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COVID-19 experience and student wellbeing amongst publicly funded higher education students in South Africa after the first, and second waves

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Abstract
Although higher education students have been identified as one of the social groups most affected by the impact of COVID-19, higher education literature appears to focus more on documenting implications for teaching and learning, curriculum and institutions, than student wellbeing. This has resulted in gaps to our understanding and approaches to intervene positively in, student wellbeing within the higher education space 'post-COVID-19'. Drawing on a novel survey data set administered in November 2021, of the 6877 higher education (University and TVET College) students in South Africa, this paper aims to contribute through cross-sectional data that allows analysis of student experience of COVID-19 and its relationship to student wellbeing. As expected, our findings confirm COVID-19 experience as a significant predictor of student wellbeing. We also identify *satisfaction with interventions from higher education stakeholders* in response to COVID-19 as the strongest, and the extent to which students felt impacted by *changes to their routine behaviours* as the weakest, predictors of wellbeing. The paper adds to existing international literature, the South African context with a large sample. Secondly, the analysis provides a more comprehensive view of the link between COVID-19 and higher education student wellbeing, as TVET College students are included. The composite measurement of COVID-19 experience is a further contribution. Finally, the findings add to the literature on COVID-19 and higher education student wellbeing, the experience of disadvantaged students. The findings underscore the emotional health of students as a critical area for higher education policy and intervention during times of uncertainty or disruption.

Keywords COVID-19 · Student wellbeing · Higher education · Publicly funded students

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Introduction

The first case of COVID-19 was reported in South Africa on the 5th of March 2020 with the spread of the virus recognised as a national pandemic on the 15th of March 2020. As cases increased,[1] government began to sensitize citizenry, encouraging prevention measures such as social distancing, the wearing of masks and improved sanitation habits. Like most countries, lockdown measures had to be employed. South Africa employed a five-level COVID-19 alert system to manage the gradual easing of lockdown in relation to several criteria "including the level of infections and rate of transmission, the capacity of health facilities, the extent of the implementation of public health interventions and the economic and social impact of continued restrictions" (National Institute for Communicable Diseases (NICD), 2021; Republic of South Africa, 2023). Levels were reviewed on a weekly or bi-weekly basis dependent on need.

Strict lockdown measures announced under level 5 (as amended on 16 April 2020) meant severe restrictions on movement, public gatherings, and interaction. In keeping with the restriction on social interaction under lockdown level 5, students and lecturers alike, were requested to stay at home or vacate residences and university or TVET College accommodation (South African Department of Higher Education and Training (SADHET), 2020), alongside further regulations to limit the spread of the virus. All higher education and training institutions in South Africa extended their break period from the 16 March 2020 and closed all campuses and learning centres. Only a small percentage of students, mainly the international and post graduate students, remained in the off and on campus residences. A risk-adjusted strategy was implemented to phase-in the reopening of campus learning as from 11 May 2020 to manage the gradual opening of on-site classroom activities and to ensure that the gains achieved during the lockdown were maintained (SADHET, 2020). Phasing in ensured the regulation of the number of students on campus, including in residences, but as far as was possible, based on the capacity of different institutions, all students and staff members who could work remotely were encouraged to do so. To establish a controlled return of students to campuses, each level had a required number of students permitted. Level 4 provided for a limited and controlled number of students to return to campuses, these students included final year students in programmes requiring clinical training. During level 3, a maximum of 33% of the student population was permitted in addition to previously identified groups. During level 2, a maximum of 66% of the student population was permitted to return to campus, including all students mentioned in level 3 and 4 regulations and first years in all undergraduate programmes. All other students had to be supported through remote teaching learning and assessment modes until their return to campus. Once level 1 was reached, 100% of the student population would be permitted to return to campus, with health protocols observed.

Since May 2020 to when the National State of Disaster was lifted on the 5th of April 2022, alert levels fluctuated between 1 and 3, the highest being level 4 in June to July 2021 (Republic of South Africa, 2023). Thus, while the most extreme limits to interaction were experienced in March to May 2020 in South Africa, even up until 2022 the system has had to deal with some level of disruption to 'normal' education and training practices. These interventions, although necessary, of course had the potential to affect student's ability to function and feel well. For example, requesting students to stay at home and vacate residences did not take into consideration the plight of postgraduate students and international

[1] As of the 27th of February 2021, 1.5 million positive cases had been confirmed, 1.32 million recoveries noted, and 49,993 deaths recorded (NICD, 2021).

students who could not return home or those who returned to homes without basic learning infrastructures. Students were faced with the challenge of coping and being successful during lockdown while being alienated from key peer and institutional support structures and not all had the technological fluency to adjust easily. Furthermore, it has also been asserted that disadvantaged students would be particularly vulnerable to the disruptive and negative implications for wellbeing emanating from the COVID-19 pandemic, as they have less firm or extensive, social and economic resources that could act as buffers against sudden shocks (Walker, 2019). Within the South African higher education system, publicly funded (colloquially referred to as National Student Financial Aid Scheme (NSFAS)) students represent a cohort from the most disadvantaged households[2] and thus receiving NSFAS funding is a clear indication of financial and socio-economic disadvantage in the South African context (Wildschut et al., 2020). Based on such concerns, the NSFAS conducted a survey to understand the experiences of their students during COVID-19, its impact on their wellbeing and to investigate how this was linked to their levels of engagement and self-assessed learning capacity.

Using this novel dataset, this paper focuses on understanding the relationship between COVID-19 experience and wellbeing among this extremely vulnerable group of higher education students. This focus aims to contribute to addressing recognised gaps in the literature on COVID-19 experience and its impact on disadvantaged higher education students in Africa. To elucidate this focus, it is important to first review available literature on student wellbeing and then secondly, how the impact of COVID-19 on student wellbeing has been explored ("Literature review" section). This offers important context for exploring the wider relevance of findings in Sects. 3 and 4. This is followed by the methods section where the instruments and the sample are described ("Methods" section), followed by the results from the analysis ("Results" section), which leads into the discussion section where the findings are juxtaposed against other studies ("Discussion of findings" section). While of course the findings emerge from analysis of the COVID-19 experience and wellbeing measures employed in the study, the conclusion section attempts to outline wider implications for higher education policy and practice in times of disruption and uncertainty ("Conclusion: considering the implications of the findings" section).

