



Food Insecurity Amongst Undergraduate Students at a South African University: Risk Factors and Coping Mechanisms

Mpho Leslie Sealetse¹ and Carina Kleynhans²

¹School of Hospitality & Tourism Management, University of Mpumalanga, Cnr R40 & D725 Roads, Riverside, Mbombela, South Africa
mpho.sealetse@ump.ac.za

²Department of Hospitality Management, Tshwane University of Technology, Staatsartillerie Road, Pretoria West, 0183, South Africa

Abstract

Food insecurity is a challenge experienced by many students across the globe. One of the risk factors associated with food insecurity is dependence on financial aid. Students from disadvantaged backgrounds in South Africa receive financial aid for tuition and food. However, there are no mechanisms to ensure that this intervention effectively addresses poverty and hunger in universities. Those who do not receive funding are left to fend for themselves. The goal of the study was to evaluate the prevalence of food insecurity amongst university students enrolled at a South African university and to develop a framework aimed at alleviating this issue. The study employed a mixed-method research approach in the form of an explanatory sequential design. Data was collected from an online survey and focus group discussions. The online survey involved 382 participants from a population of 3 887. The focus group discussions involved a purposively selected sample size of 36 participants. The quantitative data was analysed using SPSS 21, and qualitative data was analysed using Atlas ti 9. The majority of students (91%) experienced food insecurity. Many skipped meals and consumed a diet that lacked essential nutrients, which does not align with South African food-based dietary guidelines. To cope with poverty and hunger, students reduced their food intake, bought unhealthy foods, and sometimes resorted to theft or substance abuse. Food insecurity affected students' mental and physical wellbeing. Intervention measures are needed to alleviate food insecurity and ensure that students are offered enough support to ensure good health and academic success.

Keywords: Food insecurity, students, limited funding

1. Introduction and background

The Southern African Development Community [1] states that food security is “when all people at all times have physical, social and economic access to food, which is safe and consumed in sufficient quantity and quality to meet their dietary needs and food preferences and is supported by an environment of adequate water and sanitation, health services and care, allowing for healthy and active life”. Conversely, the lack of such access is referred to as food insecurity (FI). Described as the inability to consistently access sufficient, affordable, and nutritious food necessary for a healthy lifestyle, food insecurity is a persistent challenge that affects millions of people across the world [2]. The World Health Organization (WHO) reports that 733 million people faced hunger in 2023. WHO’s report further indicates that this means that approximately 1 in every 11 people globally and 1 in every 5 people in Africa are affected by hunger [3]. One of the primary reasons for food insecurity is socio-economic factors such as rising food prices and inflation [4].

Similarly, food insecurity among university students is a growing concern that affects university students across the world. Studies on students’ food security status show a challenge that affects a concerning high number of the student population, especially students reliant on financial aid for tuition and related expenses [5]. Studies report food insecurity rates among students ranging from 20% to 50% and above [6; 7]. Studies conducted in South African institutions such as the University of the Free State and the University of KwaZulu-Natal found food insecurity rates of 25-65% among students [8; 9].

Food insecurity has been linked to malnutrition and a compromised immune system [10]. In the higher education context, food insecurity is a growing concern with implications for academic performance, mental health, and overall wellbeing [11]. This study explored the key risk factors that contribute to student food insecurity and explored the coping mechanisms employed by affected individuals. Studies on food insecurity in universities indicate that reliance on financial aid is a significant risk factor for students facing food insecurity. In South Africa, the government has implemented a financial aid scheme aimed at making higher education accessible to students from previously disadvantaged backgrounds. This funding is available to qualifying students whose household income is below R350 000 per annum [12]. A significant percentage of students at the university receive financial aid. These students are provided with a monthly living allowance of R1500. However, this allowance is given without measures to ensure it effectively addresses issues of hunger and poverty among students. Additionally, there are no mechanisms in place to guarantee that the allowance is used for its intended purpose. Studies show that the implemented funding mechanisms do not address the effects of food insecurity [13; 14; 15].

