

Exploring the Impact of University Campus Environments on Obesity: A Comprehensive Study Investigating BMI of Students of 3rd Year 6th Semester of KSMU

Научный руководитель – Sheluhina Angelika Nikoleavna

Chow E.¹, Tan S.²

1 - Курский государственный медицинский университет, Пропедевтики внутренних болезней, Kursk, Россия, *E-mail: eugenehomeng@gmail.com*; 2 - Курский государственный медицинский университет, Пропедевтики внутренних болезней, Kursk, Россия, *E-mail: eugene629shum@gmail.com*

Obesity is a medical condition which sometimes consider as a disease in which there is excessive of accumulation of body fat to such an extent that it can potentially have negative effect on the health. Individual are classified as obese when their body mass index (BMI) which is a person's weight divided by the square of the person's height is over 30kg/m² in the range of 25-30kg/m² is defined as overweight. Some East Asian countries use a lower value to calculate obesity. Obesity has individual, socioeconomic, and environmental causes. Some known causes are diet, physical activity, automation, urbanization, genetic susceptibility, medications, mental disorders, economic policies, endocrine disorders, and exposure to endocrine-disrupting chemicals. This article examines the growing problem of obesity among young people and discusses various causes, consequences, and possible interventions. Based on current research and epidemiological studies, the aim is to elucidate the complex elements of genetic, environmental, and behavioural factors that contribute to the increased prevalence of obesity among young people. Additionally, this overview highlights the significant immediate and long-term health consequences associated with obesity in young adults. A synthesis of evidence-based strategies and interventions to alleviate this public health problem will also be discussed. This comprehensive overview serves as a basis for further research and policy development in the field of adolescent health.

References

- 1) Boles, A., Kandimalla, R., & Reddy, P. H. (2017). Dynamics of diabetes and obesity: Epidemiological perspective. *Biochimica et Biophysica Acta (BBA) - Molecular Basis of Disease*, 1863(5), 1026–1036. <https://doi.org/10.1016/j.bbadis.2017.01.016>
- 2) Drewnowski, A., & Almiron-Roig, E. (2010). *Human Perceptions and Preferences for Fat-Rich Foods*. Nih.gov; CRC Press/Taylor & Francis. <https://www.ncbi.nlm.nih.gov/books/NBK53528/>
- 3) Frayling, T. M., Timpson, N. J., Weedon, et. al. (2007). A Common Variant in the FTO Gene Is Associated with Body Mass Index and Predisposes to Childhood and Adult Obesity. *Science*, 316(5826), 889–894. <https://doi.org/10.1126/science.1141634>
- 4) Han, J. C., Muehlbauer, M. J., Cui, H., Newgard, C. B., & Haqq, A. M. (2010). Lower Brain-Derived Neurotrophic Factor in Patients with Prader-Willi Syndrome Compared to Obese and Lean Control Subjects. *Endocrine Reviews*, 31(3), 398–398. <https://doi.org/10.1210/edrv.31.3.9981>
- 5) Hotamisligil, G. S. (2006). Inflammation and metabolic disorders. *Nature*, 444(7121), 860–867. <https://doi.org/10.1038/nature05485>
- 6) Hruby, A., & Hu, F. B. (2015). The Epidemiology of Obesity: A Big Picture. *Pharmacoeconomics*, 33(7), 673–689. ncbi. <https://doi.org/10.1007/s40273-014-0243-x>