Literature review

Student wellbeing

The construct of wellbeing is multidimensional, usually distinguished by two related and overlapping conceptions, hedonic- (subjective wellbeing-SWB) and eudaemonic wellbeing (psychological wellbeing-PWB) (Delle Fave et al., 2011; Sheldon, 2013; Huppert, 2014; Steger, 2018; Wilson-Fadiji et al., 2021). Hedonic wellbeing (SWB) represents the maximization of pleasure and minimization of pain (happiness), whereas eudaimonic wellbeing (PWB) is characterized by human flourishing, and personal meaning and growth (self-actualization) (Steger, 2016; Wilson-Fadiji et al., 2021). Wellbeing thus refers to inter- and intraindividual optimal experiences, and a positive psychological, cognitive, social, and

[2] Students are eligible for funding if they are first time students, 1) South African Social Security Agency (SASSA) beneficiaries, 2) their household income is below R350 000 ZAR, or 3) they are living with a disability and their household income is below R600 000 ZAR.

physical functioning (Deci & Ryan, 2008; Burns & Ma, 2015). The concept of student wellbeing can be understood as a population level term concerned with positive emotions rather than referring to diagnosed mental health conditions (Burns et al., 2020).

Educational research points out the importance of student wellbeing, both as an outcome (Neubauer et al., 2017; Upsher et al., 2022) and/or antecedent (Vijayalakshmi & Selvarani, 2020) of academic outcomes. Conversely, it is noted then that ill-being negatively impacts on cognitive resources crucial to academic engagement and can negatively predict academic outcomes (Phan & Ngu, 2015; Phan et al., 2016; Robinson et al., 2017). However, this literature does not consistently approach the construct of wellbeing as multidimensional and often uses a uni-dimensional measure of happiness. There is also the need for further recognition that student's wellbeing is not an aspect that depends only on individuals, and that there is also a role for institutions and educators to play to foster student wellbeing. In this regard, there has been a growing body of literature arguing for the recognition of the multidimensionality of the construct of wellbeing (quality of life, inner satisfaction, personal experience, social relationships, student affect and traits) within the academic environment (Van Damme et al., 2002; Belfi et al, 2012; Pekrun & Linnenbrink-Garcia, 2012; Phan et al., 2016; Robinson et al., 2017). In sum then, literature acknowledges that an academic system that cultivates a sense of belonging and a positive education paradigm, may infuse positive feelings and experiences of identity, connectedness, and affiliation (social presence and social wellbeing) which can cultivate and encourage flourishing in academic endeavours (Fast et al., 2010; Phan et al., 2016; Datu, 2016; Samad et al., 2019). Wellbeing is thus noted as an important concern for education systems.

In higher education literature, student wellbeing research has focused on student's emotional state and the ability to balance personal needs and academic needs with the specific conditions and demands of their day-to-day life and their academic journey (Kristoff, 2019; Engels et al., 2004; Barkham et al., 2019). Thus, slightly different to the focus within the broader education literature, student wellbeing is seen to reside in the balance between needs, conditions and demands and as the student is older, there is a greater recognition of their responsibility in ensuring this balance. It appears that in this literature, there is a greater acknowledgement that student wellbeing is not the absence of adversity (Wilson-Fadiji et al., 2023), nor does it reside purely with the teacher or educational context to ensure optimum conditions, but students own marshalling of resources (whether emotional or physical) is paramount. In this regard, student wellbeing can then be achieved or viewed as stable when students have the psychological, social, and physical resources they need to meet a particular psychological, social, and/or physical challenge (Barkham et al., 2019; Hewitt et al., 2019) and balance this with the demands of higher education.

To support later discussion, it is also important to reflect on the higher education context in South Africa which may potentially affect the wellbeing of students in higher education. Driven by post-apartheid policy towards the transformation of access and success in higher education, student participation has widened dramatically over the last two decades. Alongside the increase in numbers of students, limited or poor preparation for higher education is still a major difficulty, with students arriving at university with massive academic deficits (Daniels & Jooste, 2018). Racial and gendered patterns of participation and success persist, which aligns with assertions of continuing high levels of racism and sexism at institutions, and with the growing allocation of bursaries to disadvantaged students, increased levels of inequality in socio-economic status are apparent, but more importantly all these differences are often reflected in academic performance. The wider societal context of violent crimes and elevated rates of trauma has been argued as further contributing to higher levels of anxiety, depression, and suicidal ideation in the student population

(Bantjes et al., 2016). While some South African institutions have extended programmes and provide student learning support (Crawford et al., 2016) and mental health and wellbeing support (Martin, 2010) this is not consistent across the system, and where these services are available, most centres have very limited personnel dealing with complex cases and higher numbers, which result in increased waiting times (Browne et al., 2017). Recent research on the student movement in South Africa (Luescher et al., 2022) highlights the levels of violence students have been exposed to in recent years and thus the way in which violence has contextualised but also impacted and shaped higher education student wellbeing in particular ways. This is an important context for any exploration into the wellbeing of students in South Africa.

COVID-19 and student wellbeing

The novel corona virus pandemic has upended the lives of people across the world, with massive and accumulating costs measured in human lives and economic consequences which affect living conditions at all levels (Baker et al., 2020; Gritsenko et al., 2020; Masten & Motti-Stefanidi, 2020). Evidence about the psychological impact of coronavirus points to conditions of depression, post-traumatic stress disorder (PTSD), suicide as well as confusion, anger, fear, boredom, stigma, and stress over the loss of life-sustaining resources, loss of jobs, livelihoods, financial security, and physical contact as a result of isolations (Fairlie, 2020; Li et al., 2020; Nurunnabi et al., 2020; Saltzman et al. 2020; Bland et al., 2021; Fairlie, 2020; Holder et al., 2021).

Within the higher education context, physical contact and social support from academic staff and peers, which usually play a critical role in mitigating mental health risks were restricted by social distancing and isolation strategies, expected to escalate extreme feelings of loneliness, anxiety and isolation owing to the disconnectedness students felt (Zhai & Du, 2020; Reimers, 2022). It was further anticipated that these challenges could result in many students lagging in respect of academic participation (Naidoo & Cartwright, 2020; Pather et al., 2020). Reimers (2022) for example notes that the prolonged stress caused by the uncertainty over the evolution and conclusion of the pandemic created a traumatic context for many that undermined dedication to academic work and exacerbated negative impacts on students' wellbeing.

A first overarching insight in the review of literature on the impact of COVID-19 within higher education systems shows a focus more on the systemic impacts on teaching and learning, staff and generally institutional responses (Moja, 2021; Onwuegbuzie & Ojo, 2021), but less so on student wellbeing. Where student wellbeing is considered within higher education systems during COVID-19, this tends to predominate in Public Health and Psychology journals (for example Nurrunabi et al., 2020; Capone, 2021; Knight et al., 2021; Lui et al., 2021; Plakhotnik et al., 2021; Prasath, 2021; Graham & Eloff, 2022; Pandya & Lodha, 2022; Liverpool et al., 2023). Furthermore, in psychology-related research, much of the evidence has centred on the impact of COVID-19 on psychological distress. Additionally, Wilson-Fadiji et al. (2023) argued that the measurement of well-being has mostly been done using negative indicators with few studies measuring positive mental health. More so, single-item or limited measures of COVID-19 has predominated the literature (Sarasjärvi et al., 2022).

A few notable exceptions in education or higher education related journals where implications of COVID-19 for student wellbeing are considered are Alsandor et al. (2020), Burns et al. (2020), Pretorius & Blaauw (2020) and Upsher et al. (2022). This appears

in contrast to the recognition that in many accounts of the overall impact of COVID-19, higher education students have been identified as one of the most affected groups as they faced massive disruption in their academic environments and were forced to abruptly, adjust and adapt to new realities (Mlambo et al., 2023; Burns et al., 2020). The literature continues to show that while overall, most students report to have adjusted quite well to online teaching, the social-emotional wellbeing of students continues to be a well-founded concern (Son et al., 2020; Ziebell et al., 2020; Dodd et al., 2021).

In South Africa, there has been similar reports of students adjusting and performing better in online-only learning environments during COVID-19 (Ngqakamba, 2020; Phakeng et al., 2020; Walwyn, 2020), but again in line with the international literature, these reports have mainly focused on the impact on teaching and learning and less so on student wellbeing (Van Schalkwyk, 2020). Others in the African context, Visser and Law-Van Wyk (2021) (similar to Eloff & Graham, 2020 and Eloff, 2021) confirmed that students reported difficulties in coping with psychological challenges in the context of COVID-19, while Olawale et al. (2021) reaffirmed COVID-19's significant negative impact on psychosocial wellbeing for higher education students. The reality is that most higher education students in South Africa, especially, those from low-socioeconomic backgrounds living in impoverished communities and rural areas reported not having adequate resources such as connectivity (internet access) and digital devices (laptops, phones) to access and participate in online classes, and the need to settle and focus in a home environment (sharing limited space, and negotiating school work and family necessities) caused significant upheaval (Hedding et al., 2020), which Soudien et al. (2021, 2022) and Visser et al. (2021) assert contributed to suboptimal wellbeing. However, while there is a clear acknowledgement and concern for the wellbeing impacts on students during COVID-19, there is limited empirical investigation and measurement in this regard.

To sum up, the review of literature with a focus on student wellbeing in general and examinations of student wellbeing during COVID-19 illustrates that the relationship between COVID-19 (a severe societal shock) and student wellbeing is well recognised and explored within public health and psychological literature. However, the following gaps in understanding persist:

- Limited quantitative measurement of COVID-19 experience as a composite variable,
- Limited investigation of the relationship between COVID-19 and student wellbeing within the African context,
- Poor understanding of the experience of all higher education students (TVET College and University based), and
- Limited focus on the experience of disadvantaged students.[3]

In as much as the study can contribute to addressing these gaps in the literature on COVID 19 impacts on higher education students, it equally provides insights into the relationship between different types of student experiences and wellbeing within contexts of extreme societal shocks and disruption. In this regard, the insights thus have wider relevance to the international higher education literature.

[3] With disadvantaged students forming ever-increasing proportions of the South African higher education student population (NSFAS funded roughly 120,000 students in 2007, which has grown to over 750,000 students in 2020) (De Villiers, 2023), to inform and guide higher education policy and intervention, it becomes increasingly important to develop baseline information on their wellbeing and which experiences impact this most.

Methods

A quantitative cross-sectional research design was employed, involving the exploration of the relationship between student wellbeing and COVID-19 experience. The survey hosted items gathering information along five core themes: (1) demographic data, (2) the experience of COVID-19, (3) wellbeing, (4) student engagement and (5) learning experiences. This paper focuses on the relationship between the COVID-19 experiences and student wellbeing, with the research question thus being; *within the context of COVID 19 what are the relationships between different aspects of student experience and wellbeing?*

Data collection procedure and ethics

All NSFAS-funded students are required to have a profile on the MyNSFAS portal, which is a portal where they can lodge queries, check account details and lodge complaints, for example. This is the easiest method of contacting all NSFAS-funded students. It is a closed system and not accessible to any students that do not receive NSFAS funding or the public. The NSFAS is mandated to conduct research and gather and analyse data to improve student experience, understand blockages and identify how better academic performance can be facilitated. The survey was developed on the Survey Monkey platform and thus took the form of an online link, which was hosted on the MyNSFAS portal for students to participate, after having given consent. This process was accompanied by circulars to all public higher education institutions in South Africa, alongside a student notice to inform students of the survey and outline upfront the ethical rights and responsibilities of participation. The survey link was thus hosted on the portal, open to all NSFAS-funded students (at the time over 750,00 students). A response rate of 1500 responses were targeted in line with an argument of 30 participants per predictor variables (Jenkins & Quintana-Ascencio, 2020).

While we acknowledge that this method could possibly disadvantage some students that do not easily have access to the internet or the possible negative exclusion if students do not have data, it is also a reality that during the particular period, the National Student Financial Aid Scheme (NSFAS), the South African Department of Higher Education and Training (DHET) and Institutions (Universities and TVET Colleges) worked together to facilitate access to electronic devices, data and zero-rating of many websites used for online learning.[4] While the team was also willing to explore the option of providing data to students to complete the survey, it was also noted that during the COVID-19 period, e-mail and WhatsApp channels (that both require data) were extensively used by close to 70% of NSFAS-funded students, and the MyNSFAS portal had close to 100% usage. The survey was fielded between 12 October and 22 November 2021. All responses were made anonymously and kept confidential. Ethical clearance was obtained through the South African Human Sciences Research Council Ethics Committee.[5]

[4] Republic of South Africa (RSA) (2023) COVID-19: About Coronavirus COVID-19. Accessed online on the 20th of July 2023.

[5] Ethics Clearance of HSRC Research Ethics Committee Protocol No REC 3/23/09/20 was received in August 2021. Approval denotes compliance with National Department of Health, South Africa (2015), Department of Health, South Africa (2006) (if applicable) and with HSRC REC ethics requirements as contained in the HSRC REC Terms of Reference and Standard Operating Procedures, all available at http://www.hsrc.ac.za/en/about/ researchethics/documentation.

Table 1 Socio-demographic profile of participants

		(Wellbeing Mean scores)	Std deviation
Age (Mage, SDage)	22.83 (4.88)		
16–20 years	38.7%	44.320	13.411
21–30 years	53.9%	45.300	12.646
31–62 years	7.2%	46.363	13.108
Gender			
Male	44.9%	46.174	13.174
Female	54.8%	44.067	12.767
Not provided	0.3%	36.863	13.083
Race			
Black	83.8%	45.187	13.210
White	2.8%	42.972	9.738
Coloured	8.5%	43.263	12.170
Indian	2.1%	44.191	11.545
Not provided	2.8%	46.966	12.429
Type of institution			
TVET	32.5%	46.243	13.035
University	67.5%	44.384	12.943
Year of study			
First	58.6%	45.379	13.227
Second	16.5%	44.234	12.416
Third	10.5%	44.280	12.475
Fourth	4.1%	43.962	12.230
Other	10.3%	45.107	13.372
Field of study			
Humanities	20.2%	44.368	12.949
Education	18.9%	46.499	13.596
Science, Engineering and Technology	31.5%	44.801	12.721
Business and Commerce	29.5%	44.646	12.881

Sample

A total of 6877 responses were realised. A summary of demographic characteristics is presented in Table 1. Participants were between 16 and 62 years of age, with a mean age of 22.83 (SD = 4.88). The majority are between 16 and 30 years (92.6% of the sample). More participants were female, from African descent, and studied at universities. This aligns with the distributional profile of NSFAS-funded students in that the population is predominantly African, female and studying at universities, were in their first year of study, and studied Science, Engineering and Technology (NSFAS, 2020).

Although not a focus of this paper and investigated more fully in a related paper (Wilson-Fadiji et al., forthcoming), as a basis for discussion, it is useful to reflect that most students were categorised as having moderate to high levels of wellbeing, with a consideration of mean scores indicating wellbeing to be highest for students above 30, males, blacks, TVET College students, first-year students, and students from the Education field.

Instruments

The survey utilised five scales in total, however for the purposes of the analysis presented in this paper, we share the scales used to measure student wellbeing and COVID-19 experience.

- *The Mental Health Continuum-Short Form* (Keyes, 1998): To measure wellbeing, the mental health continuum was used. It is designed as a 14-item scale measuring three dimensions of wellbeing: emotional wellbeing (3 items), social wellbeing (5 items), and psychological wellbeing (6 items). The scale requires participants to indicate how often they experienced a set of feelings in the past month, ranging from 0 (never) to 5 (every day). A sample of the questions is as follows: During the past month, how often did you feel… "Happy" (emotional wellbeing), "that you had something to contribute to society" (social wellbeing), and "that you liked most parts of your personality" (psychological wellbeing).
- *Experiences of COVID-19:* This scale measured different student experiences that were related to the COVID-19 pandemic. The instrument was scored on a Likert scale of 1 to 5. The scale included the following 8 questions:

1. FinIm (Financial impact): This variable draws on the question 2.1 which asks, *When you consider your total bursary funding (during the COVID-19 pandemic), how would you say that you managed the overall costs of your study?* The Likert scale response options range from very easily (1) to with extreme difficulty (5).
2. CovEm (COVID-19 emotions): This variable draws on question 2.2 which asks, *Please rate to what extent you have felt the following emotions while attending your classes online and studying and preparing for online classes since the outbreak of COVID-19?* The Likert scale response options range from strongly agree (1) to strongly disagree (5) in relation to the following emotions: Joyful, hopeful, Proud, Frustrated, Angry, Anxious, Ashamed, Relieved, Hopeless and Bored.
3. FrInt (Frequency of interaction): This variable draws on question 2.3 which asks, *How often have you communicated with the following people online since the COVID-19 pandemic?* The Likert scale response options range from never (1) to always (5) in relation to the following: close family member, more distant family member, close friend, someone I live with (e.g. roommate), neighbours, colleague from my course, lecturer, administrative staff, voluntary organizations, social networks, someone else (please specify).
4. SatIn (Satisfaction with interventions): This variable draws on question 2.4 which asks, *Please assess your satisfaction with the way in which the following stakeholders have been dealing with the COVID-19 pandemic?* The Likert scale response options range from very satisfied (1) to very dissatisfied (5) in relation to the following: University/TVET College, Government, Academic/Student support services, Lecturers, Administrators, NSFAS.
5. FutPlan (Impact on future plans): This variable draws on question 2.5 which asks, *To what extent has your future plans been affected by COVID-19?* The Likert scale response options range from to a large extent (1) to not at all (5) in relation to the following: study or academic plans, employment plans, locational plans, personal plans, other (please specify).

