



Gender differences related to the health and lifestyle patterns of university students

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One of the transitions from adolescence to adulthood is the admission of students to a university setting. Accompanying this transition is a new-found independence which results in university students having more autonomy over their lifestyles and behaviours. The assumption in this setting is that many students are likely to engage in unhealthy and risky lifestyle behaviours which include alcohol abuse, tobacco use, physical inactivity and unhealthy dietary practices which may adversely affect their health in the long-term. In South Africa, research with regard to health and lifestyle patterns amongst both male and female young adults remains limited. The purpose of this study was, therefore, to investigate whether male and female students differed in relation to their health and lifestyles, as well as the related consequences thereof. A convenience sampling technique was used, where questionnaires were administered to 400 students at three university campuses in the Gauteng province of South Africa. An exploratory data analysis for health factors was used in order to retrieve relevant factors from a factor and regression analysis. Differences in gender were tested by using cross-tabulation for descriptive statistics and Chi-square analysis. The study found no statistically-significant differences between genders relating to the three emerging health factors, namely Gastrointestinal, Upper Respiratory Infections and Total Health Problems. However, descriptive statistics of lifestyle habits revealed that more female students exercised, smoked and binged on food than their male counterparts. It was also found that female students reported a higher incidence of stress than male students. It was concluded that university students do indeed engage in behaviours and lifestyles that place them at risk for serious health problems.

In die oorgang van adolessensie na jong volwassene, bevind studente hulself binne 'n universiteitsomgewing. Gepaartgaande met hierdie oorgang word nuutgevonde vryheid verkry, wat veroorsaak dat universiteitstudente meer beheer oor hul lewenstyl en gedrag uitoefen. Die waarskynlikheid bestaan dat baie studente in hierdie omgewing betrokke sal raak by 'n ongesonde en gewaagde lewenstyl, wat alkohol misbruik, tabak gebruik, fisieke onaktiwiteit en ongesonde eetgewoontes insluit. Bogenoemde is faktore wat student se gesondheid oor die langtermyn nadelig sal beïnvloed. Navorsing in Suid-Afrika oor gesondheid en lewenstylpatrone van verskillende geslagsgroepe onder jong volwassenes is skaars. Die doel van hierdie studie was dus om ondersoek in te stel aangaande geslagsverskille in gesondheid en lewenstyl van studente, asook die betrokke nagevolge daarvan. 'n Gerieflikheidssteekproeftegniek is gebruik waartydens 400 vraelyste aan studente by drie verskillende universiteitskampusse in die Gauteng provinsie in Suid-Afrika versprei is. 'n Ondersoekende data analiese vir gesondheidsfakore is gebruik om toepaslike faktore te verkry vanuit 'n faktor- en regressie analiese. Geslagsverskille is getoets deur gebruik te maak van kruis-tabulering vir beskrywende statistiek asook 'n 'Chi-square' analiese. Die studie het geen statisties-betekenisvolle verskille tussen geslagte getoon ten opsigte van die drie gesondheidsfaktore naamlik Gastro-intestinale, Boonste Asemhalingstelsel en Totale Gesondheid Probleme nie. Nietemin het beskrywende statistiek ten opsigte van lewenstyl gewoontes egter onthul dat meer vroulike studente aan fisieke aktiwiteit deelneem, rook en hul vergryp aan kos. Daar is ook gevind dat vroulike studente meer gevalle van spanning gerapporteer het as manlike studente. Die gevolgtrekking is dus dat universiteitstudente wel betrokke raak by gedrag en lewenstyle wat hul in gevaar stel vir ernstige gesondheidsprobleme.

Introduction

The leading causes of global deaths today are largely lifestyle related (World Health Organization [WHO] 2013a). A healthy lifestyle is an important predictor of future health, productivity and life expectancy. It has been found to reduce the factors which contribute to health risks (Fahey, Insel & Roth 2009:3-4).

