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Even hungrier for knowledge: A 10-year follow-up study on vulnerability to food insecurity amongst students at the University of KwaZulu-Natal

Abstract

Research on the extent of food insecurity amongst the South African university student population has gained momentum over the past decade, and for good reason. Along with the multiple other challenges that South African university students face (e.g. funding shortfalls, limited access to student housing, high levels of failure and dropout, institutional bureaucracy, and oppressive colonial legacies), students being chronically hungry and unable to access safe and nutritious food on a regular basis remain a notable crisis. This article reports on a 10-year follow-up study on the extent of vulnerability to food insecurity amongst students registered at the University of KwaZulu-Natal (UKZN). Whereas data collected for the original 2007–2009 study only targeted students from one of the five UKZN campuses, the current study improved on the sampling strategy and collected data from 438 students registered across all five UKZN campuses in 2018. Using the University Students Food Insecurity Questionnaire, as developed during the original study and adapted from the Household Food Insecurity Access Scale, the findings from the current study suggest that 49% of the UKZN student population experience serious to severe levels of vulnerability to food insecurity. This is more than double the reported levels of serious to severe vulnerability to food insecurity found in the initial study. This article reports on how and why food insecurity levels may have escalated unchecked over the past decade.

Keywords: Food insecurity; South African university students

1. Introduction

Between 2007 and 2009, staff working in the various student counselling services at the University of KwaZulu-Natal (UKZN) (Pietermaritzburg Campus) collected data from 1 083 students to assess the extent of what seemed to be an increasing number of students presenting with

problems pertaining to food insecurity. Published in *Perspectives in Education* in 2013, the data from this study yielded the first South African publication on the levels of vulnerability to food insecurity amongst South African university students, highlighting how 21% of the sample experienced serious to severe levels of vulnerability to food insecurity (Munro *et al.*, 2013). The findings from this study also highlight the following:

- students being more likely to report going hungry at the end of a semester near examinations than at the beginning of a semester;
- those receiving funding from the National Student Financial Aid Scheme (NSFAS) (i.e. students from financially needy homes) (NSFAS, 2022) (constituting 35% of the sample), were significantly more vulnerable to food insecurity when compared to those not receiving NSFAS funding; and
- students in an access or bridging programme were more vulnerable to food insecurity when compared to students registered in mainstream programmes (Munro *et al.*, 2013).

In the same year, Kassier and Feldman (2013), also from UKZN, published the findings from their 2012 research study with UKZN Pietermaritzburg Campus students receiving NSFAS funding for their studies ($n = 269$). Similar to the Munro *et al.* (2013) study, Kassier and Feldman (2013: 253) made use of an “adapted version of the ... HFIAS [Household Food Insecurity Access Scale]” for their study, and when compared to the findings from the Munro *et al.* (2013) study, their findings suggest a much higher prevalence of food insecurity amongst their sample (i.e. 53% moderately food insecure, and 13% food insecure). Kassier and Feldman’s (2013: 255) “moderately food insecure” and “food insecure” categorisations are roughly equivalent to the “serious to severe” categorisation used by Munro *et al.* (2013), while the higher prevalence of food insecurity in the Kassier and Feldman (2013) study was probably reflective of the overall socio-economic status of their sample (i.e. 100% of the sample receiving NSFAS funding).

Sampling limitations from the Munro *et al.* (2013) study compromised generalisability of the findings to the UKZN (and national) student population, and the extent of vulnerability to food insecurity among the UKZN student sample was somewhat lower than national estimates at the time, as measured in the General Household Survey (GHS) (i.e. 29% in 2010) (Statistics South Africa, 2013). This article reports on a 10-year follow-up study of the original Munro *et al.* (2013) study, addressing some sampling limitations of the original study and providing an updated indication of the extent of vulnerability to food insecurity amongst the general UKZN student population.

Conceptually, we understand food insecurity as the “limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways” (Anderson, 1990: 1598). As measured in the HFIAS, being food insecure incorporates three occurrence domains, namely anxiety or uncertainty about food supply, insufficient food quality, and insufficient food intake and its physical consequences (Ballard *et al.*, 2011). Moreover, given that the right to sufficient food is provided for in the South African Constitution (RSA, 1996), we conceptualise food insecurity as a violation of human rights (Sen, 2004) and an important social justice and transformation issue (Dominguez-Whitehead, 2017a).

1.1 Since 2013: Research on food insecurity among university students

Since the abovementioned two 2013 publications, there have been at least ten additional empirical and conceptual publications in peer-reviewed sources specifically pertaining to food insecurity amongst South African university students (Dominguez-Whitehead, 2015; Dominguez-Whitehead, 2017a; Dominguez-Whitehead, 2017b; Dominguez-Whitehead & Whitehead, 2014; Jilajila *et al.*, 2023; Rudolph *et al.*, 2018; Sabi *et al.*, 2020; Steenkamp *et al.*, 2016; Van den Berg & Raubenheimer, 2015; Wagner, Kaneli & Masango, 2021). The growing focus on food insecurity amongst university students signals an important national concern with the wide variety of psychosocial problems that compromise students' academic success. However, as indicated above, we do not conceptualise food insecurity among university students as being relevant for student academic success only, but also for its adverse role in student development and wellbeing, and the way food insecurity signals broader social justice and human rights failures (Dominguez-Whitehead, 2017a). Since 2013, several publications on the topic considered the extent of food insecurity amongst South African university students, or a specific subset of students (e.g. HIV-positive students), while others offer critical perspectives and/or report on the findings from qualitative studies. Specifically, Dominguez-Whitehead (2017a; 2017b) reflects on the history of theorising failure and academic exclusion at universities from an epistemological access perspective and argues for food (and housing) challenges to be mainstreamed into conceptions of how and why university students may fail and get excluded academically. Similarly, she makes an argument for a social justice and transformative approach to food insecurity amongst university students, highlighting several philosophical, ethical, and methodological dilemmas involved for those working and researching in the area (Dominguez-Whitehead, 2017a). Earlier qualitative empirical work by Dominguez-Whitehead and Whitehead (2014) with students at both the University of Witwatersrand (Wits) and UKZN interrogates the ways in which students' talk about food recreate and reflect patterns of inequality in society. The authors specifically reflect on how students who experience food-related acquisition struggles construct these as "shared and systemic", while students who are privileged and restrict their diets out of choice "take for granted the material resources needed to have a range of food consumption choices", share "food-related jokes and humour," and regard food consumption restrictions and choices as individual challenges (Dominguez-Whitehead & Whitehead, 2014: 49). Using the same data from the 2014 publication, Dominguez-Whitehead's (2015) later work explains how students who have difficulties acquiring food, and therefore need to spend more time and energy on food acquisition pursuits, have less time to make the most of the personal, social, and intellectual opportunities typically afforded to university students.

In terms of relevant recent publications that report on the extent of food insecurity amongst a South African student population, Steenkamp *et al.*'s (2016) study focuses on food insecurity amongst HIV-positive students taking antiretroviral therapy (ART) at Nelson Mandela University (NMU). The researchers found a prevalence of 60% of food insecurity amongst this subset of the student population. In contrast, research conducted at the University of the Free State (UFS) (Van den Berg & Raubenheimer, 2015), Wits (Rudolph *et al.*, 2018; Wagner *et al.*, 2021), UKZN (Sabi *et al.*, 2020), and three other universities in KwaZulu-Natal (Jilajila *et al.*, 2023), all with samples drawn from the general student population, reports food insecurity levels as 60%, 7%, 23%, 53%, and 78%, respectively. Comparisons across the latter six studies are difficult for two main reasons. Firstly, the researchers sampled different 'kinds' of student populations; and secondly, they made use of different instruments to measure food