6. CovSup (COVID-19 support): This variable draws on question 2.6 which asks, *What has been your experience of different forms of support?* The Likert scale response options range from extremely negative (1) to extremely positive (5) in relation to the following: transport interventions, accommodation interventions, food interventions, emergency interventions, child-care interventions and other (please specify).
7. BehF (Frequency of COVID-19 habits): This variable draws on question 2.7 which asks, *Please assess the frequency of your habits during the COVID-19 pandemic.* The Likert scale response options range from never (1) to always (5) in relation to the following: Leaving the house for unnecessary reasons: avoided crowds and large gatherings, avoided touching your face, shaking hands, stocked up on essentials at pharmacy and grocery store, made a plan for communicating with family friends and neighbours, cancelled travel, filled prescriptions, worked from home, avoiding public transport, wearing a mask outside, offering help to people, online grocery shopping, recreation or workout, visiting family members or friends, other (please specify).
8. BehImp (Impact of COVID-19 behaviours): This variable draws on question 2.8 which asks, *Please assess the extent to which change in the following behaviours have impacted your life.* The Likert scale response options range from to a large extent (1) not at all (5) in relation to the following: leaving the house for unnecessary reasons, avoided crowds and large gatherings, avoided touching your face, shaking hands, stocked up on essentials at pharmacy and grocery store, made a plan for communicating with family friends and neighbours, cancelled travel, filled prescriptions, worked from home, avoiding public transport, wearing a mask outside, offering help to people, online grocery shopping, recreation or workout, visiting family members or friends, other (please specify).

Data analysis

IBM SPSS (version 27) was used to analyse the data. The data was cleaned prior to analysis and appropriately reverse-coded where necessary. Socio-demographic variables (SDV), namely age, gender, race, type of institution, year of study, and field of study were used to describe the profile of the participants (see Table 1). Thereafter, the means, standard deviations, skewness and kurtosis for student wellbeing and the different COVID-19 experiences were computed (see Table 2). To determine the inter-correlations and internal consistency reliability of the COVID-19 variables and student wellbeing, Pearson's r values and Cronbach's alpha values were calculated, respectively.

A hierarchical linear regression analysis was performed to determine whether COVID-19 experience related variables predict student wellbeing while controlling for age, gender, and race. The following COVID-19-related independent variables, were regressed on student wellbeing: FinIm (Financial impact), CovEm (COVID-19 emotions), FrInt (Frequency of interaction), SatIn (Satisfaction with interventions), FutPlan (Impact on future plans), CovSup (COVID-19 support), BehF (Frequency of COVID-19 habits), BehImp (Impact of COVID-19 behaviours), while controlling for age, race and gender Table 3. In model 1, the control variables were entered as independent variables, while COVID-19-related variables were entered in model 2 (Table 4).

Table 2 Means, standard deviations, skewness and kurtosis for student well-being and different COVID-19 experiences

	N	Mean	Std. deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
MHCtot2	6562	44.9890	13.00171	−.659	.030	.850	.060
Total CovEm	6562	29.0520	9.41281	−.756	.030	.962	.060
Total FrInt	6562	32.5332	8.69114	−.597	.030	1.231	.060
Total SatIn	6562	19.5177	5.66822	−.405	.030	.131	.060
Total FutPlan	6562	17.3932	5.28331	−.553	.030	−.176	.060
Total CovSup	6562	13.7278	4.28667	−.345	.030	.337	.060
Total BehF	6562	47.0244	12.46989	−.941	.030	2.380	.060
Total BehImp	6562	51.2511	15.14840	−.477	.030	.480	.060
Total FinIm	6562	2.1644	1.23294	.756	.030	−.476	.060
Valid N (listwise)	6000						

Note: *MHC*, Mental Health Continuum – Short Form; *FinIm*, Financial impact; *CovEm*, COVID-19 emotions; *FrInt*, Frequency of interaction; *SatIn*, Satisfaction with interventions; *FutPlan*, Impact on future plans; *CovSup*, COVID-19 support; *BehFr*, Frequency of COVID-19 habits; *BehImp*, Impact of COVID-19 behaviours

Table 3 Intercorrelations between COVID-19-related variables and student well-being

	MHC-SF	FinIm	CovEm	FrInt	SatInt	FutPlan	CovSup	BehFr	BehImp
MHC-SF	1								
FinIm	−.157**	1							
CovEm	.373**	−.165**	1						
FrInt	.325**	−.056**	.287**	1					
SatInt	.395**	−.308**	.351**	.255**	1				
FutPlan	−.051*	.108**	−.076*	.050**	−.015	1			
CovSup	.292**	−.198**	.292**	.210**	.331**	−.163**	1		
BehFr	.206**	.002	.075**	.212**	.127**	.128**	.134**	1	
BehImp	.014	.035**	.023	.111**	.095**	.340**	−.062**	.348**	1

Note. *MHC*, Mental Health Continuum – Short Form; *FinIm*, Financial impact; *CovEm*, COVID-19 emotions; *FrInt*, Frequency of interaction; *SatIn*, Satisfaction with interventions; *FutPlan*, Impact on future plans; *CovSup*, COVID-19 support; *BehFr*, Frequency of COVID-19 habits; *BehImp*, Impact of COVID-19 behaviours

** $p < 0.01$ (2 tailed)

* $p < 0.05$ (2-tailed)

Results

Summary of means, standard deviation, skewness and kurtosis

Before being able to construct the model, it is important to understand the distribution of responses. Skewness and kurtosis showed the data to be normally distributed.