Global risks (WHO 2011a:16) for mortality are indicated as high blood pressure (13%), tobacco use (9%), high blood glucose (6%), physical inactivity (6%) and being overweight and obese



(5%). These risks are associated with increased chances of contracting any of the four main non-communicable diseases (NCD), namely cardiovascular disease, diabetes, chronic lung diseases and cancers, which affect individuals across all income groups in different countries (WHO 2013a).

Statistics from the World Health Organization (WHO 2013b) further indicated that during 2008 approximately 54% percent of all deaths globally were caused by the four main NCDs. In Europe these fatalities added up to 77%, the United States of America 57%, Africa 27% and South Africa 25% (WHO 2013b, 2013c). More recent statistics on South Africa revealed that the rising burden of NCDs is shown by an increase in deaths due to cardiovascular diseases (11%), cancers (7%), respiratory diseases (3%), diabetes (3%) and other NCDs (4%), which account for 28% of all fatalities (WHO 2011b:1).

Most of the fatalities are linked closely to health-risk behaviours that are categorised in six areas: behaviours that contribute to unintentional and intentional injuries; tobacco use; alcohol and other drug use; sexual behaviours; unhealthy dietary behaviours; and physical inactivity (Mayosi *et al.* 2009:936). Health risks can be countered by a healthier lifestyle which includes regular physical activity, proper nutrition, elimination of unhealthy behaviours, having regular medical check-ups and maintaining good emotional health (Hoeger & Hoeger 2010:9). Hence, it is logical to assume that most of these reported deaths could have been prevented through healthier lifestyles.

Global trends indicate a movement toward more unhealthy behaviours and lifestyles. According to Janse van Rensburg, Surujlal and Dhurup (2011:249), the increased adoption of Western world lifestyle habits during the 1900s resulted in a decrease in healthier lifestyles and an increase in related diseases in the global community. University students represent a major percentage of the young adult population of this global community (Von Bothmer & Fridlund 2005:107). Thus, an increase in unhealthy behaviours will also affect the student population.

Lifestyle behaviour of university students

Transition for young adults from high school to the university setting represents a major step toward personal independence and freedom from direct parental supervision (Keller *et al.* 2008:189; Surujlal, Nolan & Ubane 2012:281). Although exciting, this event also presents as a stressful experience as these young adults need to adapt to changes in their lifestyles. These changes may include increased academic workloads, new environments and financial- and social pressures (Edlin & Golanty 2012:16; Pettay 2008:1, 7). Research (Janse van Rensburg *et al.* 2011:258–259) also indicates that university students experience greater social pressures during their university studies compared with their high school years. These social pressures in their new social groups influence them to conform to perceived new and acceptable behaviours, in an environment where the use of intoxicating substances is culturally acceptable (Goga 2010:46).

New behaviours and lifestyle patterns formed during university life are likely to be sustained into adulthood (Takomana & Kalimbara 2012:132). Lifestyle patterns could include various risky behaviours such as alcohol use, tobacco use, physical inactivity and unhealthy dietary practices (Keller *et al.* 2008:189–190; Pettay 2008:1). Other risky behaviours may include ignoring preventive safety habits such as wearing seat belts, excessive sun exposure (Von Ah *et al.* 2004:463) and risky sexual behaviours such as multiple sexual partners (Laska *et al.* 2009:377). The current study focused on risky behaviours such as alcohol use, tobacco use, physical inactivity and the dietary practices of university students.

Excessive alcohol use amongst university students is a widespread problem at many campuses and can result in liver disease, damage to the nervous system and an increased risk of cancer (George *et al.* 2013:96). Over and above the health risks, the consumption of alcohol at universities also contributes to problems such as students engaging in violent behaviour, damaging property and missing classes because of hangovers. Research suggests a direct correlation between the quantities of alcohol consumed and lowered academic performance (Brister 2012:5). Goldstein and Flett (2009:183) argue that students drink as an emotional response and to modulate either positive (i.e. enhancement of positives) or negative (i.e. coping motives) experiences.

Tobacco use in all its forms is considered a major threat to life as smoking increases the chances of dying prematurely from heart attack, several types of cancer, bronchitis, pneumonia, stroke and may even deplete the energy levels required to cope with daily activities (Edlin & Golanty 2009:11–12). Studies (Gasparotto *et al.* 2013:687; Laska *et al.* 2009:377; Oktay, Çelik & Akbaba 2013:175) have revealed that smoking is highly prevalent amongst students worldwide, which significantly increases their chance of premature mortality.

Physical inactivity is on the increase as students participate less in physical exercise (Nolan, Sandada & Surujlal 2011:56). It has been associated with increased risk of cardiovascular disease, various cancers, obesity and other health problems (Thygeson & Thygeson 2013:2, 6). Physical inactivity amongst students can be attributed to the fact that students have become immersed in technology in nearly all aspects of their everyday living. This includes the usage of computers, cell phones, the Internet, iPods and sedentary entertainment, such as television, video and computer programs (Edlin & Golanty 2009:27; Terzian & Moore 2009:1; Toscos *et al.* 2008:218). Increased attention and participation in such activities may lead to decreased levels of participation in physical activity.

Unhealthy dietary practices which can be the cause of overweight and obesity, are associated with a number of disabling and potentially fatal conditions and diseases, including heart disease, cancer, diabetes and high blood pressure (Edlin & Golanty 2012:12). University students' eating behaviours are influenced by their peers and the



media, as well as the fact that fast food and vending machines are readily available on campus (Dalton 2013:11–16; Spanos & Hankey 2010:102). Deshpande, Basil and Basil (2009:147) suggest that the university environment may also play a significant role in the worsening of dietary habits amongst students. This may arise because of the limited choice of food types available, the cost of food, the convenience of eating out instead of preparing their own meals and the academic timetables to which they are required to adhere (Pedersen & Ketcham 2009:465; Van Zyl, Surujlal & Dhurup 2012: 276–277).

The inability to cope with stress may also contribute to unhealthy practices such as excessive eating, drinking and smoking by students (Surujlal *et al.* 2012:283; Van Zyl *et al.* 2012:268). Students often lack the strong social support networks and coping skills needed in order to handle stress effectively (Van Zyl *et al.* 2012:268–270). Poor management of stress can lead to cancer, migraines, ulcers, digestive problems, insomnia, hypertension or heart attacks (Edlin & Golanty 2012:44; Fahey *et al.* 2009:309–310).

The aforementioned unhealthy habits and behaviours, causing morbidity and/or mortality in Western society, are behaviour-related and are therefore preventable if identified and changed at an early stage. It is thus important to gain a general understanding of the lifestyle patterns present in university students, in order to assist them to prevent premature mortality or unnecessary morbidity. Healthier lifestyles may aid students in becoming productive citizens for the future of South Africa.

Problem statement

Entering university is an exciting and challenging time for young people. It is interlinked with changes and new-found responsibilities such as greater control over their lifestyle and exploration of lifestyle choices. University years may also be seen as a unique opportunity to develop a healthy lifestyle or to shape lifestyle behaviours in a positive manner. Fahey *et al.* (2009:6) point out that a lifestyle based on healthy behaviours maximises the quality of life by helping people to avoid disease, remain strong and fit and maintain their physical and mental health. This implies that healthy choices today may influence health for the rest of one's life.

There is, however, evidence that many students engage in various unhealthy and risky lifestyle behaviours, such as inadequate nutritional intake, decreased sleep and exercise, increased smoking and substance abuse and other negative practices, which may produce long-term adverse effects on their health (Edlin & Golanty 2012:16; Pettay 2008:1–3).

Literature (Keller *et al.* 2008:190; Laska *et al.* 2009:376) indicates that young people are an under-researched group with regard to their health and lifestyle patterns. Only a few surveys of the health of students at universities and other higher-education institutions exist, particularly in a South African setting. As a result, information about students' health is scarce.

