



Obesity and Orthopedic Disorders: An Overview, Epidemiology, Diagnosis, Public Health, Pharmacological Treatment, and Nursing Intervention Protocols.

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Abstract:

Background: Obesity is a significant public health issue, with increasing prevalence across the globe. It contributes to numerous comorbidities, including various orthopedic disorders, significantly impacting public health and quality of life. Obesity influences orthopedic health through both biomechanical and metabolic mechanisms, leading to conditions such as osteoarthritis, soft tissue injuries, and fractures. This complex relationship between obesity and orthopedic disorders necessitates a multifaceted approach to diagnosis and treatment, including pharmacological interventions, non-pharmacological strategies, and nursing care protocols.

Aim: This article explores the impact of obesity on orthopedic disorders, addressing its epidemiology, pathophysiology, diagnosis, treatment, and nursing intervention protocols. It aims to provide a comprehensive understanding of the relationship between obesity and orthopedic issues, highlighting the need for an integrated healthcare approach.

Methods: The review synthesizes data from epidemiological studies, clinical trials, and expert guidelines to provide an overview of obesity-related orthopedic disorders. Key areas examined include the biomechanical impacts of obesity, metabolic effects, and the role of various diagnostic and treatment modalities in managing these conditions. The article also discusses the role of nursing and interprofessional teams in optimizing patient care.

Results: Obesity is identified as a significant risk factor for osteoarthritis, soft tissue injuries, and fractures, with increased BMI correlating with joint degeneration and musculoskeletal stress. Pharmacological treatments, including orlistat and GLP-1 receptor agonists, are effective in managing obesity, while non-pharmacological interventions, such as dietary changes, exercise, and behavioral therapy, form the cornerstone of treatment. Interprofessional care, including nursing interventions, plays a critical role in managing obesity-related orthopedic issues.

Conclusion: Obesity-related orthopedic disorders require a comprehensive, multidisciplinary approach to treatment. Both pharmacological and non-pharmacological interventions are necessary to manage obesity and mitigate its impact on orthopedic health. The role of nurses in monitoring, educating, and supporting patients through lifestyle modifications and treatment adherence is crucial for optimal outcomes.

Keywords: Obesity, orthopedic disorders, osteoarthritis, pharmacological treatment, nursing interventions, public health, metabolic syndrome.

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Introduction:

Obesity is clinically characterized by calculating an individual's Body Mass Index (BMI), where a BMI exceeding 30 kg/m² is classified as obesity [1]. Approximately one-third of adults in the United States fall within this category [2]. Predictions suggest that by 2030, half of the U.S. population will meet the criteria for obesity [3]. This condition significantly increases susceptibility to various comorbidities, including hypertension, type 2 diabetes, coronary artery disease, stroke, sleep apnea, and osteoarthritis [4]. Obesity arises from complex interactions among factors, including physical inactivity and excessive caloric intake, which are directly associated with increased BMI. Socioeconomic status shows an inverse relationship with BMI. Although these associations have been recognized for decades, the causative mechanisms remain incompletely understood [5]. In orthopedic settings, obesity is becoming an increasingly common concern. Elevated BMI influences orthopedic health through biomechanical and metabolic mechanisms, affecting both bone and surrounding soft tissue structures.

Etiology

The etiology of obesity and its impact on orthopedic disorders is multifaceted, involving genetic, environmental, and behavioral factors. Genetic predisposition can influence fat distribution and metabolic rate, predisposing individuals to obesity. Environmental factors, such as sedentary lifestyles and the widespread availability of high-calorie, nutrient-poor foods, exacerbate weight gain. Behavioral contributors include physical inactivity and poor dietary habits, which directly lead to increased adiposity. Additionally, socioeconomic factors such as limited access to healthcare, nutritious foods, and opportunities for physical activity disproportionately affect certain populations, contributing to obesity prevalence. Obesity also interacts with comorbid conditions like metabolic syndrome and hypothyroidism, which can further complicate its role in orthopedic disorders. For instance, the increased load-bearing on joints accelerates wear-and-tear mechanisms, contributing to conditions such as osteoarthritis, while systemic inflammation associated with obesity exacerbates cartilage degradation. These etiological factors underscore the complex interplay of biological and lifestyle determinants in the pathogenesis of obesity-related orthopedic disorders.

