Al Sinani Y, Al Busafi M, Al Mamari W S, Al-Wahaibi A. Associations between BMI, Quality of Life, and the Role of Pharmacist-Led Health Promotion Among University Students in Oman. Pharmacy Practice 2026 Apr-Jun;24(2):3394.

https://doi.org/10.18549/PharmPract.2026.2. 3394

Original Research

Associations Between BMI, Quality of Life, and the Role of Pharmacist-Led Health Promotion Among University Students in Oman

Yousra Al-Sinani, Majid AL Busafi, Wafa Al Mamari, Anfal Al-Wahaibi

Received (first version): 06-Nov-2025 Accepted: 02-Apr-2026 Published online: 29-May-2026

Abstract

Background: Obesity and undernutrition are dual public health challenges affecting physical and mental health worldwide. University students, particularly in the Middle East, face unique lifestyle challenges influencing Body Mass Index (BMI) and health-related Quality of Life (QoL). However, limited research has explored these dynamics in the region. This study aimed to evaluate the associations between BMI categories, QoL, and demographic factors among university students in Oman, and to explore the influence of pharmacist-led health counseling and students' use of supplements or medications on perceived QoL and weight-related health behaviors. **Methods:** A cross-sectional descriptive correlational design was employed, surveying 664 students at Sultan Qaboos University using the 36-item Short Form Health Survey (SF-36) to assess QoL and demographic data. Participants were categorised into BMI groups based on World Health Organization standards. Statistical analyses included chi-square tests and multinomial logistic regression to examine relationships between BMI, QoL domains, and predictors. **Results:** BMI categories were significantly associated with QoL scores. Students with healthy weight reported the highest QoL scores, while those classified as obese scored the lowest, particularly in physical health domains. Mental health scores declined with increasing BMI. Age and gender were significant predictors of BMI categories; older students and males were more likely to be overweight or obese, while younger students and females were more often underweight. Demographic factors, including gender-specific trends, highlighted cultural and lifestyle influences. **Conclusions:** Higher BMI was linked to declines in physical and mental health among university students, underscoring the need for targeted interventions. Universities should implement culturally tailored health promotion strategies addressing nutritional habits, physical activity, and mental well-being to mitigate weight-related health disparities in young adults.

Keywords: Body Mass Index, Quality of Life, University Students, Oman, Public Health, SF-36, Cross-Sectional Study.

Dr Yousra Al-Sinani*. Professor, Curriculum and Instruction, College of Education, Sultan, Qaboos University, Al Khoud Oman. Yousra@squ.edu.om
Majid AL Busafi. Professor, Director: Humanities Research Center, Department of Physical Education and Sports Sciences, College of Education, Sultan Qaboos University. Majidb@squ.edu.om
Wafa Al Mamari. Assistant Professor, HoD Sociology and social work, Department of Sociology and social work, College of Arts and Social Sciences, Sultan Qaboos University. almamari@squ.edu.om
Anfal Al-Wahaibi. Assistant Professor, Assistant Dean of Students Affairs for Social Services, Department of Education Foundation, College of Education, Sultan Qaboos University.

INTRODUCTION

Obesity and undernutrition present dual public health challenges that pose significant risks to both physical and mental health worldwide. Body Mass Index (BMI) is a key measure to classify individuals as underweight, healthy, overweight, and obese; each associated with distinct health outcomes. A high BMI is often linked to chronic conditions such as cardiovascular disease, type 2 diabetes, hypertension, and reduced quality of life (QoL)[1-3]. In contrast, underweight individuals may face issues such as compromised immune function, fatigue, osteoporosis, and mental health challenges, including depression and anxiety[4-6]. These health risks underscore the importance of understanding the complex relationship between BMI and QoL across different populations.

