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Health-Related Behaviours of Tertiary Education Students: Findings from a New Zealand Study

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1. Introduction

This study assessed the prevalence of five health-related behaviours (engagement with health providers, physical activity, diet, alcohol consumption, and smoking) among a population of tertiary students. The findings were used to inform the institution's ongoing development of health education strategies and the paper concludes with a number of recommendations for others wishing to embed health education and promotion their campus culture.

Background

Students in tertiary education increasingly face a range of challenges including coping with the pressures of academic life, study, living away from home, establishing new relationships, juggling part-time employment, as well as socialising and 'living the student life' including engaging in sexual behaviour (El Ansari, 2011; Pechar & Andres, 2011; Psutka, Connor, Cousins et al., 2012). These challenges intensify for students who leave home at a young age (16 or 17 years' old) to study at pre-graduate level, and for others, particularly international students who travel to a new country to study (Pechar & Andres, 2011). Thus, students entering tertiary education irrespective of their chosen path of study, are faced with major lifestyle challenges including a lack of parental influence (and sometimes discipline), time-management, self-control, social support, limited budgets, unhealthy food options (Melton, Bingham & Bland, 2014; Wells, Makela & Kennedy, 2014). Students are also presented with opportunities to attend orientation events and parties involving alcohol (the legal drinking age in New Zealand (NZ) is 18 years) that may be new to them.

All tertiary institutions in NZ provide enrolled students with free or subsidised on-campus medical and counselling services and lifestyle support advice. However, this support does not usually extend to guidance on individual health-related behaviours such as the recommended levels of physical activity and nutritious food consumption that are key contributors to optimum physical health and mental well-being. Also, as students spend most of their time using computers, smart phones and online learning technologies, concerns about this populations' heath status now encompass negative associations between increased sedentary behaviour due to long periods sitting whilst using computers, and medical problems such as obesity, insulin resistance, and mental health problems brought about by social isolation (Melton, et al., 2014; Yoo, Cho & Cha, 2013).

These health concerns have grown in importance in the face of burgeoning numbers of students enrolled in tertiary education. Issues such as lack of physical activity, poor diet and heavy alcohol consumption have been the subjects of international research on tertiary students (Greaney, et al, 2009, LaCaille, Dauner, Krambeer, & Pedersen, 2011). The catalyst for this study was the Canadian Charter of Okanagan's (2015) call for all tertiary education institutions to embed health education and promotion across all aspects of campus culture and growing international recognition of the importance of providing students with healthy universities and higher education institutions in which to study (Dooris & Doherty, 2010; El Ansari, 2014). The research design was guided by studies specifically examining lifestyle factors and the clustering of unhealthy behaviours in adolescents (Moreno-Gomez et al, 2012; Bonevski, Guillaumier, Paul, & Walsh, 2013).

2. Methods

2.1 Study purpose

The purpose of this study was to collect data about the prevalence of health related behaviours among a student population and to use these data to inform the institution's response to student's health-related needs.

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2.2 Ethical considerations

The institution's Human Research Ethics Committee (OPREC) approved the study. Safeguards were put in place to reassure Heads of Schools regarding some of the more controversial questions (particularly related to alcohol use). Although this question was of particular concern in the health-related disciplines, the organisation agreed that all students should be invited to participate as staff saw merit in gaining an understanding of the students' needs including the provision of pastoral care, health support and medical services.

2.3 Study design and sample

The study used a tailored design method (Dillman, Smyth & Christian, 2009). Quantitative descriptive data were gathered using an online survey that was pilot tested before going live in August 2017. The survey was publicised on the institution's electronic notice boards and social media sites and was supported by student and class representatives. It was accessible through a secured institutional portal and an independent organisational researcher returned data as a computer generated summary report of descriptive statistics. Invitations were sent to all students (N=5,700) enrolled in the institution's educational pre-graduate (certificate and diploma courses), undergraduate and postgraduate programmes based in the art, business, design, engineering, education, health, horticulture, and hospitality disciplines. After the first invitation, the student population was sent two reminder emails to complete the survey over three weeks before it closed at the end of September.

2.4 Research instrument

A 30-item online questionnaire derived from existing surveys about student's health (Moreno-Gomez et al., 2012; Bonevski et al., 2013) behaviours was pilot tested with a third-year group of students (N=27). Minor amendments to the formatting and presentation were made before the final survey was administered. Standard demographic information, (i.e. gender, ethnicity, age), data about student's discipline, year of study and living accommodation was gathered using 'forced choice' 'yes/no' response categories (some with branching statements). All items included a 'no response' option. Standard Likert response scales of 1 through to 5 were used, with 1 indicating the lowest level and 5 the highest level of agreement with individual items. The survey measures related to the following five health-related indicators.

Engagement with health services (5 items)

Respondents' engagement with non-emergency healthcare providers was assessed using eight questions from the New Zealand Health Survey (MoH, 2016). These included if students were registered with a medical doctor/General Practitioner (GP), how many times they had seen the GP in the previous 12 months, if they had difficulty seeing their GP and the types of health service they had accessed.

Physical activity (5 items)

Physical activity was assessed using questions from the NZHS (MoH, 2016) including the duration of time that spent doing daily moderate activity and the weekly frequency of these bouts of activity. National guidelines on physical activity were used to differentiate between those who undertook sufficient physical activity and those who participated in inadequate amounts of activity.

Fruit and vegetable consumption (2 items)

Daily fruit and vegetable consumption was assessed by two questions: the number of servings, and the portion size, the latter being described according to international guidelines (Bonevski, et al., 2013; Moreno-Gomez et al, 2012).

Alcohol consumption (14 items)

Alcohol consumption and the associated harms of excessive consumption were assessed using eight questions from the NZHS (2010) that were considered relevant and suitable for the students in the tertiary setting. The questions were similar to the Alcohol Use Disorders Identification Test (AUDIT, n.d.) questions used in a large range of surveys. Questions related to the frequency and volume of alcohol consumed as well as adverse experiences whilst drinking or as a result of excessive alcohol consumption.

Smoking status (4 items)

Current smoking status and previous tobacco consumption was assessed by four questions, namely "have you ever smoked?"; "have you smoked a total of more than 100 cigarettes in your whole life?"; "how often do you smoke?" and "on average, how many cigarettes do you smoke a day?" Respondents were instructed to include alternative forms of tobacco consumption (pipe, chewing tobacco, etc.) even though the questions referred to cigarettes.

2.6 Data analysis

The data collected was cleansed in Microsoft Excel and analysed using SPSS (version 24). Demographics characteristics and health-related behaviours are reported using frequencies, proportions and 95% confidence intervals. Cross discipline comparisons between health-related behaviours of the allied health group of students and non-health groups were made using chi-square test for independence with Yates Continuity Correction.

3. Results

3.1 Demographics

A total of 612 students participated in the online survey, but of these only 521 (9.1%) gave full consent for their information to be used for research purposes/and or completed all of the 30 questions. The majority of

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respondents were female (n=399, 76.6%), 20.9% (n=109) were male; with the remainder failing to answer or providing alternative answers such as "gender fluid" and "Apache Helicopter". As could be expected in a tertiary educational institution, approximately two thirds (n=327) were under 24 years of age. Self-identified ethnic groups are listed but differences between groups were not explored. Over 50% of the respondents were studying at degree or postgraduate level. Demographic characteristics of the survey sample are summarised in table 1.

Table 1: Demographic characteristics of the survey sample

Characteristics	**Sample characteristics N=521**	
Age (years)	**N**	**%**
≤24	327	62.8
≥25	183	35.1
Did not answer	11	2.1
Gender		
Male	109	20.9
Female	400	76.7
Other	4	0.8
Did not answer	9	1.6
Ethnicity		
NZ European	368	70.6
Asian	35	6.7
NZ Maori	31	6 .0
Pacifica	11	2.1
Indian	10	1.9
Other NZ	6	1.2
International	37	7.1
Refused or did not answer	15	2.9
Level of Study		
Pre-degree	205	39.4
Undergraduate	289	55.5
Honours & postgraduate	12	2.3
Did not answer	15	2.9

3.2 Health-related behaviours

There was a high level of engagement with healthcare services with over two-thirds (n=361) of respondents visiting a healthcare provider in the previous 12 months. While the majority (54.5%; n=284) had not experienced difficulties accessing their healthcare provider (doctor or nurse), a third (36%, n=188) reported that there had been occasions where they were unable to see their healthcare provider. Table 2 summarises the participants' responses regarding their health-related behaviours.

