Current Impacts of The Health at Every Size Model Upon Adolescent Health Outcomes: A Literature Review

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TABLE OF CONTENTS

ABSTRACT

Introduction:
Child and adolescent obesity is a global concern. The number of youths with obesity is increasing exponentially with subsequent increases in obesity related co-morbidities. Current approaches to treat obesity include weight-normative style interventions which provide no long-term benefits and have increased risk of physical and psychological harms. The Health at Every Size (HAES) model is a safe and inclusive alternative to traditional diet and exercise prescriptions. This approach has been shown to improve patients' overall health within adult populations. Based on these prior studies, HAES shows great promise for use in adolescent health.

Objective:
The purpose of this review is to consolidate the current literature available pertaining to use of Health at Every Size and other weight-inclusive strategies within the adolescent population. Through analysis of current evidence, this literature review aims to determine which of the five principles of the Health at Every Size model are effective for improving overall health in the adolescent population.

Methods:
A literature search using PubMed, Wiley Online Library and the University of Manitoba Online Library databases was conducted using key terms pertaining to Health at Every Size ideology and its associated principles. Eleven articles and one clinical practice guideline were found to meet the inclusion criteria and were included in this literature review.

Results:
Common themes found across the twelve documents reviewed included positive outcomes in both mental health and sustainable personal care practices in the weight-inclusive intervention groups. Both weight-inclusive and weight-normative groups found improvements in physical health measures. There were minimal improvements in participant weight biases and stigmatization in intervention groups.

Conclusion:
The Health at Every Size approach to adolescent obesity and health enhancement is effective for improving physical and psychological health. In addition, it teaches sustainable health practices with very little risk to the patient. Adolescence is a time of great change and vulnerability and using an approach that is protective of long-term physical and psychological health outcomes is of the utmost importance. Further research is required on promotion and incorporation of this strategy into primary adolescent care.

INTRODUCTION

The Childhood Obesity Problem

Childhood and adolescent obesity is a worldwide health concern (1–3). The Canadian Pediatric Society has estimated that the number of obese 5 to 19 year-olds globally has increased from 11 million in 1975 to 124 million in 2016 (4). If current rates continue, it is predicted that by the year 2050 over 57% of children worldwide will be obese by the time they are 35 years old (5). According to Canadian statistics (2022), 33% of 12 to 17 year-olds are considered to be overweight or obese (4).

In the pediatric population, obesity is diagnosed when the individual has a Body Mass Index (BMI) of greater than or equal to the 95th percentile for their age and sex (5). While obesity alone requires significant treatment considerations, it has been found that youth with high BMI are now presenting with obesity associated diseases that are typically diagnosed in adulthood. Comorbidities such as non-alcoholic fatty liver disease (NAFLD); dyslipidemia; orthopedic complications; and hypertension have all started to appear in younger populations (5,6). Furthermore, children and adolescents with obesity have higher rates of anxiety, mood disorders, and poorer self-esteem compared to their non-obese peers (5,7).

Pediatric obesity often persists into adulthood and puts individuals at higher risk for developing type 2 diabetes mellitus; cardiovascular disease; stroke; gallbladder disease; obstructive sleep apnea; and certain types of cancers (5–8). While it has not been proven that a high BMI leads to the development of these diseases, there are some detrimental factors that are shared between obesity and poor health outcomes. Weight stigmatization is a major risk factor for individuals with higher BMI, preventing them from seeking healthcare and dietetic services.

As a result, this patient population tends to spend much of their life with suboptimal healthcare resulting in higher rates of morbidity and mortality (4,5).

Traditional Efforts to Reduce Childhood Obesity

With the increased health risks associated with long-term elevations in BMI, many efforts have been employed to reduce the rates of childhood obesity around the world. The weight-normative approach is historically the most common strategy used to address obesity of all ages. This approach includes any strategy that has the individual's weight as its main determinant of health status and prioritizes weight loss as the treatment of obesity and related co-morbidities (1,6). Often persons are advised to restrict their caloric intake; avoid calorie-dense foods; increase intensity and duration of aerobic activity; and have a weight-based goal as a measure of their success (2). Studies on adolescents using this strategy have demonstrated a moderate decrease in BMI that is only maintained for a short period of time (2,9).

