

**DIETARY PATTERNS OF STUDENTS AT ZAWIA UNIVERSITY, ZAWIA, LIBYA: A
CROSS-SECTIONAL STUDY**Aisha A. Alharari^{*1}, Mohamed A. Wadan², Amina A. Agina³, Sabine A. Agina³ and Safa A. Abuajeala³¹Physiotherapy and Rehabilitation Department, Medical Technology Faculty, Zawia University.²Diagnostic and Therapeutic Radiology Department, Medical Technology Faculty, Zawia University.³Medical Nutrition Department, Medical Technology Faculty, Zawia University.***Corresponding Author: Aisha A. Alharari**

Physiotherapy and Rehabilitation Department, Medical Technology Faculty, Zawia University.

Article Received on 21/06/2023

Article Revised on 11/07/2023

Article Accepted on 31/07/2023

ABSTRACT

Undergraduate students undergo a period of development from puberty to adulthood, where maturity is fulfilled. There are several factors effecting the food patterns of university students. Weight gain during this transition is appearing to be a major issue where the lifestyles of young adults. There is also an increased risk of developing unhealthy food habits with insufficient dietary consumption. Increasing stress levels from college work also contribute to weight gain. 300 students from Zawia University participated in the study. Data was collected from the 1st January until the 30th February 2021. The investigators interviewed each subject and collected information with the aid of a structured questionnaire that included basic information regarding the study subjects. Participants were controlled to be Libyan citizens, free from any chronic diseases, and aged from 19 to 26 years old. SPSS correlation test version 18 was used to analyse data. 65.27 % of male students maintained a healthy dietary pattern, while 58.84 % of the female students maintained a healthy dietary pattern. More married students (5.28 %) maintained a healthy dietary pattern in comparison to single students. Students in the first academic level had better dietary patterns than those in the second academic level by around 2.34 %. Moreover, students in the first level reported a lower vegetarian dietary pattern than second level students. First-level students consumed less high-calorie drinks and cholesterol than the other group of students. There was no significant variation in low-carb food intake between the students. Finally, non-active students in the second level were higher than their counterparts. This study concludes that more male students have healthy dietary patterns than females. Also, married students make more healthier food choices than single students. Second-level students, too, had more healthy food attitudes, compared to level one students.

KEYWORDS: Fast food, healthy food, unhealthy food, dietary patterns, university students.**1. GENERAL INTRODUCTION**

Undergraduate students, aged 19 – 23 years old, undergo a period of development from puberty to adulthood, where maturity is fulfilled. There are several factors effecting the food patterns of university students, such as accommodation, eating out practices, time management, convenience, weight control practices, financial issues, family influences and misperceptions (Horacek, *et al.* 1998).

There is also an increased risk of developing unhealthy food habits with insufficient dietary consumption (Gan WY, *et al.* 2011). Irregular meals, skipping breakfast, limited intake of fruit and vegetables and higher amounts of fried foods are some of these habits (Ganasegeran K, *et al.* 2012).

Stress has been correlated with affecting the amount of calories burned. Some experimental studies have shown

that groups of people tend to increase the intake of high caloric and fat content snacks while stressed (Unusan N, *et al.* 2006), although other research indicated that people consumed less food while they were stressed (Cartwright M, *et al.* 2003).

University student have many opportunities to dine outside rather than preparing their own meals, considering the opening of various food restaurants and cafes (Yahia N, *et al.* 2008).

In an investigation by Stockton, *et al.* (2013) found that college students did not believe that the harm from fast food was related to calories, but rather harmful chemicals and additives. The students' main concern was the additives to their food. Also, the study found that male students consumed more fast food than females. Students were aware that hamburgers were not harmful to their health (Stockton S., *et al.* 2013).

Only a few qualitative studies have examined determinants of eating behaviour in university students. The lack of discipline and time, self-control, social support, product prices and limited budgets, and the availability of and access to healthy food options were reported as important influencing factors of students' eating behaviours (H. H. Al Qtaibi, *et al.* 2014). All of these studies were conducted in the US and neither included students of all disciplines (K. Peltzer, *et al.* 2015) nor did they specify students' study backgrounds (S. E. Shive, *et al.* 2006).

