# Relation between Weight-Related Bullying and Emotional Reactions among Adolescents and Their Coping Strategies

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## Abstract

**Background:** Weight-related bullying is a devastating experience for adolescents and is associated with negative emotional consequences that can be modulated by applying different coping strategies. **Aim:** to assess the relation between weight-related bullying and emotional reactions among adolescents and their coping strategies. **Design:** A descriptive cross-sectional study design was used to accomplish this study. **Setting:** The study was conducted at the nutrition clinic allied to the only branch of health insurance clinics for school students in Damanhour city (Abo El Reesh) affiliated to the Public Authority for Health Insurance, Northwestern Delta Branch-Egypt. **Sample**: A purposive sample of 400 adolescents comprised the study sample. **Tools of data collection:** Three tools were used. Tool I: Adolescents Socio-Demographic Characteristics structured Interview schedule. Tool II: Weight Related Abuse Questionnaire. Tool III: Coping with bullying scale for children (CBSC). **Results:** Obese and slightly underweight adolescents represented 57.2% and 5%, of the total sample, respectively. The mean score of frequency of verbal bullying was 16.17±12.32, while that of physical bullying was 3.94±6.62; and the mean scores of negative emotional reactions resulting from verbal and physical bullying were 22.06±21.58 and 11.40±19.73, respectively. Regarding coping strategies, Physical distancing was the most common used coping strategy with average score of 1.24±0.99, while the least used coping strategy was cognitive approach with average score of 0.79±0.80. A statistically significant difference was found between verbal or physical weight-related bullying and different coping strategies as well as emotional reactions ($p<0.001$). **Conclusion:** Increased body mass index was associated with verbal and physical bullying, which in turn led to experiencing negative emotional reactions among adolescents. **Recommendations:** Increase awareness about weight-related bullying and its negative consequences on health in order to reduce its prevalence, and to teach adolescents different effective coping strategies to enable them to cope with bullying in a healthy way.

**Keywords:** Body Weight, Bullying, Coping strategies, Adolescents

## Introduction

Bullying victimization in adolescence is very common globally as it approximately reaches 36% **(Modecki et al., 2014)**. Bullying has been viewed traditionally as a distinct form of aggression which is defined by the Centers for Disease Control and Prevention (CDC) as deliberate, harmful acts of violence that are repeated or have a high likelihood of being repeated, and are characterized by a perceived power imbalance between bullies and victims **(Centers for Disease Control and Prevention, 2018)**.

The World Health Organization **(2012)** stated that approximately 13% of adolescents suffer frequent bullying victimization **(World Health Organization, 2012)**. In some industrialized nations, including as the United Kingdom, the United States (US), and Europe, the proportion of adolescents who are bullied on a regular basis ranges from 10% to 30% **(Modecki et al., 2014 & Chester et al., 2015)**. Furthermore, 20.2 % school-aged adolescents in the United States reported being bullied at school, with girls being tormented more than boys. **(Kann et al., 2016)**.

Bullying may take many forms, including verbal (e.g. name calling), physical (e.g. striking), relational (e.g. social exclusion), and cyber (e.g. cyber stalking, delivering harmful or insulting content) **(Waasdrop & Bradshaw, 2015)**. Bullying may also be classified as direct or indirect. Direct types of bullying involve threatening and degrading interactions and acts that happen in front of others, such as threats or physical assault. Indirect types of bullying usually encompass relational manipulation

such as exclusion from a group or rumor spreading **(Vessey et al., 2013; Juvonen & Graham, 2014)**.

One specific form of bullying is weight-related bullying, which is greatly predominant throughout all stages of adolescents around the world **(Rosenthal et al., 2015; & Shetgiri et al., 2015)** and extends to encompass both adolescents who are perceived to be under or over weight **(Carey et al., 2018)**.

Obese and overweight adolescents are twice as likely as their normal-weight peers to be bullied **(Van Geel et al., 2014 & Puhl et al., 2016)**. On the other hand, underweight adolescents had greater probabilities of being bullied than normal-weight adolescents **(Lian et al., 2018 & Wang et al., 2018)**. Adolescents also reported being bullied by their peers, friends, family members and teachers and the majority of bullying occurs mainly at school **(Himmelstein & Puhl, 2018; Palad et al., 2019; & U.S department of education, 2019)**.

Weight status can be measured either objectively by the body mass index (BMI) or subjectively by body image and one's own perception of weight status **(Carey et al., 2018).** BMI measurements are generally classified into underweight, normal weight, overweight, and obese **(Kuczmarski et al., 2000).**

The Centers for Disease Control and Prevention (CDC) defines pediatric obesity as a child or adolescent (youth) with a BMI score of 95th percentile or higher for children of the same age and sex on the CDC Growth Charts, whereas pediatric overweight is defined as a BMI score of 85th percentile or higher for children of the same age and sex on the CDC Growth Charts **(Centers for Disease Control and Prevention, 2016).**

Weight-related bullying has a negative impact on the health and well-being of children and adolescents and is associated with several emotional or internalizing problems including depression, anxiety, loneliness, sadness, embarrassment, disordered eating, sleeping problems, substance abuse and suicidal ideation. It is also associated with externalizing problems such as aggression **(O'Brien et al., 2016; Ford et al., 2017; Puhl et al., 2017a; Wang et al., 2018; Bradbury et al., 2018; Savahl et al., 2019; & Damme, 2019)**. In addition, social isolation, rejection, and decreased social ties are other possible outcomes for these adolescents **(Puhl & king, 2013)**. Noteworthy, these negative consequences may persist throughout adulthood **(Boden et al., 2016)**.

Adolescence is a key period of development and is known to be particularly difficult for young adolescents as they learn to cope with extensive changes in their physical appearance. The physical changes may not occur in a smooth regular schedule. Therefore, these sudden and rapid physical changes that the adolescents go through make them very sensitive and worried about their own body changes. They may also perform harsh comparisons about themselves with their peers **(Medline plus, 2019)**. Compared to normal weight adolescents, those who are obese or underweight have greater risks for weight-related bullying with its concomitant negative psychological sequelae **(Lian et al., 2018; Wang et al., 2018; & Ievers-Landis et al., 2019)**. Nevertheless, their ability to cope with weight-related bullying in an adaptive manner can have a significant impact on their mental health and well-being. **(Sikorski et al., 2015 & Himmelstein et al., 2018)**.

Coping is a term that describes a group of actions taken to manage environmental stress and the subsequent emotions which result from that stress **(Lazarus, 2013)**. Support seeking, problem-solving, wishful thinking, avoidance, and fighting back are examples of coping strategies for bullying, with some being more effective than others in dealing with bullying **(Undheim et al., 2016; Evans et al., 2017; Patton et al., 2017 & Parris et al., 2019)**. Adolescents who use avoidant coping strategies are more prone to develop depression. On the other hand, coping strategies such as seeking external support, avoiding self-blame, avoiding aggressive behavior and disengaging from the victim role can reduce social anxiety and depression **(Undheim et al., 2016 & Trompeter et al. 2018)**. Nevertheless, using avoidant coping can be beneficial when the adolescents are faced with situations perceived as non-controllable. In this situation, avoidant coping can be considered as a protective factor **(Johannessen et al., 2016)**. The effectiveness or ineffectiveness of a coping strategy is determined by the cognitive abilities of the adolescents and the characteristics of the context in which it is used, as well as the

availability of a diverse set of coping strategies that allow adolescents to adapt to a variety of stressful situations. Adolescents who used a variety of coping techniques or combinations of methods to cope with stressful situations had better emotional adjustment than those who only used a few coping strategies **(Guerra et al., 2017)**.

Pediatric nurses in child health care centers play an important role in management of childhood overweight/obesity through early detection and diagnosis of rare genetic diseases of obesity during regular meetings with families **(Sjunnestrand et al., 2019)**. They also can empower children and families to make healthy changes by explaining and clarifying the complex causes of obesity such as biological or genetic causes which are out of personal control. On the other hand, pediatric nurses also have a pivotal role in reducing weight stigma that impairs effective treatment through recognition and elimination of personal biases, direct clinical care, positive interactions with adolescents and their families, and correction of faulty opinions that weight related bullying can motivate adolescents to lose weight rather than motivating them in a more positive way **(Pont et al., 2017)**. Furthermore, nursing interventions in the management of pediatric obesity aim in modifying and encouraging healthy eating behaviors and regular exercise that continues throughout the child's development and into adulthood **(Mbare, 2015)**. Moreover, advocating for systemic changes in health care, education, and media are needed to support the health of adolescents and to change the description of obesity and promote stigma-free environments **(Pont et al., 2017)**.

