# YOUTH REPORT: Sale of Diet and Muscle Supplements and its Impact on Youth Eating Disorders in the United States

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**Abstract**

Eating disorders: one of the most prevalent categorical subsets of mental illnesses, have a steady upward trend amongst adolescents in the United States and globally. While extensive research regarding the root causes of eating disorders exists, it offers minimal insight into the impact of diet and muscle supplement sales to minors on rising prevalence rates. This study aims to analyze how the sale of diet and muscle supplements impacts adolescent eating disorders in the United States. By collecting data through online surveys, our youth team was able to provide an overview of how the sale of these pills affects adolescents across racial, gender, and other demographic factors. After collecting 1518 survey responses, researchers determined that 23.3 percent, 22.1 percent, and 34.6 percent of youth respondents have used over-the-counter diet pills, detox teas, or other weight loss supplements in Massachusetts, New York, and California, respectively. In addition, across the three states, 75% of the youth respondents were not informed of the dangers of using weight loss or muscle building supplements. Although the survey method of collecting data may have its limitations, it will be useful in determining whether supplement usage negatively impacts adolescents by promoting body alteration, a set beauty standard, and certain body shapes that conform to societal norms.

Categories: Youth, Public Health, Eating Disorders
Keywords: Eating Disorders, Weight Loss Supplements, Muscle Building Supplements

  

## Literature Review

Eating disorders have been on a steady global rise over the past few decades, with a 20% overall increase in rates amongst 15-19 year olds in the United States between 1990 and 2017 (Our World in Data, 2018) and an approximately 120% increase worldwide (Galmiche et al., 2019). The major subgroups of eating disorders are anorexia nervosa, bulimia nervosa, and a third category of unclassifiable conditions defined as 'eating disorder not otherwise specified' or EDNOS, which constitutes the majority of eating disorder cases (Bunnell et al., 1990). Today, anorexia nervosa is classified as the mental illness with the highest fatality rate, not only in the narrower subgroup of eating disorders, but comprehensively, and it has mirrored the upward trend displayed by its less prevalent counterparts. This alarming rise is cause for concern for medical professionals because of the drastic measures individuals with eating disorders are willing to take as a result of the damaging and often dysmorphic thought processes they possess. Standardized mortality rates for eating disorders sit anywhere between 1.36% to 20%, and the presence of an eating disorder is provably associated with an increased risk of premature death from a number of causes, the main being cardiovascular complication and suicide (Jáuregui-Garrido & Jáuregui-Lobera, 2012).

Aetiological models of eating disorders have gone through numerous reformations over time, with presumed causes ranging from entirely biological—as was the case with the early 20th century notion that hypopituitarism could lead to anorexia nervosa— to entirely psychological (Schmidt, 2003). A strong link has been identified, for example, between the constant portrayal of idealised body types in media and a range of psychological conditions that lead to body dissatisfaction—a range that is often complimented by the development of eating disorders (Katzmarzyk, Davis, 2001). The findings of a cross-sectional survey across 548 girls from grades 5 to 12 who self-reported their frequency of reading fashion magazines alongside general behaviour in relation to dieting and exercise revealed that, compared to infrequent readers, those who frequently read the magazines were twice as likely to have started a dieting regimen and three times more likely to have initiated an exercise program to lose weight (Field, Cheung et al., 1999). Evidently, seemingly harmless stimuli from the environment can have a catapulting effect on how the development of self-image progresses, especially in young brains more vulnerable to external influence.

Therefore, while extensive research on factors that lead to the development of eating disorders exists, it has failed to examine their rising prevalence among adolescents in the United States. One potentially contributing factor in particular— dietary supplement usage— is often absent from literature regarding youth eating disorders. Unhealthy dietary behaviors have been identified by the Center for Disease Control and Prevention (CDC) as one of the six categories of health behaviors that are linked to the leading causes of mortality and morbidity across all age groups in the United States (Massey-Stokes, 2002). Research conducted by the Strategic Training Initiative for the Prevention of Eating Disorders (STRIPED) has suggested a link between weight loss/muscle building supplement usage and eating disorder prevalence, insinuating that those with eating disorders may take advantage of easy access to such remedies (Austin et al., 2013).[1] With attempts to engage in weight-loss efforts made by 45% of a sample of youth, according to a study conducted by the National Adolescent Health Information Center (Pal, 2009), adolescents are becoming increasingly susceptible to the use of these heavily promoted alternative weight-loss

[1] A study conducted by STRIPED and published to the Journal of Eating Disorders found that, of the four in-sample clinical patients suspected of overusing diet and muscle supplements, all four had a previous eating disorder diagnosis (Austin et al., 2013).

methods. Keeping in mind the COVID-19 pandemic, which has limited access to exercising facilities and had a negative impact on food consumption behaviour patterns, many adolescents have turned towards easier alternatives, such as consuming diet pills or muscle building supplements, to lose weight (Huber, Steffen, 2021). Additionally, the ever-expanding availability of diverse, algorithmically selective content throughout social media platforms has made it worth considering that youth may be at a higher risk of developing eating disorders in correlation to media influence, such as advocacy of the use of supplements and potentially enabling disordered eating behaviors online. This study is therefore crucial, and aims to provide a visualization of youth supplement usage in order to provide valuable insight into their impact and offer possible means of addressing the issue at hand.

**Materials & Methods**

In order to compile data, a survey was conducted using a pre-existing online survey created by the Strategic Training Initiative for the Prevention of Eating Disorders (STRIPED). This survey has been used by STRIPED in the past, but researchers at the International Socioeconomics Laboratory aimed to create a youth-led survey to address an issue that affects millions of youth across the country. Google Forms was used as the survey tool. The study aimed to collect 500 responses from each of the following states: California, Massachusetts, and New York. 508, 510, and 500 responses were collected from California, Massachusetts, and New York, respectively. The survey gathered data from youth of ages 12-22, giving a varied perspective on the impact of access to diet and muscle supplements in adolescents. Firstly, data was collected on the respondent's age, location, pronouns, and heritage. Some of the factors that respondents were asked about included weight loss and muscle supplement use, age of supplement usage, education regarding these supplements, and encouragement to use these products. Analyzing these factors will help provide a structure in which the impact of the sales of weight loss and muscle supplements among adolescents in the United States can be addressed. The full text of the survey can be found here.

