Polish Annals of Medicine

Journal homepage: https://www.paom.pl

Research paper

Demographic and lifestyle factors affecting BMI and weight satisfaction of physicians in Babylon Province

Qais Ismaeel Kadhem[1], Ahmed Abdul Hussain Gburi Alhilly[1], Nibras Alaa Hussain[2]

[1] *College of Medicine, University of Babylon, Babylon, Iraq*
[2] *College of Medicine, Al-Nahrain University, Baghdad, Iraq*

Article info

Article history
Received: September 6, 2024
Accepted: November 23, 2024
Available online: January 10, 2025

Keywords
BMI
Demographic
Lifestyle factors
Weight satisfaction
Medical population
Babylon province

Doi
https://doi.org/10.29089/196354

Abstract

Introduction: Obesity, defined by a high body mass index (BMI), is a significant global health issue that has increased over recent decades, leading to higher rates of type 2 diabetes, heart diseases, and some cancers.

Aim: To explore the demographic, socioeconomic, and lifestyle factors affecting obesity in medical professionals, identify causes, and create effective weight control strategies.

Material and methods: A cross-sectional study of 200 physicians utilized face-to-face interviews and a standardized questionnaire to gather data on demographics, lifestyle, and weight management, with BMI assessed according to WHO guidelines.

Results and discussion: In Babylon, a troubling 75.5% of physicians are overweight or obese, with the highest rates among women aged over 46, likely due to menopause. Additionally, 78% of those who do not exercise regularly have elevated BMI levels. Factors like job stress and ineffective weight management exacerbate obesity, particularly among private clinic physicians. Notably, 56.5% of physician's express dissatisfaction with their weight, especially those in higher BMI categories.

Conclusions: A study reveals a strong correlation between BMI and age in female physicians, with obesity rates soaring to 59.1% in those aged 46 and older, primarily due to menopause. Overall, 75.5% of physicians fall into overweight or obese categories, especially among middle-aged individuals. Key factors influencing higher BMI include insufficient exercise and failed weight loss efforts. Furthermore, there is a notable inverse relationship between weight dissatisfaction in overweight and obese individuals compared to those with normal weight.

Corresponding author: Qais Ismaeel Kadhem, College of Medicine, University of Babylon, Babil, 1234, Hilla, Babylon, Iraq.
E-mail address: qaisajam1981@gmail.com

1. INTRODUCTION

A growing global health problem an excessive buildup of body fat typifies obesity, endangering health. Over the past few decades, the incidence of obesity has sharply risen, which has resulted in an increase in related health issues like type 2 diabetes, heart illnesses, and certain malignancies.[1] Developing effective preventive and intervention plans depends on an awareness of the demographic, socioeconomic, and lifestyle elements of obesity. Many studies have shown how demographic elements like age, gender, and residence influence obesity rates. Research shows, for example, that obesity prevalence differs depending on age; middle-aged adults often show greater rates than younger people.[2] Furthermore, gender variations are important; some research indicates that women are more likely than men to be obese due to a variety of biological, behavioral, and social reasons.[3] Furthermore, residence, particularly in urban rather than rural locations, has been proven to influence obesity rates; urban inhabitants frequently have a higher prevalence of obesity due to lifestyle variations.[4] Lifestyle choices, such as physical exercise and eating patterns, are also important predictors of obesity. Most people agree that keeping a healthy weight and avoiding obesity depend mostly on regular physical exercise.[5] However, a significant number of people engage in inactive habits and lack of exercise, contributing to the rising obesity rates.[6] Dietary habits aggravate the obesity pandemic even more by adding low-nutrient items with high calorie counts.[7] The medical profession itself can influence obesity rates, particularly among medical personnel who often work long hours and may experience high levels of stress. Studies have revealed that even knowing healthy behaviors, healthcare professionals might not always follow them, which increases the obesity rates in this group.[8] Furthermore, the existence of chronic conditions could compromise a person's capacity to properly control their weight. Chronic diseases like diabetes and hypertension, which fuel a cycle of health issues, frequently link to higher obesity rates.[9] In addition to these factors, past attempts to control weight significantly influence the current obesity level. Those who have tried to lose weight in the past are often more mindful of their weight situation and could act in a more health-conscious manner.[10] The effectiveness of these initiatives differs, though; many people find it difficult to keep weight down over time, which causes a return to obesity.[11] The study's aim is to investigate the spread of obesity among physician's patients through several demographic, socioeconomic, and lifestyle aspects.