- 7) Karnik, S., & Kanekar, A. (2012). Childhood obesity: a global public health crisis. *International Journal of Preventive Medicine*, 3(1), 1–7. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3278864/>
- 8) Locke, A. E., Kahali, B., Berndt, S. I., Justice, A. E., et. al. (2015). Genetic studies of body mass index yield new insights for obesity biology. *Nature*, 518(7538), 197–206. <http://doi.org/10.1038/nature14177>
- 9) Maes, H. H. M., Neale, M. C., & Eaves, L. J. (1997). Genetic and environmental factors in relative body weight and human adiposity. *Behavior Genetics*, 27(4), 325–351. <https://doi.org/10.1023/a:1025635913927>
- 10) NCD Risk Factor Collaboration (NCD-RisC). (2016). Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19.2 million participants. *The Lancet*, 387(10026), 1377–1396. [https://doi.org/10.1016/s0140-6736\(16\)30054-x](https://doi.org/10.1016/s0140-6736(16)30054-x)
- 11) Quiñones-Ossa, G. A., Lobo, C., Garcia-Ballestas, E., Florez, W. A., Moscote-Salazar, L. R., & Agrawal, A. (2021). Obesity and Stroke: Does the Paradox Apply for Stroke? *Neurointervention*, 16(1), 9–19. <https://doi.org/10.5469/neuroint.2020.00108>
- 12) Robinson, E. (2017). Overweight but unseen: a review of the underestimation of weight status and a visual normalization theory. *Obesity Reviews*, 18(10), 1200–1209. <https://doi.org/10.1111/obr.12570>
- 13) Rosenfeld, N., Young, J. W., Alon, U., Swain, P. S., & Elowitz, M. B. (2005). Gene Regulation at the Single-Cell Level. *Science*, 307(5717), 1962–1965. <https://doi.org/10.1126/science.1106914>
- 14) Shoelson, S. E. (2006). Inflammation and insulin resistance. *Journal of Clinical Investigation*, 116(7), 1793–1801. <https://doi.org/10.1172/jci29069>
- 15) Swinburn, B. A., Sacks, G., Hall, K. D., McPherson, K., Finegood, D. T., Moodie, M. L., & Gortmaker, S. L. (2011). The Global Obesity pandemic: Shaped by Global Drivers and Local Environments. *The Lancet*, 378(9793), 804–814. [https://doi.org/10.1016/s0140-6736\(11\)60813-1](https://doi.org/10.1016/s0140-6736(11)60813-1)
- 16) Wang, Y. C., McPherson, K., Marsh, T., Gortmaker, S. L., & Brown, M. (2011). Health and economic burden of the projected obesity trends in the USA and the UK. *The Lancet*, 378(9793), 815–825. [https://doi.org/10.1016/s0140-6736\(11\)60814-3](https://doi.org/10.1016/s0140-6736(11)60814-3)
- 17) Wareham, N. J., Young, E. H., & Loos, R. J. F. (2008). Epidemiological Study Designs to Investigate Gene–Behavior Interactions in the Context of Human Obesity. *Obesity*, 16, S66–S71. <https://doi.org/10.1038/oby.2008.521>
- 18) Whitaker, R. C., Wright, J. A., Pepe, M. S., Seidel, K. D., & Dietz, W. H. (1997). Predicting Obesity in Young Adulthood from Childhood and Parental Obesity. *New England Journal of Medicine*, 337(13), 869–873. <https://doi.org/10.1056/nejm199709253371301>
- 19) Wondmkun, Y. T. (2020). Obesity, insulin resistance, and type 2 diabetes: Associations and therapeutic implications. *Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy*, Volume 13(13), 3611–3616. <https://doi.org/10.2147/dmso.s275898>
- 20) World Health Organization. (2021, June 9). Obesity and overweight. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>

- 21) Yang, X., Telama, R., Hirvensalo, M., Viikari, J. S. A., & Raitakari, O. T. (2009). Sustained participation in youth sport decreases metabolic syndrome in adulthood. *International Journal of Obesity*, 33(11), 1219–1226. <https://doi.org/10.1038/ijo.2009.171>

Illustrations

Sex	Weight (kg)	Height (m)	BMI
Group 21			
M	59	1.63	22.2063307
M	69	1.68	24.4472789
M	67	1.67	24.0238087
F	49	1.5	21.7777778
F	53	1.52	22.9397507
F	46	1.53	19.6505617
M	65	1.65	23.8751148
F	53	1.7	18.3391003
F	49	1.58	19.6282647