insecurity. When considering how sampling different 'kinds' of students make comparisons difficult, Steenkamp *et al.* (2016) highlight how HIV-positive students (i.e. those sampled from the NMU study) comprise a special sub-set of individuals where nutrition and food security are important domains of health. These lead to notably adverse health consequences, including morbidity and mortality when not managed properly. Moreover, in the first Wits study (Rudolph *et al.*, 2018), researchers sampled students from university residences where in-house catering was provided, whereas this was not the case in the other studies. The second Wits study by Wagner *et al.* (2021) only included first-year students in their sample. In terms of the second reason why comparisons across studies are made difficult (i.e. differing instruments), Sabi *et al.* (2020), Jilajila *et al.*, (2023), Wagner *et al.*, (2021), and Rudolph *et al.* (2018) made use of adapted versions of the HFIAS (similar to studies reported in the original 2013 and current study), while Steenkamp *et al.* (2016) used five questions developed from the Household Hunger Scale (HHS), which is a six-item scale developed from the HFIAS with reportedly better cross-cultural applicability (Ballard *et al.*, 2011). Although Sabi *et al.* (2020) made use of questions adapted from the HFIAS, they report on vulnerability to food insecurity (i.e. 53%) on the basis of participants' responses to one question (i.e. eating less than three meals a day). In their study, Van den Berg and Raubenheimer (2015) made use of two measures: a one-item measure adapted for university students from the Australian National Nutrition Survey, and a 10-item food security scale adapted from the United States Department of Agriculture Community Food Security Assessment Toolkit (Hughes *et al.*, 2011). Van den Berg and Raubenheimer's one-item measure yielded a 65% prevalence of food insecurity, while the 10-item measure yielded a 60% prevalence of food insecurity with hunger, and a 26% prevalence of food insecurity without hunger (i.e. 86% food insecurity). Notwithstanding the sampling and instrument differences in the abovementioned studies, research on food insecurity amongst the general South African university student population seems to point to increasing levels of food insecurity when compared to the original 2013 publication by Munro *et al.* (2013). Although food insecurity among university students seems to be increasing, this has not been the case for the general South African population, which experienced decreasing levels of food insecurity between 2010 and 2019 (i.e. 29% in 2010 down to 20% in 2019) (Statistics South Africa, 2022; Van den Berg & Walsh, 2023). The study reported in this article aimed to provide an updated measure of food insecurity amongst the general UKZN student body. Embedded within this aim, this study asked the following research questions:

- Are UKZN students (still) more likely to be hungry at the end of a semester (near examinations) than at the beginning of a semester?
- Are UKZN students on NSFAS (still) more vulnerable to food insecurity than students on other forms of funding?
- Are UKZN students in UKZN residences more vulnerable to food insecurity when compared to those not residing in UKZN residences?

2. Methodology

2.1 Study design and setting

The study employed a non-experimental survey research design with students from UKZN, a large public university based in KwaZulu-Natal, South Africa. The university has four campuses in Durban (Howard College, Medical School, Edgewood, and Westville) and a campus in Pietermaritzburg. As part of its transformation agenda, UKZN has a strategic

objective to “achieve a diverse socio-economic student body” with at least 42% of its first-year students from quintile 1–3 schools (UKZN, 2017: 23). When the researchers collected data for the study in 2018, the university had exceeded this strategic objective with 45% of its first-year entrants in 2018 coming from quintile 1–3 schools. Of the 49 646 students who registered at UKZN in 2018, 78% were black African (with 2% coloured, 17% Indian, and 3% white) and 57% female. Whereas UKZN only had the capacity to house 28% of its students in UKZN-owned or leased residences in 2010 (UKZN, 2011), this capacity increased to 41% in 2018 (UKZN, 2019). In terms of funding sources, 45% of UKZN students registered in 2018 received NSFAS funding for their studies (UKZN, 2019; 2020). In recognition of the growing number of UKZN students who experience food insecurity challenges, UKZN introduced a Food Security Programme (FSP) in 2012. Although not without its challenges (e.g. limited resources, uncertain structural positioning within UKZN), the FSP makes efforts to distribute food hampers, parcels, and vouchers to students in need after they have been screened by professional counselling and support staff (Sabi *et al.*, 2020).