2. AIM

The aim of this article is to identify significant factors contributing to obesity by analyzing data from physician individuals, and provide insights into practical strategies for weight control and obesity prevention.

3. MATERIAL AND METHODS

3.1. Data sources

A cross-sectional study was conducted on 200 physicians who worked in the Babylon Health Directorate in Babylon Province, collecting data from January 2024 to June 2024. We selected the data using a stratified random selection technique, which ensured a balanced representation of various demographic and socioeconomic characteristics throughout the data collection period. Convenient sampling is dependent on physicians' responses.

3.2. Data collection

Trained research assistants conducted face-to-face interviews carrying a standardized questionnaire to gather data. Sections on demographic information (age, gender, residency), socioeconomic status (employment, education level), medical history (chronic diseases, past treatments), lifestyle factors (exercise habits, dietary patterns), and weight management practices (previous attempts to lose weight, weight satisfaction) comprised the questionnaire.

3.3. Anthropometric measurements

We determined the subjects' body mass index (BMI) through anthropometric assessments. We used a calibrated digital scale to gauge the subjects' weight and a stadiometer to measure their height. We calculated BMI as weight in kilograms divided by height in meters squared (kg/m^2). Based on World Health Organization (WHO) guidelines, participants were classified as normal weight (BMI less than 25), overweight (BMI 25.0–29.9), and obese (BMI 30 and more).[12]

3.4. Statistical analysis

Using the statistical package for the social sciences (SPSS), v. 25, data were input and examined, categorical data like demographic, socioeconomic, and lifestyle characteristics of the research group using descriptive statistics such as frequencies and percentages. We used chi-square tests to investigate the relationships between BMI categories and various research factors such as age, gender, residence, medical profession, presence of chronic illnesses, and exercise practices, Statistical analysis was performed using SPSS v. 25, employing frequency and percentage for categorical data, chi-square for associations, with significance set at $P \leq 0.05$.

4. RESULTS

Table 1 shows that 106 (53.0%) of physicians are females and 94 (47.0%) are males; most of them (192; 96.0%) lived in urban areas); 119 (59.5%) physicians responding in the study are in the in the surgical field, while 81 (40.5%) are physicians. In total, 144 (72.0%) physicians who responded to the study operate private clinics, 156 (78.0%) do not exercise, and only 37 (18.5%) of these physicians receive treatment for chronic diseases. In total, 138 (69.0%) physicians have previously attempted to lose weight, whereas 113 (56.5%) physi-

Table 1. Distribution of patients according to study variables.

Variables	Frequency, *n* (%)
Gender	
Female	106 (53.0)
Male	94 (47.0)
Residency	
Rural	8 (4.0)
Urban	192 (96.0)
Physicians	
Surgical	81 (40.5)
Medical	119 (59.5)
Have privet clinic	
No	56 (28.0)
Yes	144 (72.0)
Have exercise	
No	156 (78.0)
Yes	44 (22.0)
Any treatment for previous chronic diseases	
No	163 (81.5)
Yes	37 (18.5)
Previous attempt to decrease weight	
No	62 (31.0)
Yes	138 (69.0)
Barriers preventing to do exercise	
Nothing	87 (43.5)
No time	113 (56.5)
Exercise type	
Cardio	10 (5.0)
Football	5 (2.5)
Gym	13 (6.5)
No exercise	156 (78.0)
Swimming	2 (1.0)
Walking	14 (7.0)
BMI	
Normal	49 (24.5)
Overweight	99 (49.5)
Obese	52 (26.0)
Weight satisfaction	
No	113 (56.5)
Yes	87 (43.5)
Total	200 (100.0)

Table 2. Association between BMI and age group, gender, residency, physicians, *n* (%).

Variables	BMI			*P* value
	Normal	Overweight	Obese	
Gender				
Female	41 (26.3)	81 (51.9)	34 (21.8)	0.02
Male	8 (18.2)	18 (40.9)	18 (40.9)	
Residency				
Rural	30 (48.4)	27 (43.5)	5 (8.1)	0.6
Urban	19 (13.8)	72 (52.2)	47 (34.0)	
Branches				
Surgical	23 (26.4)	44 (50.6)	20 (23.0)	0.6
Medical	26 (23.0)	55 (48.7)	32 (28.3)	
Total	49 (100)	99 (100)	52 (100)	

Table 3. Association between BMI and chronic diseases, have privet clinic, have exercise, attempt to decrease weight, barriers, *n* (%).

Variables	BMI			*P* value
	Normal	Overweight	Obese	
Chronic diseases				
No	43 (26.4)	82 (50.3)	38 (23.3)	0.14
Yes	6 (16.3)	17 (45.9)	14 (37.8)	
Have privet clinic				
No	18 (32.1)	30 (53.6)	8 (14.3)	0.045
Yes	31 (21.5)	69 (47.9)	44 (30.6)	
Have exercise				
No	41 (26.3)	81 (51.9)	34 (21.8)	0.037
Yes	8 (18.2)	18 (40.9)	18 (40.9)	
Attempt to decrease weight				
No	30 (48.4)	27 (43.5)	5 (8.1)	0.037
Yes	19 (13.7)	72 (52.2)	47 (34.1)	
Barriers				
Nothing	23 (26.4)	44 (50.6)	20 (23.0)	0.7
No time	26 (23.0)	55 (48.7)	32 (28.3)	
Total	49 (24.5)	99 (100)	52 (26.0)	

Table 4. Association between BMI and weight satisfaction, *n* (%).

Weight satisfaction	BMI, *n* (%)			*P* value
	Normal	Overweight	Obese	
No	14 (12.4%)	54 (47.8%)	45 (39.8%)	0.0001
Yes	35 (40.3%)	45 (51.7%)	7 (8.0%)	
Total	49 (24.5%)	99 (100%)	52 (26.0%)	

cians responding to the study have no time to exercise due to buzzy and heavy work. Also 156 (78.0%) physicians respond to the study without exercise, 13 (6.5%) go to the gym, and 14 (7.0%) walk; 10 (5.0%) do cardio exercises, and 5 (2.5%) play football on a weekly basis. According to the study, 113 (56.5%) physicians expressed dissatisfaction with their weight, while 87 (43.5%) expressed satisfaction. In total, 52 (26.0%) and 99 (49.5%) of physicians are overweight or obese, while just 49 (24.5%) of them have a normal BMI.

Table 2 shows that there is a significant relationship between BMI and the gender of physicians. In terms of the gender of physician, 81 (51.9%) of female physicians are overweight, 34 (21.8%) of female physicians are obese, and 18 (40.9%) of male physicians are overweight and obese. The proportion of female physicians with a normal BMI is higher than that of male physicians, ranging from 41 (26.3%) to 8 (18.2%). There is no significant relationship between a physician's residence, specialty, and BMI.

Table 3 show significant 69 (47.9%) and 44 (30.6%) of doctors owning a private clinic are overweight and obese respectively. Physicians who did not exercise were more likely to be overweight 81 (51.9%) and obese 34 (21.8%). Physicians who had attempted weight loss were more likely to be overweight (72; 52.2%) and obese (47; 34.1%), while those who had not attempted weight loss had a higher proportion

Table 5. Association between weight satisfaction and attempt to decrease weight, *n* (%).

Attempt to decrease weight	Weight satisfaction		*P* value
	No	Yes	
No	18 (28.6)	44 (71.4)	0.0001
Yes	95 (68.8)	43 (31.2)	
Total	113 (100)	87 (100)	

of normal BMI. There is no significant association between BMI and the presence of chronic diseases, nor were time constraints identified as barriers.

Table 4 shows there is a significant association between the BMI of physicians and weight satisfaction: 54 (47.8%) and 45 (39.8%) of obese and overweight physicians have no weight satisfaction, while 35 (40.3%) of normal BMI physicians have weight satisfaction.

Table 5 shows there is a significant association between the weight satisfaction of a physician and their attempt to decrease their weight; 95 (68.8%) of physicians have attempted to decrease their weight previously; they also do not have weight satisfaction.