Pediatric nurses may also act as a role model for other pediatric healthcare team members to demonstrate and model professional behavior that is supportive and nonbiased toward obese adolescents as well as using suitable, sensitive, and non-stigmatizing language when talking about obesity and body weight with either the healthcare team members or the adolescents and their families **(Kushner et al., 2014)**.

School nurses have a critical role in assisting adolescents in dealing with bullying. Because the school nurse does not have a disciplinary or academic role, students are more likely to confide in her and tell her their secrets. As a result, nurses are frequently on the front lines of bullying, serving as the first point of contact for both the victim and the bully. As a result, school nurses are in an ideal position to coordinate care for those involved in bullying episodes by developing strong relationships with students and demonstrating their approachability, gaining students' confidence, gathering as much information as possible from the situation, empowering them to take action, and coordinating with schools and parents about the bullying situations **(Moselhy, 2020)**.

Additionally, on multiple levels, school nurses play an important role in preventing and minimizing bullying victimization in the school setting. First, school nurses collaborate with school personnel, parents, healthcare providers, and community members to create and ensure safe school environment. Second, they advocate evidence-based violence prevention education and services in order to prevent bullying and lessen its consequences on adolescent students **(King, 2014)**.

**Significance of the study:** Bullying victimization throughout adolescence has been related to unfavorable health outcomes such as emotional and mental illnesses, as well as physical health problems that last into adulthood **(Wolke & Lereya, 2015)**. Studies on weight-related bullying victimization from developing countries are needed since there is relatively limited number of research on bullying from this setting, despite the fact that almost 90% of the world's adolescents live there **(UN Department for Economic and Social Affairs, 2017)**. A recent study performed in Egypt on 2364 adolescents aged 12 to 15 years reported that the prevalence of bullying victimization reached 70.1% **(Koyanagi et al., 2020)**. Thus, establishing successful prevention strategies and teaching adolescents effective coping skills in the start of one's life is crucial to avoid the various detrimental effects of bullying.

**Aim of the study:**

This study aimed to determine the relation between weight-related bullying and emotional reactions among adolescents and their coping strategies.

**Research questions:**

1. Is there a relation between body weight and bullying experiences among adolescents?
2. What are the adolescents' emotional reactions resulting from weight-related bullying?
3. What are the coping strategies used by adolescents in response to weight–related bullying?

**Operational definition:**

- **Verbal or psychological bullying:** in the current study refers to any form of verbal or emotional aggression such as but not limited to calling names, criticizing, making fun of, or yelling at the victims, or excluding them from groups or activities.
- **Physical bullying:** in the current study refers to any form of physical aggression such as but not limited to pushing, beating, kicking, grabbing, or pinching the victims.

## II. Materials and Methods

### Materials

**Research design:**

This study was carried out using a descriptive cross-sectional study design.

**Setting:**

The study was conducted at the nutrition clinic allied to the only branch of health insurance clinics for school students in Damanhour city (Abo El Reesh) affiliated to the Public Authority for Health Insurance, Northwestern Delta Branch-Egypt.

**Subjects:**

A purposive sample of adolescents attending the previously mentioned setting comprised the study sample after fulfilling the following criteria:

1. Age: ranged from 12-18 years old.
2. Both sexes
3. Have actual (according to BMI) or perceived over or under body weight.
4. Free from any medical conditions.
5. Not receiving steroids treatment

Based on Epi-info program V7.0 the sample size was estimated according to the following parameters:

1. Total Population size = 5400 (over three months).
2. Expected frequency = 50 %
3. Acceptable error = 5%
4. Confidence coefficient = 95%
5. Minimum sample size = 359.
6. Sample size = 400 (by adding approximately 10% for possible non-response).

**Study tools:**

To gather the necessary data, three tools were used:

**Tool I: Adolescents Socio-Demographic Characteristics structured Interview schedule:**

This tool was used to assess socio-demographic characteristics of adolescents and it included: age, gender, grade, weight, height, and BMI.

Based on the Centers for Disease Control and Prevention growth curves, BMI percentiles were computed for age and gender. The adolescents were then classified into five categories: underweight (<$5^{th}$ percentile), slightly under weight ($5^{th}$ to <$15^{th}$ percentile), normal weight ($15^{th}$ to <$85^{th}$ percentile), overweight ($85^{th}$ to <$95^{th}$ percentile), and obese (≥$95^{th}$ percentile) **(Kuczmarski et al., 2000)**.

**Tool II: Weight Related Abuse Questionnaire:**

This questionnaire was used to assess bullying experiences related to the adolescents' weight. This instrument was developed by **Salwen and Hymowitz, (2015)**. The questionnaire is composed of two parts, the first is about verbal or psychological bullying including 8 items, and the second is about physical bullying including 7 items. The items are graded on a scale of 0 (never) to 6 (more than 20 times per year); the total score for the first part ranged from 0 to 48, while the second part's total score varied from 0 to 42, whereas the higher the score the greater the frequency of bullying. Adolescents then were asked about the impact of these types of bullying on them and they were given a list of 14 different

emotional responses. Each emotion was scored on a scale of 0 (not at all) to 5 (extremely), with total values ranging from 0 to 70, whereas the higher the score, the greater the experienced negative emotions. Adolescents were also asked about who bullied them.

**Tool III: Coping with bullying scale for children (CBSC):**

This scale was developed by **Parris, (2013)** to examine children's coping with bullying. The scale was composed of 30 questions in which the adolescents when confronted with bullying, they were asked to rate how often they used each coping method. The responses were rated on a 4-point Likert scale as follows: (0= never, 1= sometimes, 2 = often, and 3= always). The coping strategies fell into five categories which are: problem-solving, physical distance, cognitive distance, cognitive approach (e.g. reframing, self-blame), and externalizing strategies. The average score for each category was then calculated to identify the most common used category.

## Methods

**Administrative process**

- An official letter from the Dean of the Faculty of Nursing, Damanhour University was sent to the Director of the Public Authority for Health Insurance, Northwestern Delta Branch and the Director of Abo El Reesh health insurance clinics in Damanhour city to gain the permission to conduct the study after explaining its purpose.

**Development of the study tools**

- The researchers translated the study tools II and III into Arabic and had it assessed for content validity by a jury of five experts in the field, after which the suggested changes were implemented.
- The reliability of tool II & III was done by measuring the internal consistency of their items using Cronbach Coefficient Alpha Test.
- The verbal abuse subscale (r =.93), the physical abuse subscale (r =.89), and the perceived emotional effect subscale (r =.96) all had excellent Cronbach's alpha.
- Cronbach's alpha for the coping scale was excellent (r =.91).

**Pilot study**

- A pilot study was accomplished by the researchers on 10% of the study sample (40 adolescents) attending the previously mentioned setting to test feasibility, clarity, and applicability of the tools. Those (40) adolescents were excluded from the study sample.

**Data collection process:**

- Adolescents were interviewed individually by the researchers at the specified waiting area in the morning when attending the clinic to describe the study's purpose in order to gain their cooperation for participation, and to obtain the necessary data.
- The interview time lasted from 15-20 minutes for each adolescent.
- The researchers used conventional portable electronic scales and stadiometers to measure and record the weights and heights of the adolescents before administering the questionnaire.
- Printed copies of the questionnaires along with a pen were handed directly to the adolescents. Each adolescent was given a questionnaire to complete and return to the researchers.
- The data were collected in the period from February to July 2019.

**Ethical considerations:**

- Permission was obtained from the aforementioned setting to conduct the study.
- Written informed assent from the adolescents and written informed consent from their parents were obtained after explaining the aim of the study and adolescents were assured that collected data were used only for the study purpose.
- Confidentiality of data was always ascertained
- Privacy and anonymity of the participants were guaranteed through using a code numbers instead of names.

**Statistical analysis of the data**

The IBM SPSS software package version 20.0 (IBM Corporation, Armonk, NY) was used to

examine the data that were fed into the computer. Number and percent were used to describe qualitative data. Range (minimum and maximum), mean, and standard deviation were used to represent quantitative data. The significance of the acquired results was assessed at a 5% level.

