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11

OUTLOOK 2025

OVERWEIGHT AND OBESITY STIGMA WITHIN THE SAUDI COMMUNITY: WHAT DOES 'SENTIMENT ANALYSIS' TECHNIQUE TELL US?

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CITATION: El Kheir, D.Y.M., Alghamdi, R.J., Badoghaish, R.A., AlMurtadha, Y. and Elfaki, A.O. (2025): Overweight and Obesity Stigma within the Saudi Community: what does 'Sentiment Analysis' Technique tell us? In Ahmed, A. (Ed.): *United Nations: What Next After 2030 Agenda and SDGs.* World Sustainable Development Outlook 2025, Vol. 21, pp.167-180. WASD: London, United Kingdom.

RECEIVED: 14 October 2025 / **REVISED:** 29 October 2025 / **ACCEPTED:** 17 December 2025 / **PUBLISHED:** 30 December 2025

DOI: 10.47556/B.OUTLOOK2025.23.12

ABSTRACT

PURPOSE: This study examines public sentiment in Saudi Arabia towards overweight and obesity, focusing on the impact of the COVID-19 pandemic. It explores how social media discourse reinforces weight stigma and affects public perception and behaviour.

DESIGN/METHODOLOGY/APPROACH: Using Twitter API v2, Arabic-language posts geolocated to Saudi Arabia were collected and filtered by relevant keywords. Sentiment analysis was performed using natural language processing and machine learning.

FINDINGS: Over 96% of tweets referencing overweight and obesity expressed negative sentiment. Posts linking these terms to COVID-19 or weight gain were similarly unfavourable. Digital stigma may undermine health outcomes and compliance.

ORIGINALITY/VALUE: The study shows how Artificial Intelligence (AI)-driven sentiment analysis can expose real-time health biases to inform stigma-sensitive policy.

RESEARCH LIMITATIONS/IMPLICATIONS: Dialectal variation and linguistic complexity may affect sentiment detection, although dataset size ensured robust classification.

PRACTICAL IMPLICATIONS: Sentiment analysis supports health surveillance by identifying stigmatising narratives and guiding culturally responsive interventions.

KEYWORDS: *Sentiment Analysis; Artificial Intelligence Model (AI); Natural Language Processing; Social Media; Twitter; Obesity; Overweight; COVID-19.*

INTRODUCTION

Overweight and obesity are complex medical conditions that pose a significant problem to public health. As of 2019, the prevalence of overweight and obese adults was reported to be 38% and 20% respectively (Althumiri *et al.*, 2021b), and these rates are projected to continue rising significantly. The role of social media in shaping adolescents' body image, dietary behaviours, and nutritional literacy has increasingly been recognised as a critical public health concern (Ruiz *et al.*, 2022).

Weight stigma is defined as prejudiced, stereotypical, and discriminatory attitudes and behaviours against people who are overweight and/or obese; these are frequently fuelled by false assumptions about the causes of these conditions (Westbury *et al.*, 2023). A study done by Althumiri *et al.* (2021a) found that the prevalence of weight stigma in Saudi Arabia is relatively high; 46.4% of individuals aged 20-29 experienced the highest rate of weight stigma. Several research papers exploring weight stigma in Saudi Arabia have been published; however, the data collection methods used, such as online questionnaires and phone interviews, might introduce some bias and/or inadequate sampling. Therefore, this current research aims to utilise Artificial Intelligence (AI), machine and deep learning, and language processing tools to study the Saudi population's behaviour and sentiment towards overweight and obesity and the stigma surrounding it. Our goal is to lower socially desirable responding, defined as people's tendency to cover up unpleasant social aspects and support narratives that present them in a positive light (Hommel, 2023).

 DOI: 10.47556/B.OUTLOOK2025.23.12

Response bias has been frequently seen in traditional research data collection methods such as questionnaires and surveys; as a solution, social desirability scales can be used to detect and reduce bias. A paper by Thea van de Mortel (2008) showed that 43% of studies that used social desirability scales were influenced by socially desirable responses. In order to address this problem, we developed a sentiment analysis model that aimed to categorise public social media posts that portray the Saudi public's opinion into positive and/or negative tones.