Issues of Concern and Pathophysiology

Biomechanical Impacts

The additional skeletal load in obese individuals alters body mechanics, adversely affecting joint function. Obesity is a leading risk factor for the initiation and progression of osteoarthritis in weight-bearing joints, particularly the knee, hip, and ankle [6]. Altered gait and heightened joint stress contribute to excessive wear on articular cartilage and other joint tissues, including synovial fluid, subchondral bone, and ligaments. Reduced muscle strength and skeletal misalignment further predispose obese individuals to osteoarthritis, especially in the knee. Articular cartilage volume correlates with local muscle mass, and a decline in quadriceps strength accelerates cartilage loss [7]. Research indicates that quadriceps weakness is a more significant factor in osteoarthritis development than adiposity alone, with strengthening exercises effectively mitigating arthritis-related pain [8]. Obesity-related skeletal alignment changes exacerbate knee osteoarthritis by increasing medial compartment loading through varus deformity. Studies confirm that higher BMI correlates with narrowing of the medial knee joint space and progressive varus deformity, a hallmark of osteoarthritis [9][10].

Metabolic Impacts

Obesity triggers a chronic low-grade inflammatory state characterized by elevated serum markers such as C-reactive protein, interleukin-6, and leptin—collectively known as adipokines [11]. Adipokines contribute to cartilage degradation and the intra-articular inflammatory cycle, leading to collagen breakdown and worsening osteoarthritis [12]. This metabolic effect also explains the increased prevalence of osteoarthritis in non-weight-bearing joints, such as the shoulder and hand.

Epidemiology

Obesity is a global public health crisis, with its prevalence significantly rising over recent decades. In the United States, approximately 42% of adults are categorized as obese, with projections indicating that nearly half the population may be obese by 2030. Obesity disproportionately affects certain demographic groups, including individuals with lower socioeconomic status and racial/ethnic minorities. This demographic variability is paralleled by the increasing number of obesity-related orthopedic disorders. For instance, obesity is a leading risk factor for osteoarthritis in load-bearing joints, such as the knee and hip, which are more commonly diagnosed in older adults and those with high BMI levels. Similarly, soft tissue injuries, including tendinopathies and plantar fasciitis, are more prevalent in the obese population, as are specific fracture types like ankle and humeral fractures. The epidemiological trends emphasize the need for targeted interventions to mitigate the orthopedic burden associated with obesity, particularly among vulnerable populations.

Complications

Soft Tissue Injuries

Obesity is a significant risk factor for numerous soft tissue injuries. Tendinopathies, including rotator cuff tendonitis and shoulder impingement, are more prevalent in obese individuals, with surgical outcomes generally inferior to those observed in non-obese patients [13][14][15]. Similarly, conditions like carpal tunnel syndrome correlate with obesity, although weight loss does not alleviate symptoms, implicating metabolic factors in its pathogenesis [16]. In the lower limbs, plantar fasciitis, Achilles tendonitis, and posterior tibial tendon dysfunction are commonly observed in obese populations, with a higher incidence of meniscal tears requiring surgical intervention [17][18][19].

Bone Health and Fracture Risk

The relationship between obesity and fracturing risk is complex and not fully understood. While obesity was traditionally considered protective against fractures, recent evidence suggests an increased risk of fractures, particularly in the ankle, leg, and humerus, among obese individuals, especially older adults. Conversely, obesity appears to reduce the risk of wrist, hip, and pelvic fractures [20][21]. Contributing factors include fall risk, comorbidities, body fat distribution, and observed fracture patterns.

Perioperative and Imaging Complications

Obesity is associated with unfavorable perioperative outcomes. Excess adipose tissue complicates surgical procedures by obscuring anatomical landmarks, increasing risks of infection, non-union, chronic pain, and implant failure. Reduced vascularization and protein malnutrition impair wound healing, while obesity-related comorbidities exacerbate anesthetic and surgical risks [17]. Additionally, limitations in imaging modalities such as MRI and CT, due to weight restrictions, may delay or hinder appropriate management of orthopedic conditions.

Pathophysiology

The pathophysiology of obesity-related orthopedic disorders involves biomechanical and metabolic pathways. Biomechanically, excess body weight increases stress on load-bearing joints, altering gait and alignment, which leads to joint degeneration. For instance, the knee often experiences increased medial compartment loading, resulting in varus deformity and progressive osