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Research Article

Unraveling the intricacies: understanding the complexities of obesity, body image, and demographic influences among Indonesian high school adolescents

Harsono Wiradinata[1*]

1) Universitas Wijaya Kusuma Surabaya

A R T I C L E   I N F O

ABSTRACT

This research addresses Indonesia's significant obesity issue among teenagers, highlighted by the 2022 Indonesian Health Survey. It explores the correlation between overweight-obesity prevalence and body image disturbances in high school adolescents, with a sample of 185 individuals selected through random sampling. Inclusion criteria involve parental consent for overweight-obese adolescents, while exclusion criteria consider specific health conditions or unwillingness to participate. Ethically, respondent anonymity and the lack of biological materials alleviate concerns. BSQ-34 prevalence rate analysis reveals a complex landscape influencing body image disturbances. While age and gender show limited associations, Body Mass Index correlates significantly, emphasizing its role. Conversely, no notable correlation is found with bullying, parenting styles, and social comparison, highlighting the independence of body image disturbances. Media influence stands out, warranting comprehensive investigations. In conclusion, these findings stress the complexity of body image concerns, advocating for holistic comprehension and interventions beyond singular influences, emphasizing the multifaceted nature of factors affecting high school adolescents' body image perceptions.

INTRODUCTION

The main problem addressed in this research is the significant issue of obesity in Indonesia, particularly among teenagers, as highlighted by the 2022 Indonesian Health Survey. The scale of the problem is substantial, with 10.8% of adolescents being overweight and an additional 9.2% facing the more severe condition of obesity (Rachmi et al., 2017). This study aims to establish a chronology explaining the need for research by emphasizing the impact of obesity on public health, mental well-being, societal norms, and the economy (Niswah et al., 2021).

To address this multifaceted issue comprehensively and proactively, collaborative efforts are essential from various entities, including the government, health institutions, and the community (Powell et al., 2018). The interconnected nature of obesity and body image issues is a crucial aspect that requires recognition, particularly in the context of societal ideals and personal aspirations (Jarman, et al., 2022). The prevalence of idealized body shapes perpetuates unrealistic standards, affecting adolescents, especially in terms of gender expectations (Akbar et al., 2023).

This study's primary objective is to investigate the significant connection between overweight-obesity prevalence and the development of body image issues in adolescents attending private high schools in Surabaya. The research hypothesizes that a higher degree of overweight obesity corresponds to a greater likelihood of experiencing body image disturbances among high school students. By exploring this relationship, the study aims to provide comprehensive insights into the nuanced connection between physical health and the mental portrayal of one's body among adolescents in the Surabaya region, offering valuable implications for tailored interventions and support strategies.

METHODS

An analytical observational approach with a cross-sectional design is employed in this study, focusing on adolescents experiencing body image disturbances associated with overweight obesity in private high schools in Surabaya during 2022. The population and sample comprise adolescents with overweight-obesity attending these schools, with a sample size of 185 individuals determined.

Obesity assessment utilizes Body Mass Index (BMI), which is calculated by dividing an individual's weight in kilograms by the square of their height in meters. This widely accepted metric categorizes participants into underweight, average weight, overweight, and obesity groups, ensuring a standardized and objective evaluation.

Data on body image disturbances are collected through a previously validated questionnaire (expert's validation) administered to the selected adolescents. Various aspects of body image perception and experiences are addressed in the questionnaire, providing insights into the participants' perspectives on this issue.

Simple random sampling is employed in this study, ensuring that every member of the population has an equal and independent chance of selection. The representativeness and generalizability of the sample to adolescents with overweight obesity in private high schools in Surabaya are enhanced by this method.

This study's inclusion criteria are as follows: adolescents who are overweight or obese,

attend private high schools in Surabaya, and obtain parental consent to participate. Parental consent and informed consent information were signed after parents received an explanation of the research objectives and demonstrated understanding. Meanwhile, the exclusion criteria include individuals with a history of metabolic disorders (such as diabetes, hypertension, dyslipidemia), those currently receiving treatment for other physical conditions, individuals experiencing psychotic or other mental disorders that may interfere with objective questionnaire responses, and individuals unwilling to complete the questionnaire.