**Data**

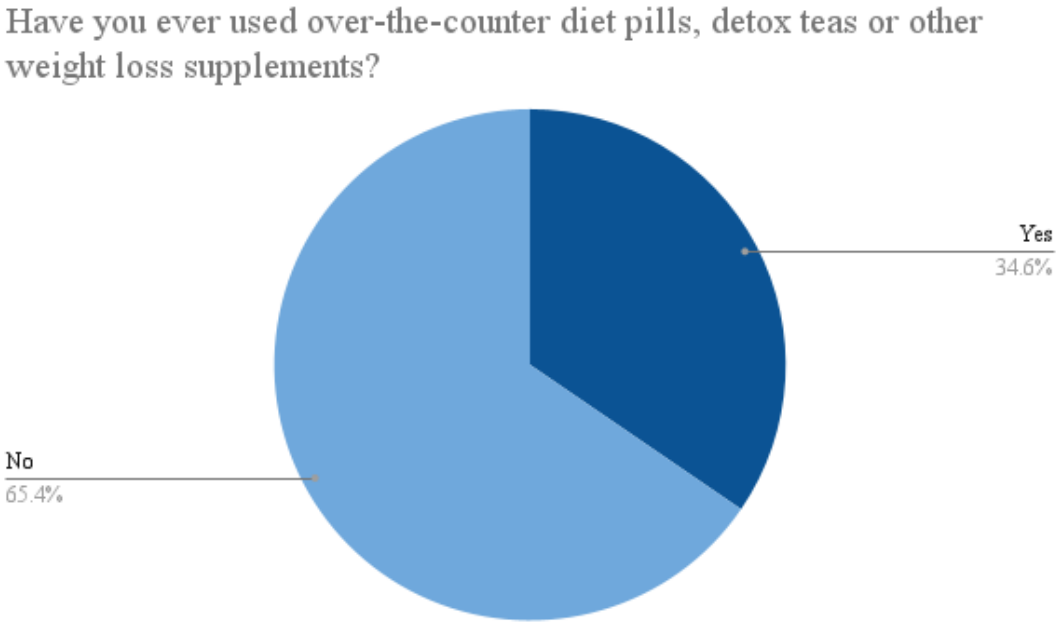

*Figure 1:* Data from 508 respondents located in the state of California on whether they had ever used any form of weight loss supplementation.

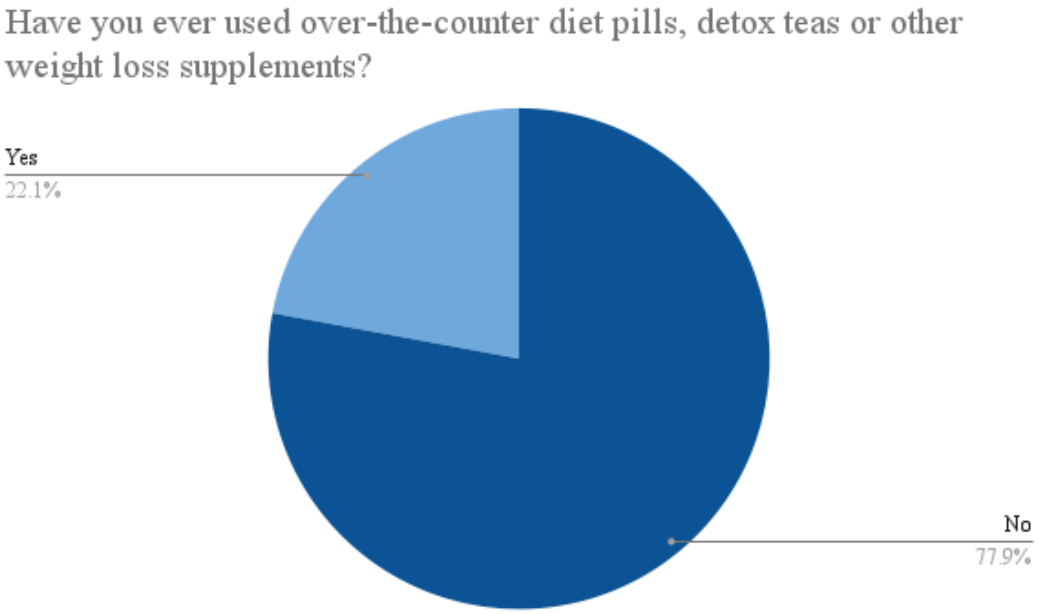


*Figure 1:* Data from 500 respondents located in the state of New York on whether they had ever used any form of weight loss supplementation.

