

Assessment of Obesity and Its Determinants as a Public Health Challenge in Bangladesh

By

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the degree of
Bachelor of Pharmacy

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Declaration

It is hereby declared that

1. The submitted thesis is my work that I completed for my degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material that has been approved for credit toward any other degree, diploma, or certification from a university or other institution.
4. I have acknowledged all main sources of help.

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Approval

The project titled “Assessment of Obesity and Its Determinants as a Public Health Challenge in Bangladesh” submitted by Sabia Tasnim (21146035) of Spring, 2025 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Pharmacy on 7 October, 2025.

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Ethics Statement

The study followed the relevant ethical considerations and was conducted in accordance with the principles of the Declaration of Helsinki. Informed consent was obtained from all participants prior to the survey. The purpose, theme, scope, and objectives of the study were clearly explained, and participants were assured that their involvement was entirely voluntary. They were also informed that all the information collected would be solely for research purposes. Confidentiality was strictly maintained, and the identities of participants were not disclosed.

Abstract

Obesity has emerged as a critical public health challenge in Bangladesh, influenced by dietary transitions, sedentary lifestyles, and socioeconomic changes. It significantly contributes to the burden of noncommunicable diseases and mental health concerns. A cross-sectional descriptive survey was conducted in Dhaka from May to July 2025, involving 499 participants. Data were collected through online/offline questionnaires and anthropometric measures to assess BMI, lifestyle habits, and perceptions of obesity. Approximately 43% of respondents were overweight or obese. Overeating (57.1 %) and sugary beverage intake (52.7%) were leading contributors. Notably, 31% reported minimal or no physical activity, and higher socioeconomic status was perceived to elevate obesity risk. Psychological consequences, including shame and mental health concerns, were also prominent. The findings highlight the urgent need for comprehensive interventions including awareness campaigns, healthier lifestyle promotion, and supportive community environments to mitigate the obesity epidemic in Bangladesh.

Keywords: Obesity, BMI (Body Mass Index), Public health, Noncommunicable disease, Sedentary lifestyle, Mental health, Socioeconomic status.

Dedication

I dedicate this thesis to myself, for the effort, patience, and resilience that made this journey possible and to my dearest parents, whose love, patience, and encouragement have guided me through every step of this journey.

Acknowledgement

First, I am thankful to Almighty Allah for granting me the strength, patience, and knowledge to complete this project successfully. I sincerely thank my supervisor, Kazi Milenur Rahman Prattay (Lecturer, School of Pharmacy) for his valuable guidance, constructive feedback, and encouragement throughout the study for giving me the opportunity to be one of his thesis students. His invaluable guidance, insightful advice, constructive feedback and constant encouragement have been a source of inspiration and have significantly guided me in overcoming challenges and achieving the objectives of this work. I would also like to extend my heartfelt gratitude to Professor A F M Yusuf Haider, Acting Dean of School of Pharmacy, for his leadership and support which ensured smooth processes and fostering a research-friendly environment were invaluable in completing my thesis on time. Finally, I also want to express my heartfelt gratitude to my parents whose inspiration and constant support paved the way for me to successfully complete my graduation.

Table of Contents

Declaration.....	ii
Approval.....	iii
Ethics Statement.....	iv
Abstract.....	v
Dedication.....	vi
Acknowledgement.....	vii
Table of Contents.....	viii
Lis of Tables.....	xi
List of Figures.....	xii
List of Acronyms.....	xiii
Chapter 1 Introduction.....	1
1.1 Background.....	1
1.2 Causes of obesity.....	3
1.3 Obesity and metabolic health risks.....	4
1.4 Obesity in Bangladeshi population.....	6
1.5 Aims and objectives.....	7
Chapter 2 Methodology.....	9

2.1 Study design.....	9
2.2 Duration of data collection and sample size.....	9
2.3 Data collection.....	9
2.4 Data analysis and statistical management.....	10
Chapter 3 Result.....	11
3.1 Socio-demographic profile of the participants.....	11
3.2 Measurement of the BMI of the sample by the WHO standard.....	13
3.3 Food Preference.....	13
3.4 Participation in physical activity.....	14
3.5 Weekly exercise hours.....	15
3.6 Fast food consumption.....	16
3.7 Perceived weight-related shame/discomfort.....	17
3.8 Daily screen time (watching television/computer/mobile)	18
3.9 Sleeping time at night.....	19
3.10 Reasons for obesity perceived by the participants.....	20
3.11 Lifestyle changes prevent obesity.....	21
3.12 Consulted a physician about obesity.....	22
3.13 Regained lost weight.....	23

3.14 Obesity affected mental health.....	24
3.15 Higher socioeconomic status raises obesity risk.....	25
3.16 The impact of having higher socioeconomic status.....	27
3.17 Obesity campaign impact.....	28
3.18 Types of media most effective for a public health campaign.....	29
3.19 Opinion on park facilities (e.g. walking tracks, sports fields)	30
Chapter 4 Discussion.....	31
Chapter 5 Conclusion.....	40
References.....	42

List of Tables:

Table 1. Socio-demographic profile of the participants.....	11
Table 2. Measurement of the BMI of the sample by the WHO standard.....	13

List of Figures:

Figure 1: Food preference among participants'	14
Figure 2: Participation in physical activity of the respondents.....	15
Figure 3: Participants' weekly exercise hours.....	16
Figure 4: Fast food consumption of the participants'	17
Figure 5: Perceived weight-related shame/discomfort of the respondents'	18
Figure 6: Participants' daily screen time.....	19
Figure 7: Participants' sleeping time at night.....	20
Figure 8: Perceptions of the participants regarding the reasons for obesity.....	21
Figure 9: Opinions on obesity can be prevented through lifestyle changes.....	22
Figure 10: Participants' consultation to a physician about obesity.....	23
Figure 11: Respondents' gradually regain of weight after losing it.....	24
Figure 12: Participants' mental health affected by obesity.....	25
Figure 13: Higher Socioeconomic status increases risk of obesity.....	26
Figure 14: Participants' responds on the impact of having higher socioeconomic status.....	27
Figure 15: Effectiveness of public health campaigns according to the participants.....	28
Figure 16: Types of media most effective for a public health campaign according to the participants.....	29
Figure 17: Opinion on park facilities of the participants.....	30

List of Acronyms

WHO	World Health Organization
NCDs	Noncommunicable Diseases
BMI	Body Mass Index
CVD	Cardiovascular Disease
CDC	Centers for Disease Control and Prevention
GNP	Gross National Product
SES	Socioeconomic Status

Chapter 1

Introduction

1.1 Background

Now-a-days obesity has become a global public health crisis among the people of almost all demographic and economic status. Obesity is a chronic health condition characterized by an excessive accumulation of body fat that adversely affects overall health and well-being. Obesity was not just a health issue for high-income countries but is dramatically associated in low- and middle-income countries too. Over 390 million children and adolescents aged 5-19 years were overweight in 2022, including 160 million who were living with obesity. According to the World Health Organization (WHO), obesity and overweight rank as the fourth leading risk factor for noncommunicable diseases (NCDs) worldwide, following high blood pressure in the European region, which is responsible for over 1.2 million deaths annually. The prevalence of obesity is also greater amongst males (63%) than females (54%), with 6 in 10 adults having said they were struggling with the disease (World Health Organization, 2024). This condition results primarily from the buildup of excess body fat that poses health risks and is influenced by genetic, behavioral, environmental, and metabolic factors.

In 2024, the World Health Organization (WHO) highlighted that approximately 35 million children under 5 years were overweight. The number of children and adolescents living with obesity has surged to more than 390 million, with nearly half of overweight or obese children under 5 years residing in Asia (World Health Organization, 2025). This alarming trend poses a serious and escalating challenge to global health systems.

Recent statistics show that the global prevalence of overweight and obesity continues to rise steadily, with more than 2 billion individuals; approximately 30% of the world's population are now affected. According to the Global Burden of Disease Group (2017), the prevalence of obesity has doubled in over 70 countries since 1980 and has continued to increase in most others. In the case of children, UNICEF reported in 2017 that there has been no significant progress in reducing the rate of overweight childhood in the past 15 years. Health experts are increasingly pessimistic about the likelihood of reversing the obesity epidemic. In fact, leading researchers have warned that if trends observed since 2000 persist, the chances of achieving the global obesity reduction target are nearly zero. This target aimed to reduce obesity rates by half by the year 2025. Clearly, the world is currently struggling and failing to win the fight against obesity (Caballero, 2019).

A recent report warns that by 2050, more than half of adults and one-third of children worldwide may be overweight or obese, posing an unprecedented threat of premature death, chronic disease, and immense pressure on healthcare systems. The analysis, published in *The Lancet*, attributes this alarming rise to global inaction and inadequate responses to the escalating obesity crisis over the past 30 years. According to the study, 2.11 billion adults aged 25 and older and 493 million children and young people aged 5 to 24 are currently overweight or obese, up from 731 million adults and 198 million youth in 1990. Without urgent reforms and policy action, projections indicate that by 2050, more than half of adults aged 25+ (about 3.8 billion) and one-third of all children and adolescents (around 746 million) could be affected. The report projects that almost a third, or 130 million, of obese children and adolescents by 2050 will be in North Africa and the Middle East, along with Latin America and Caribbean. This will have huge health, economic and social implications (The Guardian, 2025).

Children today are also gaining excess weight earlier, increasing their risk for chronic diseases such as type 2 diabetes, hypertension, heart disease, and cancer at younger ages (The Guardian, 2025).

