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Adolescence perceptions of using GLP-1 receptor agonist for weight management

Abstract

GLP-1 receptor agonists, such as Zepbound and Wegovy, have become popular and effective medications for weight loss. In December 2022, semaglutide was approved by the FDA for use in pediatric patients aged 12 to 18 years.[1] The success of these medications has led to their widespread consideration for use in pediatric populations worldwide. However, despite updated treatment guidelines, little is known about how children and adolescents feel about using such medication at a young age for weight management. This study explores the concept of "Ozempic-shaming," or the social stigma surrounding the use of GLP-1 receptor agonists, by comparing the opinions and experiences of adolescents ages 12-18 in the USA and Taiwan. Through a cross-sectional survey approach, we identified regional differences in adolescents' attitudes, shaped by cultural taboos, body image standards, and weight-related biases. Stigma associated with GLP-1 receptor agonist use is closely tied to weight-related biases and the belief that medication use is a shortcut to health. Additionally, cultural taboos around weight management and societal pressures to conform to traditional body ideals significantly influence these attitudes. The findings from the STEP TEENS trial demonstrated the efficacy of once-weekly semaglutide, with a mean change in BMI of -16.1% and that 73% of participants achieving at least 5% body weight loss, highlighting the potential of this treatment to mitigate obesity-related comorbidities.[1] Understanding how adolescents in different cultural context perceive GLP-1 use can help healthcare providers develop more empathetic, stigma-informed, and culturally sensitive strategies to improve treatment adherence and long-term outcomes.

Keywords: GLP-1 receptor agonists, pediatric obesity, ozempic-shaming, adolescent health attitudes, cross-cultural health perceptions, weight stigma

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Introduction

Obesity is a growing public health concern, particularly among pediatric populations, where it has been linked to long-term health complications such as type 2 diabetes, cardiovascular disease, and metabolic syndrome.[1–4] In the United States, approximately 22.2% of adolescents aged 12–19 years are classified as obese,[1] based on BMI-for-age percentiles at or above the 95th percentile.[2] In Taiwan, the Ministry of Health and Welfare defines overweight as a BMI of 24–26.9 kg/m² and obesity as a BMI ≥27 kg/m² , which is lower than the World Health Organization (WHO) standards due to higher metabolic risk in Asian populations at lower BMIs.[3,4] These regional differences underscore the importance of culturally and demographically tailored approaches to treatment and intervention. While traditional weight management strategies, including lifestyle modifications and behavioral interventions, remain the cornerstone of treatment, their long-term success in adolescents has been limited.[5] This has led to increased interest in pharmacologic interventions, particularly GLP-1 receptor agonists, which were originally developed for type 2 diabetes but have demonstrated significant weight loss benefits.[6,7]

GLP-1 receptor agonists mimic the endogenous GLP-1 hormone, enhancing insulin secretion, delaying gastric emptying, and promoting satiety.[6,8] These effects contribute to reduced caloric intake and subsequent weight loss. While these medications have been widely used in adults, recent clinical trials have supported their safety and efficacy in adolescents.[9,10] In 2020, liraglutide became the first GLP-1 receptor agonist approved by the FDA for pediatric obesity ages 12 and older, followed by semaglutide in 2022.[6]

As GLP-1 receptor agonists become more available to adolescents in different healthcare systems, it is essential to understand how young patients perceive these medications, particularly in relation to their body image, self-esteem, and societal pressures around weight loss.[11] This study explores adolescent attitudes toward GLP-1 receptor agonists in both the U.S. and Taiwan, their motivations for considering pharmacologic weight loss, and the broader implications of these medications on body image and social identity.