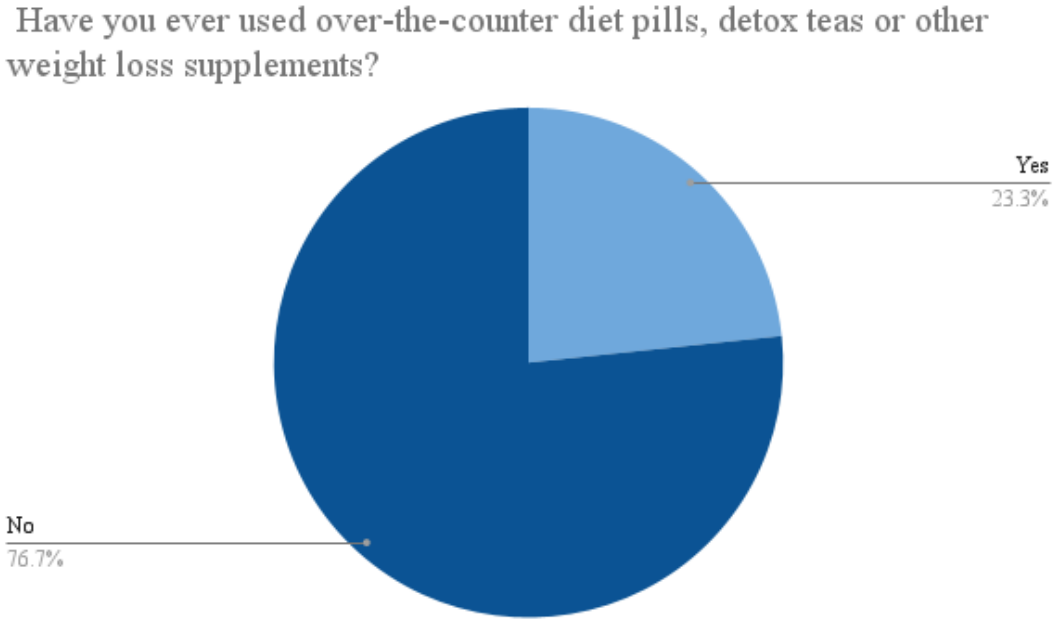


*Figure 3:* Data from 510 respondents located in the state of Massachusetts on whether they had ever used any form of weight loss supplementation.

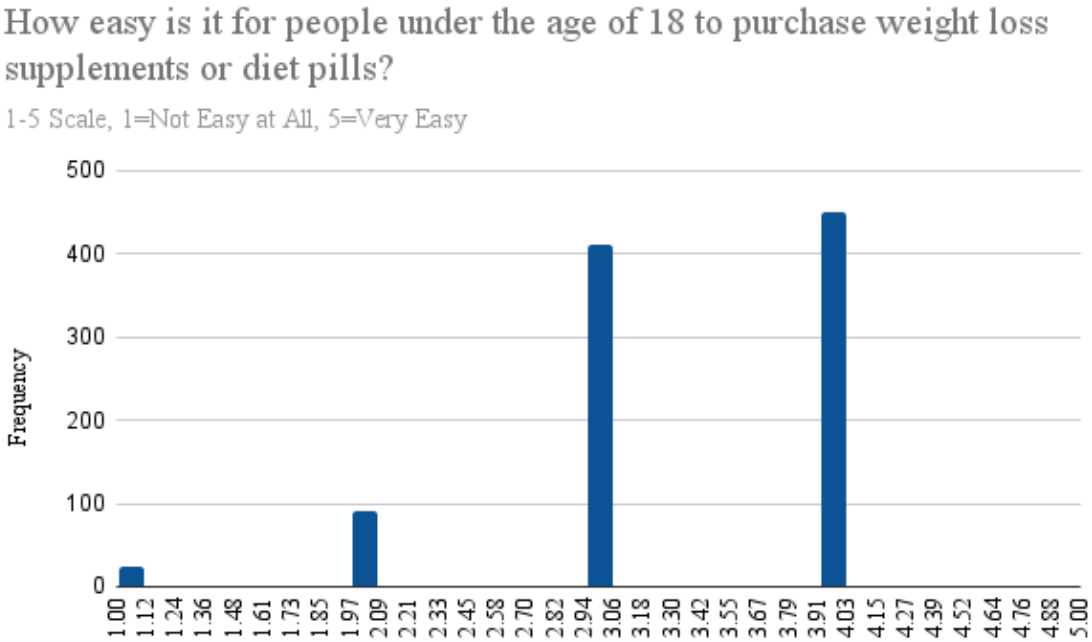


*Figure 4:* Data from a total of 1518 respondents located in the states of California, New York and Massachusetts on ease of purchase of weight loss supplements for minors.

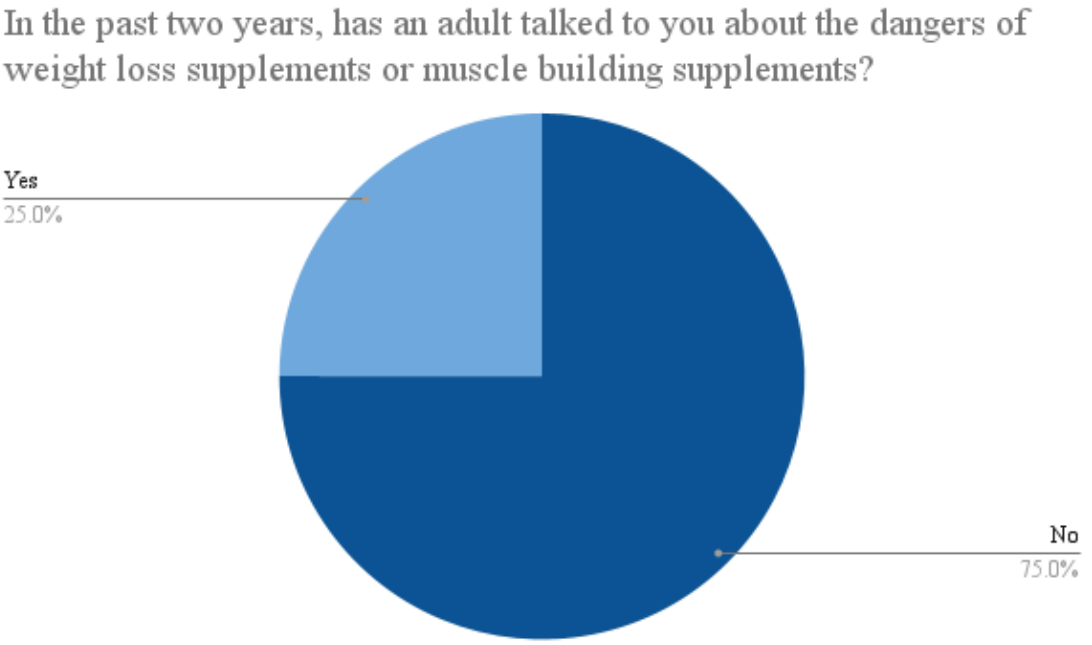


*Figure 5:* Data from a total of 1518 respondents located in the states of California, New York and Massachusetts on whether an adult has spoken to them about the dangers of supplementation in the past two years.

