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DEVELOPMENT AND VALIDATION OF A QUESTIONNAIRE TO EXPLORE TERTIARY STUDENTS' NUTRITION PRACTICES

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INTRODUCTION

A nutritious diet plays an important role in maintaining good health, wellbeing, and the prevention of non-communicable diseases (Jankovic et al., 2015; Micha et al., 2017). The Ministry of Health's "Eating and Activity Guidelines for New Zealand Adults" suggest eating a variety of foods from the four main food groups and restricting dietary salt, sugar, fats, processed foods, and alcohol (Ministry of Health, 2020). In New Zealand, nearly half of adults meet the recommended daily intake for fruit, with one in 11 meeting the daily vegetable intake (Ministry of Health, 2024). As the Ministry of Health guidelines cover a wide age range (19–64 years), it is possible that food choices and eating habits differ between younger and older adults. When considering younger adults, it is likely that many will be moving from home to independent living, which can lead to changes in their eating habits. Moreover, university is a time of transition for many young adults. Weight gain during the first year of study is common and can be linked to changes in lifestyle, likely attributed to greater independence and autonomy, including less physical activity, unhealthy dietary behaviours, and stress (Crombie et al., 2009; Finlayson et al., 2012; Vadeboncoeur et al., 2015).

Higher levels of psychological distress are more commonly reported in younger people (aged 15–24 years), and may impact nutrition practices and dietary behaviours (Ministry of Health, 2024). Higher levels of stress can occur during the examination period, and may impact student dietary choices, leading to a decrease in fruit and vegetable intake and an increase in snacking, skipping meals, and consuming more sugary foods and sugar-sweetened beverages (Alduraywish et al., 2023; Avram et al., 2025; Jaremków et al., 2020; Michels et al., 2020; Salihu & Gashi, 2024). Similar nutritional practices have been observed in studies with Western European, Middle Eastern, African, and Asian university student populations (Almoraie et al., 2025; Bernardo et al., 2017). Conversely, in the United Kingdom, it was reported that while food intake varied among university students, a considerable proportion of students followed healthy dietary patterns, such as a vegetarian diet (Sprake et al., 2018). In New Zealand, a study examining the influence of the university food environment on student and staff purchasing preferences, choice determinants, and opinions found that most respondents purchased food and beverages on campus, but healthy items were found to be less available and more expensive to purchase compared to less healthy items (Roy et al., 2019).

Although the tertiary education environment may provide less favourable conditions for healthy dietary choices, there appear to be clear changes in eating behaviours at different times of the year. As mentioned, these changes could be due to different stressors experienced, for instance exams versus term time. Therefore, the aim of this research was to explore the nutritional practices of tertiary students during various times of the academic year to determine if any significant changes in eating practices and habits occurred, which might lead to educational

opportunities to promote healthy eating practices in the future. It was hypothesised that students' nutritional practices would show an increased consumption of convenience foods, particularly sugary, sweetened, and caffeinated drinks, during exam time.

METHODOLOGY

This was a validation and exploratory study. A mixed-methods approach was employed to develop and validate the Student Nutrition and Practices Questionnaire (SNaP-Q) (Figure 1) before launching the final questionnaire. The project was approved by the Toi Ohomai Institute of Technology Research and Human Ethics Committee (unique reference number 24019).

The five phases of questionnaire development and validation involved:

Phase 1 Review of the previous similar nutrition questionnaires. Literature review and initial questionnaire development.

Phase 2 Expert content review (Delphi method).

Phase 3 Face validity (nursing students).

Phase 4 Construct validity (tutors versus students).

Phase 5 Reliability test-retest (health and wellbeing students).

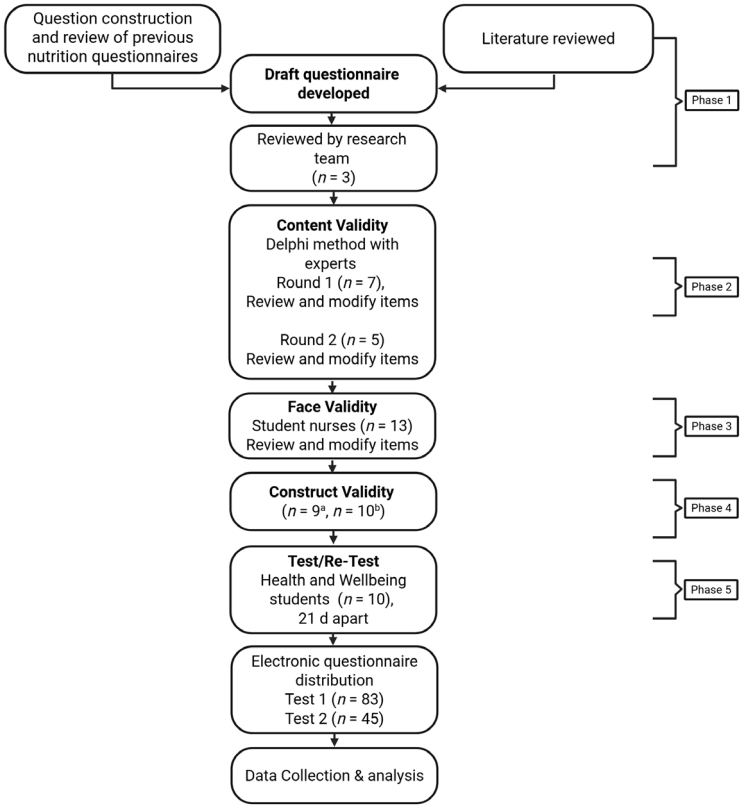

Figure 1. Five-phase development and validation of the student nutrition and practices questionnaire (SNaP-Q).
Note: a, Tutor group; b, Student Test 1 group; d, days; n, number. Original image developed in https//:BioRender.com

Phase 1 involved reviewing previously published methodological procedures to inform the five-phase validity process (Scrivin et al., 2021). Three experienced practitioners (two registered dietitians and one nutritionist) reviewed the literature and previous nutritional practice questionnaires to develop the initial questionnaire. Professional organisational bodies and researchers contacts were approached to recruit nutrition experts to review the questionnaire.

The anonymous Delphi method was used in phase 2 of the questionnaire development. The Delphi method is often used in questionnaire development in healthcare, where questions are reviewed by experts and rated to determine consensus among items (Boulkedid et al., 2011). To determine the relevance of each item, two ratings were required with cut-offs, which determined if items required subsequent review. The first rating was a content relevance score using a four-point Likert scale. Experts rated whether the item was 1, irrelevant; 2, somewhat relevant; 3, relevant; or 4, highly relevant, which determined a content validity index (CVI) score (Polit et al., 2007). A CVI score of ≥ 0.78 was required to obtain group consensus on the item's relevance. The second rating was an agreement score on whether to delete, modify, or keep each item, with an option to provide additional comments and/or context to support the rating (Scrivin et al., 2021; Tam et al., 2020). A group agreement score of ≥ 70 percent was required to keep the item (Scrivin et al., 2021). If the CVI or agreement ratings did not meet the cut-offs, the item was modified and returned for further review until a unanimous consensus was obtained. The first round required reviewing 12 demographic and 13 nutrition questions. Based on reviewer feedback, four demographic and seven nutrition questions required further review for round two, with consensus obtained on all questions after this review round. A content review and thematic analysis of the open-ended expert review responses was conducted. Comments were grouped into four categories: format, language, content, and/or comments that did not require actionable change. A thematic analysis using NVivo version 14 (Lumivero, Denver, CO 80202, United States) was performed to determine common item themes.

A group of nursing student (n = 13) volunteers attended a group face validity session (phase 3). During the group session, three researchers were available to clarify any questions students may have had about the questionnaire. Using an online form, students reviewed each item of the questionnaire and rated the difficulty of each item on a five-point Likert scale ranging from 1 (very difficult) to 5 (very easy). They also provided an agreement score indicating whether to delete, modify, or keep each item, with the option to provide additional comments. Any changes were reviewed and agreed by the research team.

To ensure the questionnaire measured the construct intended, questionnaire responses were compared between health tutors (n = 9) and health and wellbeing students (n = 10) (phase 4). It was anticipated that health tutors would behave as expected (for instance, consuming regular meals, or eating meals mostly from home) compared to students' responses, which might vary from expected. The final stage of validity (phase 5) involved a test-retest procedure to determine the reliability and stability of the questionnaire over time. Health and wellbeing students (n = 10) completed Test 1 before a semester break, and Test 2 the first week back from a semester break (21 days apart). No further changes to the questionnaire were required after construct validity (phase 4), and reliability testing (phase 5). The questionnaire was deemed ready for distribution.

The final questionnaire consisted of seven demographic and 18 nutrition practice questions. The final questionnaire was uploaded online through Microsoft Forms and advertised to all students enrolled in the Bachelor of Nursing (n = 386) and Certificate in Health and Wellbeing courses (n = 37). The questionnaire was advertised at two different time periods (21 days apart), where it was known that students would have a different workload; in other words, class time versus exam time. Students accessed the questionnaire through a provided link. Written consent was obtained online prior to completing the questionnaire. Questionnaire responses were collected using Microsoft Forms, then exported to Excel workbooks for analysis. During the preparation of this work, the authors used NVivo (version 14) to assist with auto coding and sentiment analysis of open-ended responses.

All data was analysed with IBM SPSS Statistics 26.0 (IBM Corporation, New Orchard Road Armonk, NY 10504-1722, United States). All data was checked for normality using the Shapiro-Wilk test, and descriptive statistics used to describe continuous variables. T-tests for parametric data and Wilcoxon tests for non-parametric data were conducted to test for differences. Item-CVI (I-CVI) scores were calculated by the number of experts rating either a 3 (somewhat relevant) or 4 (highly relevant) item relevance divided by the number of experts (Scrivin et al., 2021). Bivariate analysis using Pearson's intra-class correlations was used with $p < 0.05$ considered statistically significant.

RESULTS

No previous questionnaires were identified that could be replicated for the purposes of the study. The newly developed questionnaire was reviewed formally by three researchers. Seven nutrition experts with an average 20.3 years of nutrition experience reviewed the first round of the questionnaire. All demographic questions (n = 12) obtained an I-CVI score of ≥ 0.86 and an agreement rating of 91.6 percent (n = 11/12). Most (n = 12/13, 92.3 percent) nutrition questions scored an I-CVI of ≥ 0.86, with an agreement rating of 84.6 percent (n = 11/13) (Table 1).

Item	Not Relevant	Somewhat Relevant	Quite Relevant	Quite Relevant	Total of column 3 & 4	I-CVI	Delete (%)	Modify (%)	Keep (%)
D1	0	0	1	6	7	1.00	0	14	86
D2	0	0	0	7	7	1.00	0	14	86
D3	0	0	1	6	7	1.00	0	43	57
D4	0	0	2	5	7	1.00	0	57	43
D5	0	1	3	3	6	0.86	0	43	57
D6	0	0	0	7	7	1.00	0	14	86
D7	0	1	2	4	6	0.86	0	71	29
D8	0	1	3	3	6	0.86	0	29	71
D9[a]	0	1	2	4	6	0.86	14	29	57
D10[a]	0	1	0	6	6	0.86	0	0	100
D11[a]	0	0	2	5	7	1.00	0	14	86
D12[a]	0	0	2	5	7	1.00	0	29	71
N1[a]	0	0	0	7	7	1.00	0	43	57
N2[a]	0	0	1	6	7	1.00	0	43	57
N3	0	2	0	4	4	0.66	16	0	84
N4	0	1	1	4	5	0.83	17	33	50
N5[a]	0	0	0	7	7	1.00	0	43	57
N6	0	0	0	7	7	1.00	0	29	71
N7	0	0	0	7	7	1.00	0	0	100
N8[a]	0	1	0	6	6	0.86	0	57	43
N9[a]	0	0	0	7	7	1.00	0	57	43
N10[a]	0	0	3	4	7	1.00	0	71	29
N11	0	0	0	7	7	1.00	0	29	71
N12[a]	0	1	1	5	6	0.86	0	71	29
N13	0	0	1	6	7	1.00	0	43	57
Mean	0.00	0.40	1.00	5.52	6.52	0.94[b]	1.88	35.04	63.08
SD	0.00	0.58	1.08	1.36	0.77	0.09	5.21	21.74	21.06
Lower (95% CI)	0.00	0.23	0.42	0.53	0.30	0.04	2.04	8.52	8.25
Upper (95% CI)	0.00	0.63	1.42	6.05	6.82	0.98	3.92	43.56	71.33

Table 1. Item Relevance (I-CVI) and keep, modify or delete responses from experts (Delphi Method Round 1) (n = 7 experts).
Note: a, Items returned for Round 2; b, Scale Content Validity Index; CI, confidence interval; I-CVI, Item-Level Content Validity Index; n, number; SD, Standard Deviation, % = Percentage.

Most of the open-ended responses related to modifying the content of the questions or general comments regarding the consideration of other factors (Table 2).

Category	Sub-category	*n*	Examples of summarised responses
Content change	Demographic modifications	21	-Will you be specifically looking into differences between females, transgenders, etc.? If so, you could leave the question as is, but if not, I would recommend simplifying it to the gender question that is used in the NZ Health Survey for example. -Although people will understand the question, you may want to rephrase the question to "Which age group do you belong to?" to match the answer options provided. I would also remove "old" from the answer options.
	Additional information	13	… you could add a "never" option to question 4 as well … would change the order so that starts with the lowest level.
	Modify the question	26	-Does holiday mean that people are away from home (e.g., on a holiday to Australia)? Or does this include the semester breaks in which they are still at home but just not have any classes? Maybe say holiday/semester break. -I think this is relevant, but you might want to consider whether you need both this question, and question 9 about level of study - are they both necessary? If so, do you want to put them together? e.g., "What course are you enrolled in?" followed by "What level of study is this course at?" or similar?
Format change	Duplicate numbers	3	-Please note that you currently have two questions with the number "9."
	Structure Change	1	-This question could be better placed before the previous question.
Language change	Spelling	2	"Graduate" is spelt incorrectly in Option e.
General Comment (not requiring a change)	Clarification	4	-Who? Do others influence food choice e.g., friends, family, advertising -How would you interpret the cost answer? Given that water is free, they would not choose these to save money.
	Consideration	8	-Not sure about this one and what relevant info it would give us. -Will you be looking at the healthiness of the breakfast from this question or do you just want to describe the type of foods people are choosing? It would be difficult to assess healthiness. -Focus and Concentration. I wonder if you might miss information if you do not include nutritional supplements e.g. micronutrient or protein supplementation. Sometimes protein or meal replacement drinks end up replacing meals.
	Positive comment	4	-Good to see there is a "prefer not to say" option. -These demographic questions are important so that you are able to describe your participant population, so I have rated them highly throughout.

Table 2. Examples of summarised comments by experts (n = 7) on the students' nutrition and practices questionnaire (SNaP-Q) during round 1 of the Delphi method.

Four demographic and seven nutrition questions were returned for round two and reviewed by four experts. All items in the second round received an I-CVI of 1.0, with three questions requiring some minor content changes. The researchers modified the questionnaire, which did not require any further review. Thirteen nursing students rated the difficulty of each question and whether to keep, modify, or delete any questions and any additional queries or responses made were recorded. No questions were rated as difficult or very difficult. Most questions were rated as very easy to answer (82 percent), and most students wanted to keep the questions, with only a few requiring modifications.

Demographics			**Course information**		
	Completed once	**Completed twice**		**Completed once**	**Completed twice**
Gender			Course/programme		
Female	**69**	**23**	**Bachelor of Nursing**	**55**	**20**
Male	**2**	**3**	**Certificate in Health & Wellbeing**	**18**	**6**
Non-binary	**1**	**0**			
Missing	**1**	**0**			
Age (years)			Year of study		
15–19	**9**	**4**	**First year**	**37**	**14**
20–24	**21**	**6**	**Second year**	**14**	**6**
25–34	**26**	**6**	**Third year**	**20**	**6**
35–44	**13**	**7**	**Fourth year**	**2**	
45–54	**4**	**3**			
Ethnic Background			Time of year		
NZ/European	**38**	**12**	**Classes**	**18**	**6**
Māori	**15**	**6**	**Placement**	**13**	
Asian	**14**	**8**	**Study leave**	**15**	**5**
Pacific People	**2**		**Exam time**	**25**	**14**
Indian	**2**		**Semester break**	**2**	
Latin American	**1**				
Filipino	**1**				

Table 3. Demographics and course information from questionnaire responses, completed once (n = 73).

When comparing tutor and student responses in phase 4, the tutors showed some differences in their eating habits. Tutors always (n = 9/9, 100 percent) consumed a lunch or meal in the middle of the day compared to students (n = 5/11, 45 percent, p = 0.05, Z = -2.0). Students tended to consume more rice-based lunches (≥ 2–3 times per week, n = 5/11, 45 percent) than tutors (less than once a week, n = 5/9, 55 percent, p = 0.04, Z = -2.07). Most tutors reported that their main reason for consuming caffeinated, sugary, or diet drinks was taste and/or enjoyment (n = 5/8), whereas students reported varied reasons, for instance, taste and/or enjoyment (n = 3/8), routine (n = 2/9), an energy boost (n = 2/8), social influence (n = 1/8) and improved concentration/focus (n = 1/9, p = 0.04, Z = -2.023). Tutors reported consuming nuts more frequently (≥ 3–4 times a week, n = 6/9) compared to students (once a week or less, n = 5/9, p = 0.04, Z = -2.032).

The test-retest validity process (phase 5) was completed by 10 students, 21 days apart. There was no significant difference (p = 0.40, Z = -0.834) in the test-retest results of the demographic questions, which showed a strong positive correlation (r = 0.71, p < 0.001). There was no significant difference in the nutrition questions (p = 0.31, Z = -1.012) with a weak positive correlation (r = 0.32, p < 0.001). No further changes to the questionnaire were required after phases 4 and 5 of the validation process.

The questionnaire was advertised twice, encouraging students to complete it at the two different time points of the academic year. Seventy-three students completed the questionnaire once, and 26 students completed the questionnaire twice (Table 3). For the group that completed the questionnaire twice, there was no significant difference between the grouped demographic questionnaires (p = 0.12, Z = -1.547), with a strong positive correlation (r = 0.90, p < 0.001). However, there was a significant difference regarding when during the academic year the questionnaires were completed. Test 1 was completed during class time (n = 8), placement (n = 8), study leave (n = 7) or exam time (n = 3), and Test 2 was mainly during exam time (n = 14/26) (r = 0.63, p < 0.001). There was a significant difference between the grouped nutrition responses (p < 0.001, Z = -3.704), with a strong positive correlation (r = 0.679, p < 0.001). Compared to Test 1, there was significantly increased snacking (p = 0.01, Z = -2.44) at Test 2, with fruits and vegetables (p = 0.03, Z = -2.140), drinks (p = 0.06, Z = -1.862), and nuts and seeds (p = 0.01, Z = -2.496) consumed less frequently (Table 4). Table 5 highlights some of the open-ended responses analysed by NVivo, which indicate that exam time and stress are very negative responses (sentiments) associated with changes in eating habits and food choices.

Questions	Response	Test 1 (%)	Test 2 (%)	*p* (*Z*)	*r* (*p*)
How many times a week do you have snacks?	Always or almost always (6–7 x/week)	6 (23)	10 (39)	0.01 (-2.45)	0.81 (< 0.01)
	Sometimes (2–5 x/week)	14 (54)	12 (46)		
	Never or almost never (0–1 x/week)	6 (23)	4 (15)		
How many times a week do you have the following for snacks? Fruits and vegetables	Less than once a week	1 (5)	2 (9)	0.03 (-2.14)	0.68 (< 0.01)
	Once a week	1 (5)	6 (27)		
	2–3 x/week	8 (40)	6 (27)		
	3–4 x/week	1 (5)	2 (9)		
	5–6 x/week	1 (5)	0 (0)		
	Daily	8 (40)	6 (27)		
How many times a week do you have the following for snacks? A drink of some sort e.g., Protein shake, Sports drink, Up and Go, milk, tea/coffee	Less than once a week	3 (17)	6 (30)	0.06 (-1.86)	0.69 (0.01)
	Once a week	3 (17)	5 (25)		
	2–3 x/week	2 (11)	2 (10)		
	3–4 x/week	2 (11)	2 (10)		
	5–6 x/week	1 (6)	1 (5)		
	Daily	7 (38)	4 (20)		
How many times a week do you have the following for snacks? Nuts, seeds or products made from these? e.g., nut bars etc.	Less than once a week	3 (16)	9 (43)	0.01 (-2.50)	0.65 (0.01)
	Once a week	2 (11)	4 (19)		
	2–3 x/week	9 (47)	2 (10)		
	3–4 x/week	2 (11)	4 (19)		
	5–6 x/week	1 (5)	1 (5)		
	Daily	2 (11)	1 (5)		

Table 4. Nutrition questions with differences between Test 1 and Test 2.

Response	Explanations: *Please explain how you think you may eat differently during different parts of the academic year, e.g., class time versus exam time*	Nodes	Test (first) or Retest (second) response
Very Negative	Eat less during ***exam time**** as I get very ***stressed out and feel nauseous***† from stress	Stress Exams	First response
Very Negative	During ***stressful periods, I find I binge eat more sugary and snack foods***† such as around due dates of assignments and ***exam times****.	Stress Exams	First response
Very Negative	Worse during placement and ***exam time**** from change of routines and ***stress***†	Stress/ Exams	Second response
Moderately Negative	During lecture time, I find myself hungrier. During ***study leave****, I tend to get into a zone and ***do not seem to eat at regular times****	Exams	First response
Moderately Negative	***Placement and exam time not great**** due to e***xtra stress, so less time and mental energy to make healthier choices***†	Stress Exams	First response
Moderately Negative	I ***eat differently when I'm doing assignments***. I am able to be disciplined and eat healthily at all other times. When doing assignments, I ***eat junk food***§ constantly.	Eating habits Food choices	First response
Moderately Negative	I usually ***eat more processed foods***§ during ***exam time**** that are easy to make or heat up due to the ***lack of time and energy I have***†	Stress/ Exams Food choices	Second response
Moderately Negative	I ***eat more during class time***‡. ***Stress***† during ***exams**** makes me ***eat less***‡	Exams Stress Eating habits	Second response
Moderately positive	During exam ***periods, stress levels are higher***† so I find it easier to ***'reward myself' with unhealthy foods***§. ***Exam revision**** also ***requires a lot of discipline**** to focus, and I can easily get distracted and end up boredom eating. During class time, I'm good at preparing set meals for myself, but with being less active on my feet during this time (as opposed to placement) ***I'm more likely to boredom eat/snack as well***‡.	Stress Exams Food choices Eating habits	First response
Moderately positive	I usually make ***extra dinner so I can take some for lunch the next day***§	Food choices	First response
Moderately positive	If I did not ***make lunch, then I would buy it at the campus cafe***‡. But during study leave, I have ***more time to cook healthy meals***‡ at home.	Eating habits	Second response
Very positive	As a second-year student nurse, my ***eating habits definitely change during the academic year***‡. During regular class time, I try to focus on balanced meals—***lots of fruits, veggies, and whole grains***§—because I need the energy to stay alert and engaged in lectures and clinicals.	Eating habits Food choices	First response
Very positive	***During exam time**** or when I am currently doing an assessment, I prefer to prepare ***easy-to-cook or instant meals****. I do think I eat more sweets during this time.	Exams	First response
Very positive	***Eat healthy and nutritious food***§ during class and light meals during ***exams****	Exams Food choices	Second response

*, Stress; †, Exam time; ‡, Eating habits; §, Food choice

Table 5. An example of some NVivo coded open-ended responses grouped into response, nodes and if the response was from the first or second questionnaire completion.

DISCUSSION

The current questionnaire has undergone a rigorous validation process to ensure that it is robust and stable over time. The test-retest questionnaire responses confirm that students' snacking frequency and snack choices vary at different times of the academic year and that they exhibit very negative responses associated with exam time and stress, which may impact their food choices and eating habits.

The development of the SNaP-Q involved a review of the current literature to determine if similar questionnaires were already in use and to assess the structure and content of existing questionnaires (Avram et al., 2025; Ramón-Arbués et al., 2021; Scrivin et al., 2021; Tam et al., 2020). Due to a lack of nutrition questionnaires specifically developed for use with tertiary students in New Zealand, a unique questionnaire was developed. Using the Delphi method, experienced registered dietitians or nutritionists anonymously reviewed the questionnaire (Boulkedid et al., 2011). The Delphi method is a widely used methodology that has the advantage over other group consensus methods in that it does not require face-to-face contact, yet still requires group consensus (Trevelyan & Robinson, 2015). Reviewers applied both content validity (Capling et al., 2019; Polit et al., 2007; Scrivin et al., 2021; Tam et al., 2020) and agreement ratings (Scrivin et al., 2021; Tam et al., 2020) to provide numerical evidence to keep, modify or delete items. To obtain unanimous agreement, two rounds of anonymous expert review were required. The subsequent face validity process was completed by students who deemed the SNaP-Q easy to complete and understand, with minor adjustments suggested to improve comprehension. To determine construct validity, questionnaire responses were compared between a tutor and a student group. Significant differences were observed between tutor and student demographics, and some of the nutrition questions highlighted varied eating habits and food choices between groups; for instance, tutors consistently ate lunch 100 percent of the time, whereas students were less consistent ($p = 0.04$). The differences in demographic and nutrition responses favourably indicated that the SNaP-Q was able to measure the concepts it was meant to measure (Ranganathan et al., 2024). Inconsistent meal patterns have been observed in studies with university students, specifically skipping the breakfast meal (Alduraywish et al., 2023; Almoraie et al., 2025; Whatnall, Patterson, Brookman, et al., 2020). It is likely that a lack of time or available resources influences students' meal patterns, or that an increase in snacking behaviour occurs (rather than eating a meal), particularly energy-dense snacks, which may in turn influence the number of meals consumed in a day (Almoraie et al., 2025).

The final test-retest phase revealed that the SNaP-Q demographic and nutrition responses were stable over time, with no significant difference between the two different test periods ($p = 0.40$). During a two-week test-retest period, the demographic questions showed a strong correlation ($r = 0.71$, $p < 0.001$). However, a weaker positive correlation was observed for the nutrition questions ($r = 0.32$, $p < 0.001$). Despite this positive weak correlation, it is likely that due to the questionnaire construct, nutrition habits and practices could change over time, related to changes in the student's circumstances such as living arrangements or work-life balance. A change over time has been observed in other research, with a significant decline in daily fruit and vegetable consumption and physical activity from the first semester (fall freshman year) to the final semester (fall senior year) reported, with greater changes among students living off campus (Small et al., 2013).

Most of the students who completed the SNaP-Q were New Zealand European (completed once n = 38, 52 percent; or twice n = 12, 46 percent) females (completed once n = 69, 95 percent; or twice, n = 23, 88 percent), aged 20–34 years of age (completed once n = 46, 73 percent; or twice, n = 12, 46 percent). All of the students who completed the SNaP-Q were studying health-related programmes. Students were studying either a Bachelor of Nursing (completed once n = 55, 75 percent; or twice n = 20, 77 percent) or a Certificate in Health and Wellbeing (completed once n = 18, 25 percent; or twice n = 6, 25 percent). Students who completed the SNaP-Q appear to be a representative sample of both student cohorts at the time of data collection. The SNaP-Q was completed by 26 students at two different time periods ($p < 0.001$, $Z = -3.493$) about three weeks apart. The questionnaire was first completed during classes, placement, or study leave, and secondly during exam time ($r = 0.632$, $p = 0.001$). Student responses to how they might eat differently during various parts of the academic year, such as

class time versus exam time, revealed several 'very negative' responses that were associated with exams, stress, and poorer eating habits and/or food choices (nodes identified in NVivo). Some students commented that they had less time to cook and prepare meals and were more likely to choose high-sugar food and drink options during exam times. Some of the 'very positive' responses were related to preparing quick and easy meals or trying to maintain better eating habits (Table 5). Inverse relationships have been observed between stress and diet quality in studies with students enrolled in health courses (such as medicine) in Saudi Arabia and Belgium during exam time, which supports the current study findings (Alduraywish et al., 2023; Michels et al., 2020). Positive correlations have been observed between students' cooking ability and healthy dietary behaviours (Shi et al., 2022). Higher diet quality (nutritional value) was associated with students who reported self-perceived 'excellent' cooking skills and with those who cooked more frequently (Shi et al., 2022). In addition, students who reported better cooking ability tended to follow more health-conscious dietary patterns, such as eating more fruit and vegetables and less processed foods (Sprake et al., 2018). Having adequate resources such as time, nutrition knowledge and facilities to prepare and cook meals is likely to be a factor for improved diet quality.

