results in Table 5 lead to similar conclusions as those reached in Table 3. Thus, regardless of the model estimated, our results indicate that being older, being female, having higher education and living in urban informal areas were significantly associated with a higher prevalence of depressive symptoms among the young people who participated during the strict stage of the COVID-19 related lockdown. However, being employed and providing family care were significantly associated with lower depressive symptoms. Estimates by gender showed that individual factors had a differential effect among male and female participants, with age more important for male participants, while education was more important for female participants.

Finally, while we have estimated all our regressions using individual and location factors as correlates only, we check the effects of access to information on mental health problems. Using equation (1), we examine the association between the depressive symptom score and access to information, measured by having a television, radio, smartphone, data bundles, internet, computer and laptop. The results of the bivariate analysis in Table 6 (in appendix) show a positive and significant association between depressive symptom score and all the variables (except radio). This implies that having these items, which facilitated access to information, increased the depressive symptoms among young people during the pandemic. However, once we control for other individual characteristics in the multivariate analysis, except for data bundles, all the other factors lose their significance. Thus, in Table 7 (in appendix), we report results for the multivariate model including data bundles only. For the full sample, in column (1), data bundles were associated with a 4.8% increase in the depressive symptom score. This association might be a result of young people accessing endless streams of fabricated and unverified information about the COVID-19 pandemic, which in turn exacerbated their depressive symptoms. Recent studies suggest that misinformation and fabricated information about COVID-19 can indeed lead to an increase in depressive symptoms (Zhou et al., 2020). In the multivariate regression of male and female youth separately (column 2 and 3), access to data bundles remained positive and highly significant for female participants only, with data bundles associated with a 7% increase in the depressive symptom score.

6. Conclusions

This study provided the first in-depth assessment of the prevalence of and factors associated with depressive symptoms among young people aged 18-35 years during the COVID-19 related lockdown in South Africa. The study utilized data from a web-based cross-sectional survey with 11 700 participants covering all the provinces of the country. Of these participants, 5693 responded to all the emotional well-being questions.

Descriptive analysis showed that young people who participated in the survey experienced low levels of emotional well-being during the COVID-19 related lockdown, with no less than 72% of young participants revealed to be having depressive symptoms. This prevalence rate is high and worrisome. A disaggregation by youth characteristics showed that the prevalence was higher among youths who were older (76%) and female (76%), and had higher education (78%).

The multivariate regression analysis showed that increasing age, being female, having higher levels of education and residing in urban informal areas were significantly associated with increasing depressive symptoms. In contrast, being employed and providing family care were significantly associated with decreasing depressive symptoms. Of these factors, age and education exerted greater association with depression. Estimates by gender pointed to important underlying differences between male and female participants, driven by specific individual factors. The results showed that age had a greater association with depressive symptoms for male participants, while education had a greater association for female participants. Overall, our results highlight that while combating the COVID-19 pandemic, policymakers need to also pay close attention to mental health problems experienced by young people in the country, as those with depressive symptoms might see their chances to reconnection to education or employment hampered by the effects of mental ill-health, once lockdown is released.

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Appendix

Additional Tables

Table 4: Correlation matrix between the CESD-10 scale and the emotional items

	logCESD	Bothered	Mind	Depressed	Effort	Fearful	Restless	Lonely	Going	Hopeful	Happy
logCESD	1										
Bothered	0.5433	1									
Mind	0.5567	0.4133	1								
Depressed	0.6151	0.3462	0.4108	1							
Effort	0.4111	0.2096	0.2355	0.2598	1						
Fearful	0.5446	0.2264	0.2465	0.2939	0.1946	1					
Restless	0.545	0.211	0.2385	0.331	0.1816	0.3231	1				
Lonely	0.5327	0.186	0.2093	0.2835	0.164	0.245	0.2756	1			
Going	0.5107	0.1973	0.2171	0.2272	0.1659	0.2395	0.2129	0.3024	1		
Hopeful	0.1187	-0.0576	-0.048	-0.0309	-0.1841	-0.0679	-0.0178	-0.0808	-0.0761	1	
Happy	0.3766	0.0866	0.0801	0.1546	-0.0089	0.1301	0.0931	0.0962	0.0524	0.133	1

Notes: These different emotional well-being variables relates to Felt bothered, Trouble with my mind, Felt depressed, Everything was an effort, Felt fearful, Felt restless, Felt lonely, Could not get going, Felt hopeful and Felt happy.