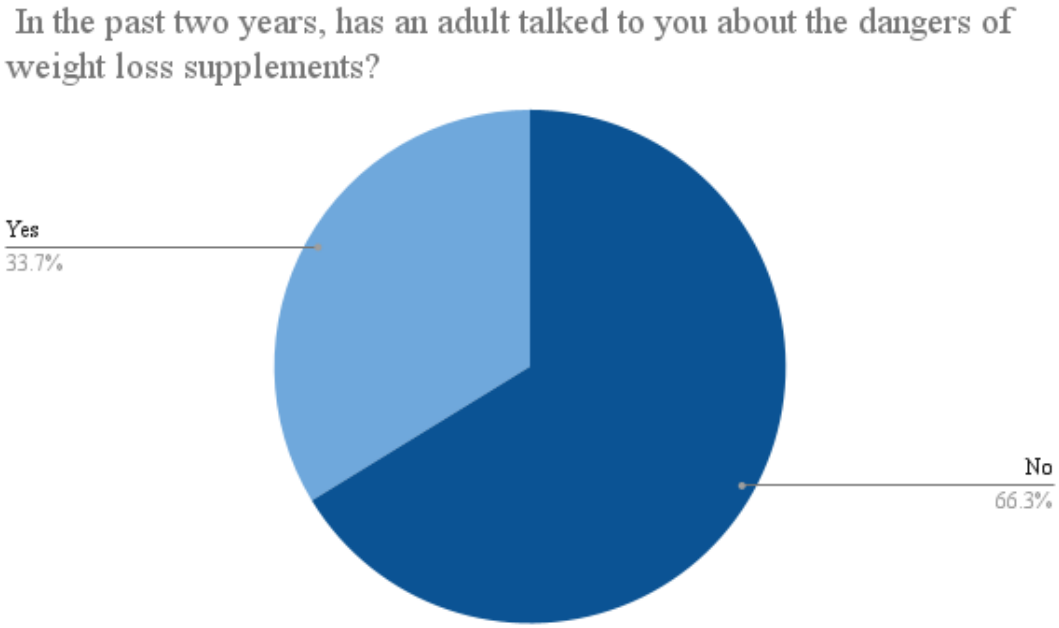


*Figure 6:* Data from 508 respondents located in the state of California on whether an adult has spoken to them about the dangers of supplementation in the past two years.

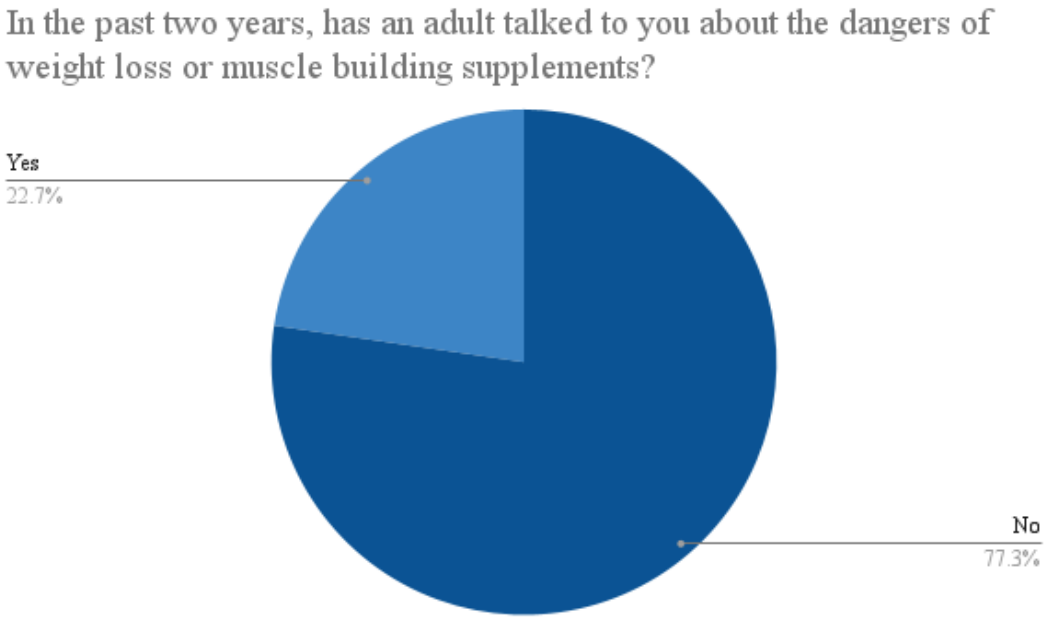


*Figure 7:* Data from 500 respondents located in the state of New York on whether an adult has spoken to them about the dangers of supplementation in the past two years.