Oman, like other high-income Gulf Cooperation Council (GCC) countries, faces a significant obesity challenge. According to WHO, one in five adults in the GCC region is obese. Data from the Global Health Observatory (GHO) indicates a rising trend in overweight and obesity rates in Oman over recent decades. A study revealed median BMI values of 27.5 kg/m² for men and 28.5 kg/m² for women, with obesity rates of 33.0% and 39.0%, highlighting the growing public health concern[7].

University students are particularly vulnerable to developing weight-related health issues due to their transitional lifestyles and the unique challenges they face during this phase of life. Factors such as academic pressures, irregular meal patterns, limited physical activity, and frequent fast-food consumption contribute to a broad spectrum of BMI categories within this demographic[8,9]. Additionally, this stage often involves significant

psychological stress, which can exacerbate the effects of BMI on both mental and physical health[10]. Furthermore, insufficient sleep, sedentary behaviour, and screen time have been linked to adverse changes in BMI and health outcomes among young adults[11]. Investigating these dynamics in university settings provides critical insights into how lifestyle factors influence health outcomes during young adulthood. In university settings, students frequently engage in self-medication practices, including the use of appetite suppressants, weight loss medications, and multivitamins. Studies have shown that the prevalence of self-medication among university students in the Gulf region is alarmingly high, with rates reaching up to 98% in Saudi Arabia and Kuwait[12,13]. Commonly used substances include analgesics, antibiotics, multivitamins, and weight-related products[14]. Pharmacists, as accessible healthcare professionals, play a critical role in counseling students on safe and effective health practices. Their involvement can enhance health literacy, guide supplement use, and promote awareness about BMI and quality of life (QoL) interconnections[15].

Although extensive research has been conducted in Western populations, studies focusing on Middle Eastern contexts remain limited. Unique cultural norms, dietary patterns, and socioeconomic factors in the Middle East may influence the relationship between BMI and QoL differently compared to other global settings. For instance, traditional diets rich in carbohydrates, social gatherings involving food consumption, and reduced physical activity due to climatic conditions can significantly impact BMI trends in this region[16]. Understanding these region-specific associations is essential for effectively developing targeted interventions to address nutritional health challenges.

This study aims to evaluate the relationship between BMI and QoL among university students in Oman, utilising the 36-item Short Form Health Survey (SF-36). This survey measures physical and mental health across eight domains, including physical functioning, role limitations due to physical or emotional health, bodily pain, general health perceptions, vitality, social functioning, and mental health[17]. Additionally, the study investigates demographic factors, such as age and gender, to identify predictors of BMI categories. By exploring these associations, this research seeks to enhance the existing body of knowledge and inform health promotion strategies targeting young adults, particularly within Middle Eastern populations.

This study hypothesises that BMI categories are significantly associated with various domains of QoL. Specifically, higher BMI is hypothesised to be linked to a decline in physical and mental health. Moreover, demographic factors such as age and gender may serve as significant predictors of an individual's BMI status, providing further insights into the factors contributing to nutritional health disparities among young adults.

METHODS

Study Design

This research utilised a large-scale, cross-sectional descriptive correlational design. Data was collected through an online survey created using Google Forms®. Participants were invited to complete the questionnaire via a link shared through student email and social media channels, facilitating convenient and widespread participation within the target student population.

Setting and Sampling

Participants were recruited from Sultan Qaboos University in Oman, with data collection taking place from December 7, 2021, to July 30, 2022. The eligibility criteria for students included (a) current enrollment at Sultan Qaboos University, (b) the ability to complete all parts of the questionnaire, (c) no history of mental illness, and (d) voluntary agreement to participate. Students with a history of psychiatric or neurological conditions that could interfere with their participation were excluded from the study.

Measures

The questionnaire collected comprehensive demographic data and included the 36-item Short Form Health Survey (SF-36) to assess health-related quality of life. The study classified participants into four categories based on their BMI, a standard metric for evaluating body weight relative to height. The Underweight category includes individuals with a BMI of less than 18.50. The Healthy Weight Range category includes participants with a BMI between 18.50 and 24.99; this range is generally considered optimal for health, with a lower risk of weight-related health issues. Participants with a BMI between

25.00 and 29.99 fall into the Overweight category. The Obese category consists of individuals with a BMI of 30.00 or higher[18].

Short Form Health Survey (SF-36)

The SF-36 was used to evaluate QoL across eight health-related domains (Stewart et al., 1988). These domains include physical functioning (PF), which assesses limitations in physical activities due to health issues; role limitations due to physical health (RP); bodily pain (BP); general health perceptions (GH); vitality (VT), covering energy levels and fatigue; social functioning (SF), examining restrictions in social activities due to physical or emotional factors; role limitations due to emotional health (RE); and mental health (MH), which assesses psychological distress and overall well-being. The survey also includes a single item on health transition. The physical component summary (PCS) is calculated from PF, RP, BP, and GH scores, while the mental component summary (MCS) is based on VT, SF, RE, and MH scores. These scores are standardised to have a mean of 50 and a standard deviation of 10, with higher scores reflecting better physical health or psychological well-being.

Data Analysis

Data were entered and analysed using the Statistical Package for Social Sciences (SPSS), version 29. Descriptive statistics, including means, standard deviations, standard errors, frequencies, and percentages, were calculated for all scales, subscales, and participant variables to address the research questions. The Chi-square test (Fisher's exact test, when applicable) was used to compare BMI groups based on the 36-item Short Form Health Survey results. Multinomial logistic regression analysis, using a full-entry model, was performed to identify independent predictors of BMI category, including physical health (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role limitations due to emotional health (RE), mental health (MH), the physical component summary (PCS), the mental component summary (MCS), total QoL, age, and gender. Odds ratios (OR) with corresponding 95% confidence intervals (CI) were reported, with a p-value threshold of < 0.05 set to determine statistical significance across all analyses.

RESULTS

The total sample consists of 664 individuals, categorised into four groups based on BMI: Underweight (15.8%), Healthy Weight (54.2%), Overweight (20.2%), and Obese (9.8%).

Males constitute 57.8% of the total population, with an increasing trend in higher BMI categories (75.4% of the Obese group is male). Females comprise 42.2% of the sample, with a higher percentage in the Underweight group (67.6%). The mean age increases across BMI categories, with underweight individuals having a mean age of 20.9 years and overweight individuals at 23.8 years. This difference is statistically significant ($P < 0.001$) (Table 1).

Scores are highest in the Healthy Weight (68.3) and Overweight (68.1) groups and lowest in the Obese group (60.8), indicating that higher BMI is associated with a decline in physical health. This difference is statistically significant ($P < 0.001$). Scores vary across groups, with the Healthy Weight group scoring highest (59.5) and the Obese group scoring lowest (55.1), showing a slight decline in mental health scores with increased BMI. This difference is also statistically significant ($P = 0.02$).

The overall Quality of Life score is highest among the Healthy Weight group (63.9) and lowest in the Obese group (57.9), suggesting that higher BMI may negatively impact QoL. This difference is statistically significant ($P = 0.01$). Role Functioning (Physical): There is a substantial difference in role functioning based on physical health across BMI categories, with the highest scores in the Overweight group (58.2) and the lowest in the Obese group (45.0) ($P = 0.02$). The Obese group reported the lowest health change score (54.2) compared to other groups, which is significant ($P < 0.001$).

Other domains, such as Physical Functioning, Role Functioning (Emotional), Energy/Fatigue, Emotional Well-being, Social Functioning, Body Pain, and General Health, showed no statistically significant differences across BMI categories.

Multinomial Logistic Regression

The final model is a significant improvement in fitting a null model [$\chi2(33) = 128.81$, $p<.001$]. Pearson's chi-square test indicates that the model fits the data well [$\chi2(1947) = 1998.1$, $p=0.21$]. Similarly, the Deviance chi-square does indicate a good fit [$\chi2(1947) = 1428.6$, $p=1$] (Table 2).

https://doi.org/10.18549/PharmPract.2026.2. 3394

Table 1. BMI Differences in Quality of Life (QoL)

	Total		**Underweight n=105 (15.8%)**		**Healthy Weight n=360 (54.2%)**		**Overweight n=134 (20.2%)**	**Obese**			
	n=664					**n=65 (9.8%)**					
Variables	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	***P***
Age	22.2	3.7	20.9	2.2	21.9	2.9	23.8	5.2	22.6	4.7	0
Physical functioning	72.1	31.1	68.1	32	73.6	31.7	74.3	28.9	66	29.1	0.12
Role functioning/physical	55	35.2	49.8	33.2	57.1	35.8	58.2	35.9	45	32.2	0.02
Role functioning/emotional	49.7	39.1	46.3	38.3	52.3	39.2	47.3	40.3	45.6	37.5	0.31
Energy/fatigue	58.3	18.8	56	20.4	59.7	18.2	57.3	17	56.5	22.1	0.2
Emotional well-being	61.8	19.6	60.4	18	63.2	19.4	59.5	21.4	61.4	19.5	0.24
Social functioning	61	21.6	60.8	20.3	62.7	21.8	58.7	20.8	56.7	22.9	0.09
Body Pain	70.9	22	69.9	20.7	72.5	22.1	69.3	22.7	66.8	22.1	0.17
General health	68.7	17.8	70.1	17	70.6	17.7	65.3	19.2	69.5	17.5	0.18
Health change	64.3	25.3	66.7	24.2	64.2	25.4	67.9	25.4	54.2	24.4	0
Physical Health Component	66.9	17.7	64.1	16.8	68.3	18	68.1	17.2	60.8	16.8	0
Mental Health Component	57.7	16	55.7	16.2	59.5	15.7	55.7	16.2	55.1	16.7	0.02
Total QoL	62.3	14.8	60	14	63.9	14.9	61.9	14.5	57.9	15.2	0.01
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	P
Gender											0
Male	384	57.8	34	32.4	208	57.8	93	69.3	49	75.4	
Female	280	42.2	71	67.6	152	42.2	41	30.6	16	24.6	

https://doi.org/10.18549/PharmPract.2026.2. 3394

Table 2. Multinomial Logistic result for predictors of BMI groups associated with Short-Form 36-item questionnaire (SF-36) and demographic variables.

Category	Variable	B	Std. Error	Wald	Sig.	Exp(B)	95% CI Lower	95% CI Upper
Underweight	Age	-0.131	0.049	7.094	0.008	0.877	0.796	0.966
	Male	-1.073	0.246	19.056	<.001	0.342	0.211	0.554
Overweight	Age	0.119	0.027	19.037	<.001	1.127	1.068	1.189
	Male	0.448	0.228	3.86	0.049	1.565	1.001	2.447
Obese	Health change	-0.016	0.006	7.285	0.007	0.984	0.972	0.996
	Male	0.829	0.318	6.792	0.009	2.291	1.228	4.275

a Variable(s) entered on step 1: Physical functioning, Role limitations due to physical health, Role limitations due to emotional problems, Energy/fatigue, Emotional well-being, social functioning, Pain, General health, Health change, age, gender.

For the Underweight category, age and gender are significant predictors. Each additional year of age decreases the odds of being underweight by 12.3% (p = 0.008, OR = 0.877), and males have 66% lower odds of being underweight compared to females (p < 0.001, OR = 0.342).

In the Overweight category, age and gender also play significant roles. Each additional year of age increases the odds of being overweight by 12.7% (p < 0.001, OR = 1.127), and males have 1.6 times the odds of being overweight compared to females (p = 0.049, OR = 1.565).

For the Obese category, health change and gender are significant. A unit increase in health change decreases the odds of being obese by 1.6% (p = 0.007, OR = 0.984), and males have 2.3 times the odds of being obese compared to females (p = 0.009, OR = 2.291).

Age significantly affects both the Underweight and Overweight categories, with older age linked to lower odds of being underweight and higher odds of being overweight. Males are less likely to be underweight but more likely to be overweight or obese, while health improvements reduce obesity risk.

DISCUSSION

This study explored the relationship between BMI and QoL among university students in Oman, utilising the 36-item Short Form Health Survey (SF-36). The findings revealed significant differences in QoL scores based on BMI categories. Individuals classified as having a healthy weight generally reported the highest QoL scores, while those who were obese showed the lowest scores in both physical and mental health domains. These results are consistent with previous studies, highlighting the negative impact of obesity on overall health and well-being[19,20]. In UAE a study examined body image dissatisfaction (BID) among 728 university students, finding a 36.7% prevalence rate, higher BID levels in men than women, no significant age differences, but significant variations across BMI categories, and recommended awareness programs and health education initiatives[21]. While in other study found that 81% of university students aged 18–25 were dissatisfied with their body image, with strong correlations between BMI and both perceived BMI and body image dissatisfaction, emphasizing the need for interventions promoting healthy eating and physical activity[22].

The study identified several important trends. First, there was a significant decline in physical health component scores among obese participants, indicating a strong relationship between excess body weight and physical limitations. Obesity is a well-documented risk factor for chronic conditions such as musculoskeletal pain, cardiovascular disease, and decreased physical functionality, all of which can impair overall physical health and QoL[23]. Similarly, underweight individuals also displayed lower QoL scores, which may be attributed to fatigue, reduced muscle strength, and nutrient deficiencies that can limit physical performance[24]. Obesity significantly impacts QoL, with higher BMI levels independently associated with reduced QoL even after accounting for long-term conditions, emphasizing the importance of addressing obesity to improve overall well-being and prevent future health deterioration[25]. A comparative perspective highlights the significant impact of overweight and obesity as key risk factors for health issues, emphasizing the broader global burden of high BMI on QoL and the need for

targeted interventions[26].

As assessed by the Mental Health Component of the SF-36 questionnaire, mental health exhibited significant variations across different BMI categories. Participants with a healthy weight scored the highest in this area, whereas those in the obese category scored the lowest. This finding supports previous research that links obesity to poorer mental health outcomes, including depression, anxiety, and social stigma[27]. Additionally, psychosocial factors such as body image dissatisfaction and perceived social support may help explain the disparities observed in mental health scores.

Age and gender were identified as significant predictors of BMI categories in this study. Younger individuals tended to be underweight, while older students were more likely to be overweight or obese. This trend may reflect lifestyle changes during university, including meal patterns, physical activity levels, and stress management[28]. Male participants were found to have higher odds of being overweight or obese compared to their female counterparts, which aligns with other research showing a greater prevalence of obesity among men in Middle Eastern populations[29]. Conversely, females were more frequently categorised as underweight, which may reflect cultural beauty standards or dietary restrictions.

Although this study did not collect data on medication or pharmacist interactions, the results highlight opportunities for pharmacist-led interventions. Given the link between higher BMI and lower QoL, university pharmacists could support students through counseling on weight management, supplement use, and healthy lifestyle choices. As accessible healthcare providers, pharmacists can help improve health literacy, promote awareness of BMI QoL links, and guide responsible use of OTC products aligning with preventive care efforts in university health systems. Previous studies have shown that pharmacist-led counseling in university and community settings can improve health literacy and support students in managing lifestyle-related health risks, including weight control and supplement use[15].

Despite the significant findings, several aspects of QoL, such as social functioning, emotional well-being, and general health, did not show significant differences across different BMI categories. This may indicate that some aspects of QoL are less affected by weight status in this population or that other unmeasured factors, such as academic stress or social support, may substantially impact these areas. Pharmacists should be considered essential contributors to multidisciplinary university wellness programs aimed at addressing obesity, nutritional risks, and mental well-being among students.

Implications for Public Health

The findings of this study emphasise the urgent need for targeted health interventions for university students. Promoting balanced diets, regular physical activity, and mental health support can help reduce the adverse health outcomes associated with both ends of the BMI spectrum. In this context, pharmacists especially those based in university clinics or community settings can play a pivotal role. Through counseling, screening, and tailored health education, pharmacists can assist students in understanding their health risks and managing weight-related concerns. They are also well-positioned to provide guidance on the safe use of multivitamins, appetite suppressants, and other over-the-counter products, which students may be inclined to use without proper oversight.

In the Middle Eastern context, culturally tailored interventions are crucial. Public health campaigns should emphasise the importance of maintaining a healthy weight while respecting cultural norms and dietary practices. Empowering pharmacists to contribute actively to such efforts especially through awareness campaigns and preventive care—can further enhance the effectiveness of these initiatives. Addressing gender-specific barriers, such as promoting physical activity among women in conservative societies, can also benefit from pharmacist-led advocacy and support.

Strengths and Limitations

This study contributes to the limited research on the relationship between BMI and QoL in university populations in the Middle East. Using a validated tool (SF-36) and a large, representative sample from Sultan Qaboos University enhances the reliability of the findings. However, the study's cross-sectional design limits our ability to establish a causal relationship between BMI and QoL. Longitudinal studies are necessary to investigate how changes in BMI over time impact QoL. Additionally, self-reported measures of height, weight, and QoL may introduce bias in the reporting.

Future Directions

Future research should explore additional factors influencing QoL, including dietary habits, physical activity levels, and academic performance. Expanding the study to include multiple universities across Oman or other Middle Eastern countries would offer a broader understanding of these relationships. Additionally, qualitative studies could investigate students' perceptions of their weight.

CONCLUSION

The study highlights significant associations between BMI categories and quality of life among university students in Oman. Students with higher BMI reported declines in both physical and mental health domains, while demographic factors such as age and gender emerged as significant predictors of BMI status. These findings emphasize the importance of implementing targeted, culturally appropriate health promotion programs within university settings to address the dual challenges of

References

1. Kasaudhan, S.; Chaudhary, V.; Saraswathy, K.N.; Dhamija, R.K.; Mahesh, K.S.S.U.; Devi, N.K. Impact of Hypertension, Diabetes, and Obesity on Quality of Life in Rural Punjab, India. Discov Public Health 2024, 21, 242, doi:10.1186/s12982-024-00359-8.
2. Powell-Wiley, T.M.; Poirier, C.P.; Burke, V.C.L.E.; Després, J.-P.; Gordon-Larsen, P.; Lavie, C.J.; Lear, S.A.; Ndumele, C.E.; Neeland, I.J.; Sanders, P.; et al. Obesity and Cardiovascular Disease. Circulation 2021, 143, e984–e1010, doi:10.1161/CIR.0000000000000973.
3. Kivimäki, M.; Strandberg, T.; Pentti, J.; Nyberg, S.T.; Frank, P.; Jokela, M.; Ervasti, J.; Suominen, S.B.; Vahtera, J.; Sipilä, P.N.; et al. Body-Mass Index and Risk of Obesity-Related Complex Multimorbidity: An Observational Multicohort Study. The Lancet Diabetes & Endocrinology 2022, 10, 253–263, doi:10.1016/S2213-8587(22)00033-X.
4. Ibrahim, F.A.; Bello, T.O.; Fakolujo, I.Y.; Oladele, J.O.; Oladiji, A.T. Nutrition and Mental Health. In Nutrition and Diet in Health; CRC Press, 2024 ISBN 978-1-00-336149-7.
5. Griffiths, J.; Seesen, M.; Sirikul, W.; Siviroj, P. Malnutrition, Depression, Poor Sleep Quality, and Difficulty Falling Asleep at Night Are Associated with a Higher Risk of Cognitive Frailty in Older Adults during the COVID-19 Restrictions. Nutrients 2023, 15, 2849, doi:10.3390/nu15132849.
6. Rallis, E.; Lotsaris, K.; Grech, V.-S.; Tertipi, N.; Sfyri, E.; Kefala, V. The Nutrient–Skin Connection: Diagnosing Eating Disorders Through Dermatologic Signs. Nutrients 2024, 16, 4354, doi:10.3390/nu16244354.
7. Al-Mawali, A.; Jayapal, S.K.; Morsi, M.; Al-Shekaili, W.; Pinto, A.D.; Al-Kharusi, H.; Al-Harrasi, A.; Al-Balushi, Z.; Idikula, J. Prevalence of Risk Factors of Non-Communicable Diseases in the Sultanate of Oman: STEPS Survey 2017. PLoS One 2021, 16, e0259239, doi:10.1371/journal.pone.0259239.
8. Dakanalis, A.; Mentzelou, M.; Papadopoulou, S.K.; Papandreou, D.; Spanoudaki, M.; Vasios, G.K.; Pavlidou, E.; Mantzorou, M.; Giaginis, C. The Association of Emotional Eating with Overweight/Obesity, Depression, Anxiety/Stress, and Dietary Patterns: A Review of the Current Clinical Evidence. Nutrients 2023, 15, 1173, doi:10.3390/nu15051173.
9. Enriquez, J.P.; Ader, D. Associations between Health Issues and Food Consumption with Overweight and Obesity in Three University Students Minorities. Journal of American College Health 2023, 0, 1–9, doi:10.1080/07448481.2023.2266045.
10. Yoon, E.S.; So, W.-Y.; Jang, S. Association between Perceived Psychological Stress and Exercise Behaviors: A Cross-Sectional Study Using the Survey of National Physical Fitness. Life 2023, 13, 2059, doi:10.3390/life13102059.
11. Chaput, J.-P.; McHill, A.W.; Cox, R.C.; Broussard, J.L.; Dutil, C.; da Costa, B.G.G.; Sampasa-Kanyinga, H.; Wright, K.P. The Role of Insufficient Sleep and Circadian Misalignment in Obesity. Nat Rev Endocrinol 2023, 19, 82–97, doi:10.1038/s41574-022-00747-7.
12. Albusalih, F.A.; Naqvi, A.A.; Ahmad, R.; Ahmad, N. Prevalence of Self-Medication among Students of Pharmacy and Medicine Colleges of a Public Sector University in Dammam City, Saudi Arabia. Pharmacy 2017, 5, 51, doi:10.3390/pharmacy5030051.
13. Shehnaz, S.I.; Agarwal, A.K.; Khan, N. A Systematic Review of Self-Medication Practices Among Adolescents. Journal of Adolescent Health 2014, 55, 467–483, doi:10.1016/j.jadohealth.2014.07.001.
14. Helal, R.M.; Abou-ElWafa, H.S. Self-Medication in University Students from the City of Mansoura, Egypt. Journal of Environmental and Public Health 2017, 2017, 9145193, doi:10.1155/2017/9145193.
15. Hasan, S.; Sulieman, H.; Chapman, C.; Stewart, K.; Kong, D. Community Pharmacy in the United Arab Emirates: Characteristics and Workforce Issues. International Journal of Pharmacy Practice (IJPP) 2011, 19, 392–399, doi:10.1111/j.2042-7174.2011.00134.x.
16. Yuan, X.; Wei, Y.; Jiang, H.; Wang, H.; Wang, Z.; Dong, M.; Dong, X.; Zhang, J. Longitudinal Relationship between the Percentage of Energy Intake from Macronutrients and Overweight/Obesity among Chinese Adults from 1991 to 2018. Nutrients 2024, 16, 666, doi:10.3390/nu16050666.
17. Stewart, A.L.; Hays, R.D.; Ware, J.E. The MOS Short-Form General Health Survey: Reliability and Validity in a Patient Population. Medical Care 1988, 26, 724–735.