Food is important for students' health and social wellbeing. Maslow's hierarchy of needs highlights that inadequate access to food can negatively impact health, cognitive function, and social interactions [16; 17]. Tinto's retention theory (Tinto, 1997) links students' persistence in university to their family background and university experience. It suggests that a student's economic background and the university's support for social wellbeing are crucial for their success [18; 19]. The economic backgrounds of students' and their impact on food security and success in university are central to the theories underpinning this study.

The purpose of this study was to determine the extent of food insecurity amongst undergraduate students. The objectives of the study were to assess the prevalence of food insecurity amongst students, identify the risk factors contributing to food insecurity, explore the coping mechanisms used by food insecure students, and suggest actionable interventions that higher education institutions can implement.

2. Methods

The study employed a mixed method approach. This method was chosen for its ability to study a phenomenon and gain an invaluable and deeper understanding of the studied phenomenon. [20]. The study was undertaken in two phases. The first phase was quantitative study in a form of an online survey that involved 382 randomly selected participants from a population of 3887 students. The extent of food insecurity was measured using two food security measuring tools namely the United States Department of Agriculture (USDA) 6-item food survey module and the 1-item Australian food security measure. Both items have been used to measure food security status of university students. The survey also analysed the students' eating habits. The analysis of students' eating habits was conducted based on the South African Food-Based Dietary Guidelines (SAFBDG), which are designed to educate and guide consumers toward healthy eating behaviours [23; 24].

The second phase was a qualitative study that involved five focus group discussions with purposively selected students who participated in the quantitative phase of the study. Participation was voluntary and included undergraduate students from diverse backgrounds. Quantitative data was analysed using SPSS 21, and thematic analysis was used to analyse qualitative data.

3. Results

3.1 Participants' demographic profile

Most (56.5%) of participants were female students, 43% were males and 0.5% identified as non-binary. The high number of female participants is consistent with the high enrolment of female students in the university. The majority (81%) of participants were financial aid beneficiaries, 11% were self-funded, and 8% were funded by private entities; 51% of the participants resided on campus, while the other 49% resided off-campus in private residences contracted to the university.

3.2 Students' food security status

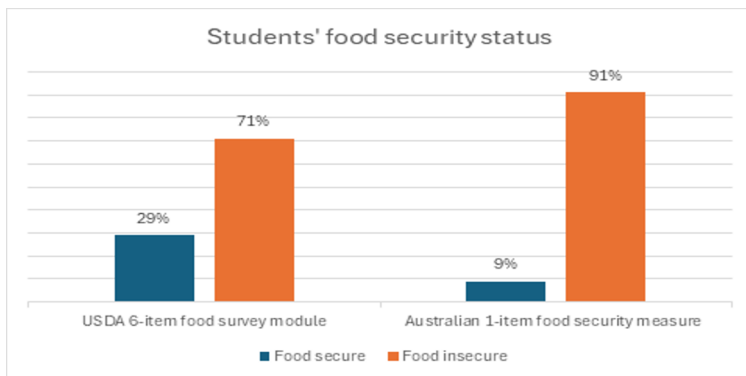


Figure 1: Students' food security status

The USDA 6-Item Food Security Survey Module indicates that only 29% of students are food secure, while a concerning 71% experience food insecurity. Among those who are food insecure, 48% face very low food security and 43% experience low food security. Additionally, the Australian 1-Item Food Security Measure reveals that a

staggering 91% of students are food insecure, leaving only 9% food secure. These findings are alarming and corroborate previous studies conducted at South African universities also highlight the high prevalence of food insecurity among South African students [21; 22; 9].

3.3 Students' eating habits & practices

Table 1. Statements relating to students' eating habits

Variable	Never	Rarely	Sometimes	Very often	Always
Enjoy a variety of foods	4%	15%	49%	19%	13%
Be active	2%	7%	23%	21%	47%
Make starchy foods part of most meals	2%	21.2%	38%	25.4%	13.4%
Eat plenty of vegetables and fruits every day	12%	44%	31%	9%	4%
Eat dry beans, split peas, lentils and soya regularly	34%	37%	24%	4%	1%
Have milk, maas or yoghurt every day	18%	31%	38%	10%	3%
Fish, chicken, lean meat or eggs can be eaten daily	4%	21%	41%	26%	8%
Drink lots of clean, safe water	2%	11%	34%	28%	25%
Use fats sparingly. Choose vegetables oils, rather than fats	19%	32%	33%	11%	5%
Use sugar and foods and drinks high in sugar sparingly	8%	30%	40%	16%	6%
Use salt and food high in salt sparingly	35%	19%	21%	10%	15%

The results show that most students (58%) consumed only two meals per day, with 57% of them skipping meals. Notably, breakfast was the most skipped meal (57%). These findings highlight that students were following a nutritionally inadequate, high-fat diet that lacked variety. The results revealed that the eating practices of the students did not align with the recommended dietary guidelines for the South African population.