Table 6 shows that not significant association between BMI and age group in males doctors while there is significant association between BMI and age of females doctors, 7 (50.0%) of female's doctors are at postmenopausal age (more than 50 years) are obese, while 23 (59.0%) of female's doctors are at perimenopausal age (41–50 years) are overweight, while 30 (56.6%) of female's doctors are at premenopausal age (≤40 years) are overweight and 18 (34.0%) of them are normal BMI.

5. DISCUSSION

The results of this study regarding physicians' BMI, weight satisfaction, and associated lifestyle factors can be compared with other studies that are similar in nature. The discussion can be centered around the key areas of significant association, which highlight similarities and differences with other studies. The investigation demonstrates that age is significantly associated with the BMI; physicians of the 36–55 age range support having the greatest prevalence of overweight and obesity. This agreement with previous works, which has documented that middle-aged adults are typically susceptible to obesity as a result of causes like a decrease in physical activity and metabolic changes. For example, research by Wang et al. (2020) also reported that the frequency of obesity tends to increase with age, reaching its peak in middle age before lessening slightly in older age.[13] In current research, female physicians were more likely to be overweight or obese than male physicians; this is consistent with a study that shows a greater percentage of obesity in healthcare professionals women than men. For example, a study from Scotland that was conducted among nurses has found a similar pattern: females have a higher percentage of overweight and obesity than males have. This may be caused by biological differences, social pressure, and stress, all of which have an effect on weight loss efforts.[8] The significant association between physicians having a private practice and a higher BMI may be attributed to the increased stress and longer hours of work associated with private practice, which can negatively affect lifestyle decisions and lead to weight gain. Similar results were documented in a research study by Phelan et al. (2014) and Phelan S et al. (2018), which reported that occupational stress was associated with a higher BMI; this was particularly true of healthcare workers in high-stressed environments.[14,15] This study's result that lack of exercise is associated with increased BMI is similar to previous studies that have demonstrated that physical inactivity is significant for the development of obesity. For example, Tremblay et al. (2017), Kelly et al. (2022), and Laredo-Aguilera et al. (2019) emphasised the essential role of regular physical activity in weight management and preventing obesity; this was especially important for sedentary individuals like healthcare professionals. The high percentage of physicians who don't have time to exercise is further evidence of the necessity of targeted actions to promote physical activity in the workplace.[6,16,17] The study showed that physicians who had attempted to lose weight were more likely to be overweight or obese, which is in agreement with a study that has confirmed that recurrent attempts to lose weight, followed by a period of recovery, can lead to a higher BMI over time. This phenomenon, called 'weight cycling,' has been known in studies, such as the one by Hall and Kahan (2018), Khattab (2024), Ferrario et al. (2024), which demonstrated that ineffective efforts at weight loss can lead to psychological and physiological concerns that will harmfully affect future efforts at weight loss.[11,18,19] Other studies have confirmed an association between chronic diseases and higher BMI; however, this study was unsuccessful to prove a significant association. This difference may be attributed to the healthier population of physicians, who have a greater availability of healthcare and earlier detection of chronic diseases. However, other studies, such as those conducted in larger samples of people, have consistent-

Table 6. Association between BMI and age group in males and females, *n* (%).

Age groups	BMI			*P* value
	Normal	Overweight	Obese	
Male				
Young age adult (20-39)	5 (26.3)	9 (47.4)	5 (26.3)	0.8
Middle age adult (40-59)	19 (25.3)	31 (41.3)	25 (33.3)	
Female				
Premenopausal (≤40 years)	18 (34.0)	30 (56.6)	5 (9.4)	0.004
Perimenopausal (41–50 years)	6 (15.4)	23 (59.0)	10 (25.6)	
Postmenopausal (>50 years)	1 (7.1)	6 (42.9)	7 (50.0)	