**The used tests were**

**1 - Student t-test**

To compare between two studied groups that have normally distributed quantitative variables

**2 - F-test (ANOVA)**

To compare more than two groups of normally distributed quantitative variables

**3 - Pearson coefficient**

To find a correlation between two quantitative variables that are normally distributed

**4 – Regression**

To detect the most independent/ affecting factor for affecting **psychological and Physical bullying.**

## Results

**Table (1)** illustrates that more than two-thirds of the sample their ages were either 15-17, or more than 17 years old (34.5%, 35.0% respectively) with mean age of 15.79 ± 2.17.

Moreover, nearly two-thirds of the sample were females (64.5%). However, the results demonstrated that greater than one-third (39.0%) of the adolescents were enrolled in the 3rd grade of secondary school, followed by less than one-fifth (17.5%) enrolled in the 1st grade of preparatory school.

The results exhibited that nearly two-thirds of the adolescents were overweight or obese (7.8%, 57.2% respectively), while 30.0% of them were within their normal weight but perceiving themselves as over or underweight, and only 5.0% of them were slightly underweight with mean BMI of 27.47±6.08.

**Table (2)** shows that the studied adolescents experienced verbal or psychological weight–related bullying by different forms. An equal percentage of them (19.5%) reported that someone laughed at them or harassed them more than 20 times per year, while nearly one-fifth of them (19.3%) complained that someone called them names more than 20 times per year. The mean score of verbal or psychological weight – related bullying was 16.17 ± 12.32.

**Table (3)** presents the distribution of the studied adolescents regarding experience of negative feelings resulting from verbal or psychological weight –related bullying. More than one quarter of the studied adolescents were slightly ashamed, or embarrassed (26.5%, 28.0% respectively) while less than one-fifth (17.5%) of the adolescents were moderately frustrated, or helpless with the mean of 22.06 ± 21.58.

**Figure (1):** This figure portrays that more than half (52.0%) of the studied adolescents were psychologically bullied by their classmates followed by 39.0% being bullied by other family members (grandmother, grandfather, aunt, uncle…), while 36.5% of them were bullied by their parents.

**Table (4)** exhibits the distribution of the studied adolescents regarding experience of physical weight –related bullying. The majority of the adolescents stated that they had never been hit or kicked by someone (88.5%, 86.8% respectively). However, 16.5% of them described that someone poked or pinched them because of their weight once per year with a mean score of total physical-related bullying equals to 3.94 ± 6.62.

**Table (5)** presents the distribution of the studied adolescents regarding experience of negative emotional reactions resulting from physical weight–related bullying. Nearly the same percentages of the studied adolescents reported slightly angry, or anxious (13.0%, 12.5% respectively), while 9.5% of them extremely felt embarrassed with total mean score of 11.40 ± 19.73.

**Figure (2):** This figure represents that less than one-third (30.5 %) of the studied adolescents were physically bullied by their classmates followed by 12.5% being bullied by parents.

**Table (6)** shows linear regression for factors affecting verbal or psychological weight-related bullying. Reported verbal or psychological weight–related bullying was further inspected in relation to adolescents' characteristics. Linear

regression models indicated that the frequency of psychological bullying was reported among females ($p<0.001^{*}$). Overweight or Obese adolescents reported more verbal bullying ($p<0.001^{*}$).

**Table (7)** portrays linear regression for factors affecting physical weight-related bullying. Reported Physical weight–related bullying was further inspected in relation to adolescents' characteristics. Linear regression models indicated that the frequency of physical bullying was reported among females ($p<0.001^{*}$). Overweight or Obese adolescents reported more physical bullying ($p<0.001^{*}$).

**Table (8)** shed the light on the studied adolescents' coping strategies towards psychological or physical bullying. Regarding problem solving strategies, more than one-quarter of the adolescents (27.5%) always think of ways to solve the problem, while 28.0% never think in the same way. However, nearly one-quarter of them (24.5%) always try to find a way to make the bully stop. Moreover, in relation to physical distancing as a strategy to cope with bullying, less than one-third of the studied adolescents (31.0%) always avoid areas the bully goes to, and more than one-quarter of them (26.5%) always walk away from the bully so he stops. On the other hand, adolescents who cope with bullying by cognitive distancing, the results revealed that 30.0% of them often adopt the manner of "pretend you don't care" followed by "Try to forget about it" or "Think about positive things in your life" (27.0%, 24.0% respectively). Furthermore, adolescents attempted to utilize cognitive approach techniques in response to being bullied. It was found that 35.5% of them reported sometimes keeping it to themselves and not tell anyone. Another strategy for cognitive approach involved thinking that it was their fault or thinking they deserve it (23.0%, 20.5% respectively). Additionally, the result revealed that adolescents engaged in externalizing behaviors as one approach of the coping strategies toward bullying. The adolescents' methods described as often "losing their temper, yell at the bully, and saying something mean to the bully (25.0%, 24.0%, and 21.5% respectively). While 23.0% of them sometimes lose their temper.

**Figure (3):** This figure represents that studied adolescents who reported psychological or physical weight–related bullying were more likely to utilize coping strategies of physical distancing with average score 1.24±0.99 followed by problem solving with average score 1.07 ± 0.83. In the 3rd rank came the cognitive distancing (1.02 ± 0.72) followed by externalizing and cognitive approach with average scores of 0.89 ± 0.80 and 0.79±0.80, respectively.

**Table (9)** clarifies the significant association between studied adolescents' demographic data and subscales' average total scores of coping strategies toward psychological or physical bullying. Regarding age, results revealed that adolescents ranging from 12–14 years were using physical distancing as coping strategies to avoid weight–related bullying with mean score of 1.54 ± 1.05 while problem solving (mean score 0.94±0.76) were used by adolescents more than 17 years. Concerning gender, male adolescents were using problem solving (1.05± 0.88) compared to female who used physical distancing as coping strategies to avoid weight–related bullying with mean score 1.31 ± 1.01. Considering BMI, it was observed that obese adolescents were using physical distancing as coping strategies to avoid weight – related bullying with mean score of 1.53 ± 0.93.

**Table (10):** illustrates the Correlation between the studied adolescents' experience of verbal or physical weight-related bullying with coping strategies. There was significant association between experiences of verbal or physical weight-related bullying with different coping strategies utilized to deal with bullying ($p<0.001$).

**Table (11):** demonstrates the correlation between emotional reactions with verbal, physical bullying, and coping strategies. Significant differences were observed between adolescents' experience of bullying either verbally or physically and their emotional reactions. ($r=0.712$ $p< 0.001$, $r=0.714$ $p< 0.001$ respectively). Moreover, adolescents' coping strategies were significantly correlated with their experience of emotional reactions ($p<0.001$).

**Table (1):** Distribution of the studied adolescents regarding their socio-demographic data (n = 400)

| | No. | % |
|---|---|---|
| **Age (years)** | | |
| **12 – 14** | 122 | 30.5 |
| **15 –17** | 138 | 34.5 |
| **> 17** | 140 | 35.0 |
| **Min. – Max.** | 12.0 – 18.0 | |
| **Mean ± SD** | 15.79 ± 2.17 | |
| **Gender** | | |
| **Male** | 142 | 35.5 |
| **Female** | 258 | 64.5 |
| **Grade** | | |
| **1st preparatory** | 70 | 17.5 |
| **2nd preparatory** | 40 | 10.0 |
| **3rd preparatory** | 44 | 11.0 |
| **1st secondary** | 48 | 12.0 |
| **2nd secondary** | 42 | 10.5 |
| **3rd secondary** | 156 | 39.0 |
| **Weight** | | |
| **Min. – Max.** | 33.0 – 97.0 | |
| **Mean ± SD** | 71.39 ± 16.73 | |
| **Height** | | |
| **Min. – Max.** | 143.0 – 178.0 | |
| **Mean ± SD** | 161.05±8.51 | |
| **BMI** | | |
| **Underweight** | 0 | 0.0 |
| **Slightly underweight** | 20 | 5.0 |
| **Normal (self-perceived over or underweight)** | 120 | 30.0 |
| **Overweight** | 31 | 7.8 |
| **Obese** | 229 | 57.2 |
| **Min. – Max.** | 16.00-35.60 | |
| **Mean ± SD** | 27.47±6.08 | |