Investigation of university students' health and lifestyle patterns is therefore essential, especially in the South African population of university students, as they have been neglected in health and lifestyle pattern research. It is also evident from previous research that, in many instances, not enough attention is paid to gender differences in relation to university students' lifestyle and the creation of awareness of healthy lifestyle behaviour for South African university students.

Consequently, the purpose of this study was to investigate gender differences in students' health and lifestyles in order to contribute to the existing knowledge of lifestyle behaviours of university students and to make recommendations on the findings. Specifically the study addressed the following research questions:

1. Are there any statistically-significant gender differences based on the following variables: Gastrointestinal, Upper Respiratory Infections and Total Health Problems?
2. Are there any differences according to gender regarding the lifestyle habits of the respondents?

Research method and design

An extensive literature study on university students' health and lifestyle patterns was conducted when undertaking the current study. In addition, an empirical investigation involving the administration of 400 wellness questionnaires was undertaken. A cross-sectional survey design was used to make inferences about the health and lifestyle patterns of students at selected university campuses.

Sample and procedure

A convenient sample of 400 second-year, third-year and post-graduate students at three university campuses in the Gauteng province of South Africa formed the sample of the study. First-year students were excluded from the study as it was expected that these students would still be adjusting to their new academic environment and may not have sufficient experience of the university setting and life to make a meaningful contribution to the study. The services of academics who were associated closely with students at the different universities were enlisted to administer the questionnaire to students during class sessions. The questionnaire was administered over a period of two weeks. Of the 400 university students who were approached to participate in the study, 381 (95%) completed the questionnaire. For the sake of anonymity, the universities are listed as University A, University B and University C and the results are presented in aggregate.

Instrument

An adapted version of the 'Student health and lifestyle questionnaire' (Engs 1992) was used. The lifestyle questionnaire was designed to test lifestyle behaviours and is based on a survey instrument that had been used previously (Engs *et al.* 1990; Engs & Hanson 1994). In Section A, the 'year of study' was included and the 'race' category was adapted to the



South African ethnic groups. The race groups in South Africa differed from those in the original questionnaire, therefore this part of the questionnaire was changed to suit the South African context. In Section B, the 'mono' category was excluded due to the fact that this is not a widely-used term in South Africa and could cause confusion. No adjustments were made to the questions in Section C. The questionnaire comprised three sections. Section A requested demographic information of the respondents, Section B requested information on health problems experienced by respondents and Section C requested information on the lifestyle habits of respondents. The questions in this section were survey-type questions, for instance: 'How many times did you exercise during the past month? During the past month, how many times did you drink beer?'

The current article reports on the health and lifestyle patterns of university students.

Data analysis

The data were captured and analysed using the Statistical Package for the Social Sciences (SPSS) version 17. The analysis was as follows:

- Firstly, descriptive statistics were conducted to describe the demographic profile of the respondents.
- Secondly, the demographic variables versus health factors were analysed through inferential statistics with the usage of either the independent *t*-test or the analysis of variance (ANOVA).
- Thirdly, the lifestyle habits per gender group were analysed using cross-tabulation tables together with the Chi-square statistic.

Results

The demographic composition of the respondents is presented in Table 1. An examination of the demographic profile indicated that more female students (269; 70.8%) than male students (111; 29.2%) responded to the questionnaire. The majority of respondents were between 18 and 27 years of age (355; 93.4%). Most respondents (258; 68.1%) were African students with the least (12; 3.2%) being Coloureds and Indian or Asians. The minority of respondents were living on campus (81; 21.5%), with others living off campus without

TABLE 1: Demographic information of student respondents.