Materials and Methods

Using natural language processing (NLP) techniques, a sentiment analysis model classifies thoughts on ideas, products, and services and helps collect data for study by identifying the emotional tone behind the text. This methodology mines text for sentiment and subjective information using data mining, machine learning, AI, and computational linguistics (Alqarni *et al.*, 2018; Khan and Srivastava, 2024). Table 1 shows the search string (key words) that has been used in this research and the purpose of each keyword. Three steps were followed to implement the sentiment analysis:

Table 1: Search String

Key word in Arabic	*English Translation*	*Purpose*
السمنة	Obesity	To identify posts discussing excessive weight gain
زيادة الوزن	Overweight	To identify posts discussing any amount of weight gain
السمنة وكرونا	Obesity and Corona	For posts discussing the impact of obesity on getting infected with the corona virus during the pandemic and chances of health complications
زيادة الوزن وكرونا	Weight gain and Corona	For all posts discussing the effect of COVID-19 on weight gain and vice-versa
السكري	Diabetes	To catch all posts mentioning weight gain and its perceived health complications, chronic diseases such as diabetes.

Source: Constructed by authors

Step 1

The first step collected the tweets (posts) that contain the target keywords using the SM platform Twitter Application Programming Interface (API) v2 and Python software. In this step, latitude and longitude were defined to limit the search to Saudi Arabia. We have used

DOI: 10.47556/B.OUTLOOK2025.23.12

the GET tweets Python library to extract public tweets data within the defined latitude and longitude. The extracted tweets were produced as records and each record consisted of {date, account name, to-user, source (device), text, language, re-tweet count}.

Step 2

After collecting the required tweets from Step 1, the sentiment analysis for these tweets was implemented: the sentiment analysis was implemented on the text field of the extracted record. The following procedure was used to implement the sentiment analysis:

1. tokenising the text, meaning that only words were extracted from tweet texts;
2. removing Arabic stop words, such as "نم" which means "from";
3. stemming the words, meaning returning words to their original roots according to Arabic grammar;
4. counting the number of positive and negative stem words in each tweet text by comparing it to predefined Python lists that contain positive and negative words. The tweet will recognise as positive if the number of positive words is greater than the number of negative words and vice versa. Table 2 shows the number of collected tweets for each keyword with the results of the sentiment analysis;
5. validation of the acquired results: this step aimed to prove the correctness and acceptability of the acquired results by defining its accuracy. Accuracy is defined by calculating precision and recall. Tables 3, 4, 5, 6 and 7 present the classification performance for each keyword used, including precision, recall and overall accuracy values. The following equations are used to calculate precision and recall:

$$Precision = TP/(TP+FP) \quad (1)$$

$$Recall = TP/(TP+FN) \quad (2)$$

$$Accuracy = TP+TN/(TP+TN+FP+FN) \quad (3)$$

Where:

TP= True positive

FP = False positive

TN =True negative

FN= False negative

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Table 2: Number of Collected Tweets for Each Keyword with the Results of Sentiment Analysis

Search Keyword	*Number of Collected Tweets*	*Defined False (=negative)*	*Defined True (=positive)*
Obesity	521	501	20
Overweight	1,299	1,271	28
Obesity and Corona	25	25	0
Weight gain and Corona	200	199	1
Diabetes	2,984	2,921	63

Source: Adapted from authors' analysis of Arabic-language Twitter data via Twitter API v2

Table 3: Accuracy for Obesity

	False positive	*True positive*	*Class precision*	*Accuracy for Obesity*
pred. negative	491	10	98.00%	97.70%
pred. positive	2	18	90.00%	
class recall	99.59%	64.29%		

Source: Adapted from authors' analysis of Arabic-language Twitter data via Twitter API v2

Table 4: Accuracy for Overweight

	False positive	*True positive*	*Class precision*	*Accuracy for Obesity*
pred. negative	1,271	0	100.00%	99.85%
pred. positive	2	26	92.86%	
class recall	99.84%	100.00%		

Source: Adapted from authors' analysis of Arabic-language Twitter data via Twitter API v2

Table 5: Accuracy for Obesity and Corona

	False positive	*True positive*	*Class precision*	*Accuracy for Obesity and Corona*
pred. negative	25	0	100.00%	100%
pred. positive	0	0	0.00%	
class recall	100.00%	0.00%		

Source: Adapted from authors' analysis of Arabic-language Twitter data via Twitter API v2.

Table 6: Accuracy for Weight gain and Corona

	False positive	*True positive*	*Class precision*	*Accuracy for Weight gain and Corona*
pred. negative	199	0	100.00%	100%
pred. positive	0	1	100.00%	
class recall	100.00%	100.00%		

Source: Adapted from authors' analysis of Arabic-language Twitter data via Twitter API v2

DOI: 10.47556/B.OUTLOOK2025.23.12

Table 7: Accuracy for Diabetes

	False positive	*True positive*	*Class precision*	*Accuracy for Weight gain and Corona*
pred. negative	2,906	15	99.49%	99.16%
pred. positive	10	53	84.13%	
class recall	99.66%	77.94%		

Source: Adapted from authors' analysis of Arabic-language Twitter data via Twitter API v2

Step 3

After collecting tweets using the search word, and then determining that each tweet's content is positive or negative, a deep learning technique was used to check the correctness of these sentiment definitions. The collected tweets were divided into two groups, training set and testing set, where the training set was used to develop the classifier model and the testing set was used to tune the classifier model. Figure 1 shows the framework of this research.

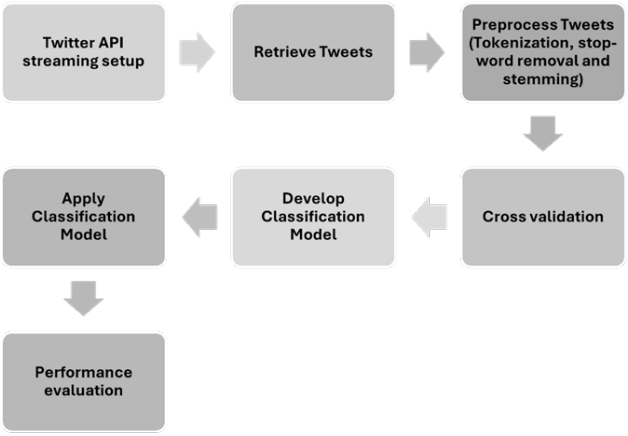

Figure 1: Framework of Research

Source: Constructed by authors

The following section explains each step in the research framework in detail.

Twitter API streaming setup: In this step, we gained permission to use the Twitter streaming Application Programming Interface (API) to collect tweets by searching specific keywords; API is a software tool that allows the connection between two pieces of software. Twitter API allows you to write a software code in any programming language and use Twitter API to connect your code with Twitter. Streaming Twitter API allows the collection of the current tweets according to your parameters, i.e., based on your search keywords, and location dimensions.

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Retrieved Tweets: In this step, the target tweets were collected.

Pre-process Tweets: In this step, tokenisation, stop-word removal, and stemming were applied to prepare the tweet for the sentiment analysis process.

Cross Validation: In this step, tweets were labelled as negative or positive based on comparison results with lists of predefined and auto-updated negative and positive keywords.

Develop Classification Model: In this step: the classification model was developed by dividing the sum of tweets into two sets, training and testing sets. This classification was developed based on deep learning techniques

Apply Classification Model: In this step, the classifier checked all the tweets' labels to define correctness. A new label was added to each tweet. If the label was true then the model checked if it was true true, or false true. If the label was false then the model checked if it was true false, or false false.

Performance Evaluation: In this step, the accuracy was calculated as mentioned previously.

$$Precision = TP/(TP+FP) \quad (4)$$

$$10/(10+491) = 1.99 \quad (5)$$

$$Recall = TP/(TP+FN) \quad (6)$$

$$10/(10+18) \quad (7)$$

FN== pred positive with true positive

Results

Our data show that 501 out of 521 tweets referencing obesity and 1,271 out of 1,299 tweets describing overweight were negatively toned. There were 25 tweets about obesity and Corona that were all unfavourable. All but one of the tweets that mentioned Corona and weight gain had a negative tone. Finally, 2,921 out of 2,984 tweets that mentioned diabetes did so in a negative manner (Table 2).

Almost all tweets discussing overweight and obesity, 97.84% and 96.15% respectively, were negative. In addition, all tweets discussing obesity and COVID were unfavourable, as shown in the analysis findings. In addition, 99.5% of tweets about gaining weight and COVID-19 were unfavourable (Table 2).

Furthermore, 97.88% of tweets that discussed the topic of diabetes were found to be negative in our study, probably highlighting the public's perception of diabetes as a chronic disease complication of weight gain (Table 2).

DOI: 10.47556/B.OUTLOOK2025.23.12

Discussion

The purpose of this paper was to investigate the sentiments and attitudes of Saudi citizens regarding overweight and obesity, as well as the stigma associated with these conditions. Artificial intelligence, machine and deep learning, and language processing tools were used to conduct a sentiment analysis of related, public, social media posts. Sentiment analysis models aim to assess people's sentiments and opinions from texts and posts available on various platforms such as social media (Zucco *et al.*, 2020). This can be applied in various sectors including healthcare. Numerous disorganised free texts on social media platforms, concerning healthcare services, can be analysed and utilised as feedback to enhance patient's experience and the quality of services provided within the healthcare system.

Researchers in England used sentiment analysis to predict what people felt about their hospital visit and compared it to the patients' quantitative rating of their care; they found that there was a strong agreement between the two assessment modalities (Greaves *et al.*, 2013). This work demonstrates that sentiment analysis models may provide a sustainable, cost-effective, and time-efficient method for understanding patients' thoughts and feelings regarding healthcare related issues.

As evidenced by our findings, 97.8% and 96.2% of tweets discussing overweight and obesity, respectively, were negative; this feeds unfavourable preconceptions and contributes to the creation of stigma towards weight gain. Our results are consistent with previous research measuring the perceived weight stigma in Saudi Arabia that revealed that weight stigma is highly prevalent (Albalawi *et al.*, 2023). This, in turn, may have detrimental psychological effects on obese individuals (Albalawi *et al.*, 2023). A cross-sectional study by Almoayad *et al.* (2023), assessing the stigmatisation of obese people through using traditional self-administered questionnaires, found a significant association between the stigmatisation of obesity and perceived controllability of weight gain. Research exploring this aspect of controllability of weight gain theorises that stigma associated with obesity results from attributing unfavourable outcomes to people's decisions, according to which people are seen as deserving of their situations because they are responsible for their own lives (Crandall, 1994; Crandall and Schiffhauer, 1998).

There is still need for further research into the correlates and causes of weight stigma among the Saudi population. As shown in our analysis, nearly all tweets discussing obesity and COVID were unfavourable. Obesity has been identified as a significant risk factor for many diseases, most recently, COVID-19. As multiple studies have shown (e.g., AlKhafaji *et al.*, 2022; Nakeshbandi *et al.*, 2020), obese individuals were more prone to adverse COVID-19 complications such as acute respiratory distress, multi-organ failure, a higher rate of mortality and need for invasive ventilation. By decreasing the stigma surrounding obesity, an increase in the rate of weight loss is expected, thus reducing the likelihood

DOI: 10.47556/B.OUTLOOK2025.23.12

of adverse outcomes of COVID-19 and other obesity related illnesses, including chronic conditions such as diabetes. Diabetes was also found to be negatively perceived among the general Saudi public, as evidenced by our finding of 98% negatively toned diabetes related social media posts.

Due to the COVID-19 lockdown, many people lost access to sports centres and walking trails; the worry of being pushed into a sedentary lifestyle may be the reason why we found that 99.5% of the posts discussing gaining weight and COVID-19 were unfavourable. Although it is not clear whether the COVID-19 pandemic increased the stigma against overweight individuals, studies have shown that the COVID-19 pandemic and consequent quarantine period contributed to an increase in media and scientific coverage of obesity and COVID-19 (de Macêdo *et al.*, 2022).

Many social media posts during the COVID-19 pandemic conveyed immense fear of gaining weight (Pearl, 2020). An example of such posts, labelled under "quarantine-15", emerged across social media platforms expressing fear of gaining weight and concerns about vulnerability to overeating (Pearl, 2020). Such stigmatising posts further promote the notion that weight is controllable and that people with obesity are indolent and are choosing an unhealthy lifestyle. These posts and fears are believed to have contributed negatively to weight discrimination that manifested as poorer COVID-19 outcomes, difficulty receiving healthcare, and unhealthy eating habits among affected individuals (de Macêdo *et al.*, 2022). To make matters even worse, it was observed that patients with obesity were in fact avoiding or delaying seeking medical care due to prior encounters with weight discrimination in the healthcare system (Dicker *et al.*, 2020).

The recent findings of a multi-centre study, performed in multiple countries in 2020, revealed that among people who claimed to have experienced stigma in the past, two-thirds of them reported that it was experienced from doctors (Puhl *et al.*, 2021). It is critical for all facets of society to combat the stigma associated with obesity seen online, but it is especially crucial for healthcare professionals to guarantee that obese patients receive appropriate, equal care unaffected by weight prejudice (Westbury *et al.*, 2023). Our study has much strength and some limitations.

Although our search key terms were chosen after careful deliberation and filtration process of relevant keywords, the Arabic language has many synonyms for both obesity and COVID-19, and this may have hampered our ability to find even more relevant social media posts. However, this limitation did not seem to have affected our results greatly, as we were still able to detect a large number of posts, using the current key terms, to enable proper model training and obtain reliable results.

Another possible limitation of our study could be the fact that Arabic is a sophisticated and complex language, and regional dialects in Saudi Arabia vary tremendously. Also, Arabic words can have a variety of meanings, and this may affect how individuals express

DOI: 10.47556/B.OUTLOOK2025.23.12

themselves and how their words and tones are perceived by their audience. Consequently, a system based on artificial intelligence might not be able to understand the exact meaning of these words, or any under-tones of such statements and posts made using the Arabic language. Nevertheless, we believe that the current results are robust enough and would pave the way for further research into the utility of sentiment analysis into complex and vital societal issues such as weight stigma.

Through harnessing the power of artificial intelligence and machine learning, and by utilising sentiment analysis, healthcare systems can actively, and timely, gauge the public's opinion. This would in turn enable implementation of targeted preventive measures that encourage healthier lifestyles and lessen the burden of obesity-related medical complications. Such pro-active measures would reduce the need for complex treatments and expensive interventions in the future.

CONCLUSIONS

Contrary to common belief, stigmatisation and discrimination against overweight and obese people are not justifiable and do not motivate them to lose weight; instead, this behaviour complicates matters (Puhl and Heuer, 2010). Schroeder and Wang (2025) conducted an online experiment with US participants (N = 501) where they examined the effects of stigmatising language in healthcare interactions. Results revealed that provider-initiated weight-related stigmatisation heightened patients' self-stigma without enhancing their motivation to lose weight, thereby undermining the intended outcome of such conversations (Schroeder and Wang, 2025). Hendy *et al.* (2025) found that weight stigma, more than BMI, predicts emotional distress among Egyptian youth, highlighting the need for interventions against weight-based discrimination (Hendy *et al.*, 2025).

Multiple studies have shown that stigma surrounding obesity increases the risk of obesity and may be correlated with challenges with weight loss, non-compliance with medications, and withdrawal from sports and exercise environments (Vartanian and Smyth, 2013). As stigma is a feeling and an emotion, it is important to find reliable means of assessing it. Sentiment analysis offers a relatively easy solution by collecting and analysing the "tone" of large amounts of data, in real-time. The data utilised in a sentiment analysis model portray a "free and un-censored" representation of the status quo of stigma among the target population. This, in turn, lends itself to better planning, monitoring and evaluation of prevention programmes combating weight stigma; a crucial step in the management of the current day epidemic of overweight, obesity and its detrimental health consequences on all ages and sectors of the population.

DOI: 10.47556/B.OUTLOOK2025.23.12

REFERENCES

Albalawi, W.F., Albaraki, J., Alharbi, S., Ababtain, N., Aloteibi, R.E., Alsudais, A.S., Jamjoom, J. and Alaqeel, M. (2023): Distribution of perceived weight stigma and its psychological impact on obese people in Saudi Arabia. *Saudi Pharmaceutical Journal*, Vol. 31, No. 10, p.101763. Available at: https://doi.org/10.1016/j.jsps.2023.101763

AlKhafaji, D., Al Argan, R., Albahrani, S., Al Elq, A., Albaker, W., Al-Hariri, M., Alwaheed, A., Alqatari, S., Alzaki, A., Alsaid, A., Alwazzeh, M., AlRubaish, F., Alelq, Z., Alsaif, T., Zeeshan, M., Alzahrani, N., Alhusil, A., Gasmelseed, B., Zainuddin, F., Alhwiesh, A. and Alrubaish, N. (2022): The impact of obesity on hospitalized patients with COVID-19 infection in the Eastern Province of Saudi Arabia. *Journal of Medicine and Life*, Vol. 15, No. 3, pp.425-432. Available at: https://doi.org/10.25122/jml-2022-0033

Almoayad, F., Felemban, N., Alshlhoub, S.A., Alqabbani, S.H., Al-Muammar, M.N. and Benajiba, N. (2023): Stigmatisation of Obesity and its Relation to the Perception of Controllability in Riyadh, Saudi Arabia: A cross-sectional study. *Sultan Qaboos University Medical Journal*, Vol. 23, No. 3, pp.320-327. Available at: https://doi.org/10.18295/squmj.12.2022.068

Alqarni, H.A., AlMurtadha, Y. and Elfaki, A.O. (2018): A Twitter Sentiment Analysis Model for Measuring Security and Educational Challenges: A Case Study in Saudi Arabia. *Journal of Computer Science*, Vol. 14, No. 3, pp.360-367. Available at: https://doi.org/10.3844/jcssp.2018.360.367

Althumiri, N.A., Basyouni, M.H., AlMousa, N., AlJuwaysim, M.F., Alhamdan, A.A., Al-Qahtani, F.S., BinDhim, N.F. and Alqahtani, S.A. (2021a): Exploring Weight Stigma in Saudi Arabia: A Nationwide Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, Vol. 18, No. 17, p.9141. Available at: https://doi.org/10.3390/ijerph18179141

Althumiri, N.A., Basyouni, M.H., AlMousa, N., AlJuwaysim, M.F., Almubark, R.A., BinDhim, N.F., Alkhamaali, Z. and Alqahtani, S.A. (2021b): Obesity in Saudi Arabia in 2020: Prevalence, Distribution, and Its Current Association with Various Health Conditions. *Healthcare*, Vol. 9, No. 3, p.311. Available at: https://doi.org/10.3390/healthcare9030311

Crandall, C.S. (1994): Prejudice against fat people: ideology and self-interest. *Journal of Personality and Social Psychology*, Vol. 66, No. 5, pp.882-894. Available at: https://doi.org/10.1037//0022-3514.66.5.882

Crandall, C.S. and Schiffhauer, K.L. (1998): Anti-fat prejudice: beliefs, values, and American culture. *Obesity Research*, Vol. 6, No. 6, pp.458-460. Available at: https://doi.org/10.1002/j.1550-8528.1998.tb00378.x

DOI: 10.47556/B.OUTLOOK2025.23.12

de Macêdo, P.F.C., Nepomuceno, C.M.M., dos Santos, N.S., Queiroz, V.A. de O., Pereira, E.M., Leal, L. da C., Santos, L.A. da S., Nascimento, L.F., Martins, P.C. and de Santana, M.L.P. (2022): Weight stigma in the COVID-19 pandemic: a scoping review. *Journal of Eating Disorders*, Vol. 10, No. 1, p.44. Available at: https://doi.org/10.1186/s40337-022-00563-4

Dicker, D., Bettini, S., Farpour-Lambert, N., Frühbeck, G., Golan, R., Goossens, G., Halford, J., O'Malley, G., Mullerova, D., Ramos Salas, X., Hassapiou, M.N., Sagen, J., Woodward, E., Yumuk, V. and Busetto, L. (2020): Obesity and COVID-19: The Two Sides of the Coin. *Obesity Facts*, Vol. 13, No. 4, pp.430-438. Available at: https://doi.org/10.1159/000510005

Greaves, F., Ramirez-Cano, D., Millett, C., Darzi, A. and Donaldson, L. (2013): Use of Sentiment Analysis for Capturing Patient Experience From Free-Text Comments Posted Online. *Journal of Medical Internet Research*, Vol. 15, No. 11, p.e239. Available at: https://doi.org/10.2196/jmir.2721