**Table (2):** Distribution of the studied adolescents regarding frequency of verbal or psychological weight –related bullying (n = 400)

| Verbal or psychological weight –related bullying | Never (score 0) | | Once per year (score 1) | | Twice per year (score 2) | | 3 to 5 times per year (score 3) | | 6 to 10 times per year (score 4) | | 11 to 20 times per year (score 5) | | More than 20 times per year (score 6) | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | |
| **1. Someone laughed at you** | 122 | 30.5 | 36 | 9.0 | 48 | 12.0 | 44 | 11.0 | 61 | 15.2 | 11 | 2.8 | 78 | 19.5 | **2.58** | **2.25** |
| **2. Someone called you names** | 128 | 32.0 | 0 | 0.0 | 62 | 15.5 | 70 | 17.5 | 21 | 5.2 | 42 | 10.5 | 77 | 19.3 | **2.73** | **2.27** |
| **3. Someone criticized you or put you down** | 82 | 20.5 | 52 | 13.0 | 50 | 12.5 | 86 | 21.5 | 13 | 3.2 | 52 | 13.0 | 65 | 16.3 | **2.78** | **2.11** |
| **4. Someone yelled at you** | 240 | 60.0 | 30 | 7.5 | 48 | 12.0 | 52 | 13.0 | 3 | 0.7 | 11 | 2.8 | 16 | 4.0 | **1.11** | **1.65** |
| **5. Someone embarrassed you in front of others** | 102 | 25.5 | 46 | 11.5 | 40 | 10.0 | 102 | 25.5 | 4 | 1.0 | 52 | 13.0 | 54 | 13.5 | **2.58** | **2.10** |
| **6. Someone forced you to go on a diet** | 174 | 43.5 | 38 | 9.5 | 88 | 22.0 | 10 | 2.5 | 32 | 8.0 | 23 | 5.8 | 35 | 8.7 | **1.74** | **2.01** |
| **7. Someone harassed you** | 144 | 36.0 | 50 | 12.5 | 42 | 10.5 | 24 | 6.0 | 50 | 12.5 | 12 | 3.0 | 78 | 19.5 | **2.34** | **2.33** |
| **8. Someone threatened to abandon you** | 318 | 79.5 | 52 | 13.0 | 22 | 5.5 | 0 | 0.0 | 8 | 2.0 | 0 | 0.0 | 0 | 0.0 | **0.32** | **0.75** |
| **Total score of Verbal or psychological weight – related bullying** | | | | | | | | | | | | | | | | |
| Min. – Max. | 0.0 – 42.0 | | | | | | | | | | | | | | | |
| Mean ± SD | 16.17 ± 12.32 | | | | | | | | | | | | | | | |

**Table (3):** Distribution of the studied adolescents regarding experienced negative emotional reactions resulting from verbal or psychological weight –related bullying (n = 400)

| Emotional reactions | Never (score 0) | | Slightly (score 1) | | Somewhat (score 2) | | Moderately (score 3) | | Very (score 4) | | Extremely (score 5) | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | |
| **1. Angry** | 144 | 36.0 | 126 | 31.5 | 50 | 12.5 | 20 | 5.0 | 42 | 10.5 | 18 | 4.5 | **1.36** | **1.50** |
| **2. Anxious** | 202 | 50.5 | 82 | 20.5 | 56 | 14.0 | 40 | 10.0 | 11 | 2.8 | 9 | 2.2 | **1.01** | **1.29** |
| **3. Ashamed** | 102 | 25.5 | 106 | 26.5 | 64 | 16.0 | 28 | 7.0 | 54 | 13.5 | 46 | 11.5 | **1.91** | **1.71** |
| **4. Confused** | 266 | 66.5 | 68 | 17.0 | 16 | 4.0 | 10 | 2.5 | 13 | 3.2 | 27 | 6.8 | **0.80** | **1.46** |
| **5. Embarrassed** | 92 | 23.0 | 112 | 28.0 | 32 | 8.0 | 24 | 6.0 | 70 | 17.5 | 70 | 17.5 | **2.20** | **1.87** |
| **6. Frustrated** | 174 | 43.5 | 50 | 12.5 | 26 | 6.5 | 70 | 17.5 | 43 | 10.8 | 37 | 9.2 | **1.67** | **1.80** |
| **7. Helpless** | 202 | 50.5 | 52 | 13.0 | 26 | 6.5 | 70 | 17.5 | 21 | 5.2 | 29 | 7.2 | **1.36** | **1.67** |
| **8. Hopeless** | 210 | 52.5 | 42 | 10.5 | 18 | 4.5 | 60 | 15.0 | 21 | 5.2 | 49 | 12.2 | **1.47** | **1.84** |
| **9. Inadequate** | 158 | 39.5 | 68 | 17.0 | 44 | 11.0 | 20 | 5.0 | 62 | 15.5 | 48 | 12.0 | **1.76** | **1.86** |
| **10. Isolated** | 176 | 44.0 | 82 | 20.5 | 12 | 3.0 | 20 | 5.0 | 49 | 12.2 | 61 | 15.2 | **1.67** | **1.94** |
| **11. Lonely** | 186 | 46.5 | 72 | 18.0 | 12 | 3.0 | 20 | 5.0 | 60 | 15.0 | 50 | 12.5 | **1.61** | **1.92** |
| **12. Sad** | 142 | 35.5 | 80 | 20.0 | 18 | 4.5 | 50 | 12.5 | 59 | 14.8 | 51 | 12.8 | **1.89** | **1.86** |
| **13. Unloved** | 184 | 46.0 | 52 | 13.0 | 34 | 8.5 | 40 | 10.0 | 28 | 7.0 | 62 | 15.5 | **1.65** | **1.90** |
| **14. Unwanted** | 158 | 39.5 | 72 | 18.0 | 50 | 12.5 | 30 | 7.5 | 29 | 7.2 | 61 | 15.2 | **1.71** | **1.85** |
| **Min. – Max.** | 0.0 – 68.0 | | | | | | | | | | | | | |
| **Mean ± SD** | 22.06 ± 21.58 | | | | | | | | | | | | | |