1.2 Causes of Obesity

Obesity is mostly caused by an obesogenic environment which encourages excessive calories intake, while discouraging physical activity. Key contributors include a food system dominated by highly processed, sugar-rich foods and automated technologies that have minimized the need for physical activity. The widespread availability and affordability of calorie-dense fast foods make it easier to consume more energy than the body needs (Meldrum, 2017). Marketing strategies targeting children and low-income populations further promote unhealthy eating habits (Smith et al., 2019). Furthermore, food portion sizes have increased over the years, leading people to consume more calories than necessary without realizing it (Livingstone, 2014).

Obesity rates remained relatively low until the 1980s, but rates began to climb sharply about 8-10 years after substantial transformation into a built environment. This built urban environment has many physical features that reduce everyday physical activity such as elevators, escalators and other labor-saving devices, along with a rise in sedentary forms of entertainment such as video games, TV watching, and online news (Meldrum, 2017). These changes have increased screen time and daily routine became less physically demanding. Moreover, urban sprawl and car-dependent infrastructure have decreased opportunities for active commuting, such as walking or cycling (Rundle & Heymsfield, 2016).

The industrialization of food production also plays a key role, making inexpensive, calorie-dense processed foods widely available and increasing their shelf life (Meldrum, 2017).

Obesity is also influenced by cultural and social factors. In some societies, excess weight has historically been viewed as a sign of wellbeing or good health. Additionally, social networks can normalize excess body weight, altering people's perceptions of what is healthy or normal and encouraging patterns of unhealthy eating and lifestyle habits (Meldrum, 2017).

Genetics play a role in obesity by increasing an individual's susceptibility to weight gain rather than directly causing it. Environmental factors, like poor diet and sedentary behavior, usually trigger weight gain. As Bray and colleagues aptly put it, "genes load the gun, and the environment pulls the trigger," highlighting the interaction between genetics and lifestyle. In short, genetic tendencies often manifest only in obesogenic environments (Meldrum, 2017).

1.3 Obesity and Metabolic Health Risks

Most global obesity statistics such as the widely cited "over 2 billion people"- include both overweight and obese individuals, meaning anyone with a BMI of 25 or higher. However, more than 60% of the disease and mortality burden linked to excess BMI comes from individuals with a BMI of 30 or above, even though they make up only about 10% of the global population with elevated BMI. In reality, the health burden associated with BMIs between 25 and 29.9 remains unclear. According to U.S. federal health guidelines, individuals in this range without additional risk factors should "avoid further weight gain rather than lose weight." (Caballero, 2019). This guidance seems to be followed, as fewer Americans are actively trying to lose weight.

The link between BMI and early obesity-related metabolic disorder such as insulin resistance, is surprisingly weak across a broad range of BMI values. Research conducted between 1994 and 2015 revealed that BMI accounts for only 16% of the variation in insulin resistance. It was found that when insulin resistance is present, it is a far more powerful predictor of disease risk than BMI,

regardless of a person's BMI level (Caballero, 2019). Oxidative stress (OS) and chronic inflammation are major contributors to insulin resistance. Obesity worsens oxidative stress by providing excess substrates for mitochondrial energy production, which is required to support the increased energy demands of a larger body mass (Meldrum, 2017). In a 5.5-year prospective study, obese individuals who were insulin-sensitive had a 40% lower risk of developing diabetes compared to those who were insulin-resistant. On the other hand, lean individuals with insulin resistance faced an 80% higher risk of diabetes than insulin-sensitive individuals of the same weight category (Caballero, 2019). Obesity directly contributes to the onset of key cardiovascular risk factors, such as dyslipidemia, high blood pressure, and sleep-related disorders. Additionally, obesity independently increases the risk of developing cardiovascular disease (CVD) and elevates CVD-related mortality, even when other risk factors are absent. (Powell-Wiley et al., 2021).

Obesity is a major risk factor for numerous serious conditions like type 2 diabetes, cardiovascular disease, cancers, hypertension, dyslipidemia, osteoarthritis, and Alzheimer's disease, reducing lifespan and quality of life. Central (abdominal) obesity triggers inflammatory cytokines, causing oxidative stress and insulin resistance. This insulin resistance leads to high blood glucose, further increasing oxidative stress and creating a vicious cycle. Over time, this results in type 2 diabetes, dyslipidemia, vascular damage, and complications such as kidney dysfunction, retinopathy (a family of vision-threatening eye diseases related to the evaluation), neuropathy (related to nerve injuries), and peripheral vascular disease (Meldrum, 2017). Eventually, these complications can result in cognitive decline, physical disability and even limb amputations.

Obesity not only causes physical health problems but can also lead to mental health issues such as depression, stress, and social stigma. Both obesity and depression have risen sharply in recent years, becoming major global public health concerns. However, the relationship between obesity

and rates of anxiety/depression are bidirectional. Often, obesity comes before depression; obesity can contribute to depressive symptoms due to inactivity, lower quality of life, and social prejudice. Conversely, depression can lead to weight gain through antidepressant medication side effects, poor sleep, and reduced physical activity. These conditions often coexist, sharing common genetic and lifestyle risk factors (Mannan et al.,2016).

The stigma associated with obesity can lead to social isolation. Low self-esteem and body image dissatisfaction, all of which can trigger depression and anxiety (Toi Chu,2019). This social isolation may initiate a vicious cycle, where limited social interaction and increased loneliness make adopting healthier behaviors or seeking help more difficult for individuals. Secondly, body image dissatisfaction is another major psychological issue, where individuals with obesity may internalize low self-worth by unrealistic societal body standards. This can contribute to mental health disorders such as anxiety, depression, and eating disorders. Moreover, Early childhood trauma and adverse experiences can further affect self-esteem and eating habits. Together, these factors increase the risk of both obesity and related psychological conditions over time. (Segal & Gunturu, 2024).

1.4 Obesity in Bangladeshi Population

Bangladesh, a densely populated nation in South Asia, has experienced substantial demographic and epidemiological shifts in recent decades. While the country continues to grapple with high rates of communicable diseases such as diarrhea and malaria, particularly in children, it is also witnessing a concerning rise in non-communicable conditions like obesity. The 2014 Bangladesh Demographic and Health Survey indicated that 33% of Bangladeshi children were underweight, reflecting ongoing undernutrition issues. However, a more recent nationwide epidemiological study revealed a growing double burden of malnutrition, reporting that 3.5% of children aged 6 to

15 were obese, 9.5% overweight, and 17.6% underweight. Despite persistent malnutrition in low-income settings, childhood overweight and obesity are emerging as significant public health issues (Biswas,2017). The prevalence of this double burden is representative of general trends affecting low- and middle-income countries as a whole, where urbanization and lifestyle transitions are taking their toll on health outcomes. Key risk factors for the rising obesity epidemic include low physical activity, increased sedentary behavior, poor diet, and limited parental education and awareness regarding nutrition. Genetic predisposition and family history also play a role, while urban environments with restricted outdoor spaces and increased fast food consumption further contribute to the problem.

Another study in Bangladesh revealed a rising prevalence of obesity and its strong link to hypertension, two important worldwide risk factors. Among 1,410 participants, 18.2% had general obesity, 9% abdominal obesity, and 30.9% hypertension. Women showed higher obesity rates than men, possibly due to hormonal and lifestyle differences. Urban residents were more affected than rural ones, possibly due to sedentary jobs and unhealthy diets. Prevalence of overweight (38.9%) and prehypertension (40.7%) were also high in the study, suggesting the necessity to apply preventive actions. Promoting regular health checks, healthy diet, physical activity and interventions such as awareness programs is crucial to tackle these challenges (Ali et al., 2022).

1.5 Aims and Objectives

Our cross-sectional study aims to identify the causes and impacts of obesity on individuals of all age groups in Bangladesh. It focuses on both lifestyle-related and environmental factors such as unhealthy eating habits, sedentary behavior, urbanization, and socio-economic status. The study also assesses how obesity affects physical health, mental well-being, and overall quality of life.

By highlighting these issues, the research aims to raise awareness and support the development of targeted health policies and intervention programs to reduce obesity rates across the country.

2. Methodology

2.1 Study Design

This study was designed as a cross-sectional descriptive survey carried out in Dhaka, Bangladesh, to determine the prevalence of obesity. The survey provided an overall scenario of obesity, highlighting its causes and impacts on individuals of different ages, and also aimed to explore prevention strategies by assessing participants' knowledge, attitudes, and practices related to diet, physical activity, and lifestyle modifications.

2.2 Duration of Data Collection and Sample Size

The study was conducted among 503 participants of varying ages and occupations in Dhaka, Bangladesh, between 7 May 2025 and 11 July 2025. Four participants were excluded due to incomplete responses (n=4). The final data set consisted of 499 participants.

2.3 Data Collection

Data was collected through both online and offline approaches. For offline data collection, participants' body weight was measured barefoot using a standard weighing scale, while height was assessed with a measuring tape, ensuring that participants stood upright against a wall with their heels, buttocks, shoulders, and occiput in contact with the surface, and without footwear. Body Mass Index (BMI) was calculated using the standard formula: $BMI = \text{weight (kg)} / \text{height (m}^2\text{)}$. Information on Knowledge, Attitudes, and Practices (KAP) was obtained using a pre-validated questionnaire that included a balanced mix of positively and negatively phrased

statements. The questionnaire was designed in both English and Bengali to ensure that all participants could clearly understand the questions.