Variable	Categories	<i>N</i>	<i>n</i>	%
Gender	Male	380	111	29.2
	Female	380	269	70.8
Age	18–27	380	355	93.4
	28–37	380	19	5.0
	38–47	380	6	1.6
Race	African people	379	258	68.1
	Coloured people	379	12	3.2
	Indian/Asian people	379	12	3.2
	White people	379	97	25.6
Living arrangements	Off campus without parents	377	157	41.6
	Off campus with parents	377	139	36.9
	On campus	377	81	21.5
Year of study	2nd year	379	160	42.2
	3rd year	379	147	38.8
	Post graduate	379	72	19.0

their parents (157; 41.6%) or off campus with their parents (139; 36.9%). A total of 160 students (42.2%) was studying at the second-year level, 147 students (38.8%) at the third-year level and 72 (19.0%) were enrolled for a post-graduate qualification.

To calculate a health problem score, students were asked to indicate how many times they had experienced a given health problem during the previous month. Three factors were retrieved from factor and regression analysis. Aspects clustered in the Gastrointestinal category included upset stomach, nausea or vomiting and diarrhoea. The Upper Respiratory Infections cluster included sore throat, a cold or flu, cough, bronchitis or laryngitis and ear infection. Symptoms included in General Malaise are headache and lack of energy. The Total Health Problems, comprising the aforementioned three factors, indicated a weighted health score of 21 315. Higher scores are indicative of higher levels of health problems.

Frequency responses of Section B were recorded and statistically-significant difference levels are indicated in Table 2.

Statistically-significant differences were found for gender based on the following variables: Gastrointestinal, Upper Respiratory Infections and Total Health Problems. Male students experienced lesser symptoms of Gastrointestinal, Upper Respiratory Infections and Total Health Problems than female students, based on the comparison of the averages in Table 3.

The differences in gender were ascertained by using cross-tabulations for descriptive statistics and Chi-square testing significance.

Based on exercise sessions per month, female respondents exercised more than males, except in the 15–21 times frequency category, where the frequencies for male and female are similar. With regard to stress, the results indicate that female students experience more stress than male students. The alcohol-consumption pattern shows that male students are inclined to consume more beer and hard liquor, whilst female students preferred beer, wine and wine coolers. An interesting finding regarding alcohol consumption was that between 40% and 50% of female students and 15% to 20% male students indicated that they do not drink any beer, wine, wine coolers or hard liquor at all. A higher percentage of females than males used tobacco. More female than male students binged on food.

Ethical considerations

Permission to use the questionnaire was obtained from the author. Written consent was obtained from the universities to conduct the study. A covering letter explaining the purpose of the study and assuring the respondents of anonymity and confidentiality was included with the questionnaire. Respondents were also informed that participation in the study was completely voluntary and that they could withdraw from the study at any stage.

**TABLE 2:** Demographic variables versus health factors.

Demographic variables	Gastrointestinal			Upper Respiratory Infections			General Malaise			Total Health Problems		
	Mean	Std Dev	Sig.	Mean	Std Dev	Sig.	Mean	Std Dev	Sig.	Mean	Std Dev	Sig.
Gender												
Male	1.17	3.159	0.000*	2.48	3.653	0.008*	3.68	7.484	0.056	9.575	14.0469	0.000*
Female	3.28	6.905		4.22	9.034		14.94	61.612		26.122	64.3214	
Age												
18–27	2.80	6.296	0.248	3.91	8.114	0.170	12.06	53.897	0.785	22.139	56.8389	0.504
28–37	0.95	2.223		0.89	1.595		3.53	5.938		7.326	7.2764	
38–47	0.00	0.000		0.67	0.816		13.17	25.191		15.200	25.3401	
Race												
African	2.82	6.587	0.481	3.56	6.805	0.832	7.89	10.672	0.14	17.610	21.2666	0.194
Coloured	4.42	8.898		2.58	3.370		10.67	16.272		21.875	26.3194	
Indian/Asian	1.25	2.417		3.67	3.869		7.92	10.791		15.250	15.3030	
White	2.14	4.585		4.30	10.859		22.20	101.313		31.656	102.6287	
Living arrangements												
Off campus, without parents	2.27	4.899	0.346	3.68	6.789	0.214	7.80	12.202	0.117	16.773	20.3982	0.049
Off campus, with parents	3.25	7.036		4.48	10.280		18.91	84.766		30.347	86.9652	
On campus	2.36	6.643		2.54	4.458		6.53	8.778		14.401	17.2476	
Year of study												
2nd year	2.86	5.850	1.074	3.68	7.365	0.007	9.19	12.307	0.802	19.107	22.1966	0.885
3rd year	2.88	7.330		3.65	8.616		15.91	82.427		25.837	84.4924	
Post graduate	1.69	3.418		3.78	7.531		8.42	13.559		16.583	18.9921	