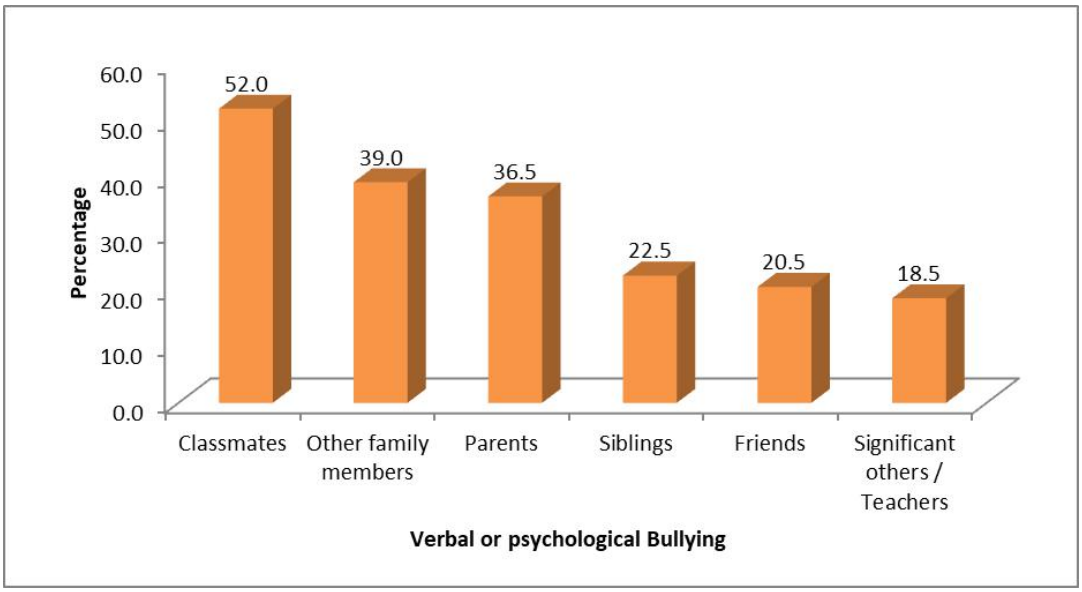


**Figure (1):** Distribution of the bullies who verbally or psychologically bullied the studied adolescents (n = 400) #

# More than one answer is allowed

**Table (4):** Distribution of the studied adolescents regarding frequency of physical weight-related bullying (n = 400)

| Physical bullying | Never (score 0) | | Once per year (score 1) | | Twice per year (score 2) | | 3 to 5 times per year (score 3) | | 6 to 10 times per year (score 4) | | 11 to 20 times per year (score 5) | | More than 20 times per year (score 6) | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | |
| **1. Someone poked or pinched you because of your weight** | 268 | 67.0 | 66 | 16.5 | 26 | 6.5 | 0 | 0.0 | 21 | 5.2 | 11 | 2.8 | 8 | 2.0 | **0.76** | **1.44** |
| **2. Someone grabbed you because of your weight** | 308 | 77.0 | 22 | 5.5 | 40 | 10.0 | 20 | 5.0 | 0 | 0.0 | 0 | 0.0 | 10 | 2.5 | **0.56** | **1.23** |
| **3. Someone threw something at you because of your weight** | 299 | 74.8 | 25 | 6.2 | 56 | 14.0 | 13 | 3.2 | 0 | 0.0 | 0 | 0.0 | 7 | 1.8 | **0.55** | **1.12** |
| **4. Someone pushed you because of your weight** | 270 | 67.5 | 14 | 3.5 | 22 | 5.5 | 54 | 13.5 | 12 | 3.0 | 21 | 5.2 | 7 | 1.8 | **1.04** | **1.70** |
| **5. Someone tripped you (or tried to) because of your weight** | 304 | 76.0 | 40 | 10.0 | 36 | 9.0 | 11 | 2.8 | 0 | 0.0 | 0 | 0.0 | 9 | 2.2 | **0.50** | **1.12** |
| **6. Someone hit you because of your weight** | 354 | 88.5 | 10 | 2.5 | 16 | 4.0 | 0 | 0.0 | 14 | 3.5 | 6 | 1.5 | 0 | 0.0 | **0.32** | **1.01** |
| **7. Someone kicked you because of your weight** | 347 | 86.8 | 37 | 9.2 | 6 | 1.5 | 0 | 0.0 | 10 | 2.5 | 0 | 0.0 | 0 | 0.0 | **0.22** | **0.71** |
| **Total score of physical bullying**<br>Min. – Max.<br>Mean ± SD | 0.0 – 30.0<br>3.94 ± 6.62 | | | | | | | | | | | | | | | |

**Table (5):** Distribution of the studied adolescents regarding experienced negative emotional reactions resulting from physical weight–related bullying (n = 400)

| Emotional reactions | Never (score 0 ) | | Slightly (score 1) | | Somewhat (score 2) | | Moderately (score 3) | | Very (score 4) | | Extremely (score 5) | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | | |
| **1. Angry** | 258 | 64.5 | 52 | 13.0 | 10 | 2.5 | 11 | 2.8 | 42 | 10.5 | 27 | 6.8 | **1.02** | **1.70** |
| **2. Anxious** | 314 | 78.5 | 50 | 12.5 | 6 | 1.5 | 1 | 0.2 | 21 | 5.2 | 8 | 2.0 | **0.47** | **1.15** |
| **3. Ashamed** | 278 | 69.5 | 20 | 5.0 | 32 | 8.0 | 20 | 5.0 | 23 | 5.8 | 27 | 6.8 | **0.93** | **1.60** |
| **4. Confused** | 314 | 78.5 | 36 | 9.0 | 0 | 0.0 | 12 | 3.0 | 20 | 5.0 | 18 | 4.5 | **0.61** | **1.39** |
| **5. Embarrassed** | 258 | 64.5 | 36 | 9.0 | 36 | 9.0 | 10 | 2.5 | 22 | 5.5 | 38 | 9.5 | **1.04** | **1.69** |
| **6. Frustrated** | 284 | 71.0 | 30 | 7.5 | 26 | 6.5 | 21 | 5.2 | 11 | 2.8 | 28 | 7.0 | **0.82** | **1.53** |
| **7. Helpless** | 324 | 81.0 | 10 | 2.5 | 16 | 4.0 | 22 | 5.5 | 10 | 2.5 | 18 | 4.5 | **0.60** | **1.36** |
| **8. Hopeless** | 334 | 83.5 | 10 | 2.5 | 6 | 1.5 | 10 | 2.5 | 14 | 3.5 | 26 | 6.5 | **0.60** | **1.46** |
| **9. Inadequate** | 270 | 67.5 | 34 | 8.5 | 26 | 6.5 | 12 | 3.0 | 30 | 7.5 | 28 | 7.0 | **0.95** | **1.63** |
| **10. Isolated** | 304 | 76.0 | 20 | 5.0 | 16 | 4.0 | 0 | 0.0 | 33 | 8.2 | 27 | 6.8 | **0.80** | **1.60** |
| **11. Lonely** | 310 | 77.5 | 14 | 3.5 | 10 | 2.5 | 7 | 1.8 | 30 | 7.5 | 29 | 7.2 | **0.80** | **1.63** |
| **12. Sad** | 288 | 72.0 | 0 | 0.0 | 32 | 8.0 | 22 | 5.5 | 30 | 7.5 | 28 | 7.0 | **0.97** | **1.68** |
| **13. Unloved** | 288 | 72.0 | 26 | 6.5 | 26 | 6.5 | 10 | 2.5 | 12 | 3.0 | 38 | 9.5 | **0.87** | **1.63** |
| **14. Unwanted** | 278 | 69.5 | 32 | 8.0 | 30 | 7.5 | 0 | 0.0 | 20 | 5.0 | 40 | 10.0 | **0.93** | **1.68** |
| **Min. – Max.**<br>**Mean ± SD** | 0.0 – 69.0<br>11.40± 19.73 | | | | | | | | | | | | | |

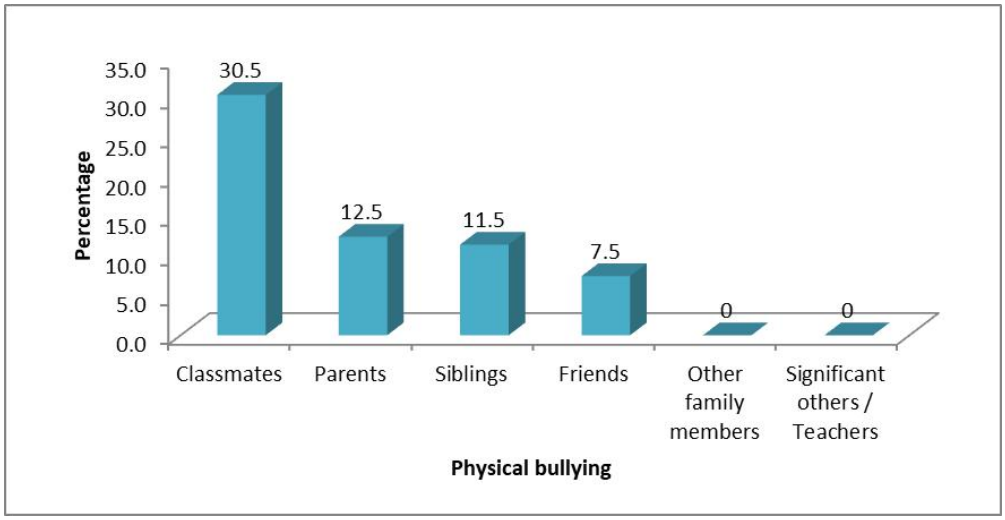


**Figure (2):** Distribution of the bullies who physically bullied the studied adolescents (n = 400) #
#: More than one answer is allowed

**Table (6):** Multivariate linear regression for factors affecting verbal or psychological weight–related bullying (n = 400)

| | B | Beta | t | p | 95% Confidence Interval for B | |
|---|---|---|---|---|---|---|
| | | | | | LL | UL |
| **Gender (Females)** | 5.605 | 0.216 | 5.169* | <0.001* | 3.473 | 7.736 |
| **Age** | -0.691 | -0.120 | 0.626 | 0.532 | -2.861 | 1.479 |
| **Grade** | -0.698 | -0.109 | 0.567 | 0.571 | -3.120 | 1.724 |
| **BMI** | 0.534 | 0.558 | 12.837* | <0.001* | 0.452 | 0.616 |

**$F = 46.877^*$, $p<0.001^*$, $R^2 = 0.322$**
F, p: f and p values for the model
$R^2$: Coefficient of determination
B: Unstandardized Coefficients
Beta: Standardized Coefficients
t: t-test of significance CI: Confidence interval
LL: Lower limit UL: Upper Limit
*: Statistically significant at $p \leq 0.05$