2.4 Data Analysis and Statistical Management

Data were collected using a structured questionnaire designed to capture relevant information for the study. To maximize reach and inclusiveness, both online and offline modes of survey administration were employed. The online survey was distributed through a Google Form, which allowed participants to respond at their convenience. For the offline survey, identical printed copies of the questionnaire were prepared, in-person surveys were conducted at various locations across Dhaka to engage participants directly. After completion of data collection, responses from both online and offline surveys were compiled and manually entered into Microsoft Excel (2019) for analysis for organization and descriptive analysis. Frequencies and percentages were calculated for demographic and lifestyle variables, including sex, body mass index (BMI), education, occupation, financial status, food preferences, physical activity, fast food and alcohol consumption, knowledge of obesity-related health risks, screen time, and sleep duration. Additional analyses explored factors such as reasons for obesity, physician consultation, experiences of regaining weight, psychological impacts, the relationship between socioeconomic status and obesity and its impact, and perceptions of public health campaigns, media platforms, and park facilities.

Chapter 3

Result

3.1 Socio-demographic Profile of the Participants

A total of 499 participants took part in the study, with 51.3% identifying as male and 48.7% as female. A large number of respondents were between 13-30 years' age (71.3%), and the least number of respondents were >65 years' group (1.4%) (Table 1)

Factors		Frequency (n=499)	Percentage (%)
Gender	Male	256	51.3
	Female	243	48.7
Education	Illiterate	3	0.6
	Primary	29	5.8
	Secondary	72	14.4
	Higher secondary	62	12.4
	Undergraduate	208	41.7
	Graduate/above	125	25.1
	<13	8	1.6

Age group	13 – 30	356	71.3
	31 – 50	94	18.8
	51 – 65	34	6.8
	>65	7	1.4
Occupation	Business	38	7.6
	Desk job	86	17.2
	Field job	62	12.4
	Housewife	56	11.2
	Student	230	46.1
	Unemployed	15	3.0
	Missing Information	12	2.4
Economic Status	Higher Class	300	60.1
	Medium Class	136	27.3
	Lower Class	27	5.4
	Missing Information	36	7.2

Table 1: Socio-demographic profile of the participants

3.2 Measurement of the BMI of the Sample by the WHO Standard

The participants' weight and height were measured to calculate their Body Mass Index (BMI), which was then classified according to World Health Organization (WHO) criteria: underweight (BMI < 18.5), healthy weight (BMI 18.5-24.9), overweight (BMI 25-29.9), and obese (BMI $\geq$ 30) (World Health Organization, n.d.). The majority of participants (49.5%) were within the healthy weight range, while 42.9% were classified as overweight or obese, and only 7.6% were underweight. (Table 2)

BMI Level	Frequency(n)	Percentage (%)	WHO standard
Underweight	38	7.6	<18.5
Healthy weight	247	49.5	18.5-24.9
Over weight	162	32.5	25-29.9
Obese	52	10.4	$\geq$ 30

Table 2: Measurement of the BMI of the Sample by the WHO Standard

3.3 Food Preference

Figure 1 illustrates the food preferences of the participants. Among the 499 respondents, the majority preferred healthy food (35.87%), followed by tasty food (29.46%), while fast food was the least preferred option (4.01%). Among the remaining 346 participants, 18.5% reported a preference for both tasty and healthy food, 6.07% preferred a combination of tasty and fast food, 1.16% selected healthy and fast food, and 18.5% indicated a preference for all three categories: tasty, healthy, and fast food.

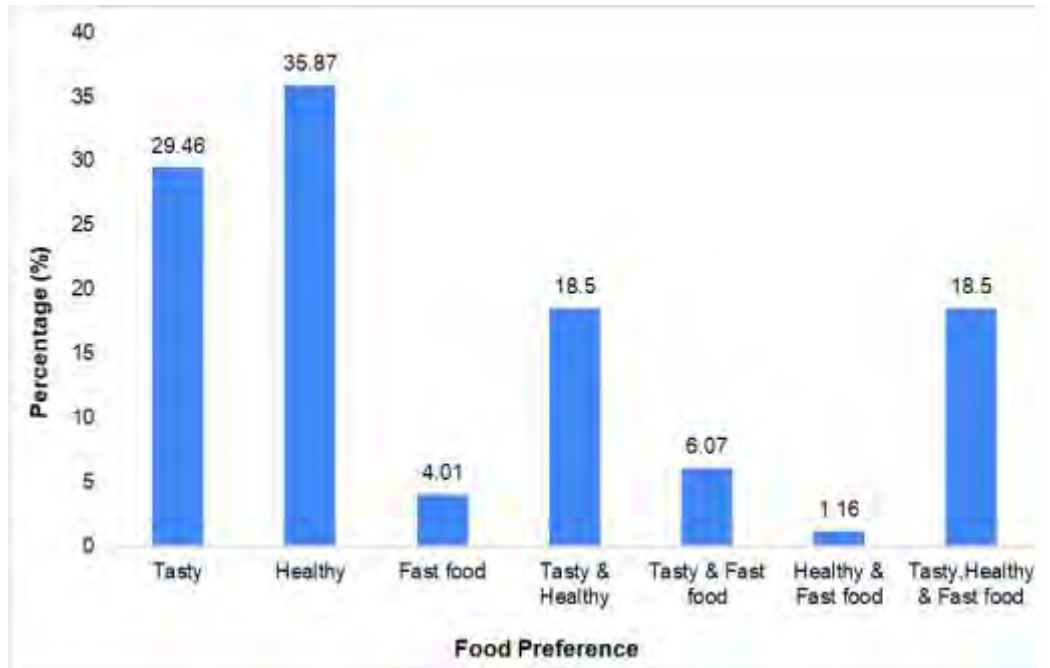


Figure 1: Food preference among participants'

3.4 Participation in Physical Activity

Figure 2 shows participation in physical activity, where 31.06% people rarely or never exercise while 20.64% exercise daily. Similar proportions (19.24%) exercise 4-6 times or 1-3 times a week, and only 9.82% exercise 1-3 times a month.

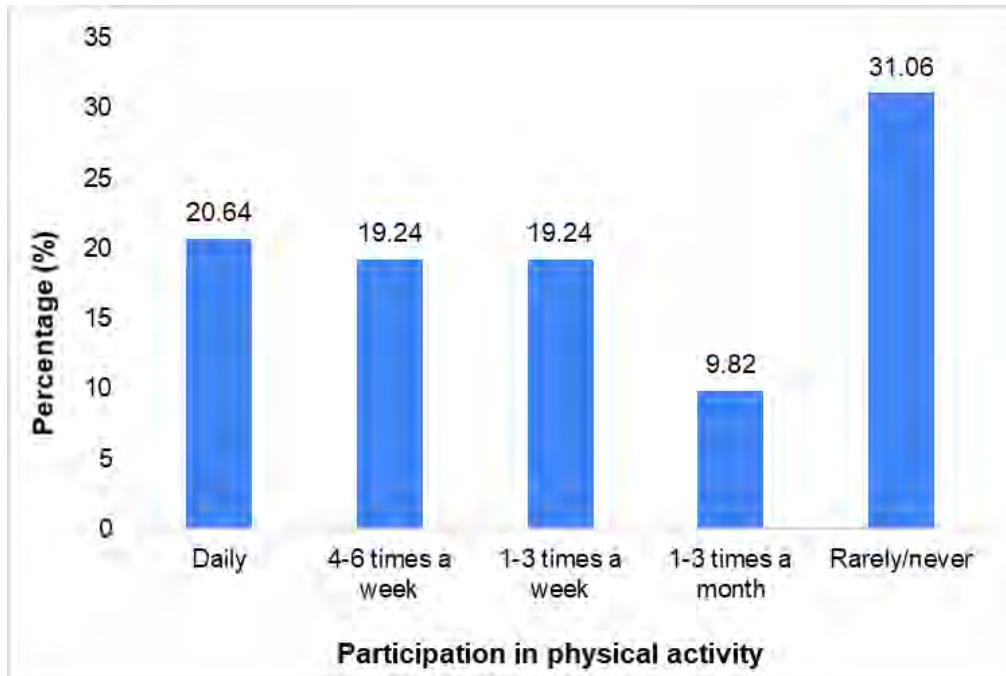


Figure 2: *Participation in physical activity of the respondents*

3.5 Weekly Exercise Hours

The graph shows weekly exercise hours among respondents. A majority (60.12%) exercise less than 2 hours per week, whereas 24.25% respondents engage in moderate exercise (2-3 hours). Only a small minority, 11.22% and 4.41%, exercise 4-6 hours and 7-9 hours respectively (figure 3).

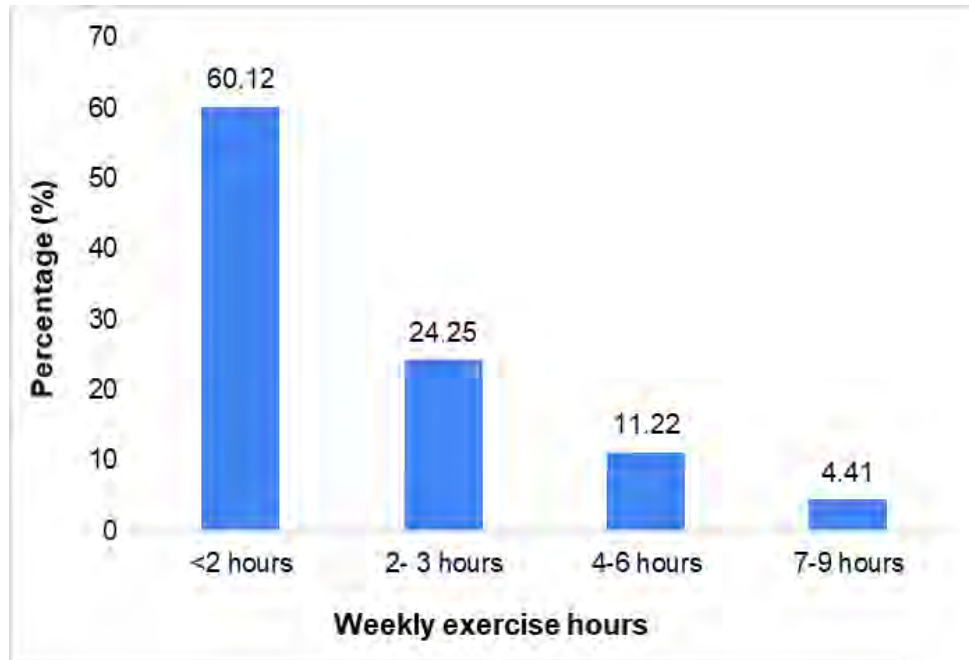


Figure 3: *Participants' weekly exercise hours*

3.6 Fast Food Consumption

Figure 4 shows the percentage of fast-food consumption among respondents. The largest group (32.06%) eats fast food 1-3 times a week, followed by 25.35% who consume it 1-3 times a month. On the other hand, 18.24% eat it daily, 14.03% consume fast food 4-6 times a week and 10.42% eat it rarely/never.