Table 2: Health behaviour indicators

	Male (n=109; 20.9%)	**Female (n=400; 76.7%)**	**Other (n=4; 0.77%)**	**Total % [95% CI]**
Engagement with health services				
Visits to healthcare in previous 12 months	58 (53.2%)	300 (75%)	3 (75%)	69.3% [65.1- 63.2]
Physical activity				
Meeting health recommendations	13 (11.9%)	56 (14%)	0 (0%)	13.2% [10.5-16.5]
Not meeting health recommendations	49 (45%)	189 (47.3%)	2 (50%)	46% [41.7-50]
Vegetable intake (3+ daily servings)				
Meeting intake recommendations	37 (33.9%)	197 (49.3%)	2 (50%)	47.2% [42.9-51.6]
Not meeting recommended intake	46 (42.2%)	158 (39.5%)	2 (50%)	39.5% [35.3-43.9]

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Fruit intake (2+ daily servings)				
Meeting recommended intake	33(30.3%)	194 (48.5%)	0 (0%)	43.6% [39.3-47.9]
Not meeting recommended intake	49 (45%)	161 (40.3%)	4 (100%)	41.1% [36.8-45.4]
Alcohol use				
Past year drinking	67 (61.5%)	314(78.5%)	4 (100%)	73.9% [69.9-77.6]
Excessive drinking	2 (1.8%)	13 (3.25%)	0 (0%)	2.88 [1.6-4.7]
Smoking				
Current smoker	13 (11.9%)	39 (9.8%)	2 (50%)	10.4% [7.9-13.3]

Less than a third of respondents (29.2%, n=152) met the physical activity recommendation to exercise on at least 5 days per week; lower than the 47.5% reported in the NZHS (MoH, 2016). However, 51.6% (n=269) indicated that they had walked briskly on at least 5 of the previous 7 days. 13.4% (n=70) indicated that they were moderately active on 5 or more of the previous 7 days. 8% (n=42) indicated that they were vigorously active on 5 or more of the previous 7 days.

The levels of fruit and vegetable consumption were analysed and compared to national reported consumption rates (MoH, 2016). Of those who answered these questions (n=448), 50% (n=224) met national guidelines of 2+ servings of fruit per day, just below the 55.8% reported in the NZHS (MoH, 2016). A statistically significant association was found between meeting the recommended intake of fruit and those studying health related subjects (X2, (1, n=439) =9.0, p=.003, phi=.15). When questioned about vegetable intake 52.2 % (n=234) met the recommended 3+ per day compared to the national trend of 62.5% (MoH, 2016). Again, a statistically significant association was found between meeting the recommended intake of vegetables and those studying health-related subjects (X2, (1, n=440) =2.9, p=.089, phi=.86).

Almost three quarters of the respondents (n=384; 73.7%) indicated that they had consumed a drink containing alcohol in the previous 12 months, marginally lower than the national trend (80%) indicated by the NZHS (MoH, 2016). Only a minority (12.7%, n=66) of respondents reported that they drank weekly ("up to 3 times per week" or "4 or more times per week"). Less than 5% of respondents appeared to be 'problem drinkers' (consuming alcohol more than 5 times a week), much lower than the 20.8% observed in the NZHS (MoH, 2016). Statistical comparison with chi-square was not possible due to the small number of cases within certain responses.

In regard to tobacco smoking, 89 (17%) of students were "current smokers"; 42.4% (n=221) had never smoked, and 43.6% (n=227) had smoked. These figures are comparable to national data where 18.3% reported being "current smokers" in the NZHS (MoH, 2016). A statistically significant association was found between non-smoking and those studying health related subjects (X2, (1, n=187) =4.3, p=.037, phi=.17).

4. Discussion

The results of this survey add to the existing body New Zealand (MoH, 2010; 2016) and international research regarding the health related-behaviours of tertiary education students (Bonevski, et al., 2013; Melton, et al., 2014; Moreno-Gomez et al, 2012). These findings provide insights into the health behaviours of this group of young adults and can be used to inform educators, administrators and policy makers' decision-making on the nature of services and support required by the tertiary students group. Specific health behaviours are further discussed and a number of recommendations conclude the paper.

4.1 Engagement with healthcare services

Students regularly use healthcare services (doctors, nurses and health centres) and the majority have no difficulties in gaining access to or seeing their chosen healthcare provider. Over a third (n=178; 34%) indicated that they made use of the institution's student health services. These findings are reassuring as they show a high level of engagement and utilisation of medical services at a critical period of a young adult's life in which they typically experience multiple new challenges (e.g., moving away from home, establishing new relationships). However, the results also indicate that students studying in tertiary education are susceptible to behaviour patterns that cause concern, namely poor diet, physical inactivity, smoking as have been observed among international student populations (Bonevski, et al., 2013; Moreno-Gomez et al, (2012).