Table 3 presents the intercorrelations between experience of COVID-19 variables and student wellbeing. Most COVID-19 experience related variables had small (when

Table 4 Model summary for COVID-19-related variables as predictors of student well-being controlling for SDV

Model	*R*	*R* square	Adjusted *R* square	Std. error of the estimate	*F*	df	Sig. *F* change
1	.106[a]	.011	.011	12.93	24.89	3	< .001
2	.592[b]	.351	.350	10.49	321.28	11	.000

a. Predictors: (Constant), Age, Gender, Race

b. Predictors: (Constant), Age, Gender, Race, Total Behavioural Frequency, q0012_0001, Total Emotions, Total Future Plans, Total Support, Total Frequency of Interaction, Total Behavioural Extent, Total Satisfaction

Pearson's *r* is between 0.1 and 2.9) to moderate (when Pearson's *r* is between 0.3 and 4.9) significant correlations with student wellbeing in a positive direction, except for extent of financial impact (FinIm) that had a small statistically significant negative correlation with student wellbeing ($r = -0.157$) as well as impact on future plans (FutPlan) (-0.05). There was also a non-significant relationship with behavioural impact (BehImp). Satisfaction with interventions (SatIn) had the highest correlation with student wellbeing ($r = 0.395$), followed by COVID-19 emotions (CovEm) ($r = 0.373$), frequency of interaction (FrInt) ($r = 0.325$), and COVID-19 support (CovSup) ($r = 0.292$). In other words, out of all the COVID-19-related experiences, *the extent to which students felt satisfied* with the way in which different stakeholders (their university, government, student support services, lecturers, administrators and NSFAS) had been dealing with COVID-19 *had the strongest relationship with wellbeing*. On the other hand*, the extent to which students felt changes to their normal behaviours were impacted by COVID-19 had the weakest relationship with wellbeing.*

Cronbach's alpha values show reliability as these were 0.864 (CovEm), 0.804 (FrInt), 0.868 (SatIn), 0.819 (FutPlan), 0.857 (CovSup), 0.898 (BehImp), 0.821 (BehFr), and 0.918 (student wellbeing) for the current sample.

COVID-19 and student wellbeing

The contribution of each component of COVID-19 experience to student wellbeing is represented in Table 5. All independent variables were found to contribute significantly to the variance in student wellbeing. The independent variables together accounted for 59% ($R^2 = 0.592$) of the variance in student wellbeing (Table 4). The ANOVA ($F = 190.99$ [11], $p < 0.001$) was statistically significant, indicating the model to be a significant predictor of student wellbeing. Ozili (2023) indicates an *R*-squared between 0.51 and 0.99 to be acceptable in social science research especially when most of the explanatory variables are statistically significant.

Regarding the COVID-19 experience related variables, each variable predicted student wellbeing with the following coefficients. Specifically, SatInt (b = 0.524), CovSup (b = 0.425), FinIm (b = −2.8), CovEm (b = 0.241) and FrInt (b = 0.211) were the strongest predictors. It is important to note that the lower the financial impact (FinIm) (b = −0.28) and impact on future plans (FutPlan) (b—0.07) and the lower the change in behaviour

Table 5 Coefficients for COVID-19 experience related variables as predictors of student well-being

Model	Unstandardized coefficients	Standardized coefficients	*t*	Sig		
	B	Std. error	Beta			
2	(Constant)	17.67	1.18		6.482	< .001
	FinIm	− .286	.111	− .027	− 2.72	< .05
	CovEm	.241	.016	.175	15.43	< .001
	FrInt	.211	.017	.141	12.39	< .001
	SatIn	.524	.027	.228	19.14	< .001
	FutPlan	− .066	.027	− .027	− 2.42	< .05
	CovSup	.425	.035	.140	12.29	. < .001
	BehFr	.216	.012	.207	18.00	< .001
	BehImp	− .028	.010	− .033	− 2.83	< .01

Note: *FinIm*, Financial impact; *CovEm*, COVID-19 emotions; *FrInt*, Frequency of interaction; *SatIn*, Satisfaction with interventions; *FutPlan*, Impact on future plans; *CovSup*, COVID-19 support; *BehFr*, Frequency of COVID-19 habits; *BehImp*, Impact of COVID-19 behaviours

required to manage COVID-19 (BehImp) (b = − 0.03), the higher the student wellbeing was found to be (See Table 5).

Discussion of findings

The aim of this paper was to explore the relationship between COVID-19 experiences and student wellbeing, controlling for race, gender and age. The findings aim to contribute further empirical evidence to international research on the impact of COVID-19 on student wellbeing, but it also allows exploration of which aspects of student experience within the context of COVID-19, had the strongest and weakest relationship with wellbeing.

COVID-19 experience significantly predicts student wellbeing

Previous studies have argued that the pandemic has resulted in lowered subjective wellbeing, lack of meaning in life and hopelessness among students (Mahlaba, 2020; Burns et al., 2020). While our findings cannot speak to a reduction of wellbeing over time, as it has a cross-sectional design, it is important that through this analysis we found further empirical confirmation of COVID-19 experience as a significant predictor of student wellbeing within the South African higher education system. As indicated in the literature review section, many studies indicate COVID-19 to have had an impact on higher education student wellbeing, but there are a few quantitative studies that have confirmed this on large samples. Sarasjarvi et al. (2022, 765) in the Scandinavian context is a notable exception.

The findings are particularly relevant to contribute the African context to the international literature that is dominated by evidence from the North. Furthermore, this study adds the perspective of the most vulnerable student cohort in the South African higher education system which includes students from both TVET College and Universities. The fact that

this was confirmed for a comparatively sizeable[6] sample and the fact that the students come from both TVET College and Universities extend the significance of the findings.

