**Eating, drinking and physical activity in health sciences students compared to other students at a South African university**

**Abstract**

Students studying towards a qualification in health sciences should have more knowledge about a healthy lifestyle than other university students. However, a question is whether these students apply such knowledge. While there are studies on the lifestyle habits of students in general, few studies have compared the practices of health sciences students with other students. The objectives of this study were to compare the eating patterns, alcohol consumption and physical activity of health sciences students with that of other students. A convenience sample (n=619) drawn from all students participated in a cross-sectional electronic self-administered survey. Data was analysed with SPSS and the Pearson chi-squared test (p<0.05). There was no statistical difference between the eating patterns, alcohol consumption and physical activity of health sciences students compared to others. Most students had poor dietary behaviour. Less than 10% of students consumed alcohol more than twice a week but binge drinking was more common. Less than 12% took part in strenuous exercise. It is interesting that students in health sciences do not have healthier lifestyles than other students. Further studies to determine reasons for this behaviour need to be undertaken and strategies should be developed to encourage behavioural change.

**Keywords: (6)**

Dietary intake, alcohol consumption, physical activity, health sciences, university students.

**Second abstract (<75 words) 72**

Health sciences students have more knowledge about a healthy lifestyle but do they apply this knowledge? This study compares the eating patterns, alcohol consumption and physical activity of health sciences students with that of other university students. No significant differences were found. Further studies to determine reasons for poor dietary habits, a sedentary lifestyle and binge drinking amongst students are needed and strategies should be developed to encourage application of knowledge and behavioural change.

**Third abstract/ social media release (<140 characters) 137**

Health sciences students do not have better eating, drinking and activity practices than other students. Encouragement of healthier lifestyles are necessary.

**Introduction**

Universities are responsible for holistic education and therefore should offer educational intervention strategies to prevent risky behaviour. The course content of health sciences programmes specifically includes education to promote a healthy lifestyle.1, 2, 3 Students who have chosen to become health professionals should therefore have more knowledge about a healthy lifestyle, but it is unclear whether these students are more motivated to apply this knowledge and have healthier lifestyle practices compared to other students.

The survey questionnaire for this study was based on the Youth Risk Behaviour Surveillance System4 but the authors will only report on dietary and alcohol intake and physical activity and not on other lifestyle issues such as smoking and sexual behaviour patterns that may also be the cause and/or effect of other risk behaviours in young adults.4

For the purpose of this study, dietary patterns were described according to the frequency of dairy, fruit and vegetable intake, regularity of breakfast consumption, and buying fast foods and unhealthy snacks regularly.

Many international studies have reported inadequate intake of important food groups by university students, especially dairy products, fruit and vegetables.5 There are only a few South African studies about the dietary patterns of health sciences students and these support international trends, although one study reported healthier eating and activity patterns amongst health sciences students, but 82.6% still had insufficient dairy intake.6, 7, 8  None of these studies compared the dietary intake of health sciences students with those of other university students.

Only some factors that influence the weight status of students, will be addressed in this study.9 Consumption of junk foods can contribute to an individual’s total energy intake and weight gain.10 One South African study reported that 92.5% of health sciences students consumed sweet snacks weekly but only 19.8% of the dominantly white students were overweight or obese, compared to the results of another South Africa study on predominantly black university students that found the prevalence of overweight and obesity of health sciences students to be 43.2% for females and 17.1% for males.8, 7 Peltzer *et al.* reported the prevalence of overweight and obesity in South African students from all study fields at two universities to be 17.1% for males and 40.9% for females, while the overall prevalence amongst international university students in 22 countries was 22%, with a significantly higher prevalence amongst males than females.11

Internationally, the consumption of three regular meals a day and the percentage of students having breakfast (the most important meal of the day) regularly have been shown to be inadequate.12 In one South African study that investigated skipping breakfast in health sciences students, 93.2% indicated that they eat breakfast on a daily basis.8

For this study, alcohol consumption was described as frequency of consumption, binge drinking and frequency of passing out after binge drinking. Binge drinking referred to the consumption of more than four and five drinks in two hours for females and males respectively.

Excessive intake of alcohol may affect a student’s general physical and mental well-being and lower academic performance.13, 6  These detrimental effects can impact on academic success. El-Ansari *et al.* reported the prevalence of binge drinking to be 64.6% for females and 76.4% for males in seven universities in the United Kingdom.5 In a study of students from all study fields on three South African university campuses it was found that 29.5% of females and 70.6% of males consumed alcohol three times or more per week.6 Van den Berg *et al.* reported in a study of health sciences students that 95% of students drank alcohol only once a week with a median intake on such days of three units per person.8

Risk behaviour with regards to physical activity referred in the present research to the absence of regular walking, participation in strenuous exercise and frequency and duration of watching TV.

Participation in health-enhancing physical activity leads to improved cardiovascular and metabolic fitness and enhanced bone health.14 Physical activity is low and on the decrease amongst South African students, even students in health sciences15, 7 In a South African study of students from all study fields, 33% engaged in low physical activity and only 19.4% in high physical activity. However, in a study specifically focused on South African health sciences students, only 1.9% of the students were inactive and 59% indicated a high level of physical activity.16, 8

Literature that compares the behaviour of health sciences students with that of other university students is limited. Kazi and Coopoo compared weight, physical activity and smoking habits of sport science students with other university students and found that more male sport science students were overweight and obese (35.7%) than other male students (17.8%) but less female sport science students were overweight and obese (26.9%) compared to other female students (34.5%).9 Sport science students were significantly more active than other students, but physical activity levels for most students did not meet minimum guidelines.

The present research was undertaken to investigate health risk behaviour in order to identify priority areas for health intervention and future research in higher education institutions. It was hypothesised that the behaviour of students in health sciences should be less risky as they should be able to apply the knowledge that they have gained in their fields of study.

**Method**

During May to June 2013 a cross-sectional online survey was implemented to determine health risk behaviour of university students at a South African university and to compare the behaviour of health sciences students with that of other university students. The survey questionnaire was based on the Youth Risk Behaviour Surveillance System,4 that was tested for reliability and validity in previous studies.17 The present researchers used a similar approach, acknowledging that dietary and alcohol intake and physical activity may be influential factors in a range of risk behaviours in young adults.

The questionnaire was tested during a pilot study among 20 students in health sciences and adapted to make minor language and other changes relevant for the South African context and the present research.

All registered students older than 18 years, with access to the university’s student-portals during 2013, were invited to voluntarily participate and all those who gave informed consent were included in the study. A total of 619 students completed the questionnaire within the five weeks that the questionnaire was online. The mean age of the sample was 24.2 years (SD = 4.2) with 27% (n=210) of the total sample being male and 25% (n = 31) of the students in health sciences being male. Similar numbers from every year group participated with 23-26% of the sample in the first, second and third year and the remainder being in the fourth year or in a postgraduate programme (See table 1).

Approval for the research was obtained from the research ethics committee of the university and students were assured of anonymity.

Data were analysed using SPSS (version 21). Descriptive statistics (frequencies and percentages) were used and subgroup comparisons (such as health sciences compared to other students) were made using the Pearson chi-squared test (p<0.05) to describe the outcome of categorical data.

**Results**

Demographic data was used to determine whether the sample was representative of the current student population and provided in Table 1.

**Table 1:** Demographic composition of health sciences students compared to other students

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  | **All students (n = 26408)** | **Health Sciences (n = 2977)** |
|  | n value | % | n value | % |
| **GENDER** |  |  |  |  |
| **All** |   |   |   |   |
| Male | 12 212 | 46.24 | 796 | 24.76 |
| Female | 14 196 | 53.76 | 2 181 | 73.26 |
|  |  |  |  |  |
| **This study** |  |  |  |  |
| Male | 210 | 26.74 | 31 | 24.60 |
| Female | 409 | 66.07 | 95 | 75.40 |
|  |  |  |  |  |
| **YEAR OF STUDY** |
| **All** |  |  |  |  |
| First | 8 230 | 31.16 |  |  |
| Second | 5 935 | 22.47 |  |  |
| Third | 7 170 | 27.15 |  |  |
| Fourth | 3 183 | 12.05 |  |  |
| More than fourth | 1 667 | 6.31 |  |  |
|  |  |  |  |  |
| **This study** |  |  |  |  |
| First | 138 | 22.55 |  |  |
| Second | 162 | 26.47 |  |  |
| Third | 162 | 26.47 |  |  |
| Fourth | 70 | 11.44 |  |  |
| More than fourth | 80 | 13.08 |  |  |
| **FACULTY** |
|  | **Other than Health Sciences** |  |
| **All** | 23 431 | 88.73 | 2 997 | 11.27 |
|  |  |  |  |  |
| **This study** | 492 | 79.61 | 126 | 20.39 |
| **RACE** |
|  | **All students (n = 26 408)** |  |  |
| Indian | 467 | 1.77 | 59 | 1.98 |
| Black | 15 972 | 60.48 | 1749 | 58.75 |
| White | 6 243 | 23.64 | 633 | 21.26 |
| Coloured | 3 726 | 14.11 | 536 | 18 |
| Other |  |  |  |  |
|  |  |  |  |  |
| **This study** |  |  |  |  |
| Indian | 14 | 2.27 |  |  |
| Black | 413 | 66.72 |  |  |
| White | 8 | 1.29 |  |  |
| Coloured | 69 | 11.15 |  |  |
| Other | 115 | 18.58 |  |  |