Data processing involves systematically structuring information into distribution tables throughout the data collection and processing phases, with data processed using SPSS 25 with a significance level set at 0,05. Multiple logistic regression statistics are employed in the analysis, adhering to the predetermined significance level of 5%. Finally, the culmination of the research involves the graphical presentation of findings through diagrams that correspond to specific data distributions under examination.

It is imperative to highlight that the safety of research subjects was diligently maintained. This was achieved by utilizing questionnaires that ensured respondent anonymity, thus mitigating potential adverse risks. Additionally, it is noteworthy that no biological residues were obtained or incorporated in the research, obviating the necessity for specific ethical considerations related to such materials.

Ethical clearance statement:

This research has obtained ethical clearance from the University of Wijaya Kusuma Surabaya Ethics Committee, as indicated by the official letter with reference number 92/SLE/FK/UWKS/2022.

RESULTS

Table 1 presents demographic data concerning the respondents in this present study. The respondents' characteristics include age distribution, gender distribution, Body Mass Index (BMI) categorization, bullying behavior frequency, parenting patterns, media influence, and social comparison engagement.

Table 1 shows that within the scope of this research, encompassing a total sample size of 185 respondents, the age distribution exhibited marked disparities. Notably, the most prominent contingent comprised individuals aged 15, containing a substantial proportion of 44.3% of the total sample. Subsequently, 17-year-olds accounted for 27% of the respondents, and the 16-year-old cohort contributed 24.9% to the sample. In contrast, the youngest cohort, aged 14, represented a comparatively smaller demographic segment, comprising merely 2.7% of the total sample. Furthermore, age groups of 18 and 19 years made marginal contributions, amounting to a mere 0.5% each. This age-stratified dataset furnishes valuable insights into the dispersion of respondents across distinct age groups within the research, allowing an intricate examination of age-related variables and their prospective implications on the study's outcomes.

The dataset also reveals that 29.2% of the examined population identifies as female, while the remaining 70.8% identifies as male. This gender distribution is a pivotal foundation for investigating potential gender-related influences. It facilitates gender-specific analyses, which hold substantial importance in research fields where gender considerations significantly impact outcomes and interpretations. Understanding this gender breakdown enables a nuanced exploration of factors that may specifically affect different genders, thereby enriching the depth and applicability of research findings in these domains.
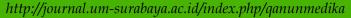
Table 1. Respondent's demographic data

Characteristic	Frequency (%)
Age (in years)	
14	5 (2.7)
15	82 (44.3)
16	46 (24.9)
17	50 (27.0)
18	1 (0.5)
19	1 (0.5)
Gender	
Male	181 (70.8)
Female	54 (29.2)
BMI	
Overweight	142 (76.8)
Mildly obese	37 (20.0)
Moderately obese	6 (3.2)
Bullying Behavior	
Never	58 (28.8)
Sometimes	39 (21.2)
Rare	66 (35.9)
Frequent	26 (14.1)
Parenting Pattern	
Authoritarian	10 (10.3)
Permissive	10 (10.3)
Authoritative	147 (79.4)
The Influence of Media	
No influence	75 (40.5)
Sometimes	95 (51.4)
Substantial	15 (8.1)
Social Comparison	
Yes	148 (80.0)
No	37 (20.0)

The data provided pertains to the respondents' distribution of body mass index (BMI) categories. The table shows that a substantial proportion, precisely 76.8%, falls within the overweight category, indicating an excess body weight relative to their height. Approximately 20% of the respondents are classified as mildly obese, signifying a more significant deviation from the healthy BMI range. Lastly, a smaller fraction, amounting to 3.2%, is categorized as moderately obese, indicating a further elevation in BMI levels. Based on the Body Mass Index, this data highlights the prevalence of individuals with varying degrees of excess body weight within the studied population.

Among 185 respondents, diverse experiences with bullying behavior are evident. Notably, 28.8% reported no past encounters with bullying, while 21.2% disclosed prior experiences. Furthermore, 35.9% indicated rare encounters, and 14.1% reported frequent exposure to bullying behavior. These findings illuminate the prevalence and varying degrees of bullying within the surveyed population, highlighting the multifaceted nature of their experiences.

Among 185 respondents, the data reveals distinct parenting patterns. Specifically, 10.3% of the respondents experienced an authoritarian parenting style characterized by strict rules and control. An additional 10.3% of respondents received permissive parenting with a more lenient and indulgent approach. The majority, comprising 79.4% of the respondents, encountered an authoritative parenting style characterized by a balance between rules and responsiveness. These findings provide insights into the prevalence and distribution of different parenting styles among the surveyed population, reflecting the diverse approaches to child-rearing that respondents have experienced.

Table 1 also shows that the influence of media on the respondents reflects a range of perspectives within the sample. A significant proportion, precisely 40.5% of the respondents, indicated that media does not influence body image disturbances for them, suggesting a limited impact on their perceptions of self-image. In contrast, the majority, encompassing 51.4% of the respondents, reported occasional influence by media, indicating intermittent effects on their body image perceptions. A smaller subset, constituting 8.1% of the respondents, acknowledged that media substantially impacts their body image disturbances. These findings provide valuable insights into the degrees of media influence within the surveyed population, highlighting the diverse responses concerning its role in shaping body image perceptions.

Finally, Table 1 illustrates that a significant proportion, precisely 80%, reported experiencing unfair treatment from peers, neighbors, and teachers across academic, sports, and social aspects. Meanwhile, the remaining 20% indicated they had not encountered such treatment. These findings highlight a substantial prevalence of perceived unfair treatment within the surveyed population across various spheres, underscoring the prevalence of these experiences among most respondents.

The prevalence rates of BSQ-34 based on age

Table 2 shows that the statistical analysis of how age relates to BSQ-34 scores revealed a p-value exceeding 0.05. This statistical finding strongly suggests that there is not a significant correlation between age and the occurrence of body image disturbances among the people surveyed. This significant finding, supported by robust statistical analysis, firmly establishes that body image disturbances are independent of age within this sample.

Table 2. The prevalence rates of BSQ-34 concerning age

BSQ-34	Age		p-value	Note
	Mean	(SD)		
<80	15.68	0.87	0.618	
80 – 110	15.76	0.92	0.575	No correlation
111 – 140	16.20	0.96	0.189	

Table 3. The prevalence rates of BSQ-34 concerning gender

Gender	BSQ-34				Note
	<80	80 – 110	111 – 140	>140	
Female	10 (18.5%)	28 (51.9%)	13 (24.1%)	3 (5.6%)	No correlation
Male	55 (42.0%)	51 (38.9%)	22 (16.8 %)	3 (2.3%)	
p-value	0.059	0.282	0.291	Referential group	

Table 4. The prevalence rates of BSQ-34 concerning Body Mass Index (BMI)

BMI	BSQ-34				Note
	<80	80 – 110	111 – 140	>140	
Overweight (25-29.9)	52 (36.6%)	63 (44.4%)	24 (16.9%)	3 (2.1%)	
Mildly Obese (30-34.9)	12 (32.4%)	12 (32.4%)	10 (27.0 %)	3 (8.1%)	
Moderately Obese (35-39.9)	1 (16.7%)	4 (66.7%)	1 (16.7%)	0 (0.0%)	
p-value	0.000	0.000	0.000	Referential group	Significantly correlated

Table 5. The prevalence rates of BSQ-34 concerning bullying behavior

Bullying	BSQ-34				Note
	<80	80 – 110	111 – 140	>140	
Never	31 (58.5%)	21 (39.6%)	0 (0%)	1 (1.9%)	
Sometimes	6 (15.4%)	19 (48.7%)	11 (28.2 %)	3 (7.7%)	
Rare	22 (33.3%)	28 (42.4%)	15 (22.7%)	1 (1.5%)	
Frequent	5 (19.2%)	11 (42.3%)	9 (34.6%)	1 (3.8%)	
p-value	0.205	0.418	0.301	Referential group	No correlation

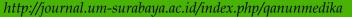***The prevalence rates of BSQ-34 based on gender***

The statistical examination of BSQ-34 rates and gender revealed a strong p-value over 0.05, as indicated in Table 3. This finding shows a lack of any visible correlation between gender and body image disturbances. This result confirms that body image problems do not seem correlated to gender in the group studied for this research.

The prevalence rates of BSQ-34 based on Body Mass Index (BMI)

Table 4 shows that the statistical examination of BSQ-34 and Body Mass Index (BMI) yielded a significant finding with a recorded p-value falling below 0.05. This statistical revelation unequivocally establishes a noteworthy and undeniable correlation between Body Mass Index and the incidence of body image disturbances. Delving deeper into the

statistical scrutiny underscores a robust and substantive relationship between BMI and the prevalence of body image disturbances within the meticulously examined population. This compelling statistical inference highlights the statistical significance and the practical relevance of BMI as a contributing factor to the manifestation and prevalence of body image disturbances among individuals within the studied cohort.

The prevalence rates of BSQ-34 based on bullying behavior

The statistical analysis regarding BSQ-34 in relation to bullying behavior resulted in a robustly calculated p-value exceeding 0.05, as indicated in Table 5. This substantial statistical outcome conspicuously highlights the notable absence of any discernible association between bullying behavior and the manifestation of body image disturbances. The meticulous statistical scrutiny further solidifies the evidence pointing towards the lack of a significant relationship

between encountering instances of bullying behavior and the prevalence of body image disturbances within the precisely examined dataset. These compelling findings not only emphasize but unequivocally support the independence of body image disturbances from experiences of bullying behavior within the specific context of this study population. This suggests that within this cohort, encounters with bullying behavior may not serve as a determining or influential factor contributing to the development or prevalence of body image disturbances.

The prevalence rates of BSQ-34 based on parenting styles

The statistical examination of how BSQ-34 rates relate to different ways of parenting resulted in a p-value above 0.05, as indicated in Table 6. This specific statistical finding strongly suggests there is no significant correlation between various ways of parenting and how much body image disturbances appear. The

Table 6. The prevalence rates of BSQ-34 concerning parenting styles

Parenting style	BSQ-34				Note
	<80	**80 – 110**	**111 – 140**	**>140**	
Authoritarian	6 (31.6%)	8 (42.1%)	4 (21.1%)	1 (5.3%)	
Permissive	6 (31.6%)	6 (31.6%)	5 (26.3 %)	2 (10.5%)	
Authoritative	53 (36.1%)	65 (44.2%)	26 (17.7%)	3 (2.0%)	
p-value	0.519	0.279	0.674	Referential group	No correlation

Table 7. The prevalence rates of BSQ-34 concerning media influence

Media influence	BSQ-34				Note
	<80	**80 – 110**	**111 – 140**	**>140**	
No influence	43 (57.3%)	8 (42.1%)	4 (21.1%)	0 (0.0%)	
Sometimes	20 (21.1%)	6 (31.6%)	5 (26.3 %)	3 (3.2%)	
Substantial	2 (13.3%)	7 (46.7%)	3 (20.0%)	3 (20%)	
p-value	0.049	0.076	0.044	Referential group	Correlated

Table 8. The prevalence rates of BSQ-34 concerning the social comparison

Social comparison	BSQ-34				Note
	<80	80 – 110	111 – 140	>140	
No	58 (39.2%)	62 (41.9%)	25 (16.9%)	3 (2.0%)	
Yes	7 (18.9%)	17 (45.9%)	10 (27.0 %)	3 (8.1%)	
p-value	0.166	0.214	0.236	Referential group	No correlation

careful statistical check shows clearly that the different ways parents raise their kids do not seem correlated to how common body image troubles are in the data studied here. These interesting findings indicate that the different ways parents approach raising their children may not have an extensive direct impact on how common body image issues are among the people examined in this study.

The prevalence rates of BSQ-34 based on media influence

Table 7 shows that the statistical analysis of the prevalence rates of BSQ-34 concerning the influence of media showed a p-value falling below 0.05. This statistically significant outcome not only signifies but emphatically highlights a substantive association between media influence and the emergence of body image disturbances. The profound implications of this in-depth statistical analysis strongly suggest a meaningful relationship between the impact of media exposure and the prevalence of body image disturbances. These compelling findings confirm and significantly underscore the pivotal role of media influence in shaping and contributing to the prevalence of body image disturbances among the subjects studied. This emphasis reinforces the noteworthy impact of media exposure on perceptions and experiences of body image within this specific cohort, shedding light on the profound influence wielded by media in molding attitudes and perceptions regarding body image.

The prevalence rates of BSQ-34 based on social comparison

Table 8 indicates that the statistical analysis of BSQ-34 rates and social comparison showed a p-value above 0.05. This statistical result shows an evident lack of a correlation between social comparison and body image disturbances. The detailed check shows no noticeable or significant correlation between comparing oneself socially and body image disturbances.

DISCUSSION

This study delves into the intricate landscape of body image disturbances, utilizing the Body Shape Questionnaire (BSQ-34) as a tool to gauge individuals' perceptions and emotions related to their bodies. The BSQ-34, designed to comprehend thoughts and feelings about body shape, offers a comprehensive understanding of body image's complexities. This research extends beyond conventional analyses, introducing novel dimensions to unravel the prevalence and depth of body image disturbances within the studied group.

This study confirms that body image problems are not strongly correlated with gender within the researched group. Body image disturbances persist across diverse age groups, influenced by multifaceted factors, as indicated by the studies by Afana et al. (2021) and Melisse et al., (2022). These findings highlight that negative body image perceptions are not limited to specific age brackets but result from a complex interplay of

societal, psychological, and personal factors.

Contrary to conventional assumptions, the lack of a strong gender correlation is attributed to various factors influencing body perception. Recent research challenges stereotypes by suggesting that males and females grapple with similar body image issues influenced by media portrayal, societal pressures, and cultural norms (Collison & Mahlberg, 2018). The study underscores that other factors, such as psychological factors, may contribute to body dissatisfaction across genders, blurring distinctions in the prevalence of body image issues, which is in line with the result of the study by Dodeen and Nassar (2022). This nuanced interplay emphasizes that body image problems transcend gender boundaries, impacting both males and females in diverse and often comparable ways.

This research reveals that the practical relevance of Body Mass Index (BMI) as a contributing factor to the manifestation and prevalence of body image disturbances is noteworthy yet complex. Beyond its role as a quantitative measure linking body weight and height, BMI's practical relevance lies in societal perceptions and ideals of specific BMI ranges (Harwood, 2015). Societal norms often idealize a particular BMI range as "desirable" or "attractive," leading to internalizing these standards. Consequently, individuals with BMI values outside this narrow range may experience body dissatisfaction, irrespective of their health status (Collison & Mahlberg, 2018).

These findings not only challenge but also prompt a deeper exploration into the intricate dynamics between bullying behavior and body image perceptions. The absence of a pronounced correlation within this population raises critical inquiries into potential complexities and underlying mechanisms, as Betz et al. (2019) expla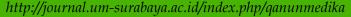ined in their study. This urges a nuanced examination of psychological, sociocultural, and individual factors that might interact with or mitigate the impact of bullying behavior on body image perceptions (Simanjuntak & Harahap, 2022). Understanding this lack of association offers a crucial perspective, encouraging further investigations into how individuals within this cohort might navigate and perceive body image disturbances independently of experiences with bullying behavior. This sheds light on potential protective factors or psychological mechanisms in shaping body image perceptions despite external negative influences (Saiphoo & Vahedi, 2019).