Table 5: Individual correlates of depressive symptoms among participating young people

Variable	Ordinary Least Square			Linear Probability model			Logistic regression model		
	(ALL)	(M)	(F)	(ALL)	(M)	(F)	(ALL)	(M)	(F)
20-24 years	0.562*** (0.191)	0.614** (0.246)	0.475 (0.307)	0.050*** (0.015)	0.057*** (0.020)	0.041* (0.023)	0.243*** (0.073)	0.263*** (0.093)	0.223* (0.121)
25-29 years	1.108*** (0.286)	1.165*** (0.353)	1.097** (0.494)	0.060*** (0.022)	0.084*** (0.028)	0.016 (0.036)	0.293*** (0.110)	0.398*** (0.135)	0.083 (0.187)
30-35 years	1.603*** (0.373)	1.910*** (0.463)	1.145* (0.649)	0.089*** (0.027)	0.105*** (0.034)	0.069 (0.046)	0.443*** (0.144)	0.503*** (0.174)	0.380 (0.261)
Female	0.772*** (0.162)			0.049*** (0.012)			0.252*** (0.065)		
Coloured	0.199 (0.364)	0.333 (0.512)	-0.095 (0.519)	0.013 (0.028)	0.032 (0.039)	-0.014 (0.039)	0.066 (0.140)	0.157 (0.191)	-0.073 (0.207)
Indian	1.981** (0.953)	1.665 (1.524)	1.697 (1.218)	0.086 (0.070)	0.066 (0.120)	0.079 (0.083)	0.522 (0.497)	0.342 (0.678)	0.597 (0.748)
White	2.318*** (0.497)	1.447 (1.006)	1.989*** (0.591)	0.057* (0.030)	0.078 (0.067)	0.026 (0.035)	0.338* (0.186)	0.398 (0.377)	0.170 (0.226)
Grade 10/11	0.815*** (0.234)	0.447 (0.292)	1.502*** (0.394)	0.037* (0.021)	0.015 (0.025)	0.079** (0.035)	0.166* (0.093)	0.068 (0.115)	0.360** (0.158)
Matric	1.727*** (0.236)	1.159*** (0.294)	2.731*** (0.391)	0.085*** (0.020)	0.055** (0.025)	0.140*** (0.034)	0.407*** (0.093)	0.259** (0.115)	0.693*** (0.157)
Tertiary	2.244*** (0.334)	1.521*** (0.442)	3.402*** (0.509)	0.096*** (0.025)	0.049 (0.034)	0.170*** (0.040)	0.475*** (0.131)	0.229 (0.162)	0.909*** (0.222)
Employed	-0.497** (0.231)	-0.769*** (0.288)	-0.007 (0.388)	-0.033* (0.017)	-0.040* (0.023)	-0.025 (0.027)	-0.165* (0.088)	-0.188* (0.109)	-0.145 (0.153)
Unemployed	-0.429** (0.196)	-0.437* (0.253)	-0.436 (0.313)	-0.018 (0.015)	-0.025 (0.020)	-0.009 (0.023)	-0.091 (0.077)	-0.117 (0.098)	-0.055 (0.129)
Family care	-0.717** (0.319)	-0.807* (0.443)	-0.555 (0.465)	-0.056** (0.027)	-0.051 (0.037)	-0.058 (0.039)	-0.272** (0.127)	-0.235 (0.170)	-0.306 (0.194)
Urban formal	0.105 (0.190)	-0.188 (0.235)	0.582* (0.320)	-0.012 (0.015)	-0.023 (0.019)	0.002 (0.024)	-0.060 (0.074)	-0.107 (0.090)	0.010 (0.130)
Urban informal	0.404* (0.211)	0.485* (0.266)	0.302 (0.352)	0.031* (0.016)	0.044** (0.021)	0.008 (0.027)	0.159* (0.085)	0.221** (0.105)	0.042 (0.145)
Constant	12.944*** (0.347)	13.209*** (0.426)	13.073*** (0.583)	0.594*** (0.029)	0.594*** (0.037)	0.634*** (0.047)	0.347** (0.138)	0.357** (0.168)	0.549** (0.235)
Province dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,567	3,396	2,171	5,567	3,396	2,171	5,567	3,396	2,171
R-squared	0.048	0.028	0.071	0.021	0.016	0.030			
RMSE	5.756	5.705	5.826	0.445	0.456	0.426			
F	11.68	4.512	7.610	5.350	2.426	3.005			
Pseudo R2							0.0181	0.0128	0.0266
Wald chi2							116.3	51.88	63.38