**Table (7):** Multivariate linear regression for factors affecting Physical weight-related bullying (n = 400)

| | B | Beta | t | p | 95% Confidence Interval for B | |
|---|---|---|---|---|---|---|
| | | | | | LL | UL |
| **Gender (Females)** | -1.455 | -0.102 | 2.053* | 0.041* | -2.848 | -0.062 |
| **Age** | -0.480 | -0.153 | 0.666 | 0.506 | -1.898 | 0.938 |
| **Grade** | 0.709 | 0.202 | 0.881 | 0.379 | -0.874 | 2.292 |
| **BMI** | 0.065 | 0.124 | 2.377* | 0.018* | 0.011 | 0.118 |

**$F = 3.231^*$, $p = 0.013^*$, $R^2 = 0.032$**
F,p: f and p values for the model
$R^2$: Coefficient of determination
B: Unstandardized Coefficients
Beta: Standardized Coefficients
t: t-test of significance CI: Confidence interval
LL: Lower limit UL: Upper Limit
*: Statistically significant at $p \leq 0.05$

**Table (8):** Distribution of the studied adolescents regarding their coping strategies toward psychological or physical bullying (n = 400)

| Coping | Never (score 0) | | Sometimes (score 1) | | Often (score 2) | | Always (score 3) | | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | | |
| **Problem solving:** | | | | | | | | | | |
| Try to find a way to make the bully stop | 132 | 33.0 | 72 | 18.0 | 98 | 24.5 | 98 | 24.5 | **1.41** | **1.18** |
| Think of ways to solve the problem | 112 | 28.0 | 86 | 21.5 | 92 | 23.0 | 110 | 27.5 | **1.50** | **1.17** |
| Keep friends near you to keep the bully away | 196 | 49.0 | 42 | 10.5 | 102 | 25.5 | 60 | 15.0 | **1.07** | **1.16** |
| Make a plan of what to do about it | 202 | 50.5 | 42 | 10.5 | 102 | 25.5 | 54 | 13.5 | **1.02** | **1.14** |
| Think you should have done something to stop it | 156 | 39.0 | 82 | 20.5 | 86 | 21.5 | 76 | 19.0 | **1.21** | **1.15** |
| Tell Your parents | 236 | 59.0 | 34 | 8.5 | 90 | 22.5 | 40 | 10.0 | **0.84** | **1.09** |
| Talk about how you feel with friends or family | 182 | 45.5 | 114 | 28.5 | 48 | 12.0 | 56 | 14.0 | **0.95** | **1.07** |
| Tell the teacher | 246 | 61.5 | 60 | 15.0 | 94 | 23.5 | 0 | 0.0 | **0.62** | **0.84** |
| **Physical distancing:** | | | | | | | | | | |
| Avoid areas the bully goes to | 132 | 33.0 | 40 | 10.0 | 104 | 26.0 | 124 | 31.0 | **1.55** | **1.24** |
| Stay near adults so the bully wont bully you | 182 | 45.5 | 52 | 13.0 | 72 | 18.0 | 94 | 23.5 | **1.20** | **1.24** |
| Go to a quiet place to calm down | 198 | 49.5 | 112 | 28.0 | 56 | 14.0 | 34 | 8.5 | **0.82** | **0.97** |
| Walk away from the bully so he stops | 156 | 39.0 | 36 | 9.0 | 102 | 25.5 | 106 | 26.5 | **1.40** | **1.25** |
| **Cognitive distancing:** | | | | | | | | | | |
| Pretend you don't care | 122 | 30.5 | 80 | 20.0 | 120 | 30.0 | 78 | 19.5 | **1.39** | **1.11** |
| Try to forget about it | 112 | 28.0 | 104 | 26.0 | 108 | 27.0 | 76 | 19.0 | **1.37** | **1.08** |
| Ignore the situation | 112 | 28.0 | 166 | 41.5 | 42 | 10.5 | 80 | 20.0 | **1.23** | **1.07** |
| Think it is not that bad | 188 | 47.0 | 96 | 24.0 | 72 | 18.0 | 44 | 11.0 | **0.93** | **1.04** |
| Ignore the bully so he stops bullying you | 126 | 31.5 | 136 | 34.0 | 88 | 22.0 | 50 | 12.5 | **1.16** | **1.01** |
| Think about positive things in your life | 166 | 41.5 | 98 | 24.5 | 96 | 24.0 | 40 | 10.0 | **1.03** | **1.03** |
| Count to 10 | 328 | 82.0 | 32 | 8.0 | 30 | 7.5 | 10 | 2.5 | **0.31** | **0.72** |
| Take deep breaths | 204 | 51.0 | 132 | 33.0 | 30 | 7.5 | 34 | 8.5 | **0.74** | **0.93** |
| **Cognitive approach:** | | | | | | | | | | |
| Think you deserve it | 236 | 59.0 | 82 | 20.5 | 36 | 9.0 | 46 | 11.5 | **0.73** | **1.03** |
| Think it is because of something you did | 282 | 70.5 | 72 | 18.0 | 46 | 11.5 | 0 | 0.0 | **0.41** | **0.69** |
| Blame yourself for what happened | 238 | 59.5 | 46 | 11.5 | 46 | 11.5 | 70 | 17.5 | **0.87** | **1.18** |
| Think it is your fault | 234 | 58.5 | 92 | 23.0 | 10 | 2.5 | 64 | 16.0 | **0.76** | **1.09** |
| Keep it to yourself and not tell anyone | 128 | 32.0 | 142 | 35.5 | 60 | 15.0 | 70 | 17.5 | **1.18** | **1.07** |
| **Externalizing:** | | | | | | | | | | |
| Yell at the bully | 186 | 46.5 | 62 | 15.5 | 96 | 24.0 | 56 | 14.0 | **1.06** | **1.12** |
| Lose your temper | 172 | 43.0 | 92 | 23.0 | 100 | 25.0 | 36 | 9.0 | **1.00** | **1.02** |
| Say something mean to the bully | 206 | 51.5 | 58 | 14.5 | 86 | 21.5 | 50 | 12.5 | **0.95** | **1.11** |
| Bully the person back | 236 | 59.0 | 52 | 13.0 | 62 | 15.5 | 50 | 12.5 | **0.82** | **1.10** |
| Physically attack the bully | 276 | 69.0 | 40 | 10.0 | 48 | 12.0 | 36 | 9.0 | **0.61** | **1.01** |

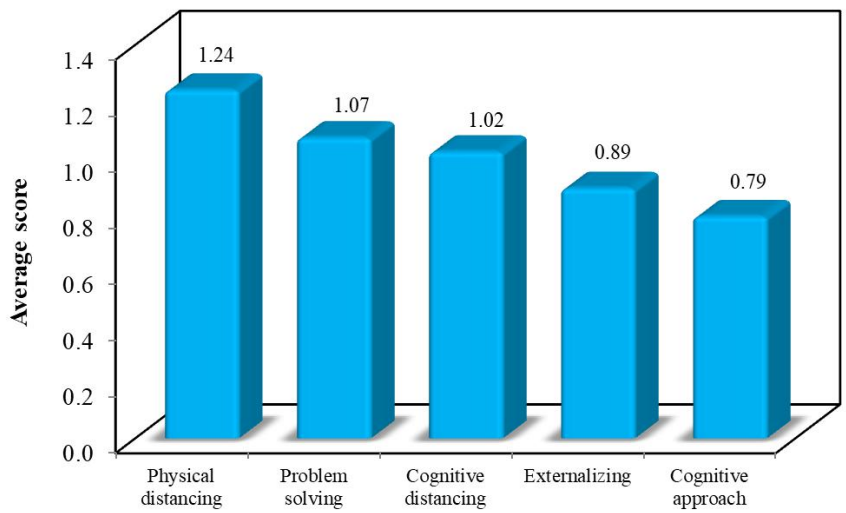


**Figure (3):** Distribution of the studied adolescents according to their ranking of utilized coping strategies toward psychological or physical bullying (n = 400).