Results show that only 13% of students consistently enjoyed a variety of foods, while 87% did not meet the recommended diversity, indicating poor dietary intake. This aligns with similar findings from universities in Alabama, where financial constraints and food insecurity were major contributors to poor diet quality [25]. Less than half of the students were consistently active, with 32% reporting low levels of physical activity. This sedentary lifestyle is linked to increased risks of obesity and non-communicable diseases such as hypertension and diabetes. Conversely, physical activity is shown to reduce stress and improve academic performance. These findings are consistent with the results of previous studies that reported a declined physical activity among university students [26; 27]. Only 13.4% of students always included starchy foods in their meals, with 61.2% falling below SAFBDG recommendations. While most students did consume some starch, the intake was insufficient compared to other studies, such as one in South Africa where 82% met the recommended levels [9]. The majority of students had an inadequate daily intake of fruits and vegetables. This finding is consistent with findings of other global studies and is associated with food insecurity and poor academic performance [28; 29].

Consumption of legumes like beans, lentils and soya was notably low, with only 1% of students meeting the recommended intake. This pattern mirrors findings from other South African and international studies, despite legumes being beneficial for managing NCDs [30; 31]. The consumption of dairy products also did not align with the recommendations of the SAFBD. Only 3% of students consumed milk, maas or yoghurt daily. The lack of dairy intake deprives students of essential nutrients like calcium and potassium, which help prevent obesity, hypertension, and anxiety [32; 33]. The consumption of fish, chicken, lean meat, and eggs was also a concern. Only 8% of students regularly consumed fish, chicken, lean meat or eggs. Financial limitations may explain the low intake, which contrasts with studies showing higher consumption elsewhere. Inadequate protein intake is linked to malnutrition and food insecurity [34]. Most students had access to clean water, with 53% drinking it regularly. However, 13% rarely consumed sufficient water, likely due to habit or disrupted access rather than availability; and a significant 84% of students did not use fats sparingly, often consuming unhealthy fats. This increases the risk of lifestyle diseases, as seen in studies from Kenya and South Africa [35; 36]. High sugar intake was prevalent, with 78% of students not limiting their consumption. This is associated with obesity, diabetes, and cardiovascular diseases, as confirmed by studies at other South African universities and elsewhere. Only 15% of students used salt sparingly. Excessive salt consumption raises the risk of hypertension and cardiovascular diseases, which are the leading causes of death in South Africa.

3.4 Risk factors

Individual factors. Participants reported that high food prices, a lack of time, cooking skills and nutrition knowledge hindered their ability to make informed and healthier food choices. An analysis of the students' financial behaviour showed strained finances and a lack of financial support from their families. Factors such as the lack of financial support from family, poor nutrition knowledge, limited cooking skills, poor time management, food security perceptions and fear of judgment contributed to students' food security status. Participants' financial habits also demonstrated poor financial skills and literacy. Some students had limited financial skills and knowledge and were therefore unable to survive with the limited funds available to them. Participants also found it challenging to manage their finances due to the overburdening financial responsibilities.

Institutional factors. Limited access to food banks, meal subsidies, and nutritional education within the institution increased vulnerability among students. The university cafeteria was found to serve food that was both unaffordable and unsatisfactory to students. Additionally, under-resourced residences and inadequate security measures in residences contracted by the university undermined students' food security. Shared facilities and insufficient storage options led to food theft, further straining the already limited food supply and exacerbating issues related to students' food security.

3.5 Coping Mechanisms

The findings of the study show that students employed various strategies to cope with food insecurity. Students resorted to unhealthy and inappropriate mechanisms to cope with the lack of food and limited finances.