Рис. : BMI of Group 21

Sex	Weight (kg)	Height (m)	BMI
Group 22			
M	73	1.81	22.2825921
F	50	1.66	18.1448686
F	47	1.6	18.359375
M	69	1.76	22.2753099
F	67	1.69	23.4585624
M	79	1.81	24.114038
M	61	1.8	18.8271605
M	54	1.65	19.8347107
M	70	1.7	24.2214533
M	70	1.67	25.0995016
M	81	1.81	24.72452
M	80	1.78	25.2493372
M	78	1.68	27.6360544

Рис. : BMI of Group 22

Sex	Weight (kg)	Height (m)	BMI
Group 23			
M	79	1.76	25.5036157
F	60	1.58	24.0346098
M	76	1.77	24.2586741
M	93	1.79	29.0253113
M	53	1.73	17.708577
F	68	1.75	22.2040816
F	65	1.72	21.9713359
M	85	1.7	29.4117647
M	82	1.72	27.7176852

Рис. : BMI of Group 23

Sex	Weight (kg)	Height (m)	BMI
Group 24			
F	57	1.6	22.265625
F	68	1.65	24.9770432
F	51	1.6	19.921875
M	53	1.75	17.3061224
M	67	1.83	20.0065693
M	64	1.75	20.8979592
F	74	1.64	27.5133849
F	69	1.67	24.7409373

Рис. : BMI of Group 24

Sex	Weight (kg)	Height (m)	BMI
Group 25			
M	60	1.65	22.0385675
F	38	1.46	17.8269844
F	45	1.51	19.7359765
F	69	1.75	22.5306122
M	60	1.55	24.9739854
F	45	1.52	19.4771468
F	53	1.65	19.4674013
F	42	1.64	15.6157049
F	69	1.55	28.7200832
M	90	1.68	31.8877551

Рис. : BMI of Group 25

Sex	Weight (kg)	Height (m)	BMI
Group 26			
M	73	1.8	22.5308642
M	55	1.81	16.7882543
M	52	1.64	19.3337299
M	80	1.76	25.8264463
F	61	1.63	22.9590877
M	55	1.58	22.0317257
M	52	1.64	19.3337299
M	100	1.65	36.7309458
F	58	1.6	22.65625
F	87	1.6	33.984375
F	70	1.55	29.1363163

Рис. : BMI of Group 26

Sex	Weight (kg)	Height (m)	BMI
Group 27			
F	67	1.55	27.8876171
F	82	1.71	28.0428166
M	77	1.7	26.6435986
F	82	1.7	28.3737024
M	42	1.6	16.40625
F	59	1.58	23.634033
M	73	1.82	22.0384012
M	65	1.7	22.4913495
M	86	1.8	26.5432099
F	74	1.7	25.6055363
M	60	1.7	20.7612457

Рис. : BMI of Group 27

Sex	Weight (kg)	Height (m)	BMI
Group 28			
M	70	1.71	23.9389898
F	74	1.74	24.4418021
F	68	1.57	27.5873261
F	78	1.76	25.1807851
F	48	1.59	18.9865907
F	91	1.67	32.6293521
M	69	1.73	23.0545625

Рис. : BMI of Group 28

Sex	Weight (kg)	Height (m)	BMI
Group 29			
M	89	1.72	30.0838291
M	65	1.78	20.5150865
M	67	1.78	21.1463199
F	62	1.63	23.3354661
F	50	1.54	21.0828133
F	43	1.55	17.8980229
F	50	1.52	21.6412742
F	50	1.68	17.7154195
F	58	1.67	20.7967299
F	70	1.57	28.398718

Рис. : BMI of Group 29

Group	No. of students	Average BMI
21	9	21.87
22	13	22.63
23	9	22.05
24	8	22.20
25	10	22.22
26	11	24.67
27	11	24.40
28	7	25.12
29	10	22.26
Total	88	23.05

Рис. : Average BMI of 3rd Year 6th Semester Students of KSMU