

Review Article

Adolescent obesity and its implications for sexual health

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Abstract

Adolescent obesity has reached epidemic proportions over the last 30 years. While much attention has been paid to the medical associations with obesity less attention has been paid to the psychological implications particularly around reproductive health and sexual behaviors. The development of healthy relationships and sexual behaviors is a developmental milestone of adolescence. Internalized weight based stigma, and lack of opportunity to engage in romantic relationships may lead to increased sexual risk taking behaviors. These risk taking behaviors may have undesired impact on reproductive health during adolescence. All health practitioners who care for adolescent women should be aware of the implications of adolescent obesity on the sexual health of women and be prepared to provide appropriate counsel. This manuscript provides a review of the known literature, suggests area where expanded knowledge is needed and provides tools the medical provider can use to mitigate risk in this vulnerable population.

Adolescent obesity a critical issue

In the United States (US) approximately 25% of children are obese; an additional 20% are overweight [1]. While we have seen some decrease in prevalence among the 2-5 year old age group in recent years this trend has not continued into the school age and adolescent age groups [1]. More alarmingly when looking at extreme obesity, defined as body mass index (BMI) at or above 120% of the sex-specified 95th percentile on the Centers for Disease Control (CDC) BMI growth curve, the prevalence has tripled in the adolescent age group while remaining stable in the younger age groups. Obesity is an illness where there is disparately high representation among those who are: women, less educated, socioeconomically disadvantaged, and from Black, Hispanic, or Native American racial/ ethnic groups [2]. There is also disparity caused by community infrastructure such as: levels of violence, access to full service grocery stores offering produce, and safe open spaces for recreation. Obesity carries a significant medical burden. Over thirty illnesses have been directly linked to obesity. Additionally, many illnesses conventionally thought of as adult-onset such as Type 2 diabetes mellitus, hypertension, dyslipidemia, and obstructive sleep apnea are presenting during adolescence with increasing incidence [2]. Obesity during adolescence has an attributed direct healthcare cost of \$14 billion annually [3]. Additionally an overweight adolescent is 11 times more likely to become an obese adult while an obese adolescent is 49 times more likely to become an obese adult in comparison to a healthy weight peer [4]. Thus overweight or obese weight status during adolescence are significant precursors to adult obesity [5].

Adolescent obesity and development

In addition to the impact of obesity on physical health obesity creates an immense burden on developmental, psychological, and social health. Overweight and obese adolescents are most significantly impacted by this burden. Among key areas of developmental focus during adolescence include: development of positive body image, formation of peer groups, development of sexual identity, and creation of intimacy within relationships [6]. It is well understood that adolescents with chronic illnesses are at risk for problems with body image and self-esteem [6]. These risks are particularly evident in young

people whose chronic illness has physical manifestations or impacts development [6]. Obesity is a physically evident chronic illness that can lead to additional chronic illnesses. Thus it stands to reason that obese adolescents may have challenges in meeting their developmental milestones as it relates to body image and self-esteem.

The timing of puberty is a girl's biggest risk factor in the development of poor body image with outliers on either end experiencing the most distress [7]. Increased adiposity has been linked to significantly earlier menarche thus explaining the earlier onset of puberty appreciated in overweight and obese adolescent girls [8]. (Biro, 2006) Physically appearing larger than peers lead to increased victimization by both peers and adults in supervisory roles [9,10].

Adolescent overweight and obese weight status has been linked to lower life satisfaction and self-confidence [7,11,12]. Additionally unhealthy weight status has been associated with increased experiences of bullying and peer victimization. These experiences can lead to increased anxiety, depression, and feelings of isolation [12,13]. The longer a young person remains overweight or obese the more intense the depressive symptoms [13,14]. Experiences with weight-related victimization leads to challenges in developing peer relationships both in the present and future. Each new relationship is a potential source of rejection leading some obese youth to view their role in relationships to support others [12]. The development of this role in relationships is potentially dangerous if extended to a romantic partner whereby an obese young person may seek to meet the physical and emotional needs of their partner to the detriment of their own needs [15-17]. This also places the obese youth at increased risk for victimization in their romantic relationship [18].

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Adolescent obesity and romantic relationships

The development of a healthy sense of sexuality is a frequently overlooked but important developmental milestone of adolescence. It has been proposed that healthy sexuality includes: (a) learning about intimacy through peer interactions, (b) developing an understanding of personal roles within relationships, (c) adjusting to one's changes in body size, shape and capability, (d) adjusting to erotic feelings and experiences and integrating them into one's life, (e) learning and choosing which social standards regarding sexual expression to adopt, and (f) developing an understanding and appreciation of reproductive processes [19]. While many discount romantic experiences during adolescence as trivial they provide significant foundational experiences that influence behaviors in adult romantic relationships. The first step in this process is dating relationships. Dating impacts one's standing within their peer group, affirm one's popularity, and in some cases improves an adolescent's popularity [20]. Obese adolescents are less likely to date despite having similar desire to date as their lean peers [21]. Missing this developmentally normative opportunity during adolescence may lead to challenges during young adulthood as it appears that even during adulthood obese individuals are rated as less physically desirable [22].