4.2 Physical activity and nutritional behaviours.

Only a quarter of these tertiary students met the recommended level of 30 minutes exercise a day on five or more days of the week. This result is also considerably lower than the general population's achievement (47.5%) reported in the NZHS (MoH, 2016). The rates of regular brisk walking were more encouraging, and were likely a feature of campus life, but still lower than the national trend. In regard to nutritional behaviours, only half of these students met the national guidelines of 2+ servings of fruit per day, just below the level reported in the NZHS (MoH, 2016). Similarly, half met the recommended intake of 3+ vegetables per day, 10% below the national trend (MoH,

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2016) but higher than results reported internationally where the measure was >5 vegetables per day (Bonevski, et al, 2013).

4.3 Alcohol and cigarette consumption

Nearly three-quarters of these students indicated that they had consumed an alcoholic drink within the previous 12 months, 5% lower than the national trend (MoH, 2010). Reassuringly, only a minority (12.7%) indicated that they drank weekly and 5% indicated hazardous or 'problem drinking' (MoH, 2010; 2016). It would be valuable in future to adopt the AUDIT to establish a more detailed understanding of student drinking patterns. While well over a third of respondents had never smoked, students' reported level of "current smoking" was similar to the national trend according to the NZHS (MoH, 2016). The reported level of smoking in this study is similar to the overall national declining trend, is likely to be influenced by the courses of study participants were pursuing and the younger demographic (where the national downward trend is most apparent) and the 'SmokefreeNZ' campaign (MoH, 2016).

4.4 Fruit and vegetable intake

On average, respondents reported eating less than half of the recommended servings of fruit and vegetables a day. This is similar to other study's findings (e.g. Grimm, Foltz, Blanck, et al, 2009) with a third of young adults (18-24) eating less than two servings of fruit a day, and a fifth eating less than three servings of vegetables a day. Reasons for low intakes of these essential foods among student populations include a lack of availability or affordability, lack of knowledge of the benefits of an adequate daily consumption of fruit and vegetables (Greaney, et al., 2009; LaCaille, et al., 2011; Melton et al., 2014). However, these findings show that students enrolled in health-related disciplines (e.g., nursing, occupational therapy, social services), had higher levels of fruit and vegetable consumption, indicating that this group better understood the nutritional benefits of these foods. This nutritional knowledge is usually part of health discipline curricula and it is pleasing to observe a positive association between being taught the theory of healthy nutrition and the practice of fruit and vegetable consumption among students enrolled in these health-related disciplines.

4. 5 Recommendations

The high use of technology in the student population is a necessary part of student life (Wells, et al, 2014). However, reliance on educational technology may not only contribute to students' sedentary behaviour (e.g., sitting in classes, studying in libraries) but also provide institutions and educators with opportunities to develop online educational content and smart phone applications. For example, all students may benefit from the provision of nutritional information content or computer applications (apps) that provide nutritional advice and dietary feedback, or activity tracking such as 'Fitbit' wristbands. Currently, the institution's own website publicises the advantages of a healthy diets and it is surrounded by an edible campus garden that provides green food crops, fruit and nuts, which all students can feely use to supplement their diets.

From these findings, it is clear that monitoring and responding to the health-related needs of this young adult group of tertiary students is essential. Furthermore, it is recommended that:

1. Institutions provide students with information, guidance and ongoing support about healthy eating, physical activity, smoking cessation and alcohol consumption, especially for the most vulnerable i.e., the youngest group of students. The first year of study, where many students reside in halls of residence, is an ideal period to focus on health education and health promotion.
2. Educators include basic health education in all curricula in a variety of formats, some of which can be student-led, e.g., organising walking or exercise groups.
3. Students are encouraged to use available lifestyle computer/smart phone applications (apps) to monitor their own physical health during their studies.

5. Conclusion

These findings provide insights into the health behaviours of tertiary students and can be used by other decision-makers to develop interventions aimed at improving students' health along the lines of the above recommendations. Reassuringly, it is apparent that students know how to engage with health care providers and that those enrolled in health-related disciplines are more likely to engage in healthy eating behaviours, meet daily recommended levels of exercise and be non-smokers. It is suggested that institutions should attend to students' physical health and well-being needs by adding health education content to all curricula, using creative alternative methods designed to encourage students to actively participate in setting, monitoring and achieving their own health goals.

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