The examination period is often a time of intensified study, with unfavourable changes in student dietary choices reported (Alduraywish et al., 2023; Avram et al., 2025; Jaremków et al., 2020; Michels et al., 2020; Salihu & Gashi, 2024). During Test 1 the frequency of snacking was mostly commonly reported as sometimes (2–5 x/week), compared to Test 2 (exam time), where frequency increased by 15 percent in the 'always or almost always' (6–7 x/week) category. This may indicate that students make small changes to the type and frequency of the snacks they choose during exam time; for instance, greater snacking on fruits and vegetables during term time (Test 1), compared to exam time (Test 2). Similar findings were reported among Saudi Arabian (Alduraywish et al., 2023) and Flemish students (Michels et al., 2020) who reported consuming less fruit and vegetables during exam time. However, other studies report that fruit and vegetable intake appears to be low among university students, regardless of the time of academic year (Al-Otaibi, 2013; American College Health Association, 2009; Gan et al., 2011; Michels et al., 2020; Ramón-Arbués et al., 2021; Whatnall, Patterson, Brookman, et al., 2020). Overall, these findings indicate there is a need for greater awareness and education about the importance of consuming more fruits and vegetables among tertiary students.

It was hypothesised that there could be an increase in the frequency of consumption of caffeinated ($p = 0.24$, $Z = -1.186$) or energy drinks ($p = 0.56$, $Z = -0.577$) or sugary snacks (such as chocolate or sweets) ($p = 0.19$, $Z = -1.303$) consumed during exam time (Test 2) but this was not observed. Contrary to current research findings, students have reported consuming sugary snacks and caffeinated drinks, such as coffee, more frequently during exam time (Jaremków et al., 2020). It is possible that food choices vary amongst demographics and courses of study. The current cohort of predominantly female nursing and health and wellbeing students are likely to have been taught about healthy eating during their course of study, which may have impacted the study findings. Eating behaviours and demographic characteristics have been explored among Australian university students, where a higher dietary intake of nutrient-rich foods was associated with age (> 25 years irrespective of gender), being female, living in rented accommodation, or being enrolled in postgraduate or health-related courses (Whatnall, Patterson, Chiu, et al., 2020). It is possible these students have greater nutrition education and health awareness due to their specific course of study.

The current exploratory study had a small number of participants complete the SNaP-Q compared to other studies with larger participant numbers (e.g., > 1000 participants) (Ramón-Arbués et al., 2021; Sprake et al., 2018; Whatnall , Patterson, Chiu, et al., 2020). Other questionnaires have investigated lifestyle factors (such as alcohol, physical activity, and smoking) in addition to nutritional practices, which may provide further insights and comparisons to student lifestyle behaviours (Avram et al., 2025; Bennasar-Veny et al., 2020; Jaremków et al., 2020; Moreno-Gómez et al., 2012; Ramón-Arbués et al., 2021). Launching the SNaP-Q to a larger student population may provide greater insight into eating habits and food choices among different demographics, courses of study, and times of the year. It is possible that the current cohort of students has a higher level of awareness and knowledge about the importance of eating healthy, nutritious food and drinks throughout the year due to their health-related course of study, which could impact study findings.

This original questionnaire has undergone a thorough validation process. This has included an expert content review, face and construct validity tests, and reliability tests. The questionnaire was launched at two different times during the academic year, highlighting that the current cohort of students had few differences in their eating habits and practices, possibly due to their health-related courses of study. The planned future development of this research is to launch the SNaP-Q to a larger student cohort to determine the differences that may exist within the wider tertiary student population and across various courses of study. Consideration of other lifestyle factors, such as physical activity, alcohol consumption, and smoking/vaping, may be included to gain a broader understanding of tertiary student lifestyle behaviours and to identify any correlations associated with nutrition practices. However, it is acknowledged that further validation would be required if the questionnaire content and construct were to change.

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