Romantic relationships both long-term and casual "hook-ups" are the platform of how, what and when sexual behavior is initiated. In these relationships adolescents explore attributes liked and disliked in partners and how to negotiate finding a partner that possesses the highest number of desired traits. While adolescent romantic experiences carry the significant risks of pregnancy, STI acquisition, dating violence and sexual victimization their important role in psychosexual development cannot be downplayed [20]. When healthy sexuality is achieved an adolescent is able to balance meeting their sexual desires, their partners' sexual desires, and their personal and cultural mores [20].

Adolescent sexual development

In addition to serving as a guide for romantic relationships, adolescence is a time when many Western youth initiate sexual intercourse. In the US the majority of teens initiate sexual intercourse between the ages of 16 – 17 years old [23]. However Black youth initiate on average approximately 9 months earlier than their White peers [23]. Initiation of vaginal intercourse (coitarche) prior to 15 years old in the US is considered early sexual debut for youth of all ethnic/ racial groups [24]. Early coitarche is associated with concomitant risky behaviors such as alcohol and substance use as well as emotional symptoms such as aggression in boys and depression in girls [24]. Additionally, it carries the reproductive risks of increased sexual partners, decreased use of hormonal and barrier contraception, increased likelihood of teen pregnancy, and increased STI acquisition [25,26]. In contrast, delayed coitarche is associated with personal, parental, religious, or peer group values that do not approve of adolescent sexual behaviors [24]. Delayed coitarche carries the inferred benefits of fewer lifetime sexual partners, decreased risk of teen pregnancy and STI acquisition [27-29].

Regardless of whether sexual debut is early, normative, or delayed adolescents follow a predictable pattern of initiation. It begins with manual/ digital stimulation, oral intercourse, vaginal intercourse and possibly anal intercourse [25,30]. While all adolescents will not engage in all of the listed sexual behaviors they tend to progress in this order that is perceived as more to less normative and less to more risky in Western culture. First intercourse typically is initiated with a "steady partner" as opposed to someone who was "just met" or with whom they

are "just friends" [31]. However, this trend does not hold as true for the precursor non-coital behaviors that are viewed as less risky [31]. Those with younger voluntary first intercourse are more likely to have it with a casual partner, have increased number of life partners, higher risk of STI, and increased numbers of unintended pregnancy [25,28,31]. In the US 78% of adolescents utilize some form of contraception upon initiation of vaginal intercourse [31]. The most commonly used form of contraception is a male condom (68%) with only 22% of couples utilizing hormonal contraception and approximately 3% using both hormonal and barrier methods upon first intercourse [31]. Utilization of contraception during intercourse particularly the use of hormonal contraception, increases as young people become more sexually experienced [31].

Adolescent obesity and sexual behaviors

Obesity as a physically visible chronic medical illness has some influence on the development of sexual behaviors during adolescence. The research studies that have been conducted evaluating this influence have focused primarily on the associations between adolescent weight status and various sexual behaviors that confer risk. These sexual behaviors include: age at sexual debut; number of lifetime and concurrent partners; use of barrier and hormonal contraception; risky sexual acts such as anal intercourse, sex in exchange for money or drugs, and casual sex; and concurrent use of alcohol or drugs [29,32].

The prevailing theory in the scientific community was that obese weight status is protective from early sexual debut. Several early studies demonstrated an association between increased weight status and later age at sexual debut [33,34]. These studies were conducted in populations of predominantly White females from suburban middle class backgrounds. The prevailing theory was that weight based stigma experienced by overweight and obese youth prevented them from being perceived as a desirable dates and sexual partners and thus delayed sexual intercourse. Some of these studies indicated that the associations likely were not the same in Black and Hispanic youth however the number of participants in these racial/ ethnic groups was not adequate to power subgroup analysis [35]. Indeed a few studies performed with adequate racial diversity showed that there was no significant association between increased weight status and age at sexual debut in Black & Hispanic youth [36,37]. This caused some to hypothesize that due to Black and Hispanic youth belonging to communities that were accepting of larger body sizes less internalized weight based stigma occurred and thereby more normative age at sexual debut [27].