**Table (9):** Relation between the studied adolescents' demographic data and their subscales average total scores of coping strategies toward psychological or physical weight–related bullying (n = 400).

| Demographic data | N | Problem solving | Physical distancing | Cognitive distancing | Cognitive approach | Externalizing |
|---|---|---|---|---|---|---|
| **Age (years)** | | | | | | |
| 12 – 14 | 122 | 1.21±0.83 | 1.54 ± 1.05 | 1.26± 0.72 | 0.71 ± 0.68 | 1.24± 0.88 |
| 15 –17 | 138 | 1.09± 0.88 | 1.01 ± 0.95 | 0.83± 0.71 | 0.68 ± 0.89 | 0.73± 0.68 |
| > 17 | 140 | 0.94±0.76 | 1.21 ± 0.90 | 0.98± 0.66 | 0.97 ± 0.76 | 0.73± 0.75 |
| **F(p)** | | 3.417*(0.034*) | 9.842*(<0.001*) | 12.619*(<0.001*) | 5.706*(0.004*) | 18.855*(<0.001* |
| **Gender** | | | | | | |
| Male | 142 | 1.05 ± 0.88 | 1.11 ± 0.93 | 0.81 ± 0.63 | 0.66 ± 0.63 | 1.04 ± 0.75 |
| Female | 258 | 1.09 ± 0.80 | 1.31 ± 1.01 | 1.13 ± 0.74 | 0.86 ± 0.86 | 0.80 ± 0.82 |
| **t(p)** | | 0.375(0.708) | 1.954(0.051) | 4.436*(<0.001*) | 2.758*(0.006*) | 2.860*(0.004*) |
| **BMI** | | | | | | |
| Slightly underweight | 20 | 0.75±0.26 | 1.25±0.26 | 1.0±0.38 | 0.30±0.10 | 0.90±0.31 |
| Normal | 120 | 0.71±0.66 | 0.81±0.97 | 1.09±0.87 | 0.47±0.44 | 0.77±1.01 |
| Overweight | 31 | 0.34 ± 0.50 | 0.69 ± 0.95 | 0.58 ± 0.80 | 0.59 ± 0.83 | 0.03 ± 0.18 |
| Obese | 229 | 1.39 ± 0.83 | 1.53 ± 0.93 | 1.04 ± 0.62 | 1.03 ± 0.87 | 1.06 ± 0.67 |
| **F(p)** | | 35.281* (<0.001*) | 19.692* (<0.001*) | 4.361* (0.005*) | 19.155* (<0.001*) | 18.391* (<0.001*) |

F: F for ANOVA test t: Student t-test
p: p value for association between different categories
*: Statistically significant at $p \leq 0.05$

**Table (10):** Correlation between the studied adolescents' experience of verbal or physical bullying with coping strategies

| | Verbal bullying | | Physical bullying | |
|---|---|---|---|---|
| | r | p | r | p |
| **Coping strategies** | | | | |
| Problem solving | 0.749* | <0.001* | 0.485* | <0.001* |
| Physical distancing | 0.713* | <0.001* | 0.411* | <0.001* |
| Cognitive distancing | 0. 494* | <0.001* | 0.349* | <0.001* |
| Cognitive approach | 0.597* | <0.001* | 0.429* | <0.001* |
| Externalizing | 0.540* | <0.001* | 0.447* | <0.001* |

**r: Pearson coefficient**
*: Statistically significant at $p \leq 0.05$

**Table (11):** Correlation between emotional reactions with verbal and physical bullying and coping strategies

| | Emotional reactions | | | |
|---|---|---|---|---|
| | Verbal or psychological weight – related bullying | | Physical weight –related bullying | |
| | r | p | r | p |
| **Verbal bullying** | 0.712* | < 0.001* | | |
| **Physical bullying** | | | 0.714* | <0.001* |
| **Coping strategies** | | | | |
| Problem solving | 0.671* | <0.001* | 0.412* | <0.001* |
| Physical distancing | 0.627* | <0.001* | 0.430* | <0.001* |
| Cognitive distancing | 0.325* | <0.001* | 0.345* | <0.001* |
| Cognitive approach | 0.712* | <0.001* | 0.497* | <0.001* |
| Externalizing | 0.265* | <0.001* | 0.298* | <0.001* |

**r: Pearson coefficient**
*: Statistically significant at $p \leq 0.05$

## Discussion

Weight-related bullying among adolescents is a major problem today because of its increasing prevalence as well as its adverse short- and long-term outcomes experienced by those who are directly involved **(Damme, 2019)**. Therefore, Adolescents must be able to cope successfully with these situations in order to avoid poor emotional health consequences **(Bradbury et al., 2018)**.

Regarding socio-demographic data, the present study demonstrated that more than two-thirds of the adolescents their ages were either 15- to17 years, or more than 17 years old. This result is inconsistent with **Wang et al., (2018)** who examined the relation between body weight and bullying victimization among United States adolescents and reported that 59.4% of the participants were 16 years or younger. According to gender, the existing results publicized that most of the studied adolescents who attended the nutrition clinic were females (64.5%). This result is confirmed by **Ievers-Landis et al., (2019)** who performed a study in the United States to assess weight-related teasing among adolescents who were evaluated for hospital-affiliated weight-management program and found that many of them were females (63.7%). This finding may be explained in the light of that the females are more concerned than males about their weight and body image and they are always dreaming of perfect body shape and good looking, therefore, they are always seeking weight-management programs.

Weight-related bullying has been identified as the most common type of bullying among adolescents. Overweight and obese adolescents have a higher risk to be bullied than their healthy weight peers **(Lee et al., 2018)**. Even adolescents who are not classified as overweight or obese according to BMI standards can still suffer from weight stigma and its related negative consequences **(O'Brien et al., 2016)**. The results of this study exhibited that nearly two-thirds of the studied adolescents were overweight or obese (7.8% and 57.2%, respectively), while only 5% of them were slightly under weight. These findings are in agreement with **Himmelstein and Puhl, (2018)** who studied the adolescents' coping strategies in relation to weight-related bullying and noticed that more than two-thirds of the studied adolescents were classified as overweight or obese, 37.2% and 34.5%, respectively. Conversely, a couple of Egyptian studies assessing the prevalence of obesity among school adolescents reported that less than half of the studied adolescents were overweight or obese. **(Talat & El Shahat, 2016; Mohammed et al., 2019)**.

Self-perceived weight, rather than objective weight, and weight-related concerns and pressures affect the association between body weight/BMI and body image, and may increase the risk of adolescents' vulnerability to bullying victimization. Weight concerns and pressures are experienced when adolescents are dissatisfied with their body image, such as believing that their body is too fat or not muscular enough, and perceive that others also believe that their body shape or size is unacceptable **(Voelker et al., 2015 & Carey et al., 2018)**. In accordance with the previous statement, the current results revealed that 30% of the studied adolescents had normal BMI, but despite that, they were attending the nutrition clinic to seek weight management programs. This result is further supported by **Puhl and Luedicke, (2012)** who found that 65% of adolescents reporting weight-related bullying had normal BMI. Additionally, **Puhl et al., (2017b)** mentioned that adolescents from all weight categories (obese, overweight, normal weight, underweight) reported weight-related bullying from peers and family members.

Regarding the types of bullying, the current results revealed that verbal bullying was more prevalent than physical bullying as the mean score of frequency of verbal bullying was 16.17 ± 12.32 while the mean score of frequency of physical bullying was 3.94 ± 6.62. Since most of bullying incidents occur at school setting, therefore, the current finding may be attributed to the fact that the adolescents in the school at this age are afraid of authority's disapproval and punishment from their teachers or school principal, so they tend to hide their aggressive behavior toward their peers by avoiding overt physical form of bullying and using verbal bullying instead,

because it is not seen by their teachers and they can easily deny it if they were confronted with their wrong behaviors. This finding is in agreement with study made by **Koyanagi et al., (2020)** who stated that adolescents with overweight or obesity were exposed to verbal bullying more than physical or relational bullying. Furthermore, **Gong et al., (2020)** in their study that was held in China to examine the association between weight status and bullying experience among adolescents, reported that verbal bullying was the most common type of bullying. On the other hand, **Waasdrop et al., (2018)** mentioned that physical bullying was also associated with overweight and obesity.