Although the sample (n=619) was similar to the population group in terms of age, gender and year group, it was unlikely to be representative of race, as 19% of the sample refrained from choosing one of the pre-selected options and only 1.3% indicated that they were white. Thus, the results cannot be generalised for this subject variable.

There were 2 997 (11%) students who studied health sciences at the university compared to 126 (20%) in the present sample.

The eating habits of the students are illustrated in Figure 1**.**

**Figure 1:** Comparison of eating habits of health sciences students with

others (%)

There was no statistical difference between the eating habits of the students in health sciences and those in other disciplines. Of all participants, 91% indicated that they drink less than two glasses of milk per day. Compared to the South African Dietary Guidelines18 the consumption of fruit was inadequate as 67% (n=412) of the total sample and 65% (n = 82) of the health sciences sample ate less than one portion of fruit per day. The same trend was evident regarding vegetables, with 70% (n = 88) of the health sciences students and 64% (n = 313) of the others eating less than one vegetable portion per day.

In both groups 51% had breakfast less than five times per week and 25% indicated that they ate less than three meals per day.

The majority of students (71% of males; 78% of females) often (more than three times per week) bought convenience food such as take-aways. Females consumed significantly (p<0.0001) more sugar containing snacks regularly. There was no significant difference between the health sciences and the other students regarding the consumption of sugar containing snacks.

Figure 2 indicates the alcohol consumption patterns of the students in health sciences versus other faculties.

**Figure 2:** Alcohol consumption of students in health sciences compared to others (%)

No statistical difference was found between the general alcohol consumption of the health sciences students compared to the other students. The majority of the total sample (83%; n=514) reported that they did use alcohol and 69% (n=398) indicated that they had used alcohol from before they started at university. Although only 4% (n=3) of the health sciences students and 9% (n = 28) of the other students used alcohol more than twice a week, 46% of the males and 31 % of the females in the total sample have experienced at least one episode of binge drinking in the last year. Of the health sciences students, 12% (n = 14) experienced passing out after binge drinking, significantly (p = 0.042) less than the other students as 22% ( n = 100) had such an episode.

The physical activity patterns of the students of the Faculty of Health Sciences versus those of other faculties are illustrated in Figure 3.

**Figure 3:** Activity patterns of health sciences students compared to other students (%)

No significant differences were found between the physical activity patterns of the students in health sciences and the other students. Low activity levels were reported by 48% (n=59) of the students in health sciences (i.e., walking briskly less than once a week for more than 20 minutes) and only 22 % did so more than three times per week, compared to 51% (n = 236) of the other students who indicated low activity levels. In the health sciences group, 63% (n = 79) seldom or never did strenuous exercise compared to the 69% (n = 332) of the other students. Only 11 % of health sciences students compared to 9% of other students regularly took part in strenuous exercise. As an indication of a sedentary lifestyle, 55% of both groups (n = 69 health sciences and n = 269 others) watched TV more than four times per week. Of the health sciences sample, 28% compared to 29% of the other sample, watched TV more than two hours per day.

Self-reported weight fluctuations indicated that significantly (p<.0001) more females (45%, n=183) compared to males (25%, n=51) gained weight during the specific year of study. There was, however, no significant difference between the students in health sciences and other faculties and no significant difference between students from different years of study.

**Discussion**

Few significant differences were found between students from the health sciences and other university students for all factors regarding health risk behaviour explored in this study.

Health sciences students did not have better eating habits. The low consumption of the major food groups such as milk, vegetables and fruit in all students is particularly a cause for concern, especially in health sciences students who should have more comprehensive knowledge on this topic. The findings are in accordance with those of most other researchers who have investigated students in health sciences,19, 6, 7 except for the study by Van den Berg *et al.* which found that health sciences students’ consumption of fruit and vegetables was relatively good.8  A low intake of vegetables and fruit may lead to a low dietary fibre and vitamin C intake and a higher intake of energy dense foods that could lead to weight gain.20 The consumption of dairy products by females is of special concern due to the implications for the risk of osteoporosis later in life.