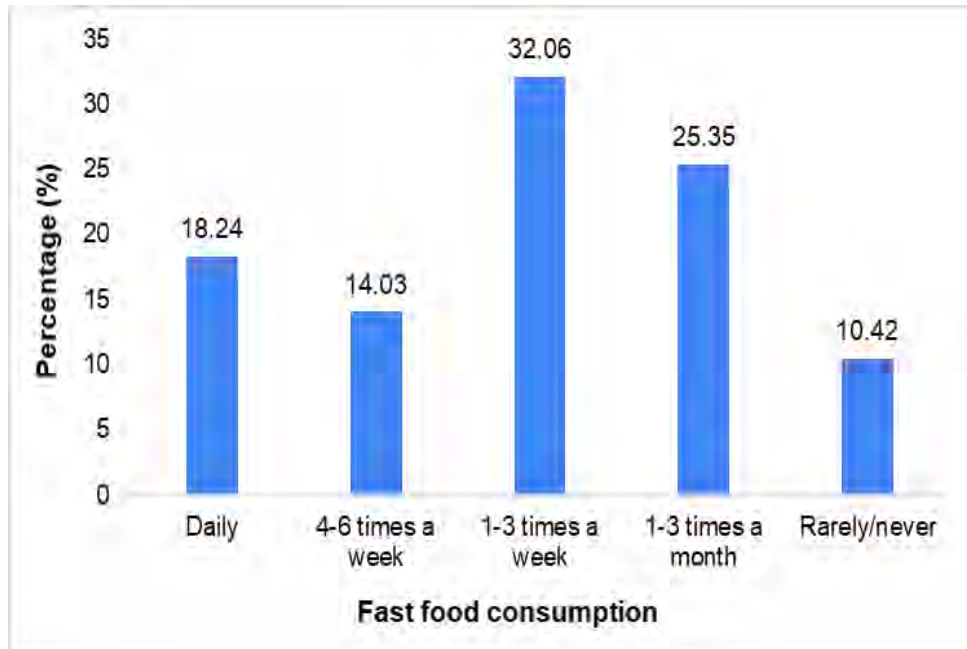


Figure 4: Fast food consumption of the participants'

3.7 Perceived Weight-Related Shame/Discomfort

The graph presents respondents' perceptions of weight-related shame or discomfort (figure 5). It shows that 58.72% do not feel ashamed or uncomfortable about their weight, while 41.28% experience such feelings. This highlights that although the majority feel at ease with their weight, a notable proportion still struggles with negative self-perceptions.

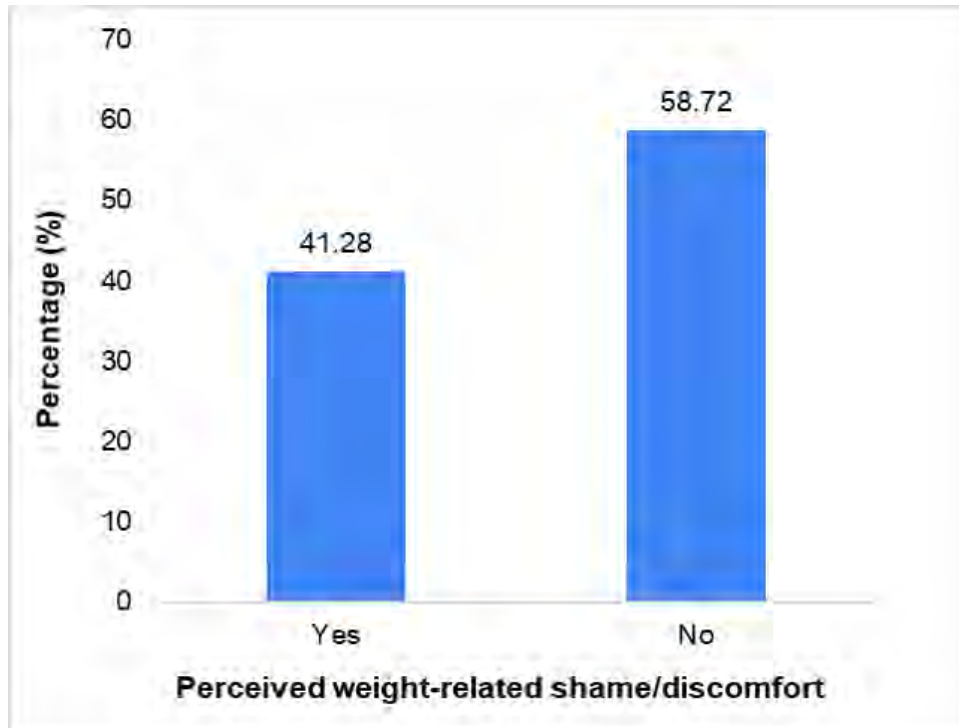


Figure 5: *Perceived weight-related shame/discomfort of the respondents'*

3.8 Daily Screen Time (Watching Television/Computer/Mobile)

The graph illustrates respondents' daily screen time (figure 6). 30.86% respondent spends 3-4 hours on screens, followed by 26.05%, who spend more than 6 hours and 21.24% with 5-6 hours. Only 13.43% spend 1-2 hours and 8.42% limit their daily screen time to less than 1 hour.

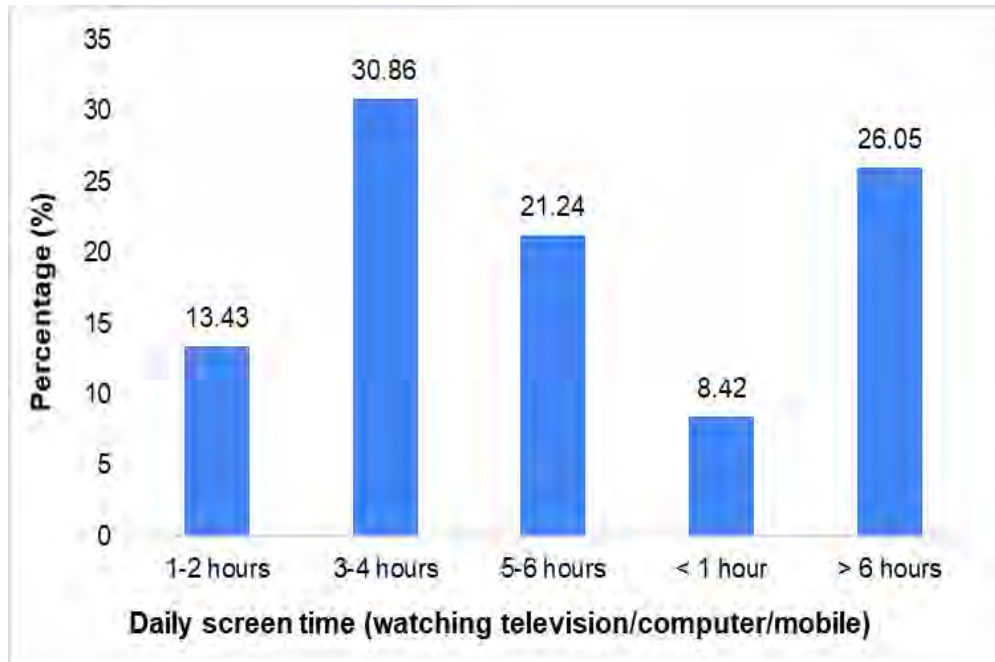


Figure 6: *Participants' daily screen time*

3.9 Sleeping Time at Night

Figure 7 shows respondents' sleeping patterns at night. The majority (72.34%) sleep between 6-8 hours, while 22.65% sleep less than 6 hours. Only a small fraction (5.01%) get more than 8 hours of sleep.



Figure 7: Participants' sleeping time at night

3.10 Reasons for Obesity Perceived by the Participants

Figure 8 shows the main reasons for obesity perceived by the participants, with overeating (57.11%) and sugary drink intake (52.71%) being the most common. Sleep deprivation (42.08%) and extended TV viewing (12.22%) contribute less significantly.