As regard the frequency of bullying, the present study declared that the majority of the adolescents experienced bullying episodes ranging from 1 to more than 20 times per year. This finding is supported by the findings of another Egyptian study performed by **Moselhy, (2020)**, that was assessing the effectiveness of anti-bullying educational program among preparatory school students, and stated that about two-thirds of the students were bullied more than once during the last month. Moreover, the current results were also reinforced by a couple of studies performed in Spain, the first one was accomplished by **Kirchner et al., (2017)** who identified the victimized adolescents and their coping strategies, and stated that the mean number of reported lifetime victimization was 17.53+19.84. While the other study conducted by **Guerra et al., (2017)** mentioned that adolescents reported between 0 and 18 incidents of victimization during their lifetime. In contrast to the current results, **Ahmed and El-Slamoni, (2018)** who assessed the impact of school bullying on preparatory students' self-esteem in Egypt stated that more than half of the students (63.5%) were not exposed to bullying.

Negative emotions displayed by adolescents were always linked to bullying victimization for more than two decades. Sadness, hopelessness, loneliness, depression and anxiety have been identified as consequences of bullying victimization **(Jeong et al., 2016)**. The results of the present study were congruent with the previous evidence, as the mean score of experienced negative emotional reactions resulting from verbal or psychological weight–related bullying was 22.06 ± 21.58, while that of physical weight-related bullying was 11.40 ± 19.73. The current results were also supported by several American studies, where **Himmelstein and Puhl, (2018)** found that adolescents had reported a high frequency of negative emotions in response to weight-related victimization, while **Lee et al., (2018)** and **Rupp and McCoy, (2019)** mentioned that overweight and obese adolescents had greater probabilities of experiencing depression and psychological distress as a result of bullying.

weight-related bullying in adolescence by family members, or both family and peers, was found to be a consistent predictor of unhealthy weight control behaviors, emotional distress, and poorer body image in adulthood **(Puhl et al., 2017b)**. The results of the current study disclosed that the most common source of verbal bullying was classmates or peers followed by other family members, parents, siblings, friends, and finally teachers. While the frequent sources of physical bullying were classmates, parents, siblings, and friends. These findings may be explained in the light of that some parents or other individuals had a misbelief about weight-related bullying and may think that by this way they are motivating the adolescents to lose weight. But actually, they need to correct this misbelief and understand that bullying is regarded by the adolescents as the biggest obstacle to weight loss. The current results are congruent with the results of **Himmelstein and Puhl, (2018)** who found that peers were the most frequent source of weight-related bullying followed by friends, family members, and the least frequent source of weight-related bullying were the teachers. In addition, the existing results also go in line with the results of **Øen et al., (2018)** who claimed that most of the adolescents in their study that was carried out in Norway expressed their lack of support from friends and family regarding weight discrimination which made them feel unsecure and sad. On the contrary to the present results, **Pulido et al., (2019)** stated that parental support for adolescents experiencing school bullying was effective in

reducing negative emotional reactions related to bullying.

Regarding gender, the linear regression model for factors affecting verbal or physical weight–related bullying declared that female adolescents were more bullied than males. This finding can be explained in the light of the prevailing sociocultural values that the girls should be thin and have perfect body shape, and those who are overweight or obese are perceived as stigmatized and are less socially accepted by their peers. On the other hand, society may perceive obesity among males as a sign of physical strength. Additionally, this finding could be explained by the fact that female adolescents became socially mature earlier than males. Thus, they use their social skills in criticizing their peers, make fun of them, and spread rumors about them. The current results are in harmony with the results of two other Chinese studies who reported that bullying was more common among girls than boys **(Liu et al., 2016 & Gong et al., 2020)**. In addition, **Ievers-Landis et al., (2019)** stated in their study that being male was a protective factor for weight-related teasing. In contrast to the present findings, **Carey et al., (2018)** reported that boys were more bullied than girls, especially those who were weighing too little. Besides, **Wang et al., (2018)** mentioned that the relation between weight status and bullying victimization was only significant in male adolescents but not female adolescents, and both underweight and obese adolescents were more likely to be bullied than their normal weight peers. They also added that boys who were underweight were the most likely to be bullied among males, while girls who were underweight were the least likely to be bullied among females. Furthermore, **Koyanagi et al., (2020)** mentioned that physical bullying was more common among boys, while **Van Geel et al., (2014) and Guerra et al., (2017)** found that bullying and aggressive behaviors didn't vary according to gender.

The relationship between BMI and being bullied was also investigated. The present findings revealed that the adolescents who were either obese or overweight according to their BMI were exposed to verbal or physical weight-related bullying (p value <0.001). This finding may be attributed to the fact that overweight or obese adolescents may be bullied due to the negative stereotypes and body-weight stigma associated with obesity as being lazy, incompetent, or lacking in willpower. These findings stand in line with the results of **Van Geel et al., (2014)** who suggested that both overweight and obese youths were more likely to be victims of bullying. Also, **Gong et al., (2020)** reported that in comparison with normal-weight students, only the obese students had a higher likelihood of being verbally or physically bullied.

Coping strategies have been proved to be effective in reducing the psychological distress resulting from weight-related bullying **(O'Brien et al., 2016)**. The current results clarified that the most common coping strategy endorsed by the adolescents was physical distancing followed by problem solving, cognitive distancing (distraction), externalizing (aggressive behavior), and cognitive approach (self-blaming). This finding may be explained in the light of that the bullies always tend to be stronger than the bullied victims, thus, the adolescents may try to avoid being in direct contact with them due to this power imbalance. This finding was supported by a number of studies who stated that most of their participants coped with bullying through avoidance **(Kirchner et al., 2017; Yufe et al., 2017; Himmelstein and Puhl, 2018)**. Additionally, the present study revealed that females used problem solving and cognitive distancing more than males, while males used externalizing more than females. This finding may be explained in the light of that males usually use physical aggressive behaviors such as kicking or beating more than females. This finding is reinforced by the findings of **Bradbury et al., (2018)** who mentioned that females used more distraction, problem solving, and social support than males, while males used more retaliation than females. Contrary to this finding, **Xie et al., (2020)** reported that coping via help-seeking came first followed by avoidance and self-defense. Moreover, **Øen et al., (2018)** stated that most of the adolescents in their study responded to negative weight-related consequences via self-blaming.

It's worth noting that if adolescents are taught how to respond correctly to bullying, the harmful effects of bullying can be mitigated.

Furthermore, **Xie et al. (2020)** found in their study that there is no one optimal coping technique for adolescents, and that the success of any utilized approach is mostly determined by the degree of bullying victimization. As a result, there is no golden rule for choosing a coping strategy for bullied adolescents, and as a result, the adolescents should be prepared with a variety of coping methods to utilize in various situations.

## Conclusion

The results of the current study concluded that increased body mass index was associated with verbal and physical bullying and adolescents experienced negative emotional reactions resulting from both types of bullying. The adolescents responded to bullying experience by using different types of coping strategies which are physical distancing, problem solving, cognitive distancing, externalizing, and cognitive approach.

## Recommendations

The following recommendations are drawn from the findings of the current study:

**For adolescents:**

- Teach adolescents strategies for how to cope with bullying in a healthy way.
- Encourage adolescents to practice realistic ways for dealing with bullying situations.
- Inform the adolescents about the methods for reporting bullying at school.
- Encourage adolescents to participate in activities that will help them develop social skills and boost their self-esteem.

**For parents:**

- Have open conversations with the adolescents and be encouraging and supportive.
- Teach adolescents self-acceptance and foster their self-esteem.
- Offer advice on how to cope with bullying.
- Teach adolescents reality and acceptance of criticism in early life.

**For school administrators and teachers:**

- Develop and implement strong policies prohibiting weigh-related bullying.
- Identify students who are bullied because of their weight and offer them coping skills.
- Provide classroom instructions to enhance adolescents' attitudes about their obese classmates to reduce weight stigma and discrimination associated with obesity and overweight.
- Offer social and emotional support for students who have been bullied because of their weight.
- Increase adult supervision in school yard and other places in the school setting to monitor and prevent bullying.

**For health professionals:**

- Raise the awareness about weight-related bullying and its negative health effects on adolescents with obesity to minimize its prevalence.
- Discuss weight-related bullying with adolescents to assess its severity and to determine whether they have the necessary abilities to cope effectively.
- Inform parents about the negative effects of bullying on their children's health.
- Provide resources for families to support adolescents and help them cope with weight-related bullying.

**For further research:**

- Longitudinal studies are needed to disentangle the relationship between the variables under study.

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## Conflict of Interest

There are no conflicts of interest disclosed by the researchers.

## Author Contribution

All researchers were part of the initial design of the research. They shared in collecting and analyzing the data, writing, and editing the final version of the text of the manuscript and formatting it and submitting it for publication.

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