Notes: Sig., significance; *, Statistically-significant difference at 0.05.

TABLE 3: Lifestyle habits per gender group.

Item	Frequency	Male (%)	Female (%)	Sig
How many times did you exercise during the past month?	1 to 7 times	14.6	31.5	0.001*
	8 to 14 times	8.3	20.7	
	15 to 21 times	7.3	7.0	
	22 times and more	1.0	9.6	
How many times did you feel 'stressed out' (under stress) during the past month?	1 to 7 times	19.5	36.6	0.002*
	8 to 14 times	5.3	18.6	
	15 to 21 times	1.2	5.3	
	22 times and more	1.2	12.4	
During the past month, how many times did you drink beer?	Less than 3 times a week	6.0	4.1	0.000*
	Once a week	4.9	8.8	
	At least once a month, but less than once a week	6.3	11.3	
	Not at all	12.1	46.4	
During the past month, how many times did you drink wine or a wine cooler?	Less than 3 times a week	1.7	2.8	0.068
	Once a week	3.4	10.1	
	At least once a month, but less than once a week	3.9	17.0	
	Not at all	20.7	40.5	
During the past month, how many times did you drink hard liquor (vodka, rum, whiskey, etc.)?	Less than 3 times a week	2.0	1.7	0.000*
	Once a week	4.8	3.7	
	At least once a month, but less than once a week	7.4	14.7	
	but less than once a week	15.3	50.4	
During the past month, how many days did you use tobacco?	1 to 5 times	12.5	19.4	0.724
	6 to 10 times	2.8	8.3	
	More than 10 times	18.1	38.9	
How many days did you binge out on food?	1 to 5 times	26.8	48.2	0.042*
	6 to 10 times	0.9	8.0	
	More than 10 times	1.8	14.3	

Sig, significance; *, Statistically-significant difference at 0.05.

Validity and Reliability

Validity was accepted *a priori* in this study. This is because the development and determination of the factor structure of the scale was adequately described by Engs (1992). The

reliability for the instrument was 0.741, which was higher than the recommended acceptable level of 0.7 suggested by Nunnally (1978:245); and in line with the reliability (Cronbach alpha = 0.89) as was determined in the original study.



Discussion

It is evident from the results that many university students have a tendency to engage in behaviours and lifestyles that place them at risk for serious health problems. Similar to Engs and Aldo-Benson's (1995:731) findings, Gastrointestinal and Upper Respiratory Infections also emerged in this study as a health problem experienced by students. On the other hand, contrary to the study by Engs and Aldo-Benson (1995:731), which reported no statistically-significant differences between genders relating to Gastrointestinal, Upper Respiratory Infections and Total Health Problems, the current study found statistically-significant differences in all three categories.

A close examination of the descriptive statistics regarding the lifestyle habits of females revealed that they exercise more than their male counterparts. This finding contradicts that of Al-Otaibi, Nassef and Raouf (2013:619), whose study reported that more male students than female students engaged in physical activity. A plausible reason for higher participation levels by female students in this study may be that at this age female students are more conscious of their appearance and as a result they tend to exercise more. Szabo and Allwood (2006) found, in their comparison of Black and White adolescent females in South Africa, that urban Black females were closer to urban White females than were rural Black females regarding their body figure preference to be thinner. It is also possible that during this time males tend to compete with their peers in terms of their image and lifestyle patterns and they might be more prone to engage in other behaviours that are seen as acceptable in the male student domain, such as drinking or smoking. This finding, however, is in stark contrast to that of Nolan and Surujjal (2012:328) who found that male students focused more on their fitness than female students.