Sacrifices and meal planning. Most students prioritised cost over nutrition and health when purchasing food. Students often resorted to buying cheap and unhealthy food, skipped meals to stretch their limited food supplies. One of the participants shared:

"A student's life is full of sacrifices. For you to survive you must know that if I eat three times a day, I won't manage to see some other days with food. So, it is all about

skipping meals. Sometimes yes you can eat three times a day but if eat three times a day you will have to know that you will have to face some other days without eating”

This quote illustrates the extreme measures students take to stretch their limited resources.

Social Support and Collaboration. Some students teamed up with roommates and friends to pool money for grocery shopping. While this strategy helps reduce costs, it can also lead to interpersonal conflicts. One participant shared:

“I found that food was more expensive for me, so I decided to start eating with one of my roommates. It improved things somewhat, but it still presented challenges. Sometimes he prefers to eat certain foods while I prefer others, which has led to some clashes between us. This situation has made things quite difficult for me.”

Risky Behaviours. In more desperate situations, students resort to borrowing from loan sharks, substance use, or even theft. These actions reflect the severity of their financial distress:

“When we run out of food, we go to loan sharks to borrow money. Currently, I have a debt of R500 with the loan sharks. There are many of us who borrow from the loan shark. When I checked the debtor book, I was number forty-something on the list”.

Other students turned to alcohol or other substances to relieve stress and anxiety.

“We do drugs to cope. The little that we have we do drugs to get rid of stress”.

Another participant shared:

“They say you spend the money on alcohol. alcohol helps you with stress”

Others engaged in online scams to make money, while some female students relied on their partners to cover living expenses, including food.

Dependence. Some female students rely on partners for financial support, which may expose them to exploitative relationships:

“When I run out of food, I get money from boys”

Entrepreneurship. Encouragingly, some students started small businesses, such as hairdressing or entertainment services, to supplement their limited funds.

“I don't have parents who can provide for me. I have to do extra hustling at least every month before month end, I have to have R1500 in my pocket at least so that I can buy food”.

4. Consequences of food insecurity

Food insecure students ran out of money to buy food, skipped meals, and purchased and consumed cheap, unhealthy food with low nutrient density. Participants of this study experienced physical incapacitation and discomfort, stress and anxiety due to hunger, which led to skipped classes. The results of this study showed that food insecurity had an impact on students' learning and participation, and this may affect their academic performance. Successful completion of academic programmes requires learning and active participation in the programmes. These are incumbent on class

attendance. Attendance is a crucial factor in student academic performance and success [37].

5. Recommendations

The findings suggest that both government and institutional interventions could help alleviate food insecurity among students. Government actions could include expanding the scope and value of student financial aid packages. Additionally, universities should establish on-campus food pantries, offer affordable meal plans, and introduce workshops on financial literacy and nutrition. It is also important to integrate food insecurity screenings into existing support services. Universities should also establish food security monitoring systems in tertiary institutions and conduct further research on the long-term impacts and the efficacy of interventions.

6. Conclusion

This paper highlights the causes and consequences of food insecurity and the various ways students cope with these challenges, many of which may have undesirable long-term effects on students' lives and wellbeing. While some approaches offer temporary relief, others pose ethical and health risks, pointing to an urgent need for institutional support and sustainable interventions to address student food insecurity.

Findings also show that food insecurity is not merely a dietary issue, it is a systematic problem that can significantly impact educational equity and hinder the successful completion of university studies for those affected. Inconsistent and inadequate access to food affects students' health, compromises students' cognitive abilities, and may result in compromised academic performance and successful completion of academic programmes. Long-term solutions necessitate collaboration across multiple sectors and a stronger commitment to students' academic success and wellbeing.

Acknowledgements

The authors would like to acknowledge and thank the Mpumalanga based students who participated in this study, the DHBW, the Baden Württemberg Stiftung and the FIRE Network for funding the Research-on-FIRE conference, and the financial contribution towards the publication of this article.

Conflict of interest

The authors declare a no conflict of interests in relation to the contents of this article.