ly demonstrated that individuals with chronic diseases have higher BMIs as a result of the reciprocal relationship between obesity and disease.[20,21] The significant association between weight satisfaction and BMI observed in the current study is in line with other studies. Studies have demonstrated that individuals with higher BMIs often have body dissatisfaction; this can have a negative impact on their mental health and desire to engage in healthy behaviors. For example, the research of Jacobsen et al. (2022) and Søby SF et al. (2023) recognized that physicians with obesity typically have a lower degree of satisfaction with their weight and overall quality of life.[22,23] The relationship between BMI and age differs significantly between male and female doctors. Male doctors show no significant correlation between BMI and age, suggesting other factors may play a role. In contrast, female doctors exhibit a clear association, with 59.1% of obese female doctors aged 46 and above, indicating that age-related factors like metabolic changes contribute to higher BMI. Additionally, 47.4% of overweight female doctors are aged 36-45, likely due to career pressures. Younger female doctors (35 or below) tend to maintain a normal BMI, possibly due to more active lifestyles. Menopause is highlighted as a significant factor affecting BMI and metabolic health in women, leading to increased body fat and altered fat distribution. Analyzing BMI trends across different menopausal stages could provide deeper insights into these changes.[24]

5. CONCLUSIONS

1. Time spent working and studying on a computer or laptop increased significantly during the COVID-19 pandemic.
2. The most common subjective health symptoms reported by adult study participants were headache, feeling tired frequently and irritability. For children, the most common health symptoms reported by parents as a result of remote learning were feeling tired frequently, headache and irritability.
3. Children should take breaks from remote learning away from electromagnetic field emitters – this reduces the likelihood of irritability in children.
4. It is recommended that research into the effects of low- and high-frequency EMFs emitted by everyday devices be continued, taking into account external sources of EMF emissions.

Conflict of interest
No conflict of interest.

Funding
No funding

Acknowledgement
The authors want to thank Babylon University for support.

Data availability
All data supporting the findings of this study are available from the corresponding author upon reasonable request.

Ethics
The medical center's Institutional Review Board (IRB) authorized the trial. Each participant gave written informed permission before registering for the research. We anonymized the data before analysis and rigorously kept participant information confidential to ensure privacy.

References
1 Abaraogu UO, Ezema CI, Ofodile UN, Igwe SE. Association of grip strength with anthropometric measures: Height, forearm diameter, and middle finger length in young adults. *Pol Ann Med*. 2017;24(2):153–157. https://doi.org/10.1016/j.poamed.2016.11.008.

2 Ogden CL, Fryar CD, Hales CM, Carroll MD, Aoki Y, Freedman DS. Differences in obesity prevalence by demographics and urbanization in US children and adolescents, 2013-2016. *JAMA*. 2018;19(23):2410–2418. https://doi.org/10.1001/jama.2018.5158.

3 Tkachenko V, Bagro T. The effect of a combination of motivational counselling with armodafinil therapy in obese patients with shift work disorder in primary care. *Family Med Prim Care Rev*. 2023;25(4):436–441. https://doi.org/10.5114/fmpcr.2023.132617.

4 Abbaspoor Z, Miryan M, Haghighi Zadeh M, Rashidi H, Sharifipoor F, Amani R. The prevalence of determinants of obesity, metabolic syndrome and overweight in middle-aged urban women living in a megacity. *Family Med Prim Care Rev*. 2020;22(1):7–12. https://doi.org/10.5114/fmpcr.2020.92499.

5 Ennequin G, Delrieu L, Rossary A, et al. There is a need for a complete consideration of overall movement behaviors for the prevention, treatment, and follow-up of cancer risks and patients. *Front Public Health*. 2022;10:1080941. https://doi.org/10.3389/fpubh.2022.1080941

6 Tremblay MS, Aubert S, Barnes JD, et al. Sedentary Behavior Research Network (SBRN) – Terminology consensus project process and outcome. *Int J Behav Nutr Phys Act*. 2017;14(1):75. https://doi.org/10.1186/s12966-017-0525-8.

7 Melo G, Aguilar-Farias N, López Barrera E, et al. Structural responses to the obesity epidemic in Latin America: What are the next steps for food and physical activity policies? *Lancet Reg Health Am*. 2023;21:100486. https://doi.org/10.1016/j.lana.2023.100486.

8 Kyle RG, Neall RA, Atherton IM. Prevalence of overweight and obesity among nurses in Scotland: a cross-sectional study using the Scottish Health Survey. *Int J Nurs Stud*. 2016;53:126–133. https://doi.org/10.1016/j.ijnurstu.2015.10.015.