2.2 Sampling and participant recruitment

While a probability sampling method would have permitted more credible generalisations to the UKZN student population (Robson & McCartan, 2016), using this sampling method was practically not possible due to internal university policies which protect students’ identifying information (e.g. student names, numbers, and email addresses). A non-probability quota and convenience sampling method was therefore used to recruit UKZN students for the study. A sample size of 1% of the student population (i.e. approximately 500) was reasoned as being suitable for the study based on previous research conducted by Sabi *et al.* (2020), and on Daniel’s (2012) recommendation that 400 to 2 500 participants are sufficient for non-probability sampling survey research that focuses on a single topic in a specific community. In terms of the quota sampling component, our aim was to work towards proportional representation of students in terms of the theoretically relevant variables of race, gender, campus, and UKZN residence. Since the data collection process took place shortly after the beginning of the 2018 academic programme, first-year students were excluded from the sample, as they were deemed not to have experienced some aspects of the conditions asked about in the questionnaire (i.e. end-of-semester/examination-period experiences of hunger). All other UKZN students were eligible for inclusion in the study. In terms of the convenience element of the sampling, participants were recruited at strategic common areas on the various campuses (e.g., open gathering spaces, foyers, student union buildings) and through self-selection via the UKZN student online notification system.

2.3 Data collection

Participants completed the University Student Food Insecurity Questionnaire (USFIQ), which was developed, tested, and administered by the researchers who initially researched food insecurity at UKZN (Munro *et al.*, 2013). The USFIQ starts with a question as to whether the respondent has completed the questionnaire before. Respondents can complete the questionnaire more than once, but responses to questionnaires which indicate prior completion are excluded from any cohort analyses. The USFIQ includes a 13-item scale to measure vulnerability to food insecurity. This scale is based on the HFIAS, and therefore comprises questions pertaining to anxiety or uncertainty about food supply, insufficient food quality, and insufficient food intake, and the physical consequences (e.g. hunger, fatigue, concentration difficulties) of not having reliable access to food. The scale was also validated during its initial

development, and reliability analyses yielded a Cronbach's alpha of .915, indicating a high degree of scale reliability. For the current study, the researchers edited some questions on the USFIQ for grammatical accuracy prior to administration.

Between March and August 2018, a researcher visited each of the five UKZN campuses with copies of the information sheet, the consent sheet, and the questionnaire. The researcher approached potential participants in the aforementioned strategic common areas, and if they met the inclusion criteria, invited them to participate in the study. Participants who were available and willing to participate signed the consent form and then completed the separate questionnaire manually (which took approximately 10–20 minutes). To protect their identities, participants who completed questionnaires in person placed their completed questionnaires in a sealed box that the researcher had on him. If a prospective participant expressed an interest in participating in the study, but was unavailable to do so immediately, the researcher provided the participant with a URL to an electronic version of the questionnaire and was asked to complete this version at their own time. The electronic version of the questionnaire is not anonymous, as it asks respondents to provide their UKZN email address for the purpose of verifying their status as a student who is eligible for inclusion in the study. The online version of the USFIQ begins with text from the information and consent sheets. Respondents who click on the URL of the electronic version of the questionnaire are prompted to review the information and consent sheet and tick a box to indicate that they have read and understood the information and consent to participate in the study (i.e. complete the USFIQ). With gatekeeper permission from the UKZN Registrar, the researchers also used the UKZN student online notification system to invite potential participants to complete the online version of the questionnaire. The UKZN online notification system sends 'announcements' about a range of topics (e.g. workshops, job opportunities, opportunities to participate in research) in the form of an email to students' UKZN email accounts. Students who then read the invitation to participate in our study could select to complete the USFIQ by clicking on the URL in the announcement. Completed versions of the online questionnaire were confidential, only accessible to the researchers, and saved on a password-protected Google drive. Once verified as eligible for inclusion in the study, the online respondents' email addresses were delinked from their responses early in the data cleaning process. The data collection process took place before the COVID-19 pandemic when face-to-face interactions were possible.