Hendy, A., Soliman, S.M., Tantawi, H., Salman, S., Ibrahim, R.K., Hendy, A., Fattah, H.A.A., Al-Mugheed, K., Sayed, S., Alabdullah, A.A.S., Abdelaliem, S.M.F. and Zaher, A. (2025): The weight of words: investigating the role of weight stigma and body mass index in shaping children and youth's emotional experiences. *Journal of Eating Disorders*, Vol. 13, No. 1, p.73. Available at: https://doi.org/10.1186/s40337-025-01248-4

Hommel, B.E. (2023): Expanding the methodological toolbox: Machine-based item desirability ratings as an alternative to human-based ratings. *Personality and Individual Differences*, Vol. 213, p.112307. Available at: https://doi.org/10.1016/j.paid.2023.112307

Khan, M. and Srivastava, A. (2024): A Review on Sentiment Analysis of Twitter Data Using Machine Learning Techniques. *International Journal of Engineering and Management Research*, Vol. 14, No. 1, pp.186-195. Available at: https://doi.org/10.5281/zenodo.10791471

Nakeshbandi, M., Maini, R., Daniel, P., Rosengarten, S., Parmar, P., Wilson, C., Kim, J.M., Oommen, A., Mecklenburg, M., Salvani, J., Joseph, M.A. and Breitman, I. (2020): The impact of obesity on COVID-19 complications: a retrospective cohort study. *International Journal of Obesity*, Vol. 44, No. 9, pp.1832-1837. Available at: https://doi.org/10.1038/s41366-020-0648-x

Pearl, R.L. (2020): Weight Stigma and the "Quarantine-15". *Obesity (Silver Spring)*, Vol. 28, No., 7, pp.1180-1181. Available at: https://doi.org/10.1002/oby.22850

Puhl, R.M. and Heuer, C.A. (2010): Obesity stigma: important considerations for public health. *American Journal of Public Health*, Vol. 100, No. 6, pp.1019-1028. Available at: https://doi.org/10.2105/AJPH.2009.159491

 DOI: 10.47556/B.OUTLOOK2025.23.12

Puhl, R.M., Lessard, L.M., Himmelstein, M.S. and Foster, G.D. (2021): The roles of experienced and internalized weight stigma in healthcare experiences: Perspectives of adults engaged in weight management across six countries. *PloSOne*, Vol. 16, No. 6, p.e0251566. Available at: https://doi.org/10.1371/journal.pone.0251566

Ruiz, R.M., Alfonso-Fuertes, I. and Vives, S.G. (2022): Impact of social media on self-esteem and body image among young adults. *European Psychiatry*, Vol. 65, pp.S585-S585. Available at: https://doi.org/10.1192/j.eurpsy.2022.1499

Schroeder, M. and Wang, N. (2025): What it Means to Call Your Patient Obese: The Impact of Communicating Weight Stigma in Patient-Provider Conversations. *Health Communication*, pp.1-10. Available at: https://doi.org/10.1080/10410236.2025.2470331

van de Mortel, T.F. (2008): Faking It: Social Desirability Response Bias in Self-report Research. *Australian Journal of Advanced Nursing*, Vol. 25, No. 4, pp.40-48.

Vartanian, L.R. and Smyth, J.M. (2013): Primum non nocere: obesity stigma and public health. *Journal of Bioethical Inquiry*, Vol. 10, No. 1, pp.49-57. Available at: https://doi.org/10.1007/s11673-012-9412-9

Westbury, S., Oyebode, O., van Rens, T. and Barber, T.M. (2023): Obesity Stigma: Causes, Consequences, and Potential Solutions. *Current Obesity Reports*, Vol. 12, No. 1, pp.10-23. Available at: https://doi.org/10.1007/s13679-023-00495-3

Zucco, C., Calabrese, B., Agapito, G., Guzzi, P.H. and Cannataro, M. (2020): Sentiment analysis for mining texts and social networks data: Methods and tools. *WIREs Data Mining and Knowledge Discovery*, Vol. 10, No. 1, p.e1333. Available at: https://doi.org/10.1002/widm.1333

BIOGRAPHY

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DOI: 10.47556/B.OUTLOOK2025.23.12

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