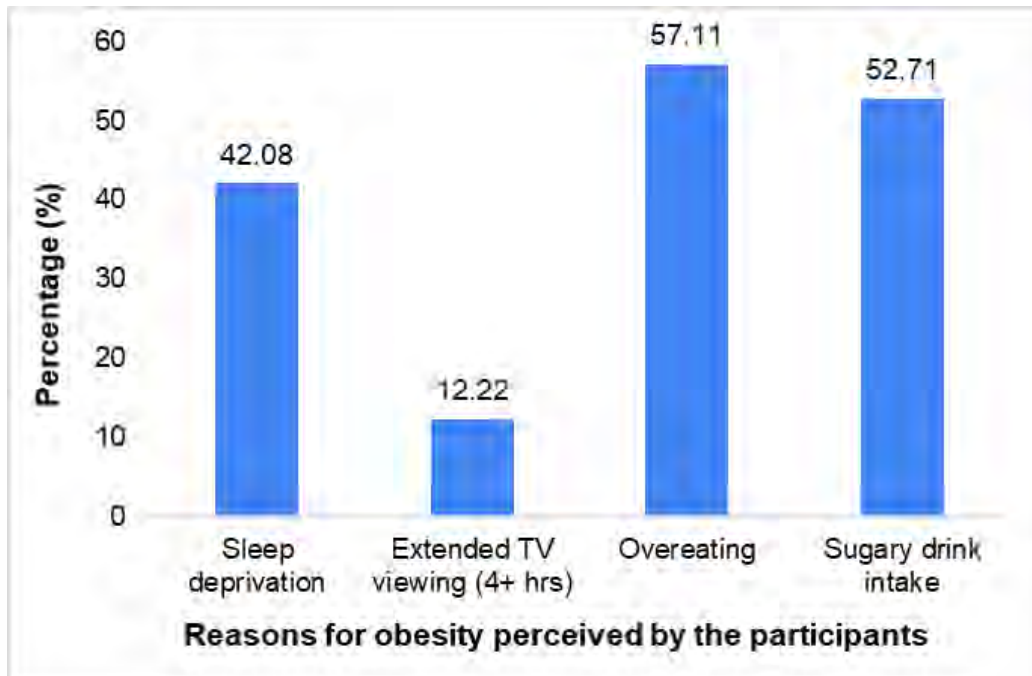


Figure 8: Perceptions of the participants regarding the reasons for obesity

3.11 Lifestyle Changes Prevent Obesity

The graph shows that most respondents believe lifestyle changes prevent obesity (figure 9), with 57.31% strongly agreeing and 37.88% agreeing. 0.2% respondents disagreed and 0.4% strongly disagreed, while 4.21% remained neutral.

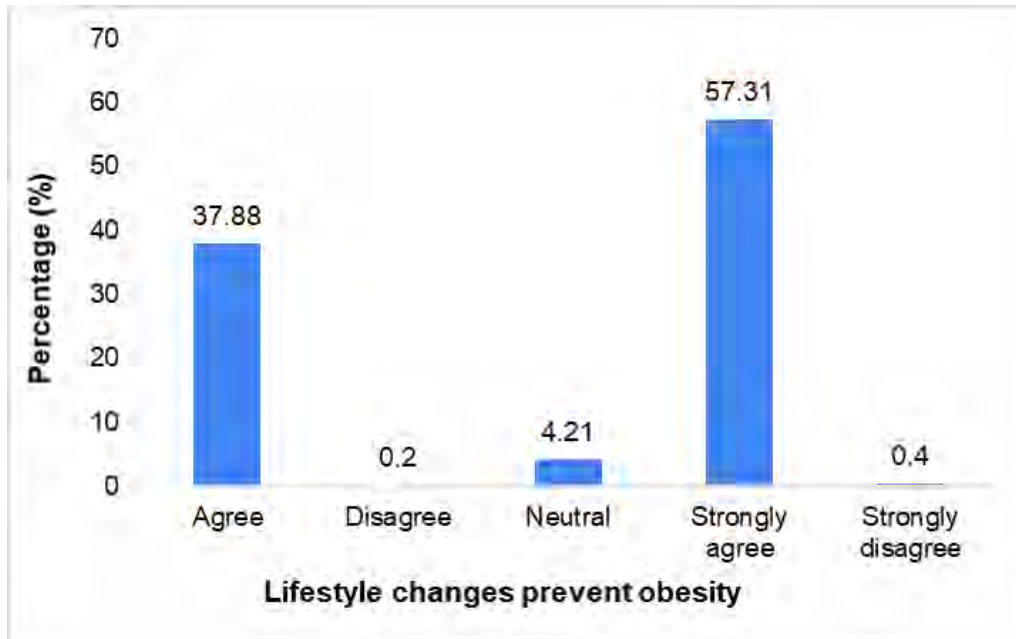


Figure 9: *Opinions on obesity can be prevented through lifestyle changes*

3.12 Consulted A Physician about Obesity

The graph shows responses to whether people have consulted a physician about obesity figure 10. A majority (56.31%) have never considered it, 26.45% have considered but not consulted, 13.03% did so once or twice, while only 4.21% consult regularly.

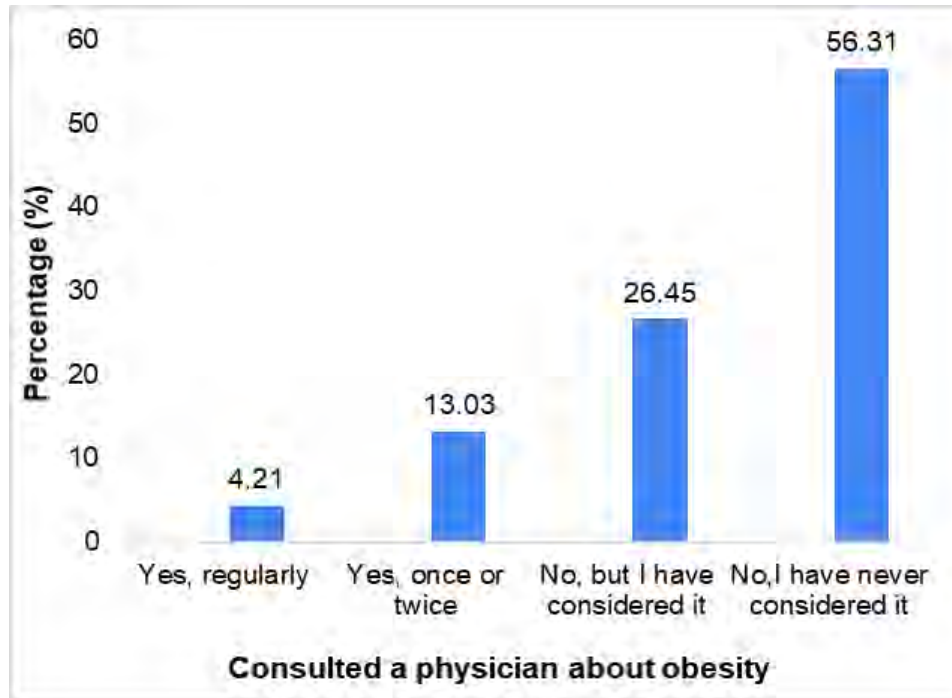


Figure 10: *Participants' consultation to a physician about obesity*

3.13 Regained Lost Weight

The graph shows the responses about regaining lost weight where 30.26% reported regaining some of the weight, while 28.46% never attempted weight loss (figure 11). It was seen that 20.44% respondent regained most/all of their weight and 20.84% respondent successfully maintained their weight loss.



Figure 11: Respondents' gradually regain of weight after losing it

3.14 Obesity Affected Mental Health

Figure 12 shows that most respondents believe obesity affects mental health, with 35.67% agreeing and 22.85% strongly agreeing. Meanwhile, 28.46% remained neutral, and only 10.02% disagreed and 3.01% strongly disagreed.

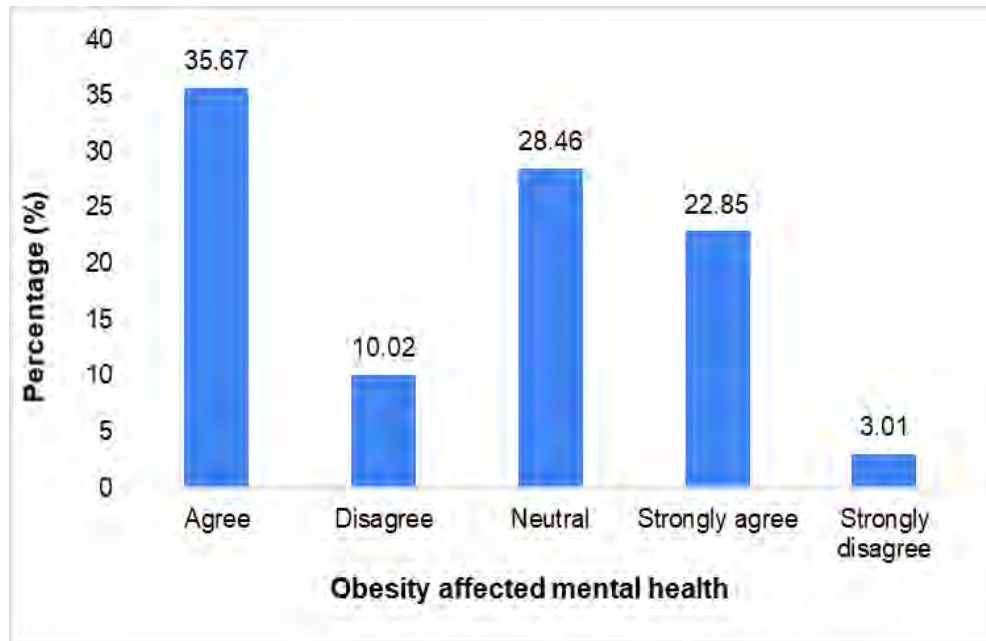


Figure 12: *Participants' mental health affected by obesity*

3.15 Higher Socioeconomic Status Raises Obesity Risk

Figure 13 shows that 58.12% respondents believe higher socioeconomic status raises the risk of obesity. In contrast, 20.04% disagreed, while 21.84% remained neutral, indicating a divided perception among participants. This suggests that although most participants see a link between socioeconomic status and obesity risk, a notable proportion are either uncertain or disagree.