2.4 Data analysis

A researcher manually entered the valid responses from the hardcopy questionnaires ($n=385$) into a file on the IBM Statistical Package for Social Sciences (SPSS) Version 27, and then imported the valid responses from participants who completed the online version of the questionnaire ($n=53$) into the SPSS file. Where respondents indicated that they had completed the questionnaire before, these participants' responses were excluded from the data analysis. All data were coded, double-checked, and then analysed quantitatively. Descriptive statistics were used to characterise the sample demographics and to assess the prevalence rates of vulnerability to food insecurity in the population. Responses to the 13-item scale embedded in the USFIQ were averaged to calculate each participant's vulnerability to food insecurity score. Based on the vulnerability score, participants were characterised as experiencing critical food insecurity (average scale score of 4), severe food insecurity (average scale score of 3), serious food insecurity (average scale score of 2), low food insecurity (average scale score of 1) and no food insecurity (average scale score of 0). A paired-sample *t*-test was performed to explore hunger levels at the beginning and end of the semester, and independent-sample

t-tests were used to compare vulnerability to food insecurity between NSFAS-funded and non-NSFAS-funded students, and between students living in UKZN residences and those not living in UKZN residences. Because of the multiple comparisons being made and the subsequent risk of making a familywise type 1 error, Bonferroni-adjusted alpha levels of .0167 (i.e. .05/3) were used (Wilson & MacLean, 2011).

2.5 Ethics

Prior to data collection, the researchers applied for and obtained ethical approval from the UKZN Humanities and Social Science Research Ethics Committee (HSS/0854017M). Participants were required to provide informed consent before they completed the questionnaire and were advised about the UKZN FSP and other related university support services. To ensure anonymity and confidentiality, personal data were not collected during the in-person data collection process, while confidentiality was maintained for participants who completed the online questionnaire, and their email addresses were de-linked from their responses early in the data cleaning process. Potential participants were advised that completing or not completing the questionnaire had no bearing on whether food assistance would be provided to them through the UKZN FSP.

3. Results

3.1 Sample demographics

Relevant sample and 2018 UKZN student population demographics are presented in Table 1.

Table 1: UKZN sample and population demographics

Demographic		2018 UKZN student population (N = 49 646)	Study sample (n = 438)
Race	Black African	77.8%	85.2%
	Coloured	1.9%	3.9%
	Indian	17.2%	8.4%
	Other	0.4%	0.0%
	(Black)	(96.9%)	(97.5%)
	White	2.8%	2.5%
Gender	Female	57.0%	66.7%
	Male	43.0%	32.9%
	Non-confirming	Data not available	0.5%
NSFAS funding		44.7%	46.0%
Campus	Howard College	34.3%	23.5%
	Medical School	26.6%	17.8%
	Edgewood	13.8%	12.8%
	Westville	5.1%	11.6%
	Pietermaritzburg	20.2%	34.2%
UKZN student residence		40.6%	58.2%

Comparisons between the population and sample demographics indicate that the sampling strategy were successful in recruiting more or less proportional numbers of students in terms of race (comparing black and white students), NSFAS funding, and students studying on the Edgewood Campus. In contrast, the sample included an over-representation of female

students, students from the Pietermaritzburg and Westville Campuses, and students living in UKZN student residences. Conversely, male students, and students from the Howard College and Medical School Campuses were under-sampled.

3.2 Overall vulnerability to food insecurity

As with the initial study, the 13-item scale embedded within the USFIQ was averaged to yield a measure of vulnerability to food insecurity for each participant. A reliability analysis of the scale using the data from the current sample produced a Cronbach's alpha of .917, suggesting a high degree of scale reliability. Table 2 reflects the average scaled scores (first column), level of vulnerability to food insecurity (second column), and the proportion of the sample falling within these levels (third column).