References

1. Southern African Development Community (SADC). 2023. Food Security. Available from: <https://www.sadc.int/pillars/food-security> [Accessed: 12/08/2023].
2. Coleman-Jensen, A., Rabbitt, M.P., Gregory, C.A. & Singh, A. 2022. *Household food security in the United States in 2021*. ERR-309, U.S. Department of Agriculture, Economic Research Service.
3. World Health Organization. 2024. The state of food security and nutrition in the world 2024. Financing to end hunger, food insecurity and malnutrition in all its forms. <https://www.who.int/publications/m/item/the-state-of-food-security-and-nutrition-in-the-world-2024>
4. World Bank, 2025. The food security update. <https://thedocs.worldbank.org/en/doc/40ebbf38f5a6b68bfc11e5273e1405d4-0090012022/related/Food-Security-Update-117-June-13-2025-2.pdf>
5. Adamovic, E., Newton, P. & House, V. 2022. Food insecurity on a college campus: Prevalence, determinants, and solutions. *Journal of American College Health*, 70(1): 58-64.
6. Ramlee, I., Ali, A., Zalbahar, N., Wahab, R. & Jaafar, S. 2019. Food insecurity among university students at two selected public universities in Malaysia. *Malaysian Applied Biology*, 48(1): 101-110.
7. Ukegbu, P., Nwofia, B., Ndudiri, U., Uwakwe, N. & Uwaegbute, A. 2019. Food insecurity and associated factors among university students. *Food and Nutrition Bulletin*, 40(2): 271-281.
8. Sabi, S.C. 2018. Development of a framework for managing food security programme: An analysis of student food insecurity and the interventions at the University of KwaZulu-Natal, South Africa. Master's thesis. University of KwaZulu-Natal.
9. Van Den Berg, L. & Raubenheimer, J. 2015. Food insecurity among students at the University of the Free State, South Africa. *South African Journal of Clinical Nutrition*, 28(4): 160-169.
10. Beyene, S.D. The impact of food insecurity on health outcomes: empirical evidence from sub-Saharan African countries. *BMC Public Health* 23, 338 (2023).
11. Lemp H, Lanier, J., Wodika A. & Schalasky, G. Impact of food insecurity on the health and well-being of college students. *Journal of American College Health*. 72(9): 3671–3680.
12. National Students Funding Aid Scheme (NSFAS). 2021. Funding Report. Available from: <https://www.nsfas.org.za/content/funding-reports.html> [Accessed: 03/06/2025].

13. Sabi, S.C., Kolanisi, U., Siwela, M. & Naidoo, D., 2020, Students vulnerability and perceptions of food insecurity at the university of KwaZulu-Natal. *South African Journal of Clinical Nutrition*, 33(4): 144-151.
14. Phillips, E., Mcdaniel, A. & Croft, A. 2018. Food insecurity and academic disruption among college students. *Journal of Student Affairs Research and Practice*, 55(4): 353-372.
15. Henry, L. 2017. Understanding food insecurity among college students: Experience, motivation, and local solutions. *Annals of Anthropological Practice*, 41(1): 6-19.
16. McLeod, S. 2022. Maslow's Hierarchy of Needs. *Simply Psychology*, 1:1-18. https://www.simplypsychology.org/maslow.html?ez_vid=2cac626a2fe896279da43d587baa3eb663083817 [Accessed: 05/07/2025].
17. Maslow, A. H. 1943. A theory of human motivation. *Psychological Review*, 50(4): 370.
18. Walker, M. 2020. The well-being of South African university students from low-income households. *Oxford Development Studies*, 48(1): 56-69.
19. Tinto, V. 1997. Classrooms as communities: Exploring the educational character of student persistence. *The Journal of Higher Education*, 68(6): 599-623.
20. Steinmetz-Wood, M., Pluye, P. & Ross, N.A. 2019. The planning and reporting of mixed methods studies on the built environment and health. *Preventive Medicine*, 126: 1-7.
21. Sabi, S.C., Siwela, M., Kolanisi, U. & Naidoo, D.K. 2018. Complexities of food insecurity at the university of KwaZulu-Natal, South Africa: A review. *Journal of Consumer Sciences*, 46:10-18.
22. Dominguez-Whitehead, Y. 2017. Conceptualizing food research in higher education as a matter of social justice: philosophical, methodological and ethical considerations. *Cambridge Journal of Education*, 47(4): 551-565.
23. Herforth, A., Arimond, M., Álvarez-Sánchez, C., Coates, J., Christianson, K. & Muchlloff, E. 2019. A global review of food-based dietary guidelines. *Advances in Nutrition*, 10(4), 590-605.
24. Vorster, H. 2013. Revised food-based dietary guidelines for South Africa: challenges pertaining to their testing, implementation and evaluation. *South African Journal of Clinical Nutrition*, 26: S3-S4.
25. Gropper, S.S., Arsiwalla, D.D., Lord, D.C., Huggins, K.W., Simmons, K.P. & Ulrich, P.V. 2014. Associations among eating regulation and body mass index, weight, and body fat in college students: The moderating role of gender. *Eating Behaviors*, 15(2): 321-327.
26. Patil, P.P. & Ghazali, S.R. 2022. Overweight and obesity: a study among university students in Sarawak, Malaysia. *International Journal of Health Promotion and Education*, 1-13.