The previous findings are called into question by contemporary studies that evaluated the association between weight status and risk in sexual activities. These studies when looking at number of partners, use of contraception, and risky sexual acts such as anal intercourse, sex for money or drugs, or sex while under the influence of substances showed that in both minority and majority communities, adolescents with higher BMIs engage in riskier sexual practices [38-42]. These findings also hold true in young adult populations [43]. The implication from these results is manifold. First, the earliest supposition that when obesity is associated with delayed coitarche it is protective appears to be false. That supposition assumes that the delay was desired by the young person and that upon being presented with the opportunity to enter a relationship at an older age they will emerge having achieved the same psychosexual milestones as their peers who experienced normative coitarche or voluntarily chose to delay coitarche. If an obese adolescent has experienced peer and dating rejection then when the opportunity to date or have a casual sexual encounter occurs they may

engage with increased risk due to incomplete attainment of healthy sexuality. This runs contrary to studies that show that obese youth have less dating experience during adolescence [21]. It also downplays the importance of adolescent relationships in the healthy development of intimacy as outlined earlier in this paper. Second, these studies validate complementary studies that indicate that weight based stigma is experienced differently by various ethnic/ racial groups [38,44,45].

Future directions

Our understanding of weight status' interaction with adolescent sexual behaviors while expanding still leaves many unanswered questions. When looking at age at sexual debut we do not understand whether the experiences are desired or coerced. We also do not understand how adolescents of various weight statuses feel about the timing of their sexual debut and how this impacts subsequent sexual behaviors. For instance a young person who chooses to engage in intercourse and then regrets the experience may behave differently with subsequent opportunities from someone who enjoys the experience not only because of the feelings related to the experience but also based on the perception of the ease of having a subsequent encounter at a time when it is desired. These nuances may help explain the continued engagement in undesired sexual acts seen in some groups of obese adolescents. Additionally, although overweight and obese adolescents experience early, normative and delayed debut the differing weight based antecedent experiences in each group are unknown. For example, whether an obese adolescent became obese during childhood versus after puberty may be important in how it impacts peer relationships and subsequent dating, relationship, and sexual behaviors. Perceived weight may also play a larger role in dating and sexual behaviors over measured weight. This could lead a young person who perceives their weight as healthy despite having a measured weight that is obese to take less risk than someone whose measured weight is healthy but perceives their weight as overweight [46]. Whether and how these scenarios are true may have important clinical implications. This is particularly true if we gain an improved understanding of the influence these experiences exert on relationship, dating and sexual behaviors during emerging adulthood and adulthood. Also, while we presume that these decisions over when and how to engage in sexual intercourse significantly impact measurable reproductive outcomes such as unintended pregnancies, STI acquisition, or experiences with coerced sex this has not been validated by the literature. Lastly, the extant literature has considered heterosexual sexual behaviors primarily from the woman's perspective. Additional work is needed to understand the man's perspective as well as consider relationships that include young people who identify as lesbian, gay, bisexual, transgender or questioning (LGBTQ).

Tools for the clinician

Though there are gaps in our understanding of the relationship between adolescent weight status and sexual behaviors there are actions that current practitioners can take to mitigate risks. The importance of taking a thorough psychosocial history on all teens cannot be overemphasized. The extant literature should not be used to assume that any group is not prone to having intercourse. All teenagers should be asked about previous and current relationship preferences, dating practices, sexual behaviors. Additionally they should be screened for bullying, coercive relationships and friendships, and mental health concerns. These screenings can be done using structured psychosocial interviews such HEADDSS and validated screenings like PHQ-9. There is a validated specifically designed to assess weight related victimization that may help identify which obese adolescents are most affected

[47]. Waiting room TV screens, educational materials in the office, and information on patient education portals should provide risk reduction education in a manner that is culturally diverse and body positive. Health care providers play an important role in building the self-esteem of all young people they provide medical care to. Special attention should be given to building resilience in youth at highest risk. Overweight and obesity while not conventionally thought of as an at-risk group of youth should receive special attention focused at building resiliency.

An overlooked challenge that providers face in the midst of combatting the childhood and adolescent obesity epidemic in America is how to provide needed nutrition education to prevent and treat obesity while not damaging the body image and self-esteem of overweight and obese youth. There have been case reports of obese young people who subsequently developed eating disorders [48-52]. Indeed many obese youth have disordered eating behaviors [47,51]. There is a delicate balance between motivating a young person to achieve a healthy weight, and applying pressure that is interpreted as shaming and thus triggering disordered eating [53]. Many obese youth describe weight-based stigmatizing comments made by family member or trusted adult. Additionally over 55% of overweight or obese young people seeking treatment describe disordered eating habits [51]. Current studies suggest the use of the terms "unhealthy weight" or "weight problem" were less stigmatizing and more motivating to make healthy lifestyle changes in comparison to "heavy", "overweight", "obese" and "fat" for parents. Further research is needed on the best approaches to discuss weight status with young people [54]. This research will ideally yield better tools to promote resilience in youth at all sizes.

Conclusion

In conclusion adolescent obesity is an epidemic that will continue to challenge health providers for many years to come. While there is hope that early interventions will ultimately decrease the prevalence of adolescent obesity from epidemic levels; there will always be obese adolescents in need of care. Understanding the medical, psychological, and reproductive health ramifications of adolescent obesity and feeling prepared to address them is an important skill for practitioners who care for adolescents to possess.

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