While the weight-normative approach is affective for short-term BMI reduction, it is grounded in poor data and has substantial negative health outcomes. Many of the weight-normative strategies focus on promoting a decrease in BMI rather than emphasizing changes in health outcomes. Not only does this negatively impact a person's long-term health, but heavily relies on a limited and outdated clinical tool. The issue that arises when using BMI to define success in obesity management are the specific parameters measured. Body Mass Index does not directly measure body composition but creates a data point based exclusively on the individual's height and weight (5,10,11). This strategy lacks true discrimination between fat and lean tissue and leads to inaccurate classification of obesity status (5,11). Recent data from the United States has shown that more than 25% of children whose BMI is above the 95th percentile for their age actually do not have excessive adipose tissue but rather increased muscle mass contributing to

their weight (5,10). Furthermore, the weight status categories defined by BMI are not specified for gender or race which leads to increased misclassification of females and those in ethnic minorities (5,10,11). Calculating BMI has a high specificity but low sensitivity for true obesity, thus making it a weak instrument for obesity diagnosis and management (5,11).

The clinical pitfalls of BMI are widely known, yet many clinicians still believe that a higher BMI leads to poorer health outcomes (2). When comparing BMI categories, studies have shown that only those in the two extreme categories of underweight (BMI <18.5) and obese II (BMI >35) have higher rates of mortality (6). The category of overweight (BMI of 25 to < 30) had the lowest mortality rates and categories of average (BMI 18.5 to < 25) and obese I (BMI 30 to 35) had moderate mortality rates (6). These studies concluded having a high BMI does not correlate to an increased risk for poor health outcomes. Moreover, those who fall into the extremes of the weight spectrum often have extensive health complications that impact their health status more than their weight alone (6). Therefore, BMI should not be the primary measurement used in clinical practice to assess obesity as it contributes to inaccurate and harmful patient assessment and care.

The Dangers of the Weight-Normative Approach

The weight-normative approach carries significant risks to a person's health when BMI is the primary focus. Those who engage in intense diet and exercise patterns to lower their BMI often end up weight cycling (i.e., repeat periods of weight loss and gain due to inconsistent diet and exercise behaviors) (6,7). Individuals are often not taught sustainable health practices and frequently rely on fad diets; excessive exercising; laxative use; and other disordered eating practices in order to reduce their BMI (1,6). This behavior is especially dangerous in the adolescent population as it increases their risk for developing bulimia and anorexia nervosa and

their associated complications over their lifetime (6,9). Weight cycling is associated with adverse medical and metabolic consequences and has not been proven to improve health or provide long term obesity management (6,7). A review on weight-loss interventions using various weight-normative behavior strategies has shown that these strategies are unsustainable and provide no significant improvements to individual health (6). Tylka et.al. has shown that only 20% of weight-loss participants maintain their weight loss after one year and 77% regain their initial weight loss after five years (6). It is important to note these numbers are referencing the most promising populations and do not include participants who withdrew from the study early. Therefore, the percentage of participants who regained their initial weight is likely to be much higher than what was reported (6).

Other issues that arise when looking at the weight-normative approach is the harmful and unrealistic expectations set on the individual. Both internal and external pressures placed on the individual to meet an arbitrary goal are frequently accompanied by a sense of failure when that goal is not met or maintained (2,9,11). Anxiety is often associated when weight goals are not met which can lead to unhealthy weight management strategies and a poor self-esteem. This is regularly exacerbated in the adolescent population as they may face societal expectations and bullying from peers that fuel the pressure to change (5). When youths are unable to meet or maintain these unrealistic goals they frequently adopt a learned helplessness and may begin to believe that healthy behaviors are futile (6,12,13). These individuals often become reluctant to seek healthcare as they associate it with unsolicited diet advice or they feel like a burden in the health care system (6,12). The weight-normative approach fuels individual and societal weight stigmatization that leads to increasing rates of low self-worth and other mental health concerns in the majority of adolescents (6).

Health At Every Size: A Promising Approach to Health and Obesity

The use of a weight-normative approach in managing adolescent obesity is harmful and ineffective. Better options have been developed that address both obesity and general health. Health at Every Size (HAES), a registered trademark of the Association for Size Diversity and Health, is a promising framework for addressing health concerns, including obesity, without the negative effects of traditional dieting (14).