In a qualitative study of 35 Belgium university students, the factors that influence behaviours of promoting healthful eating were identified, and found to macro-environment (media and advertising). The relationships between eating behaviour determinants appeared to be moderated by the university's environmental characteristics. As for the lack of time, some students preferred using their free time for activities, rather than food preparation, especially when they have to cook only for themselves (Deliens T., *et al.* 2014).

Gender-specific attitudes and behaviours towards eating are often reflected by the food intake pattern. For example, compared to men, women generally tend to gravitate towards healthier food choices and are more concerned with maintaining healthy eating behaviours to stay in good physical shape (Beardsworth, *et al.* 2002; Bellows, *et al.* 2010; Malinauskas, *et al.* 2006). Women are generally more aware of diet and the implications of the health–diet relationship, and embrace suggested dietary changes to a greater degree than men. Women also show higher dietary restraint and disinhibition levels than men (Leblanc, *et al.* 2015). Furthermore, males prefer to consume fish and meat, while females prefer to eat vegetables and fruits (Monge-Rojas, *et al.* 2015). Also, women are more likely to eat low calorie foods and avoid eating too much (Chaiken and Pliner, 1987).

Recent studies of the dietary habits of Arab adolescents show non-healthy eating and lifestyle behaviours among first- and sixth-year students of the School of Medicine in Zagreb. An association between the year of study and some eating habits and lifestyle factors that are significant predictors of poor eating habits in gender and place of meal consumption, were observed. Aмоса *et al.* (KRE[I] G, *et al.* 2009; Aмоса T., *et al.*

Living with a partner and the effects it has on eating habits has most often been studied as marital status. Marital status has long been suggested to be an important factor for health-promoting behaviours (Umberson D., 1992; Yannakoulia, M., *et al.* 2008). Marital relationships have been thought to provide social support and guidance, men in particular were reported to be positively influenced by the presence of a female partner as females make more health-conscious food decisions (Waite L., 1995; Horwath C. C., 1989). Thus, the

relationship between marital status and healthy eating behaviours was shown to be stronger for men than women (Conklin, *et al.* 2014). Furthermore, evidence has proven that married couples have higher rates of vegetables, fruit and fish consumption, and lower rates of consumption of energy-dense foods, compared with their unmarried counterparts (Pollard J., *et al.* 2001; Yannakoulia, M., *et al.* 2008; Horwath C. C., 1989; Schafer R.B., 1978).

1.2. Aims & Objectives

1.2.1. General Objective

To determine the different dietary patterns among university students.

1.2.2. Specific Objectives

1. To compare students with healthy dietary patterns and those with unhealthy dietary patterns to evaluate the correlation between the two groups.
2. To contrast between female students and male students with healthy dietary pattern, to estimate the correlation between two variables.
3. To compare female students with unhealthy dietary patterns and male students with unhealthy dietary patterns to estimate the correlation between two variables.
4. To determine the relationship, if present, of healthy dietary patterns among married and unmarried students.
5. To assess the relationship, if present, of healthy dietary patterns among first-level (first and second years) and second-level students (third and above).

2. METHODS AND MATERIALS

2.1. Study Sources

300 students from Zawia University agreed to participate in the study by signing a consent form. Data was collected from the 1st January until the 30th February 2021. The investigators interviewed each subject and collected information with the aid of a structured questionnaire that included basic information regarding the study subjects.

2.2. Data Criteria

Study criteria included that participants are Libyan citizens, free from any chronic diseases, and aged from 19 to 26 years old. Exclusion criteria compromised anyone who was not a Libyan citizen, had a history of chronic disease, and also aged less than 19 years old or more than 26 years old.

2.3. Data Collection & Study Population

This study was conducted at different faculties in the University of Zawia. The population constituted of students at Zawia University who matched the study criteria. The sampling unit for this study was the students who attend the university faculties and enrolled in the study. The sampling was as per Pallone sampling design. Data was collected through a dietary pattern

questionnaire, translated to Arabic, to detect dietary patterns among students.

2.4. Study Design

A cross-sectional comparative design was followed in this study. The rates of healthy and unhealthy dietary

patterns in the university population were measured at a single point in time, to determine whether there was an association between dietary patterns and risk factors.

2.5. Data Analysis

SPSS correlation test version 18 was used.

3. RESULTS

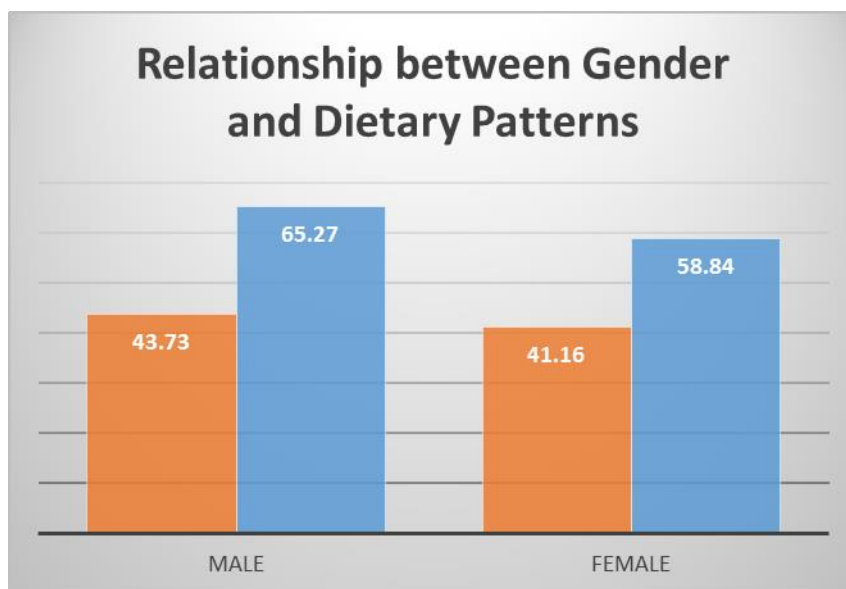


Figure 1: Relationship between gender and dietary patterns.

Among male students, 65.27 % maintained a healthy dietary pattern, while the remaining 43.73 % of them had non-healthy dietary patterns. In the female subjects, it was estimated that 58.84 % of the students maintained a

healthy dietary pattern while the rest did not. Similar to the male students, more female students upheld healthy dietary patterns. (Figure 1).

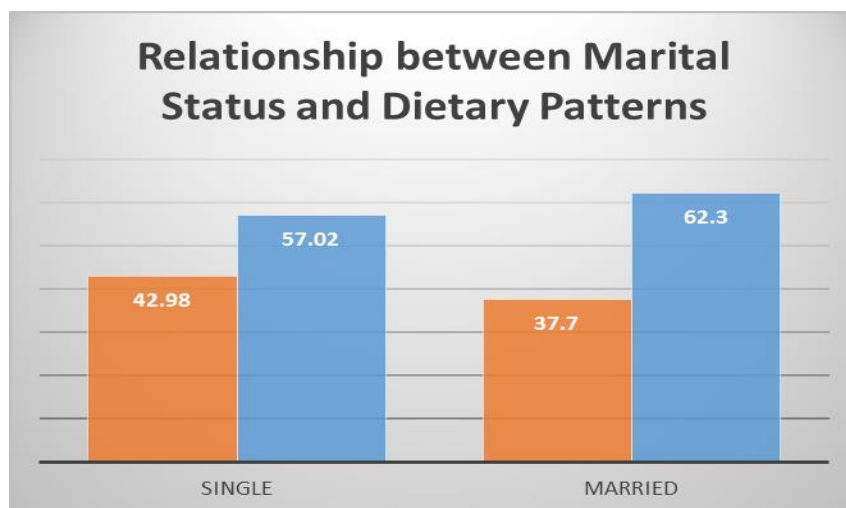


Figure 2: Relationship between marital status and dietary patterns.

From figure 2, it is interpreted that the difference in the percentage between healthy and non-healthy dietary patterns among single students. Additionally, more

married students maintained a healthy dietary pattern in comparison to single students.

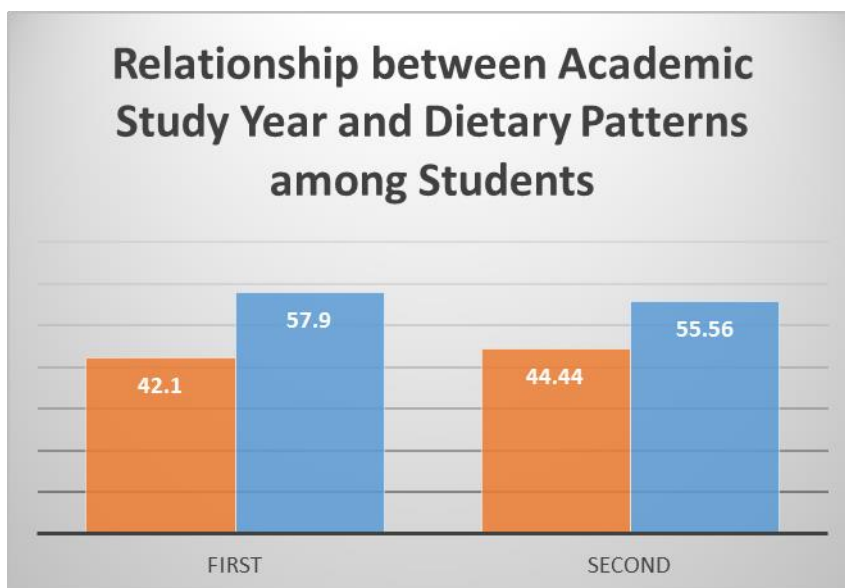


Figure 3: Relationship between academic study year and dietary patterns among students.

The bar chart in figure 3 shows that the dietary patterns and habits of students in the first academic level were better than those in the second academic level.

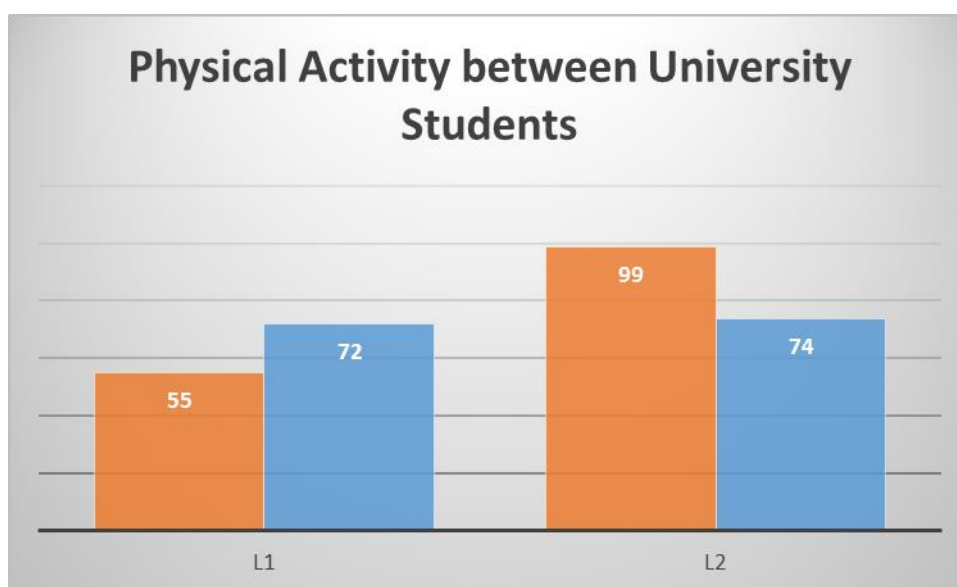


Figure 4: Physical activity between university students.

Figure 4 highlights that the significant variation between the non-active students in the second level were higher than their counterparts.

4. DISCUSSION

This cross-sectional study investigated the association between gender and dietary patterns. The result showed that the male students had better dietary patterns than female students by 6.43 %. The observations aren't in line with several gender-specific studies regarding attitudes and behaviours. For example, Beardsworth (2002) and Bellows (2010) found that women generally tend to gravitate to healthier food choices and are more concerned with maintaining healthy eating habits.

This current study also investigated the association between marital state and the attitudes and behaviours towards healthy eating among students. The variations in the percentage between healthy and non-healthy dietary patterns among single students around 14.0 %, while the difference among married students were 24.6 %. The percentage of married students who had healthy dietary patterns was more than single students by 5.28 %. Therefore, married students in this study had more positive results more than single student. This is in line with previous studies stating that subjects who are married people or have partners follow healthy diets more than unmarried people.

Students in level one (first- and second-years) displayed better healthy dietary pattern and habit than those in level two (third- and fourth-years) by around 2.34 %. Also, they showed a lower percentage among non-healthy dietary patterns by approximately 2.34 %. Level one students reported less vegetarian dietary patterns than those in level two. This, in particular, is in accordance to the National survey of Spanish Dietary intake 2011. In terms of the patterns and habits of consuming high-calorie drinks, first-level students had lower results than the other group. As for the intake of low-carbohydrate foods, no significant variation between the two levels were found, yet the variation in high-carbohydrate consumption appeared to be significantly higher amid level two students. These findings are in line with a prior study reporting that university students showed low fibre and high carbohydrate consumption (Cuadra C, 2013).

Moreover, this study found a significant variation between the two levels that is clearly seen among non-active student in L2. This is in accordance with a previous study that found physical activity to be much higher in first-year students, in comparison to sixth-year students, with a more sedentary lifestyle (Hasse A, 2004). Abundant literature also demonstrates that college students often struggle with time management among the commitment and academic responsibilities, and thus, students neglect healthy food choices some study (Brown M, 2014; Wynn A, 1987).

5. CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS

This study concludes that more male students have healthy dietary patterns than females. Also, married students make more healthier food choices than single students. Second-level students, too, had more healthy food attitudes, compared to level one students.

This study had a small sample size, so larger sampling is advised for more reliable results. Many other factors require studying in future to investigate their contributions to students' food choices. These factors may include time management availability and age. A cohort study design can also be recommended so more factors that influence dietary patterns and habits can be studied.

REFERENCES

1. AL-Otaibi HH. The pattern of fruit and vegetable consumption among Saudi university students. *Global J Health Science*, 2014; 6(2): 155-62.
2. Beardsworth A, Bryman A, Keil T, et al. Women, men and food: The significance of gender for nutritional attitudes and choices. *British Food Journal*, 2002; 104(7): 470-491. [Google Scholar]
3. Bellows AC, Alcaraz VG, Hallman WK. Gender and food, a study of attitudes in USA toward organic, local, U.S. grown and GM-free foods. *Appetite*, 2010; 55(3): 540-550.
4. Brown M, Flint M, Fuqua J. The effects of a nutrition education intervention on vending machine sales on a university campus. *J Am Coll Health*, 2014; 62: 512-16.
5. Cartwright M, Wardle J, Streggles N, Simon AE, Croker H. and Jarvis MJ. Stress and dietary practices in adolescents. *Health Psychology*, 2003; 22(4): 362.
6. Chaiken, S. and Pliner, P. Women, but not men, are what they eat: The effect of meal size and gender on perceived femininity and masculinity. *Journal of Personality and Social Psychology Bulletin*, 1987; 13(2): 166-176.
7. Conklin A.I., Forouhi N.G., Surtees P., Khaw K.T., Wareham N.J., Monsivais P. Social relationships and healthful dietary behaviour: evidence from over-50s in the EPIC cohort, UK. *Soc. Sci. Med*, 2014; 100: 167-175. [PMC free article] [PubMed] [Google Scholar]
8. Cuadra, C.; Davidson, R. *Eating Puerto Rico: A History of Food, Culture, and Identity*; University of North Carolina Press: Chapel Hill, NC, USA; Available online: www.jstor.org/stable/10.5149/9781469608846_ortzcuadra (accessed on 11 November 2018), 2013.
9. Deliens T, Clarys P, Bourdeaudhuij I, Deforche B. Determinants of eating behaviour in university students: A qualitative study using focus group discussions. *BMC Public Health*, 2014; 14(53): 1-12.
10. Gan WY, Mohd Nasir MT, Zalilah MS, Hazizi AS. Differences in eating behaviours, dietary intake and body weight status between male and female Malaysian university students. *Malays J Nutr*, 2011; 17(2): 213-228.
11. Ganasegeran K, Al-Dubai SA, Qureshi AM, Al-Abed A-AA, Am R, Aljunid SM. Social and psychological factors affecting eating habits among university students in a Malaysian medical school: a cross-sectional study. *Nutr J*, 2012; 11: 48. doi: 10.1186/1475-2891-11-48.
12. Horacek, T.M. & Betts, N.M. College students' dietary intake and quality according to their Myers Briggs type indicator personality preferences. *Journal of Nutrition Education*, 1998; 30(6): 387-395.
13. Horwath, CC Marriage and diet in elderly Australians: results from a large random survey. *J Hum Nutr Diet*, 1989; 2: 185-193. CrossRefGoogle Scholar
14. K. Peltzer and S. Pengpid, "Correlates of healthy fruit and vegetable diet in students in low, middle and high income countries," *International Journal of Public Health*, 2015; 60(1): 79-90.
15. Leblanc V, Begin C, Corneau L, Dodin S, Lemieux S. Gender differences in dietary intakes: what is the contribution of motivational variables? *J Hum Nutr Diet*, 2015; 28(1): 37-46.
16. Malinauskas BM, Raedeke TD, Aeby CG, et al. Dieting practices, weight perceptions, and body composition: A comparison of normal weight,

- overweight, and obese college females. *Nutrition Journal*, 2006; 5(11): 1.
17. Monge-Rojas, R., Fuster-Baraona, T., Garita, C., Sánchez, M., Smith-Castro, V., Valverde-Cerros, O. and Colon-Ramos, U. The Influence of Gender Stereotypes on Eating Habits Among Costa Rican Adolescents. *American Journal of Health Promotion*, 2015; 29(5): 303-310.
 18. Pollard, J, Greenwood, D, Kirk, S et al. Lifestyle factors affecting fruit and vegetable consumption in the UK Women's Cohort Study. *Appetite*, 2001; 37: 71–79.
 19. S. E. Shive and M. N. Morris, “Evaluation of the energize your life! Social marketing campaign pilot study to increase fruit intake among community college students,” *Journal of American College Health*, vol. 55, no. 1, pp. 33–39. View at: Publisher Site | Google Scholar, 2006.
 20. Schafer, RB Factors affecting food behavior and the quality of husbands' and wives' diets. *J Am Diet Assoc*, 1978; 72: 138–143.
 21. Stockton S, Baker D. College students' perceptions of fast food restaurant menu items on health. *Am J Health Educ*, 2013; 44: 74-80.
 22. Umberson, D Gender, marital status and the social control of health behavior. *Soc Sci Med*, 1992; 34: 907–917.
 23. Unusan N. Linkage between stress and fruit and vegetable intake among university students: an empirical analysis on Turkish students. *Nutrition Research*, 2006; 26(8): 385-390.
 24. Waite, L Does marriage matter? *Demography*, 1995; 32: 483–507.
 25. Wynn A. Inequalities in nutrition. *Nutrition and Health*, 1987; 5(1-2): 79-94.
 26. Yahia N, Achkar A, Abdallah A, et al. Eating habits and obesity among Lebanese university students. *Nutrition Journal*, 2008; 7(1): 32.
 27. Yannakoulia, M, Panagiotakos, D, Pitsavos, C et al. Eating patterns may mediate the association between marital status, body mass index, and blood cholesterol levels in apparently healthy men and women from the ATTICA study. *Soc Sci Med*, 2008; 66: 2230–2239.
 28. Zazpe I, Marqués M, Sánchez-Tainta A, Rodríguez-Mourille A, Beunza J, Santiago S. Hábitos alimentarios y actitudes hacia el cambio en alumnos y trabajadores universitarios españoles. *Nutr Hosp*, 2013; 28(5): 1673-80.
 29. Zellner DA, Loaiza S, Gonzalez Z, Pita J, Morales J, et al. Food selection changes under stress. *Physiology & Behavior*, 2006; 87(4): 789-793.