Female students reported a higher occurrence of stress than male students. This result concurs with the findings of Laska *et al.* (2009:380) and Von Bothmer and Fridlund (2005:112). This finding may also explain why more female students participate in exercise, as it has been found that one of the benefits of exercise is to reduce levels of stress (Nolan & Surujjal 2009:10). In their study, Thawabieh and Qaisy (2012:116) also found that female students experienced more stress than male students. They attributed this to the fact that females are more subject to community pressure, as well as the pressure of their cultural habits.

More female students than male students did not consume any alcohol. This corresponds with research done by Kremer and Levy (2008:196). A possible reason for this could be that males are more susceptible to peer influences than female students. The authors, however, argue that because more drinking takes place in male dorm rooms at universities, the propensity for male students to consume alcohol was greater. Another factor that could contribute to higher alcohol-consumption patterns in male students is that they are more likely to attend a greater number of parties where alcohol is consumed than female students.

The finding that more female students used tobacco is in agreement with that of Laska *et al.* (2009:380). However, research done by Thompson *et al.* (2007:429) and Von Bothmer and Fridlund (2005:112) diverge by indicating that more males are likely to use tobacco than females.

The finding that more female students binged on food is in contrast with research from Mwaba and Roman (2009:908), where Black South African female students indicated that, irrespective of their body shape, they engaged in healthy eating behaviours. In a study by Senekal, Steyn & Nel (2003:111), however, it was found that a large proportion of Black women in South Africa were overweight and obese. Similarly, Peltzer and Pengpid (2012:4513) confirmed a high prevalence of obesity in Black female students through their study done at a South African university. These findings corroborate those of Nelson and Story (2009) who said that university life, for most students, was characterised by poor eating habits. In another study, Gillen and Lefkowitz (2012:126), found that the poor eating habits made university students vulnerable to weight gain.

Limitations and implications for further research

The results reflected in this study are not representative of all the race groups. In view of this limitation, generalisation of the results of the study to all populations should be approached with caution. Despite this limitation, the study, however, provides interesting avenues for future research. For instance, the study could be replicated with a sample which is representative of all population groups so that comparisons can be made not only by gender but also across different population groups.

Recommendations

Arising from the study are recommendations which may assist in improving the lifestyle behaviours of university students. Stakeholders involved in academic planning, residence management, student services, student counselling, health education, physical education, recreational sports, food services and campus security could get together to develop comprehensive wellness programmes to guide and assist students toward a healthier lifestyle. If possible, aspects of such programmes should be integrated into the curriculum or orientation so that they become compulsory components.

In addition, ongoing awareness campaigns regarding the benefits of following a healthy lifestyle and highlighting the negative effects of engaging in unhealthy lifestyle behaviours should be undertaken. Counseling should be available for those students who are unable to take control of their lifestyle behaviours.

Conclusion

It appears from the results of the current study that university students engage in unhealthy lifestyles and risky behaviours



which have implications for their future health. The results of the study indicate that statistically-significant differences were found for gender based on Gastrointestinal, Upper Respiratory Infections and Total Health Problems. The study also revealed gender differences in lifestyle patterns. Universities, as potential settings for health promotion in the early years of adulthood, need to take cognisance of the challenges that university students face as well as their naïveté with regard to healthy lifestyle behaviours so that appropriate measures can be taken to help direct them toward these behaviours.

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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.

Authors' contributions

C.J.v.R. (Vaal University of Technology) was the primary author responsible for the data collection, literature review and contributed jointly to the preparation of the manuscript. J.S. (North-West University) was responsible for the literature review, interpretation and reporting of the data and contributed jointly to the preparation of the manuscript.

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