Table 2: Level of vulnerability to food insecurity

Average scaled score	Level of vulnerability to food insecurity	% of sample
0	No	10.9%
1	Low	40.4%
2	Serious	36.1%
3	Severe	12.6%
4	Critical	0.0%

As explained in the article by Munro *et al.* (2013: 173),

for a student to near the midpoint [2] of the scale, s/he generally needs to score higher on at least some of the items [and] ... [a]s a result, it was reasoned that the midpoint of the scale would already indicate serious problems with [food insecurity].

The findings from the current study therefore suggest that, at the time of this research, 36.1% of the sample were experiencing a *serious* level of vulnerability to food insecurity, with a further 12.6% experiencing a *severe* level of vulnerability to food insecurity. No students in the sample endorsed a critical level of vulnerability to food insecurity. The sample mean for the vulnerability to food insecurity scale was 1.5 (SD = 0.8).

3.3 Comparisons across theoretically relevant points in a semester and sub-groups of students

In addition to providing an updated measure of vulnerability to food insecurity among the UKZN student community, this study also aimed to identify whether students' levels of hunger differed across relevant points in a semester (i.e. at the beginning of a semester, and at the end of a semester near examinations), as was found in the original study. The USFIQ asks each respondent to respond to a question pertaining to their level of hunger at the beginning of a semester, and to a question pertaining to their level of hunger at the end of a semester. Therefore, the questionnaire assesses the same student's level of hunger at different time points. As a result, a repeated-measures (paired-samples) *t*-test, with Bonferroni-adjusted alpha levels of .0167 were used, and revealed that there were no significant differences in how hungry students reported being ($t = -.131$; $df = 436$; $p = .896$) when comparing hunger levels at the end of a semester (near examinations) ($M = 1.7$; $SD = 1.3$) and at the beginning of a semester ($M = 1.7$; $SD = 1.4$). In addition to comparisons of hunger levels at different points in a semester, we also explored whether students receiving NSFAS funding were more

vulnerable to food insecurity when compared to students who were not receiving NSFAS funding. An independent-samples *t*-test, with Bonferroni-adjusted alpha levels of .0167 revealed a significant difference in vulnerability to food insecurity ($t = 5.027$; $df = 433$; $p < .001$) when comparing NSFAS-funded students ($M = 1.7$; $SD = 0.8$) and non-NSFAS-funded students ($M = 1.3$; $SD = 0.8$). When comparing vulnerability to food insecurity among UKZN residence and UKZN non-residence students in the sample using an independent-samples *t*-test, with Bonferroni-adjusted alpha levels of 0.0167, we also found a significant difference in vulnerability to food insecurity ($t = 6.023$; $df = 436$; $p < .001$) with UKZN residence students ($M = 1.7$; $SD = 0.8$) reporting higher levels of vulnerability than UKZN non-residence students ($M = 1.2$; $SD = 0.8$).

4. Discussion

4.1 Explaining the changes in overall vulnerability to food insecurity amongst UKZN students

In terms of overall vulnerability to FI, the current study findings suggest that 49% of the sample reported experiencing serious to severe levels of vulnerability to food insecurity. In contrast, the findings from the original study found that only 21% of the sample experienced the same levels of vulnerability to food insecurity (Munro et al., 2013), and that this level was somewhat lower than national estimates at the time (i.e. 29%) (Statistics South Africa, 2013). We therefore note a 28% increase in the proportion of UKZN students in the sample experiencing serious to severe vulnerability to food insecurity across the 10-year period. In contrast, the findings from the 2018 annual GHS survey note a decline in food insecurity for South Africans between 2010 and 2018, noting only 24% of South Africans experiencing food insecurity (Statistics South Africa, 2019a). Before interrogating why the levels of food insecurity for UKZN students may have increased over the 10-year period in question, despite national statistics denoting an inverse trend, it is relevant to consider sampling and measurement differences observed in three other current and comparable studies of vulnerability to food insecurity among the general South African student population.