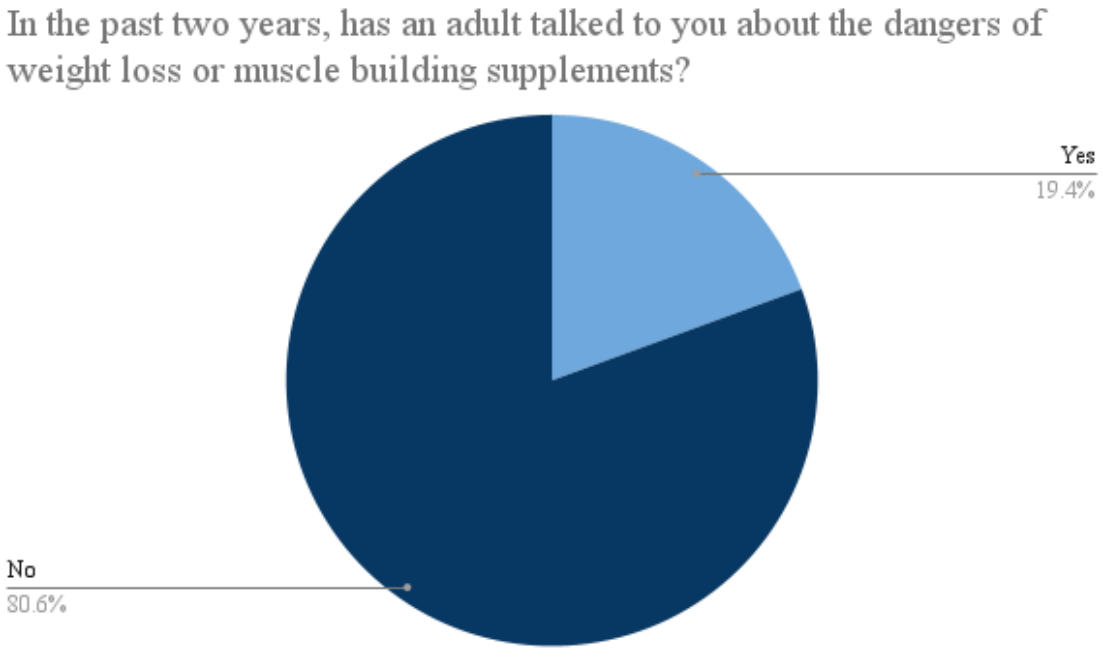


*Figure 8:* Data from 508 respondents located in the state of Massachusetts on whether an adult has spoken to them about the dangers of supplementation in the past two years.

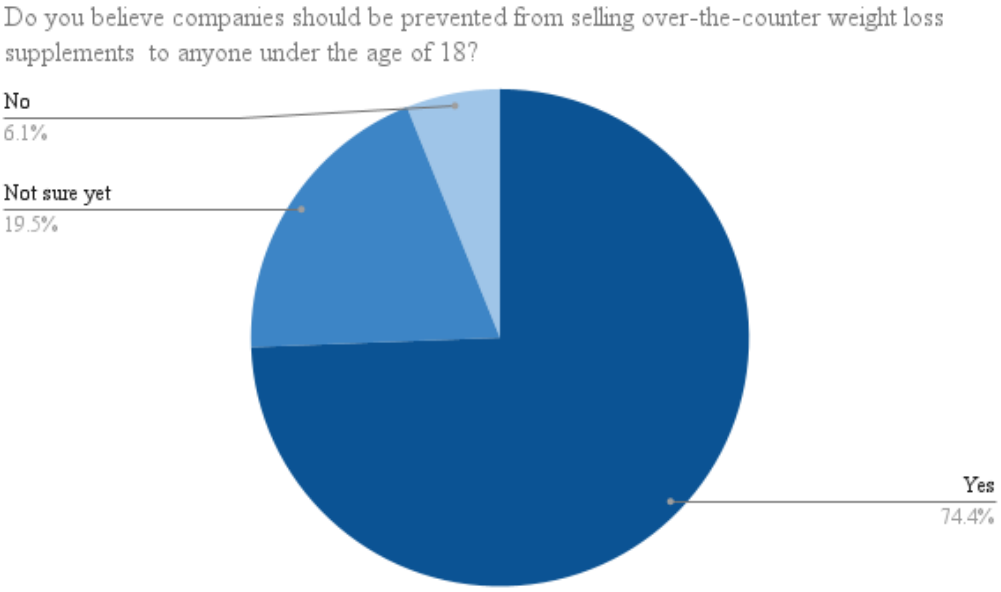


*Figure 9:* Data from 508 respondents located in the state of California on whether they believe that minors should not be able to purchase over the counter weight loss supplements.

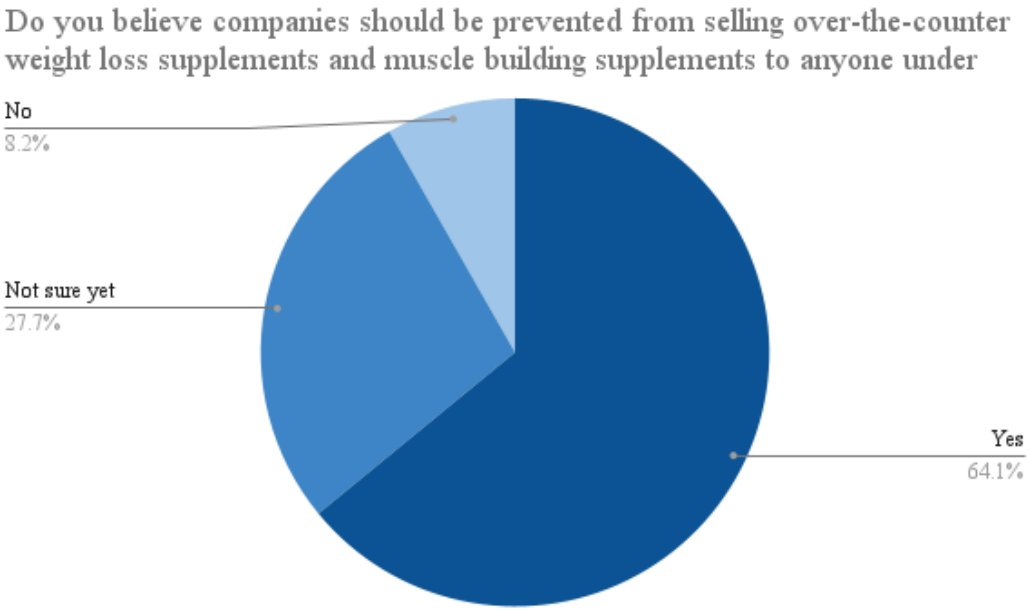


*Figure 10:* Data from 500 respondents located in the state of New York on whether they believe that minors should not be able to purchase over the counter weight loss supplements.