This weight-inclusive ideology has existed since the early 2000s and aims to promote long-term healthy behaviors and self-acceptance while reducing the focus on weight itself within healthcare (8,15). Health at Every Size challenges the idea that a particular BMI is indicative of health status, health behaviors or moral character, and removes weight from being the focal point of any medical intervention (6). The primary goal of this approach is to shift focus from weight management to health improvement and includes any method that aligns with the principles of this philosophy (8,15). In addition, HAES recognizes that there are several factors that contribute to obesity such as genetics; epigenetics; socioeconomic status; individual physiology; metabolism; and environmental factors that lie outside of individual or medical control (6,15). Health at Every Size has five principles that each uniquely address an important area of healthcare and advises clinicians on ways to improve their practice to benefit all patients.

The five principles from the Association for Size Diversity and Health are as follows (14):

1) Weight Inclusivity: Accept and respect the inherent diversity of body shapes and sizes and reject the idealizing or pathologizing of specific weights.
2) Health Enhancement: Support health policies that improve and equalize access to information and services, and personal practices that improve human well-being,

including attention to individual physical, economic, social, spiritual, emotional, and other needs.

3) Eating for Well-Being: Promote flexible, individualized eating based on hunger, satiety, nutritional needs, and pleasure, rather than any externally regulated eating plan focused on weight control.
4) Respectful care: Acknowledge our biases, and work to end weight discrimination, weight stigma, and weight bias. Provide information and services from an understanding that socio-economic status, race, gender, sexual orientation, age, and other identities impact weight stigma, and support environments that address these inequities.
5) Life-Enhancing Movement: Support physical activities that allow people of all sizes, abilities, and interests to engage in enjoyable movement, to the degree that they choose.

Practices that follow HAES principles have been shown to be effective for improving health outcomes in the adult populations (5,6,8). Based on these outcomes and the practical advice of the weight-inclusive interventions, HAES has immense potential for positive impact within the adolescent population. Adolescence, encapsulating the ages of 10 through 19, comes with multiple physiological and psychological changes and increasing autonomy. Those experiencing adolescence can find themselves easily influenced and vulnerable, which can potentiate susceptibility to poor health practices and self-esteem (15). This stage in life is an excellent intervention opportunity to promote life-long healthy habits and educate youth on the risks of weight-normative dieting practices. Providing weight-inclusive care to adolescents not only reduces their risk for life-time disease but can make a significant impact on childhood obesity (15). While it is not the primary goal of HAES to reduce patient weight, it is a common side effect. As patients learn to treat themselves with respect and care they adopt practices that seem

to regulate their weight in the long term (8,15). Moreover, these practices often reduce overall disease risk in all populations which can help to reduce the pressure of obesity related co-morbidities on the healthcare system (1–3).

PURPOSE OF STUDY

Based on the available literature, this review will focus on how the five principles of Health at Every Size impact adolescent health outcomes in order to assess its use and practicality. The primary research question asks: Which of the five principles of the Health at Every Size model are effective for improving health outcomes in the adolescent population?

METHODS

Inclusion Criteria

Articles chosen for this review were required to include interventions that fit into one or more of the HAES principles. Key concepts from each principle were identified to ensure they were suitable for the research question. For the principle of Weight Inclusivity, articles were examined for interventions that promoted body diversity and rejected the idealization or pathologizing of specific weights. With respect to Health Enhancement, interventions that promoted personal practices that improve physiological and/or psychological well-being were reviewed. Regarding Respectful Care, literature that addressed weight discrimination, stigma, and bias for both patients and providers were included. Concerning Eating for Well-Being, interventions that promoted flexible eating, responding to hunger and satiety cues, and rejecting externally controlled feeding practices were analyzed. Finally, for Life-Enhancing Movement, articles that included interventions that promoted engagement in enjoyable activities and the promotion of movement for well-being were examined.

In addition, studies had to include or be applicable to youth ages 10 to 19. There was considerably more research on HAES application in the adult population compared to the adolescent population but many of the interventions could be applied to both groups. Therefore, if a strategy used in an adult population was deemed appropriate for the younger group it was accepted for this review. Finally, both primary research and review articles were acceptable for this study, including clinical practice guidelines that consolidated research on this topic.