4.1.1 *Samples and measurement, and vulnerability to food insecurity*

Van den Berg and Raubenheimer's (2015: 160) 10-item measure administered among UFS students identified that 60% of their sample experienced food insecurity "with hunger". Using a one-item measure (question), Sabi et al. (2020) found vulnerability to food insecurity among 53% of UKZN students. In contrast, Rudolph et al.'s (2018) study from Wits reports a 7% food insecurity prevalence among students. Although these three studies drew data from the general student population (and not from a population of students with specific health and dietary needs), a closer look at the sample from the Wits study (Rudolph et al., 2018) explains the probable reason for the results from this study being notably lower in terms of food insecurity prevalence when compared to the other two studies (as well as the current study). In contrast to Wits, the UFS and UKZN do not offer catering services in any of its residences, and so all (university residence) students sampled in the UFS and UKZN studies would have been taking personal responsibility for buying and preparing or sourcing their meals. In their study amongst Wits students, Rudolph et al. (2018) identified how 32% of their sample reported eating three meals a day in one of the Wits residence dining halls, and how all students in the sample who received financial aid were selected from a specific Wits residence which provided in-house catering at the time. Although Rudolph et al. (2018) acknowledge

the seemingly low levels of food insecurity amongst their sample, they do not explain why the food insecurity prevalence they found was noticeably lower than that reported in similar studies of food insecurity amongst university students or in national food insecurity statistics. It seems probable that the Wits sample, and therefore students accessing meals through university residence systems, are more protected from food insecurity when compared to students at universities where meals are no longer provided by university residences. Van den Berg and Raubenheimer (2015: 167) highlight how many South African universities phased out residence catering “in a bid to make higher education more affordable”. Unfortunately, the adverse effects of a range of global socio-economic factors (e.g. economic recession, inflation, growing rates of poverty and unemployment) seem to have worked against attempts to make South African higher education more affordable, making the rationale of phasing out catering in many university residences counterproductive. An outcome of the phasing out of catering in university residences is that it has exacerbated the problem of food insecurity amongst university students, many of whom would have been able to access food regularly through residence catering. Ironically, while universities like NMU, UFS, Wits, and UKZN were looking into the problem of food insecurity amongst their students over the past decade, researchers from Stellenbosch University found it relevant to investigate and report on student menu preferences and factors leading to food wastage patterns in their residences (Marais *et al.*, 2017). Findings from the latter study affirm how students “preferred a standard menu option ... [and demonstrated] a relatively high average plate waste of 16.9%” (p. 60). Marais *et al.*’s (2017) study highlights vastly differing concerns pertaining to food wastage or food insecurity at South African higher education institutions.

In summary, although there has been a range of prevalence of food insecurity levels among university students reported over the past few years, the range can be explained by differing samples (e.g. general, specific health and/or diet needs, access to residence catering), and differing food insecurity measurement types and levels of refinement (one-item, 10-item, 13-item). Despite these differences, the current study used the same 13-item food insecurity measure as that administered between 2007 and 2009 and found a more than doubling in food insecurity among UKZN students. As indicated above, this doubling occurred in the context of declining national statistics in food insecurity (Statistics South Africa, 2019a).

We turn now to explore possible reasons for this increase in the proportion of UKZN students who experience serious to severe vulnerability to FI, even in the context of declining national food insecurity levels.

4.1.2 *Explaining the doubling in food insecurity among UKZN students*

Recovery from the global economic recession of 2009 is a process that could partly explain the declining number of South Africans affected by food insecurity and complex food access challenges between 2010 and 2018 (Statistics South Africa, 2019b). Similarly, South Africa has observed a consistent decline in multidimensional poverty (comprising health, education, living standards, and economic activity) between 2001 and 2016. However, while multidimensional poverty and food insecurity may have declined at national level, inequality in South Africa, as measured by the Gini coefficient, as well as unemployment has remained consistently high. Although food security may have improved at national level in South Africa, when inequality deepens and unemployment rises, those most vulnerable in society are more adversely affected when compared to those who are less vulnerable (Statistics South Africa, 2019b). As part of a national and institutional transformation agenda, UKZN has strategically