Notes: All- is the full sample, M – male sample and F- female sample. For the OLS regression, we use as dependent variable the CESD-10 scale in levels, for the Linear Probability Model (LPM) and the Logistic Regression Model, we use the prevalence of depressive symptoms dummy as the dependent variable. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 6: Access to information and depressive symptoms among participating young people

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Television	0.030*** (0.012)						
Radio		0.019 (0.013)					
Computer			0.074** (0.034)				
Smartphone				0.047*** (0.012)			
Internet					0.079*** (0.023)		
Data bundles						0.069*** (0.017)	
Laptop							0.073*** (0.023)
Constant	2.709*** (0.007)	2.715*** (0.006)	2.718*** (0.006)	2.706*** (0.007)	2.714*** (0.006)	2.712*** (0.006)	2.715*** (0.006)
Observations	5,693	5,693	5,693	5,693	5,693	5,693	5,693
R-squared	0.001	0.000	0.001	0.003	0.003	0.003	0.002
RMSE	0.416	0.416	0.416	0.415	0.416	0.415	0.416
F	6.790	2.265	4.862	14.61	12.12	16.20	10.20

Notes: The dependent variable is log of the continuous 10-item CESD score variable ranging from 0-30. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 7: Access to information and depressive symptoms among participating young people

	Full sample	Male	Female
	(1)	(2)	(3)
20-24 years	0.046*** (0.014)	0.046** (0.018)	0.044** (0.021)
25-29 years	0.069*** (0.020)	0.073*** (0.026)	0.065* (0.033)
30-35 years	0.091*** (0.028)	0.108*** (0.035)	0.066 (0.047)
Female	0.051*** (0.011)		
Coloured	-0.003 (0.028)	-0.003 (0.044)	-0.014 (0.036)
Indian	0.130** (0.057)	0.121 (0.090)	0.098 (0.073)
White	0.101*** (0.034)	0.076 (0.071)	0.065 (0.040)
Grade 10/11	0.049*** (0.017)	0.027 (0.021)	0.092*** (0.029)
Matric	0.097*** (0.017)	0.063*** (0.022)	0.160*** (0.029)
Tertiary	0.125*** (0.024)	0.069** (0.033)	0.212*** (0.035)
Employed	-0.030* (0.017)	-0.046** (0.022)	-0.002 (0.026)
Unemployed	-0.018 (0.014)	-0.014 (0.018)	-0.025 (0.021)
Family care	-0.039* (0.022)	-0.045 (0.031)	-0.029 (0.032)
Urban formal	0.004 (0.014)	-0.015 (0.017)	0.037 (0.022)
Urban informal	0.029* (0.015)	0.031 (0.020)	0.027 (0.024)
Data bundles	0.048*** (0.018)	0.024 (0.025)	0.070*** (0.024)
Constant	2.563*** (0.025)	2.585*** (0.031)	2.566*** (0.041)
Province dummy	Yes	Yes	Yes
Observations	5,567	3,396	2,171
R-squared	0.035	0.020	0.057
RMSE	0.409	0.415	0.399
F	8.893	3.219	5.928

Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1



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