Search strategy

A comprehensive article search was completed across PubMed, Wiley Online Library, and the University of Manitoba online Libraries databases. Primary keywords of this search included "Health at every size," "weight-inclusive," "adolescent," "youth," and "health." Additional searches were required to find articles that addressed all principles of this study and used the keywords "body positivity," "weight stigma," "sedentary behavior," and "physical activity" in combination with the aforementioned keywords.

Abstracts were screened for applicability to the research question and inclusion criteria. PubMed produced nine articles, Wiley Online Library included ten articles with one duplicate, and the University of Manitoba Online Libraries provided seven articles and two duplicates. The American Academy of Pediatrics released an up-to-date clinical practice guideline on adolescent and pediatric obesity treatment and prevention at the time of this search and was included in this review. The twenty-seven articles were evaluated for their connection to the research question and HAES principles. Articles were removed if they did not meet the inclusion criteria, did not match the HAES ideology, or did not discuss how their intervention addressed health outcomes. After thorough analysis, twelve articles were selected to be included in this review.

RESULTS

Weight Inclusivity

Several the HAES interventions aimed to help participants increase their bodily autonomy and find confidence in their figures. A key finding from Humphrey et.al. was that first-year-college students in a HAES intervention group had a significant decrease in thinness-related behaviors and preoccupations such as dieting and measuring food or body statistics (16). They also saw a statistically significant increase in esteem for appearance ($P=0.01$) and weight ($P<0.01$) by the end of the study (16). Another study by Tylka et.al. found that helping participants address their thinness idealizations and weight loss fixations can successfully prevent eating disorders (6). Participants who were able to comprehend their unhealthy attitudes and behaviors and adapt their fixations showed improvements in their mental health and perceptions. These participants became more accepting of their body diversity, showed a decrease in behaviors intended for weight control, and also reported improved mood (6). One study involving a brief body-positive intervention with 17 to 19 year old females resulted in participants having increased self-confidence and became motivated to maintain their health and wellness for non-diet related reasons (17). This group had increased appreciation for their bodies which remained significantly increased at a ten-week follow up (17). Lastly, Tilles-Tirkkonen et al. studied grade five and six students that received encouragement in self-independence when making food and lifestyle choices. The results of this study reported that 12% of students gained an improved perception of body size diversity post-intervention (18).

Health Enhancement

Several studies on health enhancing behavior interventions show positive and clinically significant changes in both weight-neutral and weight-normative groups. All cohorts reviewed

saw improvements in physiological health measures such as systolic and diastolic blood pressure; total cholesterol; fasting blood glucose; and hemoglobin A1c (5,6,19). The HAES informed cohorts exclusively showed a decrease in comorbidities such as NAFLD, asthma and obstructive sleep apnea (OSA) in the adolescent populations (5). Regarding other areas of health, the HAES informed interventions improved mental health, self-esteem, and reduce stress whereas the weight-normative interventions had no impact in this area (5,6,15,20). In addition, the adolescents in the HAES groups were found to have less depressive symptoms compared to control groups which was continuous up to one year (20).

Key healthy behavioral changes were found within the HAES groups. Adolescents who participated in HAES informed sessions engaged in less binging and less restrictive eating habits compared to control groups (5,6,20). Furthermore, these groups participated in more physical activity, had less sedentary behavior, and reported these changes with being linked to self-care and enjoyment more than being linked to weight-control (5,6). Moreover, HAES groups had significantly better adherence to the healthy practices they developed while in intervention than the weight-normative groups did to their prescribed diet and exercise plans (6).

Eating for Well-being

Several studies emphasized how flexible eating improves participant outcomes. A 6-month long study within grade five and six classrooms used HAES informed nutrition education to encourage hands on food preparation experience and intuitive eating practice (18). At the end of the study the authors found that the intervention group increased their daily salad intake from 32% to 68%, significantly increased their vegetable consumption as snacks (P=0.043), and decreased their overall sugary snack intake (P=0.016) compared to the control group (18). When asked about their ability to incorporate what they learned in class, 31% of students reported that

they found making changes to their diet easy (18). Other studies have found similar results with adolescents having improved diet quality after learning about flexible eating (15). It has been shown that encouraging youth to become involved in food preparation has resulted in increased confidence in making balanced food choices and more diverse diets overall (5).