Another key contribution lies in the composite measure of COVID-19 experience applied. The study confirmed three COVID-19-related experiences as negative predictors of student wellbeing: the higher the *financial impact*, *changes to future plans* and *alterations to certain behaviors*, the lower student wellbeing was found to be. The remaining five aspects were all found to positively predict student wellbeing: the higher *COVID-19 emotions*, *frequency of interaction*, *satisfaction with interventions*, *COVID-19 support* and *frequency of COVID-19 habits*, the higher student wellbeing. This aligns with Liu et al.'s (2021) findings that within the Australian university context, emotional support is positively associated with student's psychological wellbeing but also in finding frequency of interaction as a positive predictor somewhat aligns to Liu et al.'s (2021) finding on social isolation as having the largest negative effect on student's wellbeing.

Our findings also align with Sarasjarvi et al. (2022) from the Scandinavian context where "higher satisfaction with the procedures and information provided by the higher education institutions and government" was associated with higher levels of mental wellbeing. However, it is also important to consider the extent of impact of different aspects. Here we turn to the results from the regression analyses ("Summary of means, standard deviation, skewness and kurtosis" to "COVID-19 and student wellbeing" sections).

Weakest COVID-19-related experience predictors of student wellbeing

In this sample, two aspects of COVID-19 experience were found to be weak predictors of student wellbeing. *Impact of COVID-19 behaviours (BehImp)* which considers the extent to which students felt that their lives have been impacted by the changes that they had to make in their normal routine behaviours due to COVID-19 (such as avoiding crowds and large gatherings, avoiding touching your face, shaking hands, having to cancel travel or avoiding public transport) was found to be the weakest predictor. This was followed by *Impact on future plans (FutPlan)* which assessed the extent to which students felt that their future plans (such as study, employment or locational plans), have been affected by COVID-19. In other words, neither the behavioural changes that students had to make (−0.028), nor the extent to which students felt that COVID-19 impacted on their future plans (−0.066) had a large impact on wellbeing.

Our findings align with Plathotnik et al. (2021) that found student concerns about the impact of COVID-19 on their future prospects did not decrease their level of wellbeing as opposed to more immediate concerns. As noted by Xu et al. (2021), it is possible that where students do not see an immediate threat this has less of an effect on wellbeing. This also bears some relevance to Ajjawi et al.'s (2022) findings that during COVID-19, students were more successful in managing and navigating difficulties by actions oriented to their present circumstances.

[6] Gomez-Garcia et al. (2022) had a sample of 1873 and Pakhotnik et al. (2021) a sample of 2707 ts in their respective investigations into the impact of COVID-19 on the wellbeing of university students. A recently published systematic review of studies on wellbeing among university students during the COVID-19 pandemic (1 December 2019–15 December 2022) also concluded that study sample sizes in the range of studies included in their review varied from 58 to 3693 students (Lemyre et al., 2023).

Moderate COVID-19-related experience predictors of student wellbeing

FrInt (0.211), BehFr (0.216), CovEm (0.241) and FinIm (−0.286) were found to be moderate predictors of wellbeing in this sample. *Frequency of interaction* assesses the frequency with which the students communicate with different types of people (such as close family, roommates, neighbours and distant family) during the COVID-19 context, while *Frequency of COVID-19 habits* assesses the extent to which the frequency with which student's habits were affected (like, offering to help people, online grocery shopping, working out). *COVID-19 emotions* aim to assess the extent to which students felt certain emotions (for instance, joyful, hopeless or anxious) since the outbreak of COVID-19 while *financial impact* aimed to assess how easily students managed the overall costs of their study during COVID-19. These four aspects were found to moderately predict student wellbeing and point to the relative importance of frequency of interruption to normal routines and behaviours, rather than the interruption in and of itself, that has a stronger impact on student wellbeing.

Financial stress has been found to be a major predictor of student mental health and a factor acknowledged to have been significantly affected by the pandemic (American College of Health Association (ACHA), 2020). Kohls et al. (2021) similarly found that income changes and thus worry over finances during the pandemic affected levels of depressive symptoms. This is since many students rely on part-time jobs and due to the lockdown and economic crisis they either had to contend with terminations of such contracts or access to shorter shifts and less capital. It is thus somewhat surprising that financial stress, appeared to play a smaller role in this sample and not a strong predictor of wellbeing. This finding could speak to the protective effects for mental health in this sample of students particularly in that they all receive a comprehensive package of funding for their studies (inclusive of accommodation, travel, meals and personal care). The South African government maintained allowances even if students were off campus in recognition that certain financial needs would have changed or remained intact.

Strongest predictors of student wellbeing

Finally, this investigation found SatIn (0.524) and CovSup (0.425) to be the strongest predictors of student wellbeing. *Satisfaction with interventions* assesses the student's satisfaction with the way in which different stakeholders (such as the university or TVET college or government or NSFAS) have been dealing with the pandemic while the *extent of COVID-19-related support* asks what the student's experience has been of different forms of support (for instance food interventions, accommodation, or transport-related interventions).

This again underscores the importance of ensuring a broad range of support structures are available but also that relevant institutions are seen to be taking up their responsibilities in delivering these to students in uncertain contexts, to impact positively on student wellbeing. Poots and Cassidy (2020) also found within the context of COVID-19, that comprehensive support for students is a positive predictor of wellbeing. This also links to assertions by Plakhotnik et al. (2021) that argue that the new normal requires that higher education institutions make support to students a priority and that "universities should be aware of the student's changing emotional responses to crisis and ensure visibility and accessibility of student support". This result illustrates the importance of university support and the implications for student perceptions and emotional states (Flinchbaugh et al., 2012) which recognises that university support represents a resource that is outside of individuals (Hobfoll et al., 2018) and when this is timely and adequate (Mokgele & Rothman, 2014; Wood et al., 2021), students can successfully deal with the demands of higher education.

