Review Article

Examining Risk for Persistent Pain among Adults with Overweight Status

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Abstract:

Aims of Investigation: Obesity and persistent pain are public health concerns with associated high costs. Evidence supports an increased risk for reports of persistent pain among adults who are above the recommended body mass index level. However, data have not been clearly synthesized to report the risk for the two co-occurring conditions. Even less is known about how overweight status that does not reach the level of obesity is related to pain. Thus, the aim driving this review was to calculate the risk and odds ratios of chronic pain among adults with an overweight body mass index. Methods: A literature review was completed using CINAHL and PubMed databases. Key words were entered using combinations of several MeSH headers. Results: Risk and odds ratios were calculated to determine overweight status among adults with chronic pain. Risk and odds ratios were calculated from nine studies. Overweight adults were between 14% and 71% more likely to report chronic pain than normal-weight adults. Implications for Practice: Pain management nurses should educate adults about the importance of weight management to reduce risk for persistent pain. Nurses need to be informed about current national physical activity and diet recommendations to ensure proper health information is relayed to patients. Conclusions: There is an elevated risk for persistent pain among adults who are overweight compared with those who are recommended weight status. Future longitudinal research focused on causality can help determine which condition contributes to the other. Weight management may be implied for clinical risk reduction of pain conditions among adults who are above recommended body mass index levels.

The prevalence of overweight adults has been significantly increasing worldwide. Today, more than 33% of adults in the United States are classified as obese (OB), or body mass index (BMI) greater than 30 (Ogden, 2012). Greater than 69% of the US population is overweight, defined as BMI greater than 25 (Ogden,

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Carroll, Kit, & Flegal, 2012). This is concerning because being overweight is linked to costly chronic health conditions with high morbidity and mortality rates such as diabetes, heart disease, stroke, and some cancers (Centers for Disease Control and Prevention [CDC], 2017). Data indicate that adults with overweight BMI are more likely to report chronic pain than those with normal BMI (Fowler-Brown, Wee, Marcantonio, Ngo, & Leveille, 2013; McCarthy, Bigal, Katz, Derby, & Lipton, 2009; Stone & Broderick, 2012; Wright et al., 2010). Higher BMI is also correlated with greater pain interference, depressive symptoms, and disability among adults with chronic pain (Allen, Da Grande, Abernathy, & Currow, 2016; Marcus, 2004). Chronic or persistent pain, defined as pain that is present most days in the past 3 or more months, is estimated to affect 100 million adults in the United States at an annual cost of roughly $635 billion (American Academy of Pain Medicine, 2011). Current costs related to health care and loss of workplace productivity related to overweight status are estimated at $214.3 billion per year (Robert Wood Johnson Foundation, 2016). Both conditions are costly, and solutions to concurrently address the epidemics are critical public health and nursing concerns.

BACKGROUND

The mechanisms by which overweight BMI is thought to contribute to chronic pain are multifactorial. One non-modifiable factor is genetics. Data indicate that twin pairs with obesity are more likely to have chronic pain than twin pairs with normal weight (Wright et al., 2010). Additionally, adult children were found to be significantly more likely to suffer chronic pain if one or both parents had chronic pain, as opposed to adult children whose parents were both pain free (Lier, Mork, Holtermann, & Nielson, 2016). In contrast, learned behaviors may create unhealthy habits, such as sedentary lifestyle and overconsumption of fatty foods, which may increase risk of obesity and chronic pain (Bonakdar, 2013). Furthermore, the accessibility of ready-made, tasty, unhealthy foods may facilitate overindulgence, which can result in weight gain and may create bodily aches from the additional weight (Narouze & Souzdalnitski, 2015).

Overeating may also be a behavior common to adults with chronic pain. A study by Janke and Kozak (2012) found that a sample of adults with overweight status and obesity reported overeating to soothe chronic pain, which led to guilt and triggered further unhealthy eating habits. Meleger, Froude, and Walker (2014) conducted an observational study on diet among a small sample of adults with chronic pain and found that participants overconsumed sodium, added sugars, fats, caffeine, and calories and were deficient in vitamins with respect to US national nutrition guidelines. A review by Okifuji and Hare (2015) summarizes the strong association between depressive symptoms, poor sleep, chronic pain, and overeating and cites studies that indicate that surgical and natural weight loss may improve pain outcomes in overweight adults.

Another contributing factor relating overweight status to chronic pain involves the load on joints from excessive weight, which causes increased pressure and painful tissue damage (Zdziarski, Wasser, & Vincent, 2015). This mechanism only partially explains the relationship, however, as overweight status has been linked to increased risk of pain in non–weight-bearing joints such as the hands (Bonakdar, 2013; Narouze & Souzdalnitski, 2015) or the head in migraine headaches (Wright et al., 2010). A prominently cited cause of obesity-related pain is inflammatory and metabolic processes (Bonakdar, 2013; Narouze & Souzdalnitski, 2015; Okifuji & Hare, 2015; Zdziarski et al. 2015). This state increases pain sensitivity and, when it occurs long term, may lead to chronic fatigue syndrome, promoting a sedentary lifestyle and reducing the likelihood of weight loss.

Although evidence clearly indicates that overweight status is associated with chronic pain conditions, and multiple theories exist as to why this might occur, the worldwide prevalence of chronic pain among adults with overweight BMI compared with those with a normal BMI is unclear, especially when overweight status is distinguished from obesity. The risk for reports of persistent pain among adults with overweight BMI that is not specific to obesity therefore needs to be further explored to illuminate avenues for reducing risks associated with both health conditions. The primary aim of this literature review, therefore, was to uncover the current risk for reports of pain based on recent global data on adults with and without an overweight BMI.

METHODS

A review of the literature was performed to determine global prevalence and risk of chronic or persistent pain among adults based on BMI. CINAHL and PubMed are two widely used and comprehensive medical databases and, thus, were chosen for this review. A search strategy was developed using combinations with the following MeSH terms: chronic, persistent, pain, associat*, overweight, obes*, and prevalen*. Asterisks were used to increase the search strategy; for example, "obes*" as a search stem returns articles with key words of both obesity and obese. Figure 1 is a