Humphrey et. al. used a similar approach by incorporating HAES education into a first-year college course and emphasizing recognition of internal cues when navigating food choices. They found that the students easily incorporate intuitive eating into their lifestyles and were more appreciative of their hunger and satiety cues at the end of the study (P=<0.001) (16). Similar studies have found that participants were better able to select portion sizes and types of food in response to their hunger cues after practicing intuitive eating (6). These groups also became confident in navigating healthy choices when experiencing external pressures to eat. Participants reported more awareness of their satiety levels and with less susceptibility to emotional eating compared to control groups (6).

Regarding dieting behaviors, HAES informed studies have demonstrated a significant decrease in disordered feeding habits compared to weight-normative informed studies. Dugmore et. al. suggested that the biggest improvement in participant habits across ten different HAES style interventions was a statistically significant decrease in bulimia-like behaviors in the weight-neutral groups compared to weight-normative groups (P=0.02) (19). Raffoul et al. supports this finding as they also saw reductions in binge eating and bulimic behaviors in participants who were taught intuitive eating (15).

Respectful Care

Studies that incorporated brief educational interventions to address internalized weight bias showed limited results. When taught about the societal and health-related complexities that

surround obesity and weight stigma, the majority of adolescent preconceptions did not change (21). Further, varied attempts at reaching participants including films, web-based modules, speaker series and first-person narratives did not bring about empathic change in youths (21). The only effective short-term intervention was using social influence, which involved having persuasive peers act positively towards those with larger bodies. This intervention resulted in a moderate improvement in other participants attitudes towards fatness with unknown duration of effectiveness (21). There was success found in a single six-month long study that resulted in a significant decrease in anti-fat prejudice among first-year college students ($P<0.001$) (16).

Another key element addressed in two studies was decreasing healthcare provider bias towards overweight adolescents. It was found that healthcare providers who practiced weight-focussed care had an increased number of patients with unhealthy food and weight pre-occupations (21). Overweight adolescents who experience weight stigmatization in physician offices were less likely to present for care and as a result had worse health outcomes (6,21). Educating health care professionals on the benefits and use of HAES has led to significant reductions in unconscious weight stigma, increases in intuitive eating promotion, and safer health advice (21). Adolescent patients who attend offices that actively work to decrease weight stigma have shown increased willingness to discuss their health concerns and return for weight and non-weight-related care (6).

Life-Enhancing Movement

Two studies highlight how involving the whole family can increase youth engagement in physical activity. Perrino et.al. conducted a three-month study that provided overweight and obese teens ages 13 to 15 and their families with opportunities to engage in physical activity education (22). The focus was on parental involvement and role modelling to encourage activity

in youth. The results showed a decrease in sedentary behaviour in the overweight and obese groups. There was no change in activity level within the severely obese group (22). In a two year follow up of this study, the intervention group had decreased their average daily sedentary behavior hours from five and a half hours initially to slightly under five hours, meaning that on average they were adding about 30 minutes per day of activity (22).

Foster et.al. completed a review on caregiver involvement and increasing adolescent physical activity. The research demonstrated that adolescents tend to be more interested in activities when they have family support (23). In addition, having caregivers who personally enjoy being active creates a role model effect that encourages the youth to increase their activity levels throughout the week. They also linked family-centred play to more enjoyment for all participants as well as increased physical literacy and confidence in the youth (23).

Further studies have found that increasing adolescent self-confidence and enjoyment has been shown to increase their total physical activity levels. Hu et.al. reviewed the existing literature and found that adolescents who are confident about their competency, self-perception, and perceived health will participate more often in physical activity and sustain their participation for longer (24). According to Hampl et. al., youth tend to adhere to activities most when they are non-competitive, involve co-operation, and improve personal and interpersonal skills (5). Adolescents who participated in confidence building HAES informed physical activity interventions not only increased their enjoyment of activity, but also increased the amount of moderate physical activity they participate in by 29% (15,20). Moreover, interventions that encouraged exercising for pleasure instead of exercising for weight loss found more adherence to frequent exercise as well as an improved body confidence post-intervention (6).