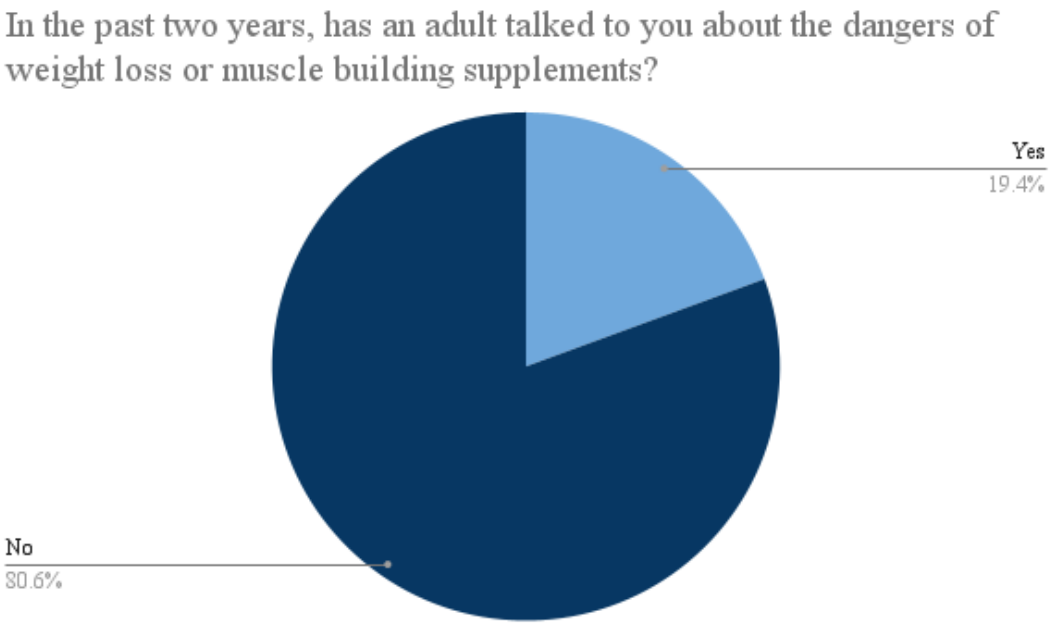


*Figure 11:* Data from 510 respondents located in the state of Massachusetts on whether they believe that minors should not be able to purchase over the counter weight loss supplements.

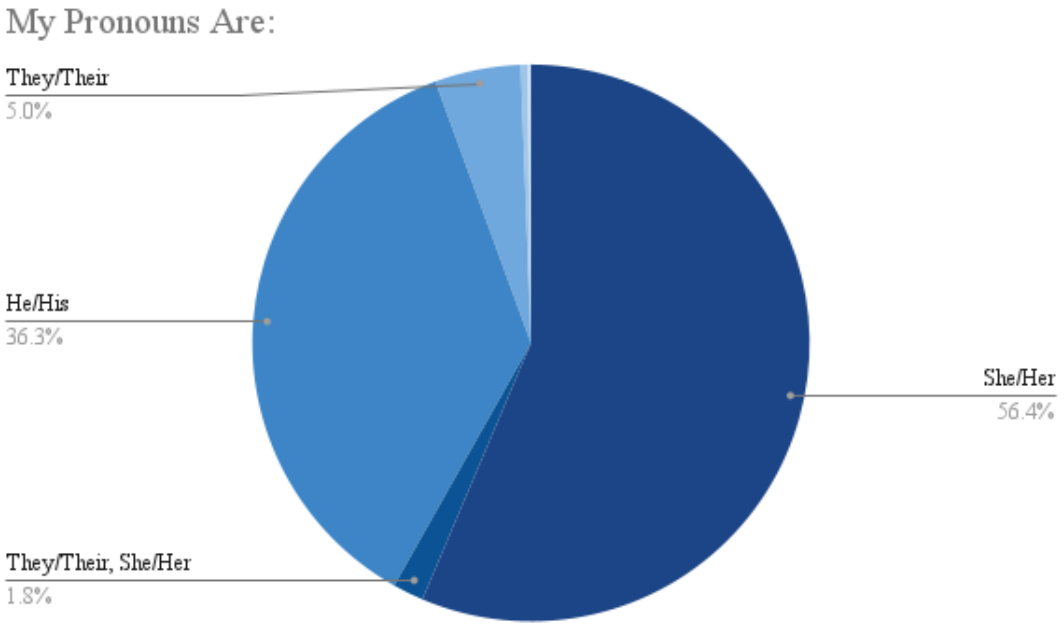


*Figure 12:* Data from 508 respondents located in the state of California on their preferred pronouns.

