Original Article

The dietary habits of Maltese university students

Carmel Cefai, Liberato Camilleri

Abstract

***Objective*:** The objective of this study was to explore university students' perceived diet and related health practices and whether these varied by gender, faculty and year of course. It also sought to examine the students' recommendations on what may help them to engage in a healthier diet.

Method: A self-administered questionnaire was completed by a representative sample of 494 undergraduate students stratified by gender and faculty. The questionnaire explored various features of the students' perceived physical and mental health and lifestyle, including diet, the focus of this paper.

Results: Half of the students had only between 1 and 2 servings of fruit and vegetables daily, more than half chose the less healthy food, less than half had a regular healthy breakfast, while one third consumed soft drinks. Female students were consistently more conscious of their diet. The students made various recommendations on how the university may help them to make healthy choices, particularly more availability of healthy food on campus.

Conclusions: Despite being a highly educated group, the majority of students did not reach the healthy diet benchmarks explored in the study. Further research is suggested to explain the psychological correlates underlying the dietary habits of Maltese university students.

Keywords

Universities, students, Malta, diet, health

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Introduction

Although the traditional Maltese cuisine is primarily Mediterranean, based on seasonal agricultural products and seafood and with strong Sicilian influence, the diet of the Maltese population today has become more westernised and heavily influenced by a Northern European type food consumption, with high fat, high sugar and high salt intake.[1,2] Bellizzi[3] underlined the major changes in the Maltese diet in the second half of the twentieth century by referring to two reports on the state of the Maltese diet written within the span of half a century. A 1939 report written by the then British colonial government describes the diet of the Maltese population as consisting mainly of bread, seasonal vegetables and occasional fish, with very little animal products.[4] Fifty years later, a WHO report[5] portrays the Maltese diet as an unhealthy one, rich in fats and sugar and low in fibre, underlying the need for less red meat, eggs, and fatty and sugary foods, and more fish, vegetables, fruits and whole grain cereals in the diet of the Maltese population. By the end of the twentieth century, the Maltese were consuming more meat, milk and dairy products, eggs and vegetables oils, while their sugar and salt intake was higher than recommended; fruit, vegetable and fish consumption however, was increasing steadily. Cereals, particularly Maltese bread and pasta, were still the major source of energy in the Maltese diet, providing 33% of energy. As a result, the Maltese diet changed from one low in fats and high in complex carbohydrates to one high in total fats and low in complex carbohydrates.[3] This 'nutrition transition' from traditional healthy diets to unhealthy, convenient fast foods, has been the hallmark of many countries in the Western world.[6]

In his report on the EU diet, Schmidhuber[2] remarks how the Mediterranean diet is being increasingly abandoned in the Mediterranean. For instance, in the latter half of the twentieth century, while calorie daily intake in 15 EU countries increased by about 20%, in the Mediterranean countries such as Italy, Greece, Spain, Portugal, Cyprus and Malta, the intake increased by about 30%. Similarly the Mediterranean countries were the ones with the highest consumption of fatty foods when compared with the other European countries. In a study on the diet of Southern European adolescents, Cruz[7] similarly reported that two of the most important components of the Mediterranean diet have been lost amongst adolescents, namely low consumption of saturated fatty acids and high intake of complex carbohydrates.

Health concerns such as circulatory diseases (accounting for 40% of deaths in the Maltese population), high blood pressure and diabetes (22% and 8% of the population respectively),[8] coupled with the emerging evidence of the health benefits of the Mediterranean diet[9-13] have been one of the main drives behind initiatives for the rediscovery of the Mediterranean Maltese diet and the modification of current unhealthy practices. In a cross-European study portraying the food consumption trajectory in Malta from 1994 to 2000, Pace et al[14] reported that cereals, dairy products, meat, fruit and vegetables, and to a lesser extent potatoes, were the predominant food groups in the daily diet of the Maltese population. Over the six year period, there was a considerable increase in the availability of cereals, milk products, fish, fruit and vegetables, and juices; marginal increase in pulses and meat; and considerable decrease in potatoes and alcoholic beverages.

The European Health Interview Survey[15] reported that the nearly three quarters of the 3,680 Maltese participants in the study, consumed fruit and vegetables once or twice a week. Salad, fresh water and cereal products are also becoming more common in the diet of Maltese people, and fresh fish is gradually regaining the popularity it once enjoyed in Maltese households. The changes in diet reported by the Maltese respondents in the latest Eurobarometer on health[16] suggest a healthy picture close to the EU average, with an increase in fruit and vegetables and water, and a decrease in the consumption of fat, salt, sugar, meat and calories. However, another very recent food consumption survey with over 1,000 Maltese adults, reported that while vegetable and salad consumption was increasing, pasta remained the most consumed food type in both lunch and dinner, followed by chicken and beef, while Maltese bread is prevalent across all food breaks.[17]

There have been various studies on the diet of the Maltese population, particularly the adult population[14-16,18] and school children[19], but little research on the dietary patterns of young people, including university students. Their food consumption, dietary habits, and attitudes towards food differ from those of both adults and children.[20-21] This situation reflects that in Europe where there appears to be a lack of published data on the dietary habits of young people between 18-25 years.[20] The present study, to our knowledge, is the first to examine in detail the health and lifestyle, including diet, of Maltese university students as a specific group.

Methods

The study was carried out with undergraduate students at the University of Malta, exploring their views of their physical health, lifestyle, mental health, social wellbeing and academic life. A multistage sampling framework, combining different sampling methods, was used to select a representative sample of the student population. The students were first stratified by gender and faculty clusters, namely Humanities, Science, Social Sciences and Civil Sciences, with each cluster including faculties of a similar discipline origin. Random sampling was then used to select a sample of students within each cluster. The resulting sample of 494 students, which comprised more than 7% of the university population, included 340 female students and 154 male students, in proportion to the gender difference in the university population. The vast majority of the students were 25 and under, with only 4.3% students being older than 25 years.

A questionnaire was developed to examine students' perceived health and lifestyle in their various aspects, including physical and mental health, emotional and social wellbeing, sexual health, health habits, and academic life including motivation, engagement, stress, and equal opportunity amongst others. It included a qualitative section, where students were asked to make recommendations on how the university may promote students' health and wellbeing in these various aspects. The questionnaire made use of a number of established international questionnaires on students' health, namely the National College Health Assessment,[22] the Student Health and Lifestyle Questionnaire,[23] the Health Behaviour Student in School-aged Children Mandatory Questionnaire,[19] as well as the First Health Interview Survey carried out in Malta.[24] A test retest technique was carried out using a randomly selected sample of 50 university students to examine the questionnaire's reliability**.** The Pearson correlations ranged from 0.783 to 0.964 for all quantitative variables, while the percentage agreement of the qualitative variables ranged from 83.42% to 98.59%. All the measures indicate sufficient test-retest reliability

The questionnaire consisted of four sections. The first section provided details of a number of demographic and course-related variables such as gender, course year, faculty, nationality, age, relationship status and socio-economic status. The second section consisted of items related to physical health and lifestyle including perceived health and health habits, the third section examined students' emotional and social wellbeing, while the final section asked questions about the students' academic experiences. For the purpose of this paper, the results on diet only will be presented, with the objective of examining the extent to which students were engaging in a healthy diet. A healthy diet is usually defined as one where energy balance and healthy weight are achieved and maintained by increasing consumption of fruits and vegetables, and legumes, whole grains and nuts; taking enough fluids; limiting intake of free sugars and salt consumption; limiting energy intake from total fats and shifting fat consumption to unsaturated fats and towards elimination of trans-fatty acids.[25]

The analysis of the data made use of the Chi-Square test to determine whether there existed a significant association between two categorical variables, while the One-way ANOVA test was used to compare the mean values of dependent variables with a metric scale across the categories of the independent variables, namely gender, faculty, course year, age and relationship status. In both instances a 0.05 level of significance was adopted.

Results

Participants were asked about three main indicators of healthy diet, namely breakfast, consumption of fruit and vegetables, and type of food and drinks consumed at university. Figure 1 shows that half of the students have only between 0 to 2 fruit and vegetable servings per day, one third 2 to 4 servings, while only 15% have 5 or more servings. These figures fall short of the 5 daily servings of fruit and vegetables recommended by the World Health Organization. Females have, on average, 2.14 fruit and vegetable servings a day; whereas, their male colleagues have 1.72 daily servings; this difference is significant. Only 43.9% of the respondents said that they have a daily healthy breakfast (Figure 2); again female students are more likely to start the day with a healthy breakfast (46.9%) than male students (37.2%).

Students tend to indulge in unhealthy rather than healthy food on campus. Figure 3 shows that white bread, rolls and sandwiches are the most consumed snacks (66.8%), followed by sweets or chocolates (39.9%), with salads being the least selected snack (11.1%). While white bread, rolls, sandwiches, cheesecakes and pastries are the more preferred snacks for males, brown bread, fruit, salads and crisps are more preferred by female students.

Figure 4 shows that, in contrast to their food preference, students consume healthier drinks. Water is by far the preferred drink (84.0%), followed by soft drinks, coffee/tea and juice, while alcohol is the least selected drink. Again female students are likely to consume healthier drinks than males, with the latter tending to drink more alcohol and soft drinks.

Weight and diet

Students were also asked about their weight and its relationship to their diet. Figure 5 shows that almost two thirds of the students think they have the right weight, a quarter described themselves as being overweight, while about 11% believe they are underweight. When asked whether they are on a diet to lose/gain weight, 23.5% of the participants specified that they are, whereas another 33.5% said they intended to do so. While there are more females (27%) than males (15%) on a diet, more males

Figure 1: *Daily fruit and vegetable servings consumed by students*

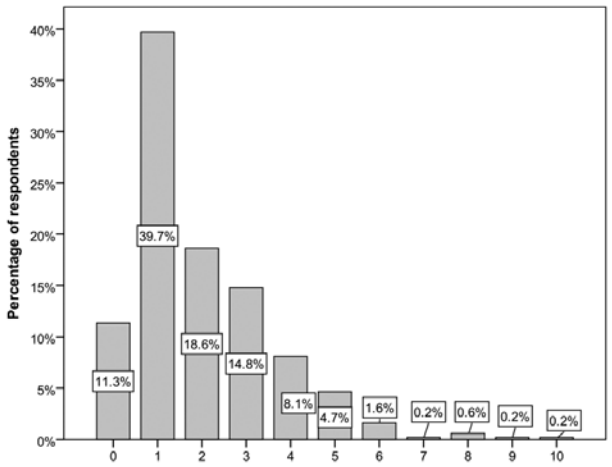


Figure 2: *Percentage of students having a healthy regular breakfast*

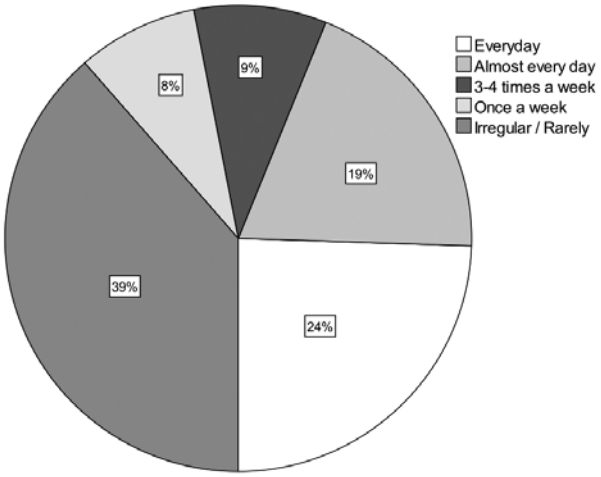


Figure 3: *Typical snacks students have on campus*

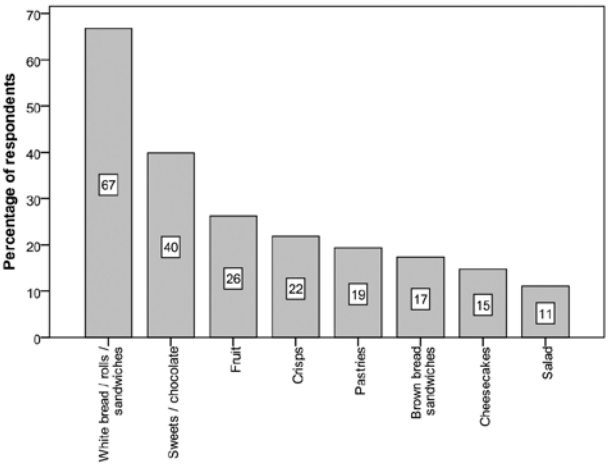
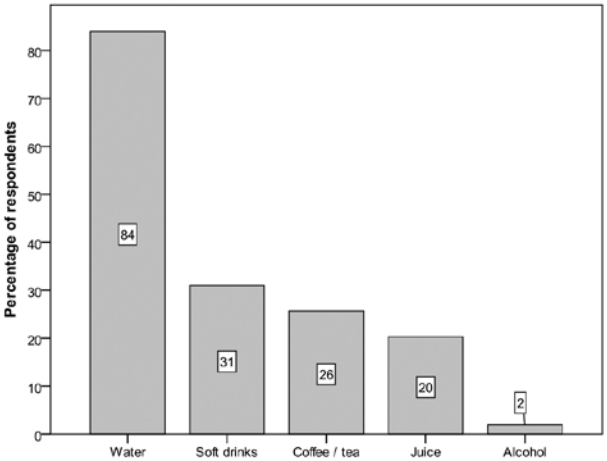


Figure 4: *Typical drinks consumed by students on campus*



consider that their weight is not appropriate; yet they are less concerned than females about starting a diet. A large proportion of the respondents who attempted to lose weight, did exercise (55.6%) or started a dieting program (36.7%); only 8% used weight reduction methods such as vomiting, pills or smoking. More males do exercises to reduce weight, while more females seek to reduce weight through dieting.

Improving health on campus

When asked how the university campus may help to improve their health, the majority of the students suggested healthier food in the canteen as their main recommendation. They also suggested alternative food outlets on campus, free drinking water, and healthy food vending machines amongst others (Figure 6).

Figure 5: *Students' perceived weight*

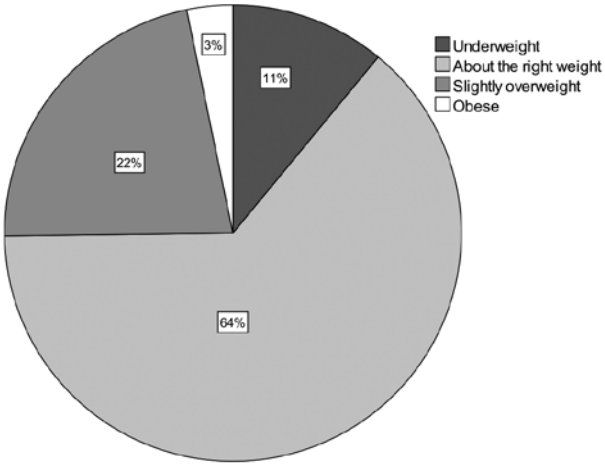
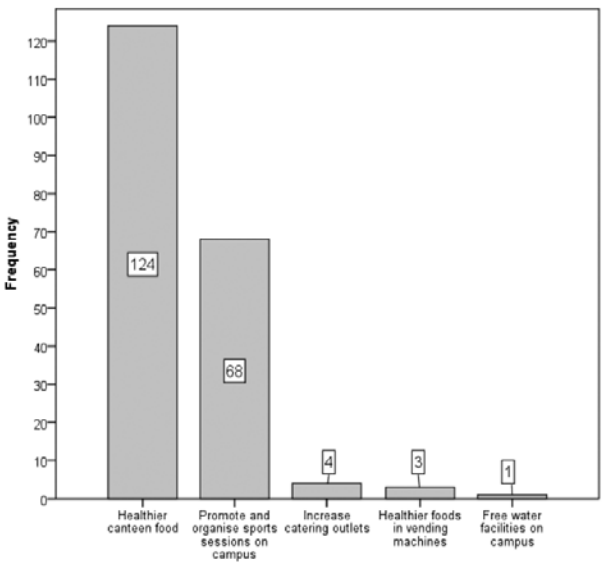


Figure 6: *Students' recommendations for a healthier diet on campus*



Discussion

The majority of students in the study did not reach these dietary benchmarks examined in the study, with less than half of the students starting the day with a healthy breakfast, having about five daily servings of fruit and vegetables, or consuming nutritional food and drinks on a regular basis. These figures reflect the rather unhealthy dietary behaviours of young people in general, both locally and abroad.[15,19-20,26] Only one third of 15-24 year olds in Malta have two or more portions of fruit per day, 14% have two or more portions of vegetable and salad per day, and 9% two or more fruit or vegetable juice per day, with a gender bias in favour of females.[15] Only about half of 11-15 year olds have regular breakfast, which is well below the EU average, vegetation consumption is below the EU average, and the intake of soft drinks and sweets places Maltese children towards the bottom of the list of countries.[19]

University female students are consistently more conscious of their diet, performing better than males on the three healthy diet indicators. This reflects other studies which suggest that Maltese women in general are more conscious of what constitutes a healthy diet and more likely to engage in it.[15,18] Female students may be more exposed to sociocultural pressure related to weight and body image,[27-28] while male students may have more positive views of weight and may be still subjected to gendered eating stereotypes such as avoiding 'feminine' salads or fruits.[27,29]

When asked to give suggestions on how the university may support students' health, the most cited recommendation by the students was healthier food in the canteen. Students mentioned healthier foods in other venues on campus, including a salad bar, as well as the provision of free drinking water. They also recommended regular campaigns to raise awareness about healthy eating and encourage students to adopt healthier lifestyles. Students are aware of the benefits of a healthy diet, with more than 60% saying they need to consume healthier food, but they seem to suggest that they also need an environment which helps them to make good choices, where the healthy choice becomes the easier one. Indeed availability is one of the key factors in determining the kind of food one consumes, with people more likely to consume healthy food if it is available in stores and canteens nearby.[16,21,30] Healthy food is usually more expensive than fast foods and unhealthy snacks, thus making the healthier choice the more difficult one for tight-budgeted students.[30] Fast food may also be more attractive and convenient for busy students, who may find it more convenient to skip a healthy breakfast and instead have a less healthy snack later on.[27] Clearly, knowledge on its own is insufficient to bring about a change in dietary habits. The vast majority of Maltese, including young people, believe they have adequate information on what constitutes a healthy diet.[16] Information needs to be accompanied and complemented by other factors such as self-efficacy, priority values, availability and affordability, positive peer pressure, emotional regulation and stress management, and removal of barriers, amongst others.[16,31-34] Further studies

on students' diet need to examine these social-cognitive correlates of dietary behaviour.

Body weight is an issue of serious concern in Malta. One third of adults are overweight and one fifth obese,[15] 15 year olds are the most overweight and obese out of 38 countries in Europe and North America,[19] and 31.4% of those aged 15-24 are overweight or obese.[15] These figures are somewhat reflected in the university students' responses, with one third saying they do not feel they have the right weight, one fourth describing themselves as overweight, and more than half saying that they are on a diet or intend to start one to get the right weight. Usually females express more concern about body image and weight than males[27-28] but female participants in this study appear to be more satisfied with their weight than males. On the other hand, however, they are more conscious on the need to keep to the right weight and thus more likely to take action to lose weight.[28,35] While male students need be encouraged to take more care of their weight,[36] particularly dieting, female students may be encouraged to use exercise more as a weight reduction strategy besides diet.[30-38] For instance, the recent MSA Food Consumption Survey[17] reported that about 20% of those who did more than 30 minutes of physical activity 3 to 4 times a week were still obese. Good eating habits and exercise need to go together in weight control.

Research underlines the positive relationship between the level of education and health habits,[39-40] yet the lifestyle of university students leaves much to be desired, with consequent short and long term impact on their health. The health habits established in adolescence and young adulthood are difficult to change and are set to determine health and wellbeing as well as the type and severity of chronic illness that may develop later in middle and older adulthood.[20,41-42] In view of the findings of the study, it is thus essential that the university seeks to actively promote a healthy diet on campus as part of a healthy lifestyle amongst the student population, making use of educational initiatives, nutrition counseling, and social engineering strategies amongst others. Healthier food in the canteen and in the vending machines, subsidised healthy food, alternative restaurants or snack bars; and free drinking water on campus are some of the first steps to encourage the students to make healthier choices.

The students also recommended more nutrition education and counseling on campus. Peer education programmes providing guidance and support in the promotion of a healthy lifestyle have been found to be highly helpful and relevant for the students.[43] A health promotion office on campus may also be established to organise regular campaigns, courses and seminars in healthy eating and provide coaching and counseling as well professional support to encourage students to take more responsibility for their health and well-being.

One in five students said they used comfort eating as a stress coping mechanism.[44] Comfort foods which are usually high in fat and sugars, provide relief from stress hormones such as cortisol.[45-46] Stress management programmes, particularly close to the examination period, would thus help students to avoid comfort eating and fatty foods and to maintain their healthy habits.[47] Exercise is another way to deal effectively with stress and maintain control over weight and diet.[48-49] As the students themselves suggested, more sports facilities and opportunity and incentives to practice sports on campus, particularly for females, would be also be helpful for students in this regard.

Finally, in view of dietary patterns of the Maltese population in general and children and adolescents in particular, there needs to b**e** continued efforts on a national level to encourage healthy eating, making use of a multimodal campaign combining education, social skills training, family and community empowerment and social engineering strategies.[50] Such efforts need to start as early as possible in families, schools, and local communities.

Conclusion

This study was a general descriptive study of Maltese university students' health habits and lifestyle amongst others. It did not examine the diet of Maltese university students in depth, particularly the factors influencing food choices such as beliefs and attitudes towards food and dieting, self-efficacy, self-esteem and sense of control, peer pressure and social support, perceived barriers and other socio-cultural aspects of diet.[31-34, 51] Psychological theories such as the Theory of Planned Behaviour and the Stages of Change Theory have also been found to predict healthy eating and dietary modification.[33,52] Further research taking such factors into consideration would thus help to identify the processes which facilitate or inhibit the healthy diet of university students.

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