DISCUSSION

Principles that Improve Adolescent Health

The HAES principle of Eating for Well-Being has had one of the largest positive impacts on adolescent health outcomes throughout this study. All cohorts in this review who implemented some version of intuitive eating within their studies had favorable results for this method of nutrition education (5,6,15,18). Participant confidence in food selection for diversity and portions improved throughout, and those in the HAES interventions had low risk of developing eating disorder behaviors (15). The HAES interventions improve nutrition behaviors and support long-term healthy habits. This principle shows immense practicality for use within the adolescent population.

Another principle demonstrating success for improving health outcomes was Health Enhancement. When compared, the weight-inclusive cohorts matched the weight-normative cohorts for positive impact on physical health, but vastly out-performed them in areas of mental health, co-morbidity reduction, and health-behavior adherence (5,6,15,20). This is likely due to the HAES interventions promoting behaviors that allow for change over the course of one's life. The flexibility of the HAES model is superior when compared to the all-or-nothing approach of the weight-normative style interventions. The improvement in several areas of health enhancement shows great promise for long-term disease reduction in this population.

The principle of Weight Inclusivity had some surprising results, albeit the mostly short durations of cohort involvement in HAES education. It appears that even brief encounters with body-positive content can improve participant self-esteem for an extended duration of time (5,16). The cohorts involved in long-term education seemed to have the most promising results, as one would expect with consistent support surrounding this topic (17,18). The older cohorts

gained more depth compared to the younger cohorts which is most likely due to their emotional maturity and comprehension of the complex subject matter. The results of these studies are encouraging nonetheless and promote early and age-tailored exposure to these topics to maximize benefits within this population. There is great potential in developing strong mental health practices that follow this population through the stages of adolescence which could create a lasting impact on self-esteem and self-care behaviors over their lifetime.

Principles with Significant Barriers to Improving Adolescent Health

Improvements were seen among the cohorts who addressed the principle of Life-Enhancing Movement but seemed to be heavily reliant on external motivators to maintain adolescent participation in physical activity. While there were significant improvements seen in participant level of activity in all studies, it required adult support which may not always be available to all adolescents (22,23). Further factors including higher competency, confidence, interest, and access to varied activity also seem to rely on external motivators and supports for youth success (5,6,24). While there is great promise for youth who have a solid role model to be successful in this principle, those who are without supportive peers and parents may be at a disadvantage. If these barriers can be addressed at the individual and community level, the approaches used have immense potential for improving adolescent activity levels and physical health outcomes.

Lastly, the principle of Respectful Care had the lowest impact on adolescents across all groups examined. While adolescents seem to have improvements in their own self-esteem, their outlook towards others appears to be difficult to change even with diverse strategies (21). Long-term and peer influenced tactics seemed to perform moderately well but overall, this principle had poor results for improving participant judgement of others. This judgement is an important

but indirect health outcome to assess as bias and discrimination does not impact the individual per se but does impact their peers. When adolescents face stigmatization by their peers based on weight it can lead to poor self-esteem, learned helplessness, and poor health outcomes (12,13). It is unreasonable to expect these deeply rooted biases to be dismantled with a few HAES sessions, therefore, these results are not surprising. Further research in this area is required to address how to dismantle these socially ingrained biases within the adolescent population.

Fortunately, the improvements seen in healthcare providers show some promise for improving Respectful Care practices in the clinical setting. Decreases in stigmatization in physician offices after HAES intervention has the potential to be protective for adolescents facing societal discrimination elsewhere. When children and adolescents have a safe place for health care, they are more likely to seek medical attention and gain HAES informed advice for improving their health outcomes (21). This connection has potential to improve other health outcomes in the patient's life and aid in overcoming the negative effects of societal weight bias. If HAES principles can be implemented into primary care settings, there is potential for increase impact of this principle.

Effectiveness of HAES on Improving Adolescent Health Outcomes

In essence, the HAES ideology is effective for improving adolescent health outcomes, particularly within the principles of Eating for Well-Being, Weight Inclusivity, and Health Enhancement. These areas showed improvements in participants' healthy eating habits, body positivity, mental health, and quantifiable health measurements. While there are improvements seen in the principle of Life-Enhancing Movement, these studies relied heavily on external motivation to increase adolescent participation. This is a significantly limiting factor to consider when assessing this model for efficacy in this population.