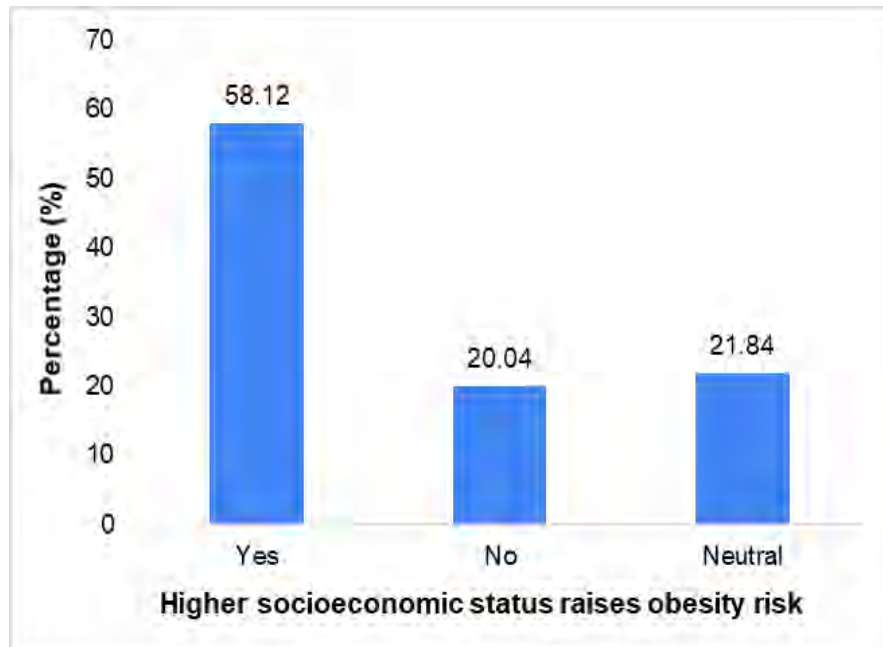


Figure 13: *Higher Socioeconomic status increases risk of obesity*

3.16 The Impact of Having Higher Socioeconomic Status

Figure 14 shows the responses of participants who believed that higher socioeconomic status increases the risk of obesity ($n = 290$). Among them, nearly half (49.31%) indicated that higher socioeconomic status strongly impacts obesity risk, while 45.52% reported that it somewhat

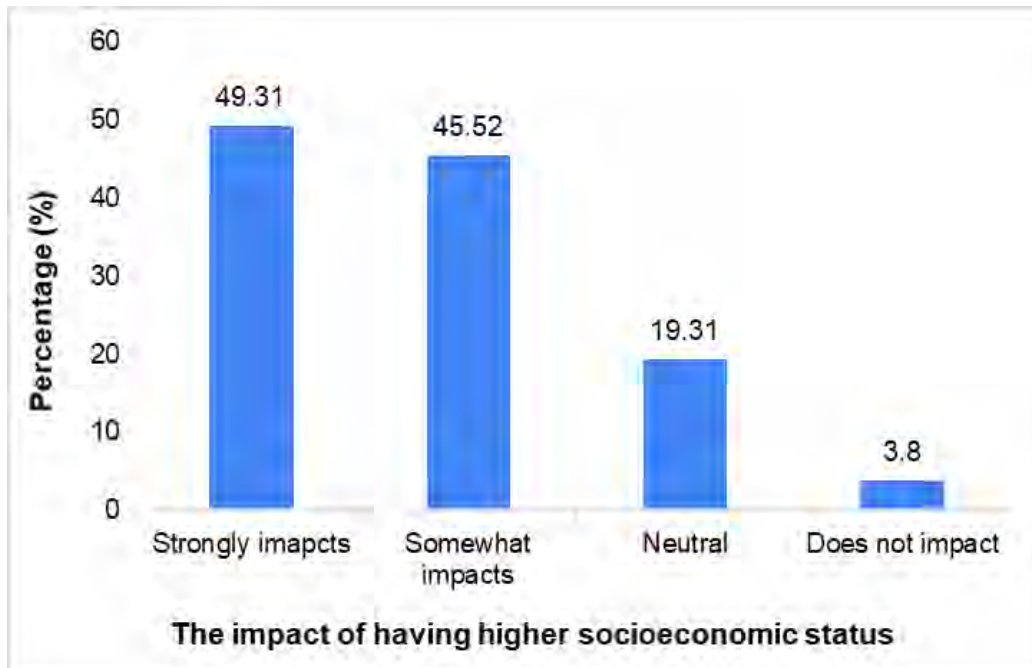


Figure 14: Participants' responds on the impact of having higher socioeconomic status

impacts. 19.31% of people remained neutral, and only 3.8% stated that it does not impact obesity risk.

3.17 Obesity Campaign Impact

Figure 15 shows that most respondents found obesity campaigns impactful, with 60.72% rating them as effective and 24.25% as very effective. In contrast, only 10.22% considered them ineffective and 4.81% found them very ineffective.

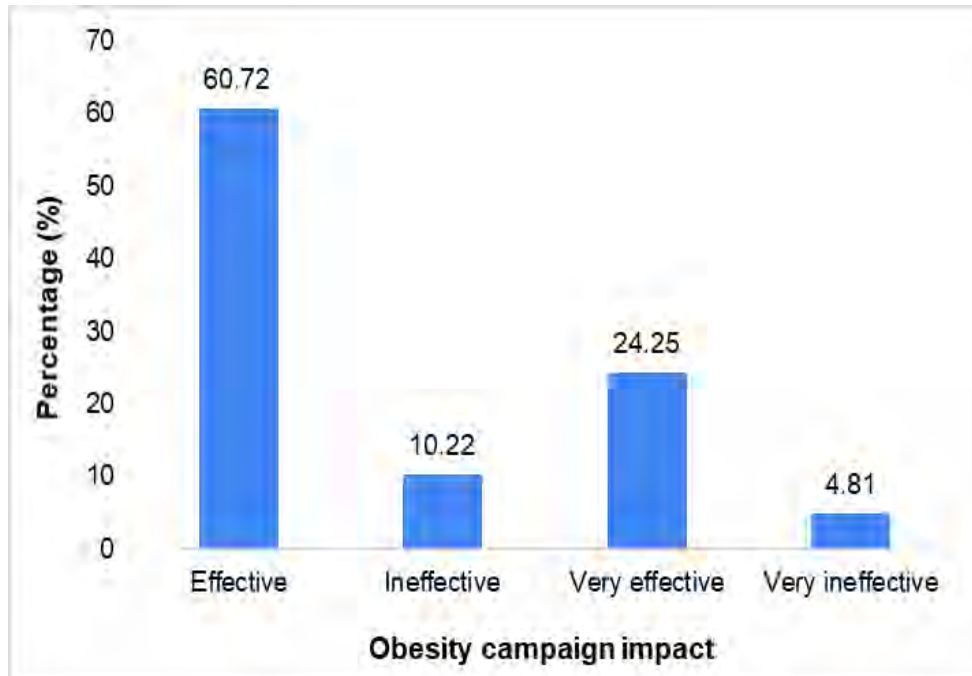


Figure 15: *Effectiveness of public health campaigns according to the participants*

3.18 Types of Media Most Effective for A Public Health Campaign

The graph shows the effectiveness of different media types for public health campaigns (figure 16) Social media leads significantly at 71.94%, followed by television (14.63%), offline campaigns (9.42%), newspaper (5.81%) and SMS or mobile app notification (5.21%), while radio (0.4%) is the least used medium.

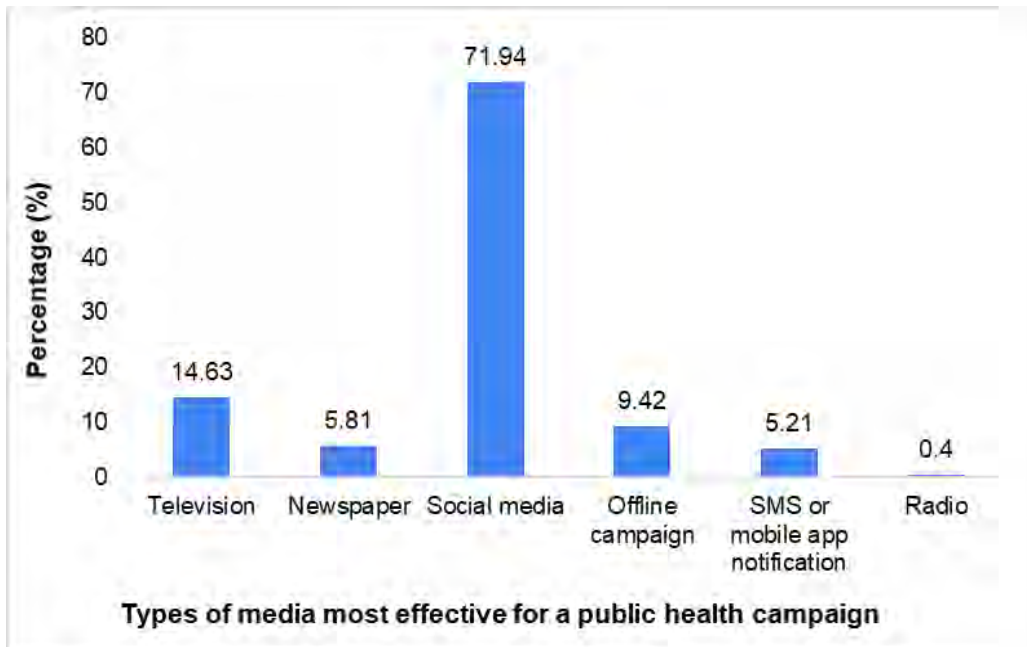


Figure 16: *Types of media most effective for a public health campaign according to the participants*

3.19 Opinions on Park Facilities (e.g. Walking Tracks, Sports Fields)

The graph illustrates respondents' opinions on park facilities such as walking tracks and sports fields (figure 17). A majority, 59.12% respondents believe new park facilities would encourage them exercise more, while 33.27% think it might encourage some people. Very few (5.41%) were unsure, 1.4% don't think it would encourage more exercise and 0.8% felt that no more facilities are needed.