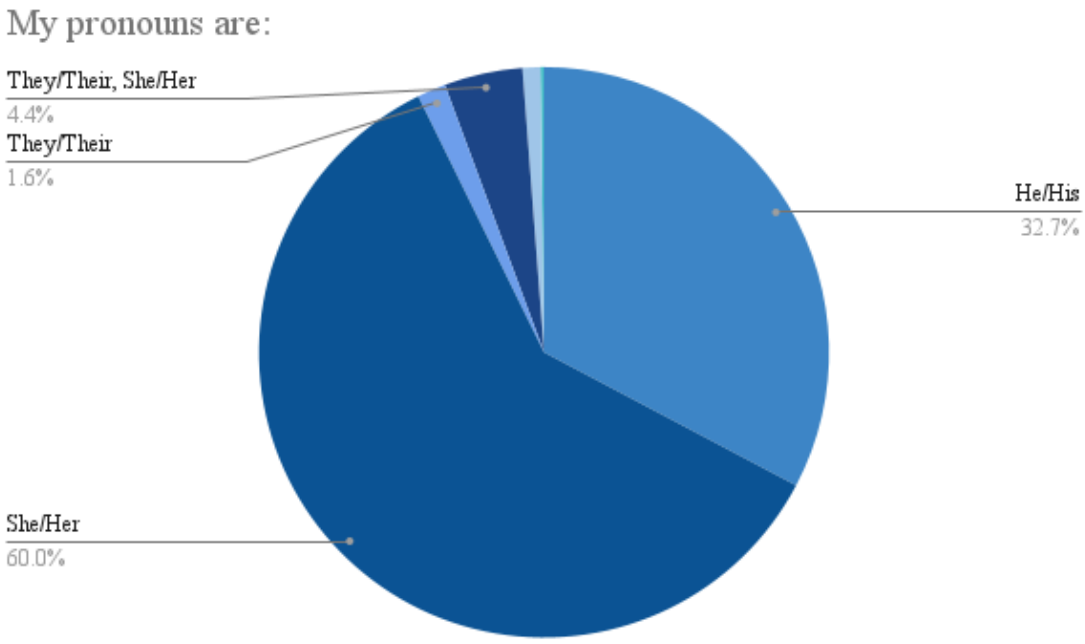


*Figure 13:* Data from 500 respondents located in the state of New York on their preferred pronouns.

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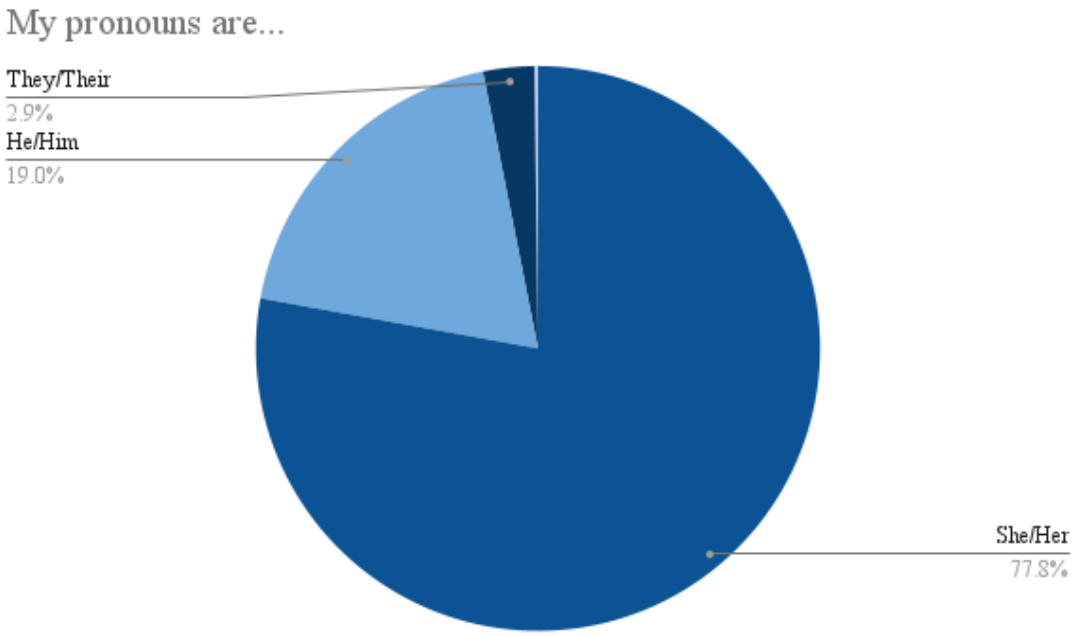


*Figure 14:* Data from 510 respondents located in the state of Massachusetts on their preferred pronouns.

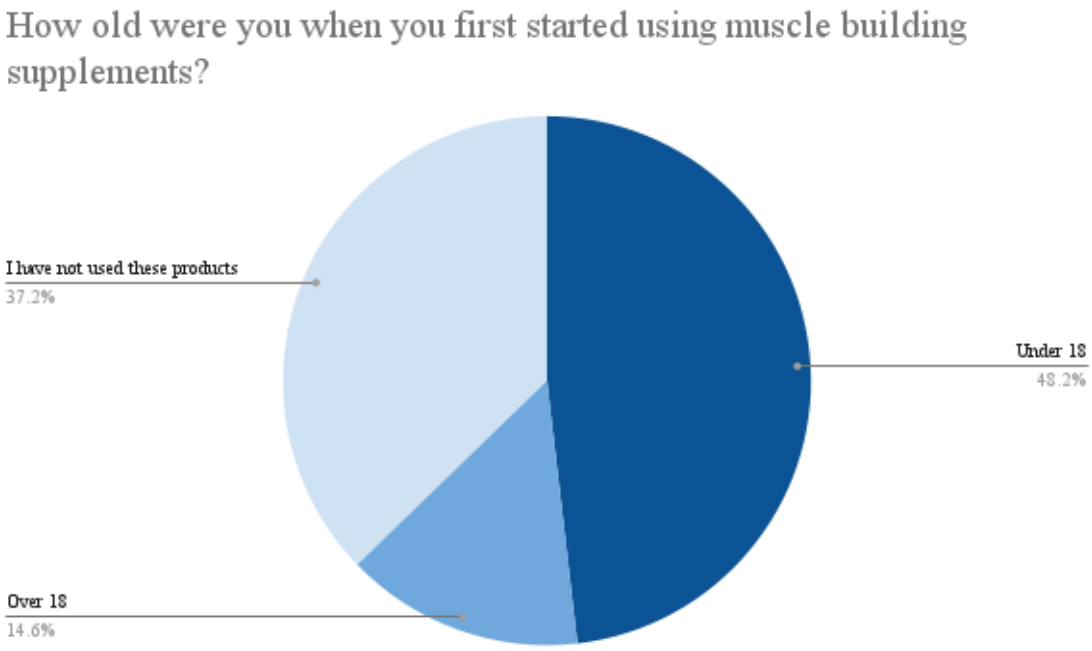


*Figure 15:* Data from a total of 1518 respondents located in the states of California, New York and Massachusetts on the age at which they first began to use muscle building supplements.