Limitations

The study used a cross-sectional design, so the results cannot illustrate the process and evolution of how the identified variables influence student wellbeing or speak to reduction or elevation of wellbeing over time, taking into account COVID-19.

To provide some context on the levels of student wellbeing pre- and post-COVID 19, we can reflect on the findings from Van Zyl and Rothmann (2012) that suggested that most of a South African student sample were mentally healthy (scoring high on the scale), with more individuals flourishing (high levels) than languishing (low levels). A more recent examination during the COVID-19 period however suggests the contrary. Visser and Law-van Wyk (2021) found that respondents scored low (an average score of 11.1 on a possible total scale score of 0–42) on the MHC-SF, indicating that many of the respondents were languishing rather than flourishing. Contrary to Visser and Law-Van Wyk (2021) though in a related paper (*Wilson-Fadiji* et al.*, forthcoming*), following the same categorisation, we found that the majority of students were in the moderate mental health category, with a significant minority of the sample (3.3) in the languishing category. A key differentiation between Visser and Law-Van Wyk's (2021) study could be the addition of TVET College students in our sample, who confirmed to have higher mean wellbeing scores in comparison to university students.

Furthermore, while the sample is comparatively sizeable and although the G power calculation shows that our sample is more than adequate to support robust analysis against the number of variables, the sample size represents roughly 9% of the student population at the time and hence must carefully bear this conclusion in mind.

Finally, given the available data and considering the nature of the COVID-19 crisis, and its unfolding impacts on wellbeing, it would thus be useful to explore differences across countries as well as through longitudinal study. Furthermore, the approach is quantitative, and the analysis focuses on statistical impacts; however wellbeing is subjective and can be an intensely personal or relational experience and exploring these dimensions and implications for different aspects for student resilience and wellbeing would be further useful contributions.

Conclusion: considering the implications of the findings

This study focused on COVID-19 experience and its relation to student wellbeing within the South African higher education system post the first and second waves. The analysis investigated and demonstrated empirically the effects of different aspects of COVID-19 experience on student wellbeing. Three distinct contributions can be noted.

Firstly, our findings extend the existing empirical literature, confirming the predictive power of COVID-19 experience for higher education student wellbeing within the African context. Secondly, having a sample inclusive of TVET college students, offers a fuller view of the relationship between wellbeing and experience within higher education as often studies focus on only university students. Thirdly, in focusing on the relationships between COVID-19 experience and wellbeing of students coming from the most vulnerable South African households, sheds light on a social group not reported on before. Finally, the analysis also shows the importance of investigating the different sets of relations that could be present with regards to COVID-19 experience and student wellbeing. This aligns with others that asserted the need to better understand the impact of COVID-19 on student psychological states (Li et al., 2020, Zhai & Du, 2020). To find effective strategies and resources,

colleges, and universities must identify and understand factors and mechanisms through which COVID-19 affects student wellbeing (Plakhotnik et al., 2021).

While the study findings confirm expectations that COVID-19 experience was a significant predictor of student wellbeing, it also highlighted unexpected relationships between particular variables and student wellbeing. In this regard, finding that behavioral changes students had to make was one of the weakest predictors of wellbeing appears counterintuitive to extant work asserting the extensive impact that changes in traditional methods of teaching and learning, and engagement brought about by COVID-19, would have on student wellbeing. It is also quite interesting that in this sample, the extent to which students felt that COVID-19 impacted on their future plans was also one of the weakest predictors of their wellbeing. Evidence from other studies suggests negative impact on wellbeing when there is uncertainty or concern about the future. Contrary to Mngomezulu et al. (2017), Robb (2017) and Sari et al. (2018), these findings speak to the protective impact of secure funding on student wellbeing as our findings suggest that student wellbeing was comparatively less affected by behavioural adaptation required during these uncertain circumstances, as well as being comparatively less affected by concerns around how the current circumstances would impact on their future.

Comparatively, our analysis finds student wellbeing to have been impacted more by the limitations to frequent interaction with close family and friends and traditional habits such as exercising and shopping, as well as their emotional experiences and concerns around the financial impact of the COVID-19 context. Finding the financial impact of COVID-19 as having only a moderate impact on student wellbeing in this sample is also interesting. Especially, if we consider a widescale acknowledgement over the extensive impact of COVID-19 on student's financial concerns and furthermore that financial stress has been found to be a major predictor of student mental health and significantly affected by the pandemic (ACHA, 2020). Kohls et al. (2021) similarly found that income changes and thus worry over finances during the pandemic affected levels of depressive symptoms. Our findings in this regard are thus in contradiction to expectations from the extant literature.

Finally, the COVID-19 experience scale includes a mixture of institutional structure- and broader societal interaction-related indicators of student experience, the findings have relevance and provides general insights outside of the COVID-19 context as well. These findings underscore the emotional health of students as a critical area for higher education policy and intervention during times of uncertainty or disruption, as similarly concluded by others (Sarasjarvi et al., 2022). This is not to suggest at all that student wellbeing is the sole responsibility of higher education institutions. As recognised and argued elsewhere, there are limits to the ability of higher education institutions to transform wellbeing challenges which are sensitive to the wider societal context within which the student resides. That being said, it is increasingly argued that the wellbeing of students should be considered an equally important and essential outcome for tertiary education (Oades et al., 2011; Finley, 2016) alongside the clear benefits for educational outcome (Salami, 2010) and future functioning (O'Connor et al., 2016). Growing and high levels of social distress and poor mental health in student populations (Broglia et al., 2018) offer further support of the growing importance of building our understanding of student wellbeing in higher education. These findings together imply that if higher education stakeholders emphasise their focus on immediate, visible, and comprehensive avenues of support during societal shock or disruption, this has the potential to foster student wellbeing. In choosing to contribute these findings to the higher education literature particularly, we aim to emphasise the growing realisation that higher education institutions have a meaningful role to play in understanding and supporting student wellbeing.

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Declarations

Competing interests The authors declare no competing interests.

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