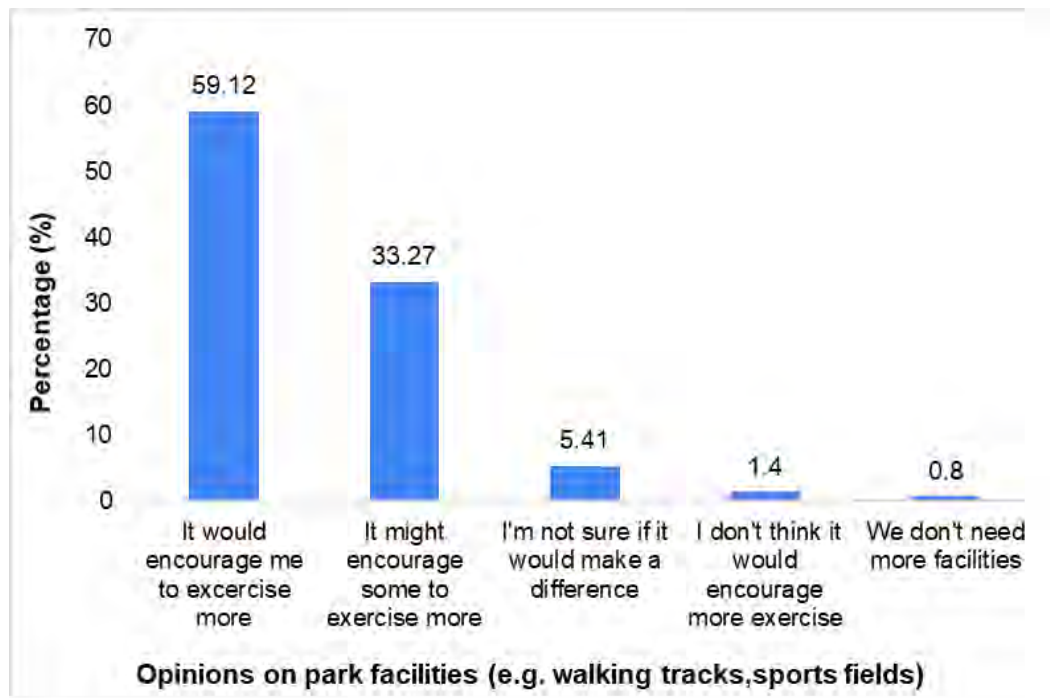


Figure 17: *Opinions on park facilities of the participants*

Chapter 4

Discussion

This study aims to assess individuals' body mass index (BMI) by examining genetic, behavioral, environmental, and social determinants in order to prevent health risks, enhance quality of life, and raise awareness about obesity. Investigated factors include food preferences, participation in physical activity, weekly exercise hours, fast-food consumption, feelings of shame or discomfort related to body weight, daily screen time, nighttime sleep duration, reasons for obesity, lifestyle modifications, physician consultation regarding obesity, weight regain after loss, the impact of obesity on mental health, and the association between higher socioeconomic status and obesity risk. Additional aspects considered were the perceived effectiveness of obesity campaigns, types of media exposure, opinions on park facilities, and the overall prevalence of obesity, particularly in urban populations, where an upward trend has been observed.

Among the 499 individuals assessed in this study, females demonstrated a higher prevalence of obesity compared with males. Among the 499 respondents, the majority preferred healthy food (35.87%), followed by tasty food (29.46%), while fast food was the least preferred option (4.01%). Among the remaining 346 participants, 18.5% reported a preference for both tasty and healthy food, 6.07% preferred a combination of tasty and fast food, 1.16% selected healthy and fast food, and 18.5% indicated a preference for all three categories: tasty, healthy, and fast food. Almost everyone (99%) respondents think that normal weight is important for health. A study conducted in Pakistan in 2020 reported that 58.7% of the 276 respondents agreed or strongly agreed that obesity is a very serious disease ((Laar et al., 2020), whereas findings from our survey revealed

that 85.8% of participants expressed the same view. A family history of obesity is a significant factor that can influence an individual's risk of developing obesity, as genetic factors may affect how the body processes food, stores fat, and regulates appetite. In our survey, the majority of respondents (56.3%) reported no family history of obesity, while 28% acknowledged having a family history, and 15.6% were uncertain about it. Regarding physical activity, our survey revealed that 20.64% of participants exercised daily, 19.24% engaged in physical activity four to six times per week or one to three times per week, and 9.82% exercised one to three times per month. In contrast, the Pakistani study reported that only 15.2% of participants engaged in any form of physical activity. Within this subgroup, 4.7% exercised once a week, while only 2.2% exercised four or more times per week. A large proportion of participants (84.78%) in that study attributed their inactivity to job-related fatigue and workload, with laziness also cited as a major contributing factor (Laar et al., 2020). In comparison, our findings showed that 31.06% of respondents reported exercising rarely or never.

In the survey of Pakistan (Laar et al., 2020), the duration of each exercise session was reported as follows: 19 participants (11 males and 8 females) exercised for less than 30 minutes, 14 participants (10 males and 4 females) exercised for 30-60 minutes, and 9 participants (4 males and 5 females) exercised for 60 minutes or more. This indicates that while the majority engaged in relatively short durations of activity, a meaningful proportion still reported exercising for an hour or longer per session (Laar et al., 2020). By contrast, our survey measured physical activity in terms of weekly accumulated hours. The findings showed that 60.12% of respondents exercised for less than 2 hours per week, 24.25% engaged in moderate exercise (2-3 hours weekly), and only 11.22% and 4.41% reported exercising for 4-6 hours and 7-9 hours per week, respectively. These findings suggest that although some individuals are meeting or exceeding recommended activity guidelines,

the majority of participants remain insufficiently active, highlighting the need for greater emphasis on promoting regular physical exercise.

The same survey revealed that over 64% of participants consumed fast food, junk food, sugary or oily items, or soft drinks either daily or 1-2 times per week. This pattern was more prevalent among females (68.6%) compared to males (61.9%). Furthermore, 27.9% of participants reported frequent consumption of these foods, whereas only 7.2% abstained entirely (Laar et al., 2020). And in our survey 50.3% of participants were found to consume these foods daily or 1-3 times a week (51.6% of males and 49.0% of females). An additional 25.35% consumed them 1-3 times a month, 14.03% 4-6 times per week, while 10.42% reported rare or no consumption. The finding indicates a higher overall proportion of participants consuming such foods at least once or twice per week, whereas our survey provides a more detailed distribution of consumption frequencies, with notable proportions reporting intake on a monthly as well as near-daily basis.

Alcohol consumption is associated with an increased risk of obesity, primarily because alcohol is high in calories (7.1 kcal/gram) and can promote fat accumulation, particularly in the abdominal area. A survey conducted in Ireland, published in 2023, revealed that alcohol consumption was highly prevalent among the study population, with 81.9% of the 6,864 participants reporting alcohol use. However, the majority of alcohol consumers (76.3%) drank less than three times per week, and approximately one-third (32.1%) engaged in binge drinking at least once a week (AlKalbani & Murrin, 2023). In contrast, our survey showed a different trend, with a large proportion of participants (95.6%) reporting no alcohol consumption, while only 4.4% of respondents consumed alcohol. Among these 4.4% alcohol consumers 3.2% people consume alcohol 2-4 times a week, and 1.2% people consume alcohol either 6-8 times a week or occasionally.

Those who are obese have a higher risk of developing serious health conditions such as type 2 diabetes, heart disease, high blood cholesterol, stroke, osteoarthritis, and respiratory problems (Kiran et al., 2024). A survey conducted in Pakistan in 2017 reported that obesity is associated with a wide spectrum of health risks, including diabetes mellitus, hypertension, several forms of cancer, as well as other pathological conditions such as osteoarthritis and respiratory disorders. Importantly, 98% of respondents in that survey demonstrated awareness of cardiovascular disease and diabetes as adverse consequences of obesity (Shahid et al., 2020). In comparison, findings from our survey indicate that 88.2% of participants were aware of these health risks, whereas 11.8% lacked such knowledge.

Overvaluation of weight and shape which is the tendency to judge oneself disproportionately based on body weight or shape has a bidirectional relationship with affective symptoms such as feeling fat and fearing weight gain. Specifically, because weight and shape are significant determinants of an individual's physical health, psychological well-being, and social acceptance, experiences of feeling fat or gaining weight may be perceived as personal failure, thereby eliciting emotions of distress, shame, disgust, or fear. In our survey, 58.72% do not feel ashamed or uncomfortable about their weight, while 41.28% experience such feelings. This highlights that although the majority feel at ease with their weight, a notable proportion still struggles with negative self-perceptions.

Prolonged sedentary behavior, particularly spending excessive hours in front of screens (television, computers, or mobile devices), is recognized as a major contributor to obesity. Our survey revealed that 30.86% of respondents reported spending 3-4 hours daily on screens, followed by 26.05% who spent more than 6 hours, and 21.24% who spent 5-6 hours per day. In contrast, only 13.43% of respondents limited their screen time to 1-2 hours, while just 9% restricted it to less than 1 hour per day. Comparable findings were reported in a survey conducted in Egypt in 2011 among 608

participants, where weekly screen time was assessed. The study revealed that 20.7% of participants spent more than 25 hours per week in front of a screen, a level classified as highly physically inactive. Additionally, 42.8% of participants were categorized as moderately physically inactive, reporting 11-25 hours of weekly screen time, while 36.5% reported fewer than 10 hours per week (Ismail et al., 2011).

Sleep loss has been shown to create hormonal imbalances that promote overeating and weight gain. Individuals with obesity are more likely to report insomnia or difficulty sleeping compared to those with normal weight. In children, inadequate sleep significantly increases the risk of becoming overweight or obese. Bedtime patterns may also influence weight: one study reported that children with later bedtimes had poorer diet quality, characterized by higher intake of nutrient-poor foods and lower consumption of fruits and vegetables. Furthermore, research indicates that among children who are overweight, those with shorter and more irregular sleep schedules are at the greatest risk for adverse health outcomes (Sleep Foundation, 2025). According to the National Sleep Foundation and the Centers for Disease Control and Prevention (CDC), the recommended sleep duration for adults is 7-9 hours per night. Our survey findings revealed that the majority of participants (72.34%) reported sleeping 6-8 hours per night, while 22.65% slept less than 6 hours, and only 5.01% slept more than 8 hours. Similarly, a study conducted in India in 2009, among 300 medical students revealed that 80.3% take 6-8 hours of sleep, 19.7% take 8-10 hours of sleep (Deotale et al., 2015). Taken together, both surveys highlight that a large proportion of individuals achieve sleep durations that fall within or close to the ideal range recommended by health authorities.

Poor lifestyle choices significantly contribute to the increasing risk of obesity. According to the Centers for Disease Control and Prevention (CDC) in 2018, factors such as poor sleep quality and the consumption of sweetened beverages were identified as key health risks (Centers for Disease

Control and Prevention, 2024). Further research indicates that larger portion sizes also promote overeating and obesity (Livingstone & Pourshahidi, 2014). In 2007, the Young Finns Study found that watching TV for more than four hours a day is associated with an increased risk of obesity (Heinonen et al., 2013). Our survey results revealed that overeating (57.11%) and sugary drink consumption (52.71%) were the most common contributors to obesity, while sleep deprivation (42.08%) and prolonged TV viewing (12.22%) had a lesser impact.

Obesity can be prevented through lifestyle changes. Dietary therapy includes instructing patients in the modification of their diets to achieve a decrease in caloric intake (National Institutes of Health [NIH],2000). In our survey, respondents believe lifestyle changes prevent obesity (figure-9), with 57.31% strongly agreeing and 37.88% agreeing. 0.2% respondents disagreed and 0.4% strongly disagreed, while 4.21% remained neutral.

Sometimes people consult a physician to assess a patient's weight status and provide advice, counseling, or treatment (National Institutes of Health [NIH],2000). In our survey, the majority of participants (56.31%) reported never considering consultation with a physician regarding their weight status. Additionally, 26.45% had considered it but had not pursued consultation, while 13.03% had consulted once or twice. Only 4.21% of respondents reported consulting regularly for weight-related concerns.

Some individuals experience regains of weight, which in turn increases their health risks. A majority of patients who lose weight eventually regain it (National Institutes of Health [NIH], 2000). Similarly, our research found that 0.26% of participants reported regaining some of the weight they had lost, while 28.46% had never attempted weight loss. Additionally, 20.44% of respondents reported regaining most or all of the weight they had lost, while 20.84% successfully maintained their weight loss.

The stigma associated with obesity can result in social isolation, low self-esteem, and body image dissatisfaction, which in turn may contribute to depressive symptoms and anxiety, negatively impacting mental health (Segal & Gunturu, 2024). In our study, the majority of respondents believed that obesity affects mental health, with 35.67% agreeing and 22.85% strongly agreeing. Meanwhile, 28.46% remained neutral, while only 10.02% disagreed and 3.01% strongly disagreed.

A study published in *Social Science & Medicine* examined data from 67 countries across different world regions to investigate the relationship between economic development, socioeconomic status (SES), and obesity. Body mass index (BMI) was calculated using self-reported height and weight, and obesity patterns were analyzed in relation to gross national product (GNP) and SES indicators such as education, occupation, and income. The results indicated that obesity rates tended to increase with national economic development. However, the association between SES and obesity varied across income levels. In lower-income countries, individuals with higher SES were more likely to be obese, whereas in higher-income countries, higher SES was linked to lower obesity prevalence. This reversal may be explained by differences in lifestyle behaviors: in lower-income settings, higher SES is often associated with greater access to calorie-dense foods and reduced engagement in physically demanding work, whereas in high-income settings, higher SES is more commonly linked to health-conscious dietary practices and regular physical activity (Houle, 2013). In our survey, 58.12% of respondents believed that higher socioeconomic status increases the risk of obesity, whereas 20.04% disagreed and 21.84% remained neutral, reflecting a divided perception among participants. Among those who perceived a positive association (n=290), nearly half (49.31%) indicated that higher socioeconomic status strongly impacts obesity risk, while 45.52% reported that it somewhat impacts risk. In contrast, 19.31% of respondents

expressed neutrality, and only 3.80% asserted that higher socioeconomic status does not impact obesity risk.

Public health communication campaigns have played a pivotal role in raising awareness about the risks of chronic illnesses and emerging infectious diseases, while also promoting the adoption of recommended treatment regimens. Most community-based interventions and social marketing campaigns targeting obesity have aimed to address the issue on a broad community level, rather than focusing solely on individuals who are obese or overweight. The Recommended Community Strategies and Measurements to Prevent Obesity in the United States: Implementation and Measurement Guide serves as an example of a comprehensive framework for guiding environmental and policy changes at the local government and community levels (Walls et al., 2011). In our study, we assessed the perceived effectiveness of the public health campaign targeting obesity. The results reveal that the majority of respondents found the campaign impactful, with 60.72% rating it as effective and 24.25% rating it as very effective. In contrast, only 10.22% of respondents considered the campaign ineffective, and 4.81% deemed it very ineffective.

The WHO has set in expanding its communication capacity to meet the growing demand for information and guidance. This includes integrating media relations, social media, branding, and health and emergency risk communications. All employees are expected to effectively utilize these strategies to achieve programmatic goals, guided by a framework of principles for best practices (World Health Organization [WHO], n.d.). In our survey, respondents were asked to identify the most effective media for public health campaigns. The majority (71.94%) identified social media as the most effective, followed by television (14.63%), offline campaigns (9.42%), newspapers

(5.81%), and SMS or mobile app notifications (5.21%). Radio was considered the least effective medium, with only 0.4% of respondents.

Lastly, a 10-year longitudinal study conducted in 2011 by researchers at the University of California, Berkeley, followed 3,173 children and found that access to urban parks and more importantly, to recreational programming was strongly associated with reduced obesity risk by age 18. More than half of the participants lacked recreational programs within 550 yards of their homes, yet the researchers estimated that providing universal access could shift nearly 10% of children from overweight to normal weight and 2% from obese to overweight (University of California, Berkeley, 2011). These findings underscore the critical role of recreational programming in promoting child health and preventing obesity. So in our survey when asked about the effectiveness of adding more facilities in local parks and recreation areas to encourage exercise, 59.12% of respondents indicated that new facilities would motivate them to exercise more, while 33.27% believed such improvements might encourage some people to be more active. A smaller proportion, 5.41%, were uncertain, 1.40% felt additional facilities would not increase exercise, and only 0.80% believed no further facilities are needed.

Chapter 5

Conclusion

This research examined the prevalence, determinants and consequences of obesity among individuals in Dhaka, Bangladesh revealing obesity as a pressing and complex public health issue. Results showed that among the 499 participants surveyed, nearly 43% were classified as overweight or obese, with overeating (57.1%) and high consumption of sugary beverages (52.7%) identified as the most significant contributors. Low physical activity levels were also evident, as 31% reported rarely or never exercising, and the majority engaged in less than two hours of weekly exercise. In addition, high rates of fast-food consumption and prolonged screen time were strongly associated with lifestyle risk factors for obesity.

The findings also emphasize the psychological and social burden of obesity. More than 40% of respondents reported feelings of shame or discomfort related to their weight, while a majority agreed that obesity negatively affects mental health. Notably, higher socioeconomic status was perceived by most participants as a risk factor for obesity, reflecting the influence of urbanization and changing lifestyles. Furthermore, challenges with weight maintenance were observed, with a considerable proportion regaining lost weight, underscoring the difficulty of sustaining long-term behavioral change.

The implications of these findings extend beyond individual health outcomes. They point to an urgent need for multi-level interventions, including nutrition education, community-based physical activity programs, and targeted health campaigns. Respondents identified social media and park facilities as particularly effective tools for raising awareness and promoting healthier behaviors. Therefore, policymakers, healthcare professionals, and community stakeholders must

collaborate to design comprehensive strategies that integrate health promotion, policy reform, and environmental support to address the obesity epidemic.

In conclusion, this research underscores the importance of early, preventive measures in reducing obesity prevalence and its associated health risks. By prioritizing education, sustainable lifestyle changes, and supportive community infrastructure, Bangladesh can work toward reducing obesity rates and alleviating the strain on its healthcare system. Preventing obesity will not only improve life expectancy and quality of life but also strengthen national resilience against the rising tide of noncommunicable diseases.

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