Compared to the breakfast consumption of students in the study of Van den Berg *et al.*, breakfast consumption in this study was less regular for all students.8  This could lead to lower attention span, irritability and tiredness due to low blood sugar levels.20 This is of concern for health sciences students who may be involved in practical work in places such as hospitals where low attention span and fatigue could cause mistakes and increased feelings of demotivation in students.

The high intake of convenience foods by all students and especially the high intake of sweet snacks by females indicate that many students follow low fibre diet. The present results reflect similar trends in other studies.5, 19 The lack of a difference between the fast food and sweet consumption of students in health sciences and other university students indicates that health sciences students may not always understand the implications of their decisions or do not have the insight to know how to apply their knowledge.

The large number of students in both groups that have experienced episodes of binge drinking and even passing out thereafter is concerning, especially as such behaviour may lead to other risky behaviours such as unprotected sexual intercourse with strangers.21 The fact that there are significantly less health sciences students that passed out after a binge drinking episode may indicate that they have started thinking about the implications of their actions, according to the theoretical knowledge that they have gained, but the sample size in this study limits the present authors from making assumptions in this regard.

In contrast with some international studies that found male students more prone to overweight and obesity than females,11 the results of the present study showed that females gained significantly more weight during the specific year of study identified., indicating that females at this university may be more prone to overweight and obesity. Such a finding would be supported by other South African studies that have indicated that females are more prone to overweight and obesity than males.7, 11 The researchers in this study did not weigh the participants (participants only reported on their weight gain or loss) and a conclusion regarding the weight difference between males and females can therefore not be made. However weight gain, in combination with other risky behavioural patterns such as a sedentary lifestyle and poor dietary choices, may contribute to overweight and obesity and even non-communicable diseases such as coronary heart disease and diabetes in later years. It is therefore of concern that such a high percentage of students, and especially students in health sciences, reported a sedentary lifestyle with only a few participating in vigorous exercise.

The lack of physical activity at this university seems to be worse than those of students in the United Kingdom5 and those of health sciences students at the University of the Free State where 59% of the students indicated that they were very active,8 as well as students in the study of Bloemhoff.16 However different ways of measuring physical activity were used.

**Conclusion and Recommendations**

As health behaviour may play an important role in short-term quality of life, and thus learning outcomes, as well as an impact on long-term health, this study increased existing knowledge of the health behaviour of the students at a particular South African university, especially regarding the lack of better practices by students in health sciences. The study also emphasised future research needs.

Research should be undertaken on how to motivate university students to adapt healthier lifestyles. Ways should be found to make such students aware of how their own behaviour will have an influence on their future careers and, particularly in the case of health sciences students, how they motivate others to follow a healthy lifestyle, and thus their future success.

In order to make students aware of the possible consequences of their behaviour, awareness and motivational campaigns to market healthier food choices and explain the practical implication of poor food choices are important throughout the university, but especially in health sciences where the students should already have knowledge about good choices. Peer pressure plays an important role in risky behaviour regarding alcohol intake and motivational campaigns to strengthen the message that students are not less popular when they say no, should be introduced.

Although the authors intend to introduce awareness campaigns, as outlined above, at this university, there is a critical need for earlier modification by targeting school children in awareness campaigns that may be of more value. The study also confirmed the need for continuous longitudinal monitoring processes of student health risk behaviour and wellbeing at this university.

**Limitations**

The present sample was not representative of all race groups and the findings can therefore not be generalised to the total population of the university. Although convenience sampling increased participation, this sampling technique does not conform to the statistical principle of randomness and therefore information gained from this form of sampling cannot be generalised to other settings or populations.22

The authors did not discriminate between the results of the behaviour of students in different years of study. An improvement in lifestyle behaviour in senior students was found by Alpar *et al.23*  Results may therefore be different if the behaviour of first year health sciences students, with relatively little knowledge, is compared with that of fourth year students. It is therefore recommended that such a comparison should be undertaken in future.

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**Competing interests**

The authors declare that they have no financial or personal relationship(s) that may have inappropriately influenced them in writing this article.

**References**

1. NMMU. 2015. 2015 Health Sciences Prospectus. [www.nmmu.ac.za](http://www.nmmu.ac.za)

2. UCT. 2014. Health Sciences Faculty Handbook 2014. [www.health.uct.ac.za](http://www.health.uct.ac.za)

3. UFS. 2015. Yearbook. Faculty of Health Sciences. [www.health.ufs.ac.za/template/yearbooks](http://www.health.ufs.ac.za/template/yearbooks)

4. Centers for Disease Control and Prevention (CDC). Methodology of the Youth Risk Behavior Surveillance System - 2013. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6201a1.htm> (Accessed 11 November 2014).

5. El Ansari W, Stock C, John J, *et al.* Health promoting behaviours and lifestyle characteristics of students at seven universities in the UK. Cent Eur J Public Health 2011*;* 19(4): 197-204.

6. Janse van Rensburg C, Surujlal J. Gender differences related to health and lifestyle patterns of university students. HSAG 2013; 18(1) Art#735, 8 pages <http://dx.doi.org/10.4102/hsag.v18i1>. 735

7. Pengpid S, Peltzer K. Physical inactivity and associated factors among university students in South Africa. AJPHERD 2013; 19(1):143-153.

8. Van den Berg VL, Abera BMM, Nel M, Walsh CM. Nutritional status of undergraduate healthcare students at the University of the Free State. S Afr Fam Pract 2013; 55(5):445 – 452.

9. Kazi HA, Coopoo Y. Physical activity, alcohol use, smoking and dietary profiles of a cohort of university students. AJPHERD 2010;December (Supplement):104-118.

10. Lowry R, Lee SM, Mckenna ML, Galuska DA, Kann LK. Weight management and fruit and vegetable intake among US high school students. J School Health 2008; 78 (8):417-24.

11. Peltzer K, Pengpid S, Samuels TA. *et al*. Prevalence of overweight/obesity and its associated factors among university students from 22 countries. Int J Environ Res Public Health 2014; 11:7425-7441. Available at: <http://www.mdpi.com/journal/ijerph110707405> (Accessed 14 January 2015)

12. Yahia N, Achkar A, Abdallah A, Rizk S. Eating habits and obesity among Lebanese university students. Nutr J2008; 7:32. Available at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2584644/> (Accessed 11 November 2014).

13. Pengpid S, Peltzer K, Van der Heever H, Skaal L. Screening and brief interventions for hazardous and harmful alcohol use among university students in South Africa: Results from a randomized controlled trial. Int J Environ Res Publ Health 2013; 10: 2043-2057. Available at: <http://www.mdpi.com/1660-4601/10/5/2043> (Accessed 11 November 2014).

14. Janssen I, LeBlanc AG. Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. Int J Behav Nutr Phy 2010; 7:40.

15. Nolan VT, Sandada M, Surujlal J, Perceived benefits and barriers to physical exercise participation of first year university students. AJPHERD, 2011; September Supplement*,* 56–69.

16. Bloemhoff HJ. Gender- and race-related physical activity levels of South African university students. AJPHERD*,* 2010; 16(4):25-35.

17. Brener ND, Billy JOG, Grady, WR. Assessment of factors affecting the validity of self-reported health-risk behavior among adolescents: Evidence from the scientific literature. J Adolesc Health 2013; 33:436- 457.

18. Naudè CE. Eat plenty of vegetables and fruit every day: a food-based dietary guideline for South Africa. S Afr J Clin Nutr 2013; 3(supplement):546-556.

19. Van den Berg V, Okeyo A, Dannhauser A, Nel M. Body weight, eating practices and nutritional knowledge amongst university nursing students, Eastern Cape, South Africa. **Afr J Prim Health Care Fam Med** 2012. Available at: <http://www.phcfm.org/index.php/phcfm/article/view/323>. Date accessed: 14 January 2015.

20. Mahan LK, Escott-Stumpt S, Raymond JL. Krause’s Food and the Nutrition Care Process. Philadelphia: WB Saunders, 2012

21. Author, 2012.

22. Durrheim K, Painter D. Collecting quantitative data: sampling and measuring. In Terre Blanch MJ, Terre Blanche M, Durrheim K, Painter D, eds. Research in Practice. Pretoria: Juta, 2006:131-159.

23. Alpar SE, Senturan, L, Karabacak Ü, Subuncu, N. Change in the health promoting health behaviour of Turkish university nursing students from beginning to end of nurse training. Nurse Educ Pract 2008; 8:382-388.