Internalized weight bias, as assessed within the principle of Respectful Care, is a factor that will require extensive restructuring for the HAES model to be most effective in this population. There are deeply rooted negative beliefs about obesity at both the individual and societal levels that seem to provide the most resistance to progress in this area. While these concepts require extensive further research and may take years to address, a few simple measures can be implemented by healthcare providers and/or caregivers to begin transitioning their adolescents towards healthy lifelong habits (Appendix A). Overall, the Health at Every Size principles are effective to varying degrees, with recognition that this ideology requires further assessment to optimize its effectiveness in the adolescent population.

STUDY LIMITATIONS AND FURTHER RESEARCH

A limitation of this study was the lack of evidence containing comprehensive adolescent age-based data. Most of the literature chose cohorts that were in the early adolescent age range of 10-13, mid adolescent age range of 13-16 or late adolescent age range of 16-19 without any study truly involving the entire age ranges that define adolescence (i.e., 10-19 years old). This may be due to the difficulty of designing a study that incorporates this diverse group or lack of availability of defined cohorts. Regardless, studies that address a diverse age range would have been helpful to truly identify the strengths and weaknesses of HAES within this population. Because most studies included in this literature review conducted their research using classroom or private cohorts, there is limited information available regarding the impact that a medical professional could have when providing HAES care. Further research is required to assess how this approach may be implemented outside of formal studies, including in primary care practices and within large-scale education curriculums. This research is essential to further assess the

impact of this ideology on youth health outcomes and improve clinical practice surrounding childhood and adolescent obesity.

CONCLUSION

The HAES model improves adolescent health outcomes in many different areas. There are significant positive outcomes in physical, mental, and emotional health without the detrimental side effects that accompany traditional dieting approaches. Incorporating this style of health promotion into adolescent care has immense potential for the prevention of both negative physical and mental health problems, including obesity and its accompanying diseases. By implementing these practices early in life, adolescents may be better equipped to manage their health in the long-term. The Health at Every Size principles and recommendations should be incorporated into adolescent care to not only replace traditional approaches to obesity management but to improve the health of all patients.

APPENDIX

Appendix A: Incorporating HAES Principles into Daily Life

Principle	Strategies (1,5,23,24)
Weight Inclusivity	1. Practice positive self-talk and body gratitude. 2. Reflect on any comments or thoughts made about one's own body size- are they positive, negative, or neutral? Are they true or false? Does this comment help or hurt? How can I adapt this comment to better improve my general health? 3. Evaluate how social media/society impacts one's thoughts surrounding body size and reflect on how this may be impacting self-perception. Consider decreasing social media use or dis-engaging with unhealthy messages.
Health Enhancement	1. Choose healthy practices that one can see themselves doing for life. 2. Educate oneself on the negative outcomes of dieting and how one can avoid engaging in unhealthy practices. 3. Create goals for health improvement, rather than for appearance modification.
Eating for Well-Being	1. Avoid restrictive feeding practices such as giving foods moral value; avoid coercive feeding practices such as finishing a meal for the sake of not wasting food. 2. Practice intuitive eating: listening to body cues to know when one is hungry or full rather than trusting external cues. 3. Get involved in the kitchen and experiment with new recipes; this can increase exposure to diverse food textures/flavors and expand one's palate.
Respectful Care	In Clinic: 1. Ensure furniture and equipment fit all body sizes including chairs, exam tables and blood-pressure cuffs. 2. Avoid taking patients weight measurements unless it is pertinent to their chief complaint and ask the patient if they wish to know the value or not. 3. Ask permission to discuss weight if it was not brought up by the patient and use weight-neutral words when engaged in discussion. Individual 1. Spend time with people who have different body types than oneself and learn from their experiences. 2. Educate oneself on societal weight bias and reflect on how one can adjust their own biases. 3. Speak up when encountering weight bias and encourage others to evaluate their own bias.
Life-Enhancing Movement	1. Adult figures may role model engagement in activity and encourage child/adolescent to participate with them. 2. Find activities that family or friends can do together, such as participating in school sports or finding community groups to join. 3. Use online resources for activity ideas and further information including participACTION and Let's Move or other community resources available.

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