Methods

This study employed a cross-sectional survey design to assess the perceptions of adolescents aged 12-18 regarding the use of GLP-1 receptor agonists for weight management in the United States and Taiwan. Participants were recruited both in person and online between November 2024 and January 2025. The survey consists of two main sections. The first asked participants whether they agreed or disagreed with the use of GLP-1 receptor agonist for weight loss in adolescents. The second was a Likert- scale questionnaire, in which participants rated their agreement with a series of statements using a 5-point scale (1= strongly disagree to 5= strongly agree). The statements addressed topics such as social perception of obesity, stigma toward GLP-1 receptor agonist users, and ethical or medical perspectives on the use of weight management medications. To ensure clarity and contextual relevance, the survey was translated and distributed in both English and Traditional Chinese for English-and Mandarin-speaking participants, respectively. Responses were analyzed separately for participants who agreed versus disagreed with GLP-1 receptor agonist. Mean scores were calculated for the Likert-scale responses, and independent-sample t-tests were performed to compare responses between U.S. and Taiwanese participants. Statistical significance was set at $p<0.05$. The full bilingual questionnaire is included below Table 1.

Table 1 Full bilingual questionnaire

S. No	Questionnaire	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	Do you agree or disagree with adolescents between the ages of 12 to 18 use GLP-1 receptor agonists to lose weight?					
2	There is a strong stigma against obesity in my social circle and overall environment.	1	2	3	4	5
3	My body image is very important, and I pay close attention to body image to meet social expectations	1	2	3	4	5
4	I have observed or have been bullied due to obesity or body habitus.	1	2	3	4	5
5	I believe 12-18 year olds who use GLP-1 Receptor Agonists are unfairly judged by others.	1	2	3	4	5
6	Taking GLP-1 Receptor Agonists at a young age is a responsible way to improve health.	1	2	3	4	5
7	Using weight-loss medication like GLP-1 Receptor Agonists is a "cheating" way to lose weight.	1	2	3	4	5
8	Weight-loss medications like GLP-1 Receptor Agonists should only be used if exercise and dieting don't work.	1	2	3	4	5
9	Doctors who recommended their patients from the age 12-18 to consider using GLP-1 Receptor as a mean of weight loss is ethically acceptable	1	2	3	4	5
10	For someone in your age group who is obese, losing weight helps improve their social status	1	2	3	4	5

Results

A total of 231 adolescents (aged 12-18) participated in the survey, with 115 participants from Taiwan and 116 from the United States. Among the Taiwanese respondents, 22.6% agree with the use of GLP-1 receptor agonists for weight loss, while 77.4% disagreed. In contrast, 62.1% of U.S. participants supported the use of GLP-1 receptor agonists for weight management, while 37.9% opposed their use (Figure 1).

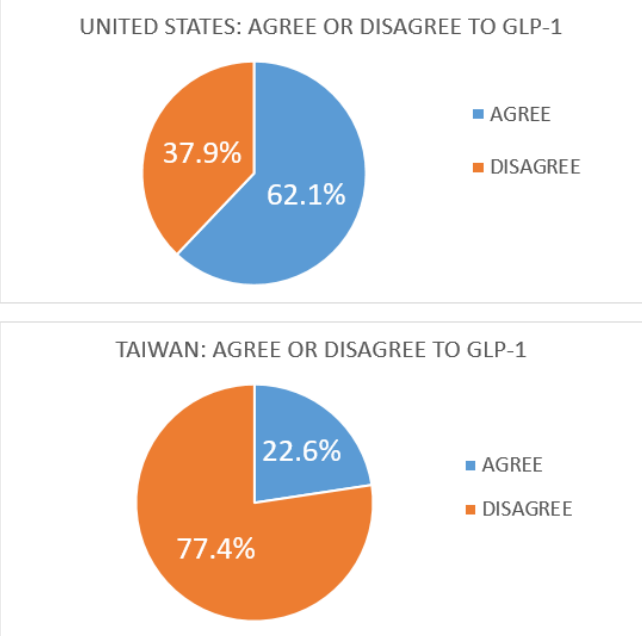
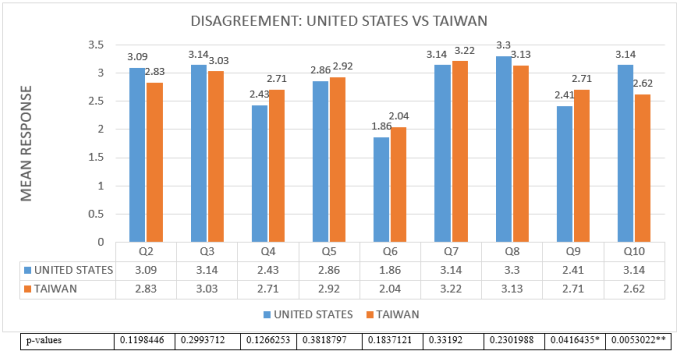


Figure 1 Participants' response to whether they agree or disagree with the use of GLP-1 receptor agonist for weight loss (US vs Taiwan).

Following this, participants completed a 9-item Likert-scale questionnaire (1= strongly disagree to 5= strongly agree), addressing various perspectives on social stigma, body image, and ethical/medical viewpoints on GLP-1 receptor agonist use (Figure 2).



	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
UNITED STATES	3.09	3.14	2.43	2.86	1.86	3.14	3.3	2.41	3.14
TAIWAN	2.83	3.03	2.71	2.92	2.04	3.22	3.13	2.71	2.62
p-values	0.1198446	0.2993712	0.1266253	0.3818797	0.1837121	0.33192	0.2301988	0.0416435*	0.0053022**

Figure 2 Mean response of those that disagree to the use of GLP-1 and p-values (United States vs. Taiwan).

p-value * indicates p<0.05, p-value** indicates p<0.005, p-value*** indicates p<0.0005, p-value**** indicates p<0.00005.

Several statements about social perception and body image were included in the questionnaire. When asked whether there is obesity stigma in their social circles, those who disagreed with the use of GLP-1 receptor agonists in Taiwan had an average response of 2.83, while those in the U.S. averaged 3.09 (p=0.120). Among those who agreed with medication use, the average score was 3.08 in Taiwan and 3.75 in the U.S. (p=0.007). When combining all responses, the overall average rating was 3.08 in Taiwan and 3.75 in the U.S. (p=0.000753). Regarding the importance of body images, participants in Taiwan who disagreed with GLP-1 receptor antagonist use had an average rating of 3.03, compared to 3.14 in the U.S. (p=0.299). Among those who agreed with use, the average in Taiwan was 3.35, and in the U.S., 3.89 (p=0.014). Overall, Taiwanhad an average of 3.10, while the U.S.

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averaged 3.60 (p=0.0003). When asked whether the participants had observed or experienced bullying due to obesity, those who disagreed with GLP-1 averaged 2.71 in Taiwan and 2.43 in the U.S. (p=0.127). Among those who agreed with GLP-1 use, Taiwanese participants averaged 3.31and the U.S. participants 3.42 (p=0.365). Overall, Taiwanhad an average of 2.84, while the US averaged 3.04 (p=0.137). Finally, when participants were asked whether weight loss will help with social status improvement, those in Taiwan who disagreed with GLP-1 receptor agonist use had an average rating of 2.62, compared to 3.14 in the U.S. (p=0.005). For those that agree with the use, Taiwanese respondants averaged 3.62 and U.S. participants 3.93 (p=0.082). Overall, Taiwan had an average of 2.84, and the U.S. had 3.63 (p=0.0000001) (Figure 3).

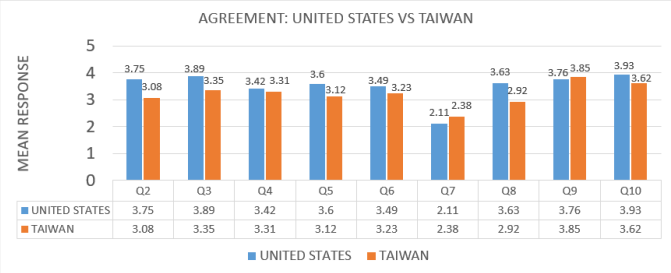

Figure 3 Mean response of those that agree to the use of GLP-1 and p-values (United States vs. Taiwan).

p-value * indicates p<0.05, p-value** indicates p<0.005, p-value*** indicates p<0.0005, p-value**** indicates p<0.00005.

Furthermore, participants were also presented with several statements regarding perceptions of GLP-1 receptor agonists and associated stigma. When asked whether GLP-1 users face unfair judgment, those who disagreed with the use rated 2.92 in Taiwan, and 2.86 in the U.S. (p=0.382). Among those who agreed, the averages were 3.12 in Taiwan, while the U.S. participants averaged 3.60 (p=0.035). Overall, Taiwan averaged 2.97, and the U.S. averaged 3.32 (p=0.008). In addition, when participants were asked whether using weight-loss medication is a "cheating" approach, those who disagreed with the use in Taiwan rated 3.22, while those in the US rated 3.14 (p=0.332). For those that agreed with the use of GLP-1 receptor agonists, Taiwan rates were 2.38, while the US participants answered 2.11 (p=0.163). Overall, Taiwan rated 3.03, while the US rated 2.50 (p=0.00052) (Figure 4).

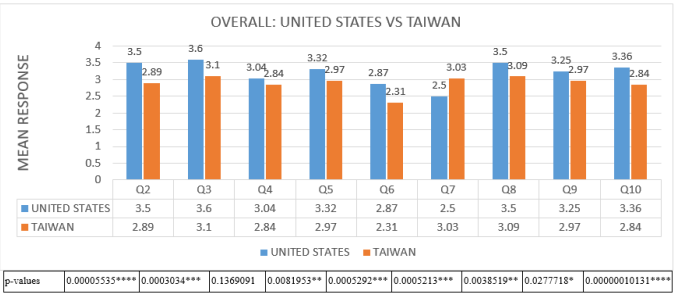

Figure 4 Mean response of all participants on the view of GLP-1 (United States vs. Taiwan).

p-value * indicates p<0.05, p-value** indicates p<0.005, p-value*** indicates p<0.0005, p-value**** indicates p<0.00005.

Finally, participants responded to statements regarding the medical and ethical perspectives on GLP-1 receptor agonists. When asked whether GLP-1 use at a young age is a responsive way to improve health, those who disagreed with use rated 2.04 in Taiwan, and 1.86 in the U.S. (p=0.184). Among those who agreed, Taiwan rated 3.23, while the U.S. rated 3.49 (p=0.159). Overall, Taiwan averaged 2.31, while the US averaged 2.87 (p=0.00053). When asked whether GLP-1 should only be used if diet and exercise fail, participants who disagreed with use averaged 3.13 in Taiwan and 3.30 in the U.S. (p=0.230). Among those who agreed, Taiwan averaged 2.92, while the US averaged 3.63 (p=0.004). Overall, Taiwan scored 3.09, and the U.S. scored 3.50 (p=0.0039). Lastly, regarding whether it is ethically acceptable for doctors to recommend GLP-1 for adolescents, those who disagreed with the use rated 2.71 in Taiwan, and 2.41 in the US (p=0.042). Among those who agreed, Taiwan averaged 3.85, while the US averaged 3.76 (p=0.363). Overall, Taiwan averaged 2.84, while the US averaged 3.63 (p=0.0000001).

Discussion

Our findings suggest that adolescents aged 12-18 in the U.S. are significantly more agreeable to the use of GLP-1 receptor agonists for weight loss compared to their counterparts in Taiwan. This difference may be influenced by the level of obesity stigma present in each society.[12,13] Our data indicate that U.S. participants who observed higher obesity stigma in their social circles were more likely to support the use of GLP-1 agonists. In contrast, Taiwanese participants remained largely neutral on this issue.[14,15] Prior research has documented that more than 40% of U.S. adults report experiencing weight stigma,[16] whereas weight-related stigma in Taiwan, while increasing, has not been as extensively studied.[17] This suggests that heightened obesity stigma in the U.S. may contribute to greater acceptance of pharmacological interventions for weight management. Cultural differences may play a role in this disparity, as Western societies, particularly the U.S., emphasize individualism and self-enhancement, often idealizing thinness.[13] While some research suggests that Western beauty ideals have influenced Asian societies,[12,13] our data imply that body image concerns may still be more pronounced in the U.S. than in Taiwan. Further research is needed to explore how cultural values shape perceptions of weight loss interventions across different populations.

A striking difference also emerged in attitudes toward whether using GLP-1 receptor agonists is a "cheating" way to lose weight. U.S. participants generally rejected this idea, while Taiwanese participants were more neutral. This difference may be influenced by broader cultural attitudes toward medical intervention.[18] American culture, often associated with innovation and efficiency, is more open to medical solutions as a legitimate means of achieving health goals.[19] With the recent "COVID-fatigue", Americans often seek treatments that are fast and efficient.[19] This is reflected in the high level of interest in prescription weight-loss medications among Americans, with surveys showing that 44% express interest in pharmacological weight-loss solutions.[19] In contrast, Taiwanese culture is influenced by Chinese traditional health beliefs, such as *ShiYaoSanFenDu*, which translates to "medicine is three parts poison."[20] This belief promotes caution toward unnecessary medication use, potentially explaining why Taiwanese respondents were less inclined to view GLP-1 receptor agonists as an acceptable solution.[21]

Another significant difference emerged between Taiwan and the U.S. regarding the perception that weight loss improves social status. U.S. participants largely agreed with this notion, whereas Taiwanese participants leaned toward disagreement or neutrality.[22] This aligns with previous research indicating that weight loss in the U.S. is often pursued not only for health benefits but also to enhance social interactions and reduce bias.[22] In contrast, Taiwan's cultural emphasis

on uniformity, exemplified by widespread school uniform policies, as seen in many Asian countries, may discourage individuals from seeking social elevation through weight loss.[23] Instead, Taiwanese individuals may focus on maintaining social cohesion rather than using weight loss as a means of distinguishing themselves. These cultural differences highlight the varying motivations behind weight management behaviors and suggest that weight stigma manifests differently across societies.

While significant differences were found in obesity stigma and attitudes toward medication, both U.S. and Taiwan participants reported similar experiences regarding weight-based bullying. Our survey found no significant difference between groups in their responses to whether they had observed or experienced bullying due to obesity. Those who disagreed with the statement tended to rate their responses between *disagree* and *neutral*, while those who agreed responded between *neutral* and *agree*. The overall distribution ranged from *slightly disagree* to *neutral*, suggesting that weight-related bullying is not perceived as more severe in one country than the other. Several explanations may account for this shared perspective. First, weight-based bullying is a well-documented issue in both countries.[22] Studies have shown a strong correlation between higher body mass index (BMI) and increased bullying victimization in both U.S. and Taiwan adolescents.[23] A study analyzing data from the World Health Organization's 2009/2010 Health Behavior in School-Aged Children Survey found that American adolescents with higher BMIs were significantly more likely to experience bullying.[24] Similarly, research conducted in southern Taiwan found that overweight and obese students were more likely to be bullied than their normal-weight peers.[22] The presence of weight-based bullying in both societies may explain why participants reported similar experiences.

Conclusion

The findings of this study highlight both cultural differences and shared experiences in how adolescents in the United States and Taiwan perceive obesity, weight-loss interventions, and the use of GLP-1 receptor agonists. While U.S. participants showed greater acceptance of medical weight-loss interventions, likely influenced by a stronger emphasis on body image and individual health choices, Taiwanese participants displayed more neutral attitudes, reflecting a more cautious approach toward pharmacological treatments. Despite these differences, both groups recognized the impact of obesity stigma and weight-based bullying, suggesting that societal pressures related to body weight are a common challenge across cultures.

These insights emphasize the need for nuanced public health discussions that consider both medical and cultural perspectives when addressing adolescent obesity. As the United States and Taiwan continue to evaluate treatment options for obesity, the shared concerns and experiences between the two populations may help inform policies that prioritize adolescent well-being while fostering a more accepting and supportive approach to medical weight management. Further cross-cultural research is needed to bridge the gap between differing health beliefs and to ensure that all adolescents have access to the most effective and socially accepted treatments for obesity.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this study. This research was conducted independently, and no financial or commercial relationships influenced the study design, data collection, analysis, or interpretation.

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