targeted the enrolment of (socio-economically vulnerable) students from quintile 1–3 schools (45% in 2018), aiming to achieve a socio-economically diverse student body (UKZN, 2017). In addition, in 2018, when data were collected for the current study, 45% of UKZN students were funded for their studies through NSFAS. In contrast, in 2010, only 25% of the first-year intake from UKZN came from quintile 1–3 schools, while not more than 30% of its students were funded through NSFAS (UKZN, 2011). Although food insecurity may have declined at national level, UKZN has therefore specifically widened access to students from socio-economically vulnerable backgrounds, and it is these students who are the most vulnerable to the effects of social and economic inequality, rising unemployment, and subsequent food insecurity.

4.2 Comparisons across theoretically relevant points and sub-groups of students

Whereas the original study found that students were more likely to go hungry at the end of a semester near examinations than at the beginning of the semester (Munro *et al.*, 2013), the current study did not find support for this difference. This could mean that over the years, there are no longer specific risk periods in a semester when UKZN students are more likely to experience challenges associated with hunger and food insecurity than at other times in a semester. Unfortunately, it also implies that vulnerability to food insecurity could now be pervasive across the semester for many UKZN students. The changing student demographic at UKZN is relevant to consider here. Whereas parents and families of UKZN students at the time of the initial study might have been able to send their children to university with additional funds and resources at the start of a semester – which might have protected them from food insecurity initially – this might no longer be the case. Given the socio-economic backgrounds of current UKZN students (i.e. quintile 1–3 schools, many funded by NSFAS), it is possible that their families do not have additional resources with which to send their children to university at the start of a semester, and so their vulnerability to food insecurity across a semester might be consistent and more pervasive. In addition, students studying through the aid of NSFAS funding are likely to be severely affected in terms of food security when NSFAS allowances are not distributed timeously (*The Citizen*, 2022; Tshwane & Macupe, 2018). As with the previous study, the current study affirms how UKZN students receiving NSFAS funding are significantly more vulnerable to food insecurity when compared to students receiving funding from other sources. As students qualify for NSFAS funding on the basis of family socio-economic circumstances (NSFAS, 2022), it makes sense that these students do not have access to additional family capital that could protect them from being vulnerable to food insecurity.

This study also found differences in vulnerability to food insecurity between students staying in UKZN residences, and those who are not. Given that UKZN residence students were found to be more vulnerable to food insecurity than other students, and that these students are accommodated by UKZN, it would be important for the institution to explore strategies to protect this subset of the student population from becoming vulnerable to food insecurity. Although reintroducing residence catering may not be financially feasible or practical for UKZN students and the institution, there could be targeted interventions in residences (e.g. FSP awareness drives; budgeting, priority setting, bulk shopping, and collective catering seminars; and enhancing part-time employment opportunities for residence students) to offset the heightened risk that the subset of UKZN residence students face.

5. Conclusion

Although the current study had some limitations (e.g. potential biases introduced through convenience and self-selection sampling which resulted in under and over sampling in theoretically relevant variables of gender, campus, and residence), the study sample was nonetheless a better representation of the general UKZN student population when compared to the sample from the previous study. We are therefore more confident that our present findings were generalisable to the UKZN student population at the time of data collection (i.e. with 49% of students experiencing serious to severe vulnerability to food insecurity). Unfortunately, we suspect that food insecurity among UKZN students has worsened during the COVID-19 pandemic because of the adverse effect that lockdown restrictions had on economic activity and on food supply and access chains for vulnerable members of society (Statistics South Africa, 2022). Given the growing numbers of UKZN students who come from socio-economically vulnerable backgrounds, it has become imperative for the institution to implement and consolidate policies and practices that protect these students from the range of social justice and human rights challenges (such as food insecurity) that adversely affect vulnerable members of society more so than others.

Declaration

No artificial intelligence tools were used in the creation of this article.

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