**Results**

23.3 percent, 22.1 percent, and 34.6 percent of youth respondents have used over-the-counter diet pills, detox teas, or other weight loss supplements in Massachusetts, New York, and California, respectively. It is clear that a substantial portion of youth in the United States have access to these harmful products. Across the respondents from the three states who reported to have used these products, 48.2% of respondents started using them when they were under 18 years old. These findings highlight the importance of early education pertaining to the dangerous correlation between these supplements and eating disorders.

64.1 percent of youth respondents in New York believed that companies should be prevented from selling over-the-counter weight loss and muscle supplements to minors. This ideology is reflected in other states as well, as 74.4% of California respondents believed that companies should not be allowed to sell over-the-counter weight loss and muscle supplement pills to minors. A startling statistic of 80.6% of youth from Massachusetts revealed that an adult had not talked to them about the dangers of weight loss or muscle building supplements in the past two years. Similarly, 77.3% and 66.3% of respondents from New York and California respectively reported that they were not informed of the dangers of the products in the past two years. Across the three states, 75% of the youth respondents were not informed of these dangers.

**Discussion**

The prevalence of eating disorders may be linked to the sale of diet and muscle supplements, as these products may be abused by those who suffer from eating disorders. After implementing surveys to acquire data about the specific trends in the use of diet and muscle supplements, our team identified significant results that point to a need for regulation of and education about supplement products. The results varied between male and female respondents, as the dominant paradigm illustrates that females are more subject to the use of diet pills while males are more subject to the use of muscle building supplements.

A large contributor to the prevalence of weight loss and muscle supplement use in youth is the predatory marketing of these products on social media platforms such as Instagram, YouTube, and TikTok, much of which is specifically targeted towards younger demographics more vulnerable to media influence. As a result of extensive social media usage, younger individuals are frequently exposed to the advertisements presented by influencers. By employing influencers to market these harmful products to minors, weight loss and muscle supplement companies escape social media regulations, and through visuals such as digital posters and social media posts, they greatly exaggerate the desirable effects of these products to lure minors into consuming them.

In terms of addressing the educational aspect of this crisis, there is still a lot of work that needs to be done. The education system stresses the dangers of tobacco use and alcohol use, yet fails to warn of the dangers of diet pills and muscle supplements despite the latter being highly accessible to minors. To address this issue, legislation can be implemented to increase awareness of the link between usage of these products to eating disorders through school systems. Implementing educational programs regarding the use of these supplements into health classes and pre existing state mandated lessons would help prevent the abuse of such products by minors.

These results can be used to aid and finalize policies to regulate the sale of these products. Moreover, the findings of this study can be used as a foundation for various public policy initiatives that will allow for changes in how diet and muscle supplements are advertised to youth across the United States and potentially, the world.

One of the potential limitations of survey data acquisition is that data might be inaccurate due to the uncontrolled variable of human response. Using surveys can limit total honesty from the participants, especially as some with mental illnesses such as eating disorders, may find it

difficult to candidly respond to the survey questions. Additionally, the survey method posed challenges in the diversity of responses with regards to the exact age within the 12-22 age range and the location within the three states that were studied. Therefore, some of the responses could have been clustered, failing to provide an evenly distributed spread of data. Furthermore, another limitation in the study was that a majority of the survey respondents identified as she/her. Due to this bias, it is plausible that the research results may not have been entirely representative of the U.S. youth population. Despite these limitations, this study will be a cornerstone in essential public policy that will help mitigate the rise in eating disorders that have been affecting youth across the United States.

**Conclusion**

Educational advocacy for the dangers of weight loss and muscle building supplements could prove to be very beneficial in combating the rising rates of eating disorders among the youth. While the dangers of other drugs such as tobacco and e-cigarettes are commonly taught to students, the dangers of these supplements, all of which are easily accessible to youth, are very rarely addressed. This leads to consequences that could occur, unbeknownst to adolescents, when taking these supplements, such as the consumption of toxic and unregulated ingredients. In addition, enacting stricter policies regarding the advertisement of weight loss and muscle building supplements could aid in curbing the development of eating disorders among adolescents. There are many flaws in the advertisement of these supplements, and while certain companies are not allowed to advertise their products to youth, influencers who have purchased these products and have a younger audience are capable of advertising these supplements to a vulnerable population. This manner of advertisement is consequential, since these idolized influencers could be more successful in persuading their younger audience than established companies.

Easy accessibility of weight loss supplements, diet pills, and muscle building supplements may validate the notion of casual consumption of these substances, even without a sufficient understanding of its adverse consequences. While adolescents' motives for using such supplements have not been extensively identified through this research, the primary factors responsible for initiating their consumption are parents and friends. Opinions on whether companies should be permitted to sell over-the-counter weight loss supplements vary, with a great majority of respondents claiming to be unsure and an even greater percentage saying that they agree with the prevention of sales to minors. Focusing on establishing educational policies that provide for substantial discussions centered around the responsible consumption of diet loss pills and muscle building supplements is critical not only for adolescents, but also for individuals associated with ensuring their well-being such as parents, teachers, and coaches.

There are many limitations and other factors that come into play when identifying the causes of eating disorders. The usage of weight loss and muscle building supplements are not the only contributors to eating disorders among the youth. Since eating disorders are caused by a multitude of factors, there are limitations to the association between these supplements and eating disorders, such as the environment, wealth disparities, and other factors that can influence how an individual develops an eating disorder. Although the banning of these supplements are not a perfect solution to the rise of eating disorder rates among youth, they are likely to play a significant role in making the youth less vulnerable to turning towards supplements for weight loss and muscle building, or would, at the very least, help isolate this factor from others when it comes to investigating eating disorders. With eating disorders rising amongst the youth and social media influencing the need to conform to a certain body type, it could lead to an abuse of weight loss and muscle building supplements if they are easily accessible. A combination of

regulation of the sale of said products combined with educational initiatives targeted towards the youth would help make great strides towards the prevention of eating disorders amongst youth in the United States.

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