These findings challenge previous beliefs about the direct correlation between parenting styles and body image, highlighting the multifaceted factors influencing body image perception (Fardouly et al., 2017). Lewallen and Behm-Morawitz (2016) found that while positive parenting can mitigate body image issues, its impact is intricate and often overshadowed by broader societal influences, such as media and cultural standards. Individual differences, genetic predispositions, and the complexity of adolescent development further diminish any consistent link between parenting styles and the emergence of body image disturbances. Thus, while parenting styles influence body image, the intricate interplay of societal, individual, and environmental factors weakens their correlation.

Media exposure significantly correlates with body image disturbances due to the pervasive nature of media in shaping societal beauty ideals (Octaviany, 2021). Continuous exposure to idealized beauty standards, mainly through social media, is linked to heightened body dissatisfaction and the development of body image disturbances (Rousseau & Eggermont, 2018). The perpetuation of unattainable body standards and the prevalence of edited images contribute to feelings of inadequacy

and dissatisfaction, particularly among adolescents more susceptible to internalizing these ideals. Thus, the media's influential nature substantially shapes and exacerbates body image disturbances across diverse demographics.

Research suggests that while social comparison impacts individual perceptions, its direct correlation with body image disturbances may not be consistently prominent. Social comparison theory posits that individuals evaluate themselves by comparing attributes, including body image (Powell et al., 2018). However, the impact varies due to personal resilience, self-esteem, and the ability to differentiate between realistic and idealized images(Shaheen et al., 2016). Cultural differences, individual traits, and coping mechanisms further contribute to the nuanced relationship between social comparison and body image disturbances, as revealed by Afana et al. (2021) in their study. Thus, while social comparison theory offers insights into self-evaluation, its direct and consistent correlation with body image disturbances remains intricate and subject to numerous mitigating factors.

In short, this study goes beyond traditional analyses, offering novel insights into the intricate dynamics of body image disturbances. The findings challenge conventional beliefs, prompting deeper explorations into the relationships between BMI, bullying behavior, parenting styles, media exposure, and social comparison with body image disturbances. This research contributes to a more comprehensive understanding of the multifaceted factors influencing body image perceptions, paving the way for targeted interventions and nuanced approaches to address and mitigate body image disturbances. The novelty lies in unraveling the intricate

interplay of these factors, offering a holistic perspective for future research and interventions in the realm of body image and mental health.

Limitations include limited generalizability due to sample size and selection criteria, hindering applicability to broader teenage populations. The cross-sectional design hampers establishing causality between overweight-obesity and body image disturbances. Despite efforts for representativeness, the sample size (185 individuals) and exclusions may compromise generalizability. Reliance on self-reported data for body image, bullying, and parenting styles introduces response bias. A narrow focus overlooks potential influences like socioeconomic status and cultural norms.

CONCLUSION

In conclusion, this analysis of BSQ-34 prevalence rates unravels the intricate landscape influencing body image disturbances, revealing no substantial associations with age and gender. Notably, Body Mass Index emerges as a significant correlate, underlining its role in contributing to body image concerns. Conversely, bullying behavior, parenting styles, and social comparison exhibit no notable relations, highlighting their independence from body image disturbances in this dataset. Media influence is a significant factor, underscoring the necessity for comprehensive investigations and tailored interventions. These findings emphasize the complexity of body image concerns, advocating for holistic understanding and targeted interventions.

Further research is crucial to explore additional factors influencing body image disturbances among adolescents with overweight obesity, necessitating a larger sample size. The correlation between media influence and body image disturbances positions the research as a potential reference for families, aiding in providing ac-

curate information to foster positive acceptance among those experiencing overweight and obesity. Additionally, the insights on bullying offer valuable guidance for educational institutions, indicating the presence of such issues within the school environment.

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