18. WHO Obesity and Overweight Available online: https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight (accessed on 5 February 2025).
19. Jaison K, I.; Asharaf, H.; Thimothy, G.; George, S.; Jose, J.; Paily, R.; Josey, J.; Sajna, S.J.; Radhakrishnan, R. Psychological Impact of Obesity: A Comprehensive Analysis of Health-Related Quality of Life and Weight-Related Symptoms. Obesity Medicine 2024, 45, 100530, doi:10.1016/j.obmed.2023.100530.
20. Reinbacher, P.; Draschl, A.; Smolle, M.A.; Hecker, A.; Gaderer, F.; Lanner, K.-B.; Ruckenstuhl, P.; Sadoghi, P.; Leithner, A.; Nehrer, S.; et al. The Impact of Obesity on the Health of the Older Population: A Cross-Sectional Study on the Relationship between Health-Related Quality of Life and Body Mass Index across Different Age Groups. Nutrients 2024, 16, 51, doi:10.3390/nu16010051.
21. Dodeen, H.; Alharballeh, S. Predicting Statistic Anxiety by Attitude toward Statistics, Statistics Self-Efficacy, Achievement in Statistics and Academic Procrastination among Students of Social Sciences Colleges. Journal of Applied Research in Higher Education 2024, ahead-of-print, doi:10.1108/JARHE-01-2024-0021.
22. Radwan, H.; Hasan, H.A.; Ismat, H.; Hakim, H.; Khalid, H.; Al-Fityani, L.; Mohammed, R.; Ayman, A. Body Mass Index Perception, Body Image Dissatisfaction and Their Relations with Weight-Related Behaviors among University Students. Int J Environ Res Public Health 2019, 16, 1541, doi:10.3390/ijerph16091541.
23. Khatoon B, S.; Saravanan, D.; Ganamurali, N.; Sabarathinam, S. A Narrative Review on the Impact of Sarcopenic Obesity and Its Psychological Consequence in Quality of Life. Diabetes & Metabolic Syndrome: Clinical Research & Reviews 2023, 17, 102846, doi:10.1016/j.dsx.2023.102846.
24. Luah, X.W.; Holst-Hansen, T.; Lübker, C. The Association between Body Mass Index and Health-Related Quality of Life in the 2017 and 2018 Health Survey of England Data: A Cross-Sectional Observational Analysis. Diabetes, Obesity and Metabolism 2024, 26, 2318–2328, doi:10.1111/dom.15546.
25. Stephenson, J.; Smith, C.M.; Kearns, B.; Haywood, A.; Bissell, P. The Association between Obesity and Quality of Life: A Retrospective Analysis of a Large-Scale Population-Based Cohort Study. BMC Public Health 2021, 21, 1990, doi:10.1186/s12889-021-12009-8.
26. Jacobsen, A.L.; DeVries, C.E.E.; Poulsen, L.; Mou, D.; Klassen, A.F.; Pusic, A.L.; Makarawung, D.J.S.; Wiezer, M.J.; van Veen, R.N.; Sørensen, J.A. The Impact of Body Mass Index (BMI) on Satisfaction with Work Life: An International BODY-Q Study. Clin Obes 2022, 12, e12527, doi:10.1111/cob.12527.
27. Melamed, O.C.; Selby, P.; Taylor, V.H. Obesity, Mental Health, and Health-Related Quality of Life. In Handbook of Obesity - Volume 1; CRC Press, 2023 ISBN 978-1-00-343767-3.
28. Solomou, S.; Logue, J.; Reilly, S.; Perez-Algorta, G. A Systematic Review of the Association of Diet Quality with the Mental Health of University Students: Implications in Health Education Practice. Health Educ Res 2023, 38, 28–68, doi:10.1093/her/cyac035.
29. Okati-Aliabad, H.; Ansari-Moghaddam, A.; Kargar, S.; Jabbari, N. Prevalence of Obesity and Overweight among Adults in the Middle East Countries from 2000 to 2020: A Systematic Review and Meta-Analysis. J Obes 2022, 2022, 8074837, doi:10.1155/2022/8074837.