- 46 M. L. Scaletse and C. Kleynhans
27. Castro, O., Bennie, J., Vergeer, I., Bosselut, G. & Biddle, S.J. 2020. How sedentary are university students? A systematic review and meta-analysis. *Prevention Science*, 21: 332-343.
28. Reuter, P.R., Forster, B.L. & Brister, S.R. 2021. The influence of eating habits on the academic performance of university students. *Journal of American College Health*, 69(8): 921-927.
29. Halfacre, K., Chang, Y., Roseman, M. & Holben, D. 2017. Financial strain and food preparation ability may be important factors for food insecurity and fruit and vegetable consumption among university students. *Journal of the Academy of Nutrition and Dietetics*, 117(9): A87
30. Morales-Suárez-Varela, M., Amezcua-Prieto, C., Peraita-Costa, I., Pérez, C.A., Juan, L.F.V., Ortiz-Moncada, R., Gómez, A.A., Ojeda, J.A., Rodriguez, M.D. & Abellán, G.B. 2021. Adherence to recommended intake of pulses and related factors in university students in the UniHcos project. *British Journal of Nutrition*, 126(3): 428-440.
31. Winham, D.M., Davitt, E.D., Heer, M.M. & Shelley, M.C., 2020, Pulse knowledge, attitudes, practices, and cooking experience of Midwestern US university students. *Nutrients*, 12(11), 1-13.
32. Khanferyan, R.A., Radysh, I.V., Semin, D.A., Geyko, E.G. & Korosteleva, M.M. 2023. Evaluation of the frequency of consumption of various groups of dairy products by students of the Peoples Friendship University of Russia. *Clinical Nutrition and Metabolism*, 4(2): 66-74.
33. Sousa, R.J., Baptista, J.A. & Silva, C.C. 2022. Consumption of fermented dairy products is associated with lower anxiety levels in Azorean university students. *Frontiers in Nutrition*, 9:1-7.
34. Ntentie, F.R., Angie Mbong, M.-A., Tonou Tchunte, B.R., Biyegue Nyangono, C.F., Wandji Nguedjo, M., Bissal, C., Souavourbe, P., Avom-Me Mbida, F. & Enyong Oben, J. 2022. Malnutrition, eating habits, food consumption, and risk factors of malnutrition among students at the University of Maroua, Cameroon. *Journal of Nutrition and Metabolism*, 2022(1): 1-10.
35. LaCaille, L.J., Dauner, K.N., Krambeer, R.J. & Pedersen, J. 2011. Psychosocial and environmental determinants of eating behaviors, physical activity, and weight change among college students: a qualitative analysis. *Journal of American College Health*, 59(6): 531-538.
36. Brannan, D., Biswas-Diener, R., Mohr, C.D., Mortazavi, S. & Stein, N., 2013, Friends and family: A cross-cultural investigation of social support and subjective well-being among college students. *The Journal of Positive Psychology*, 8(1): 65-75.
37. Kauffman, C.A., Derazin, M., Asmar, A. & Kibble, J.D. 2018. Relationship between classroom attendance and examination performance in a second-year medical pathophysiology class. *Advances in Physiology Education*, 42(4): 593-598.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