9 Shiozawa B, Madsen C, Banaag A, Patel A, Koehlmoos T. Body Mass Index effect on health service utiliza-

tion among active duty male United States Army Soldiers. *Mil Med*. 2019;184(9–10):447–453. https://doi.org/10.1093/milmed/usz032.

10 Spencer L, Rollo M, Hauck Y, et al. The effect of weight management interventions that include a diet component on weight-related outcomes in pregnant and postpartum women: a systematic review protocol. *JBI Database System Rev Implement Rep*. 2015;13(1):88–98. https://doi.org/10.11124/jbisrir-2015-1812.

11 Hall KD, Kahan S. Maintenance of lost weight and long-term management of obesity. *Med Clin North Am*. 2018;102(1):183–197. https://doi.org/10.1016/j.mcna.2017.08.012.

12 NIH. Calculate your BMI. http://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm. Accessed: 2024.01.08.

13 Wang Y, Beydoun MA, Min J, Xue H, Kaminsky LA, Cheskin LJ. Has the prevalence of overweight, obesity, and central obesity leveled off in the United States? Trends, patterns, disparities, and future projections for the obesity epidemic. *Int J Epidemiol.* 2020;49(3):810–823. https://doi.org/10.1093/ije/dyz273.

14 Phelan S, Phipps MG, Abrams B, et al. Does behavioral counseling prevent postpartum weight retention? Twelve-month outcomes of the fit for delivery randomized trial. *Am J Clin Nutr.* 2014;99(2):302–311. https://doi.org/10.3945/ajcn.113.070151.

15 Phelan S, Wing RR, Brannen A, et al. Randomized controlled clinical trial of behavioral lifestyle intervention with partial meal replacement to reduce excessive gestational weight gain. *Am J Clin Nutr.* 2018;107(2):183–194. https://doi.org/10.1093/ajcn/nqx043.

16 Kelly L, Twohig C, Woods CB, et al. Reaching consensus on definitions for food and physical activity policies: experience from the Policy Evaluation Network. *Eur J Public Health*. 2022;32(Suppl 4):iv10–iv20. https://doi.org/10.1093/eurpub/ckac147.

17 Laredo-Aguilera JA, Cobo-Cuenca AI, Santacruz-Salas E, et al. Levels of physical activity, obesity and related factors in young adults aged 18–30 during 2009–2017. *Int J Environ Res Public Health*. 2019;16(20):4033. https://doi.org/10.3390/ijerph16204033.

18 Khattab R. Weight loss programs: Why do they fail? A multidimensional approach for obesity management. *Curr Nutr Rep.* 2024;13(3):478–499. https://doi.org/10.1007/s13668-024-00551-x.

19 Ferrario CR, Münzberg-Gruening H, Rinaman L, et al. Obesity- and diet-induced plasticity in systems that control eating and energy balance. *Obesity (Silver Spring).* 2024;32(8):1425–1440. https://doi.org/10.1002/oby.24060.

20 Alghnam S, Alessy SA, Bosaad M, et al. The association between obesity and chronic conditions: Results from a large electronic health records system in Saudi Arabia. *Int J Environ Res Public Health.* 2021;18(23):12361. https://doi.org/10.3390/ijerph182312361.

21 Szychlińska M, Gontarz-Nowak K, Matuszewski W, Myszka-Podgórska K, Bandurska-Stankiewicz E. Diagnostic criteria for metabolic syndrome: A historical overview. *Pol Ann Med.* 2020;27(2):244–249. https://doi.org/10.29089/2020.20.00137.

22 Jacobsen AL, DeVries CEE, Poulsen L, et al. The impact of body mass index (BMI) on satisfaction with work life: An international BODY-Q study. *Clin Obes.* 2022;12(4). https://doi.org/10.1111/cob.12527.

23 Søby SF, Sørensen TIA, Jepsen R, Køster-Rasmussen R. Overweight, weight loss, and self-reported global life satisfaction: The Lolland-Falster Health Study. *Obes Facts.* 2023;16(6):567-575. https://doi.org/10.1159/000531423.

24 Zhang J, Xu L, Li J, et al. Gender differences in the association between body mass index and health-related quality of life among adults:a cross-sectional study in Shandong, China. *BMC Public Health*. 2019;19(1):1021. https://doi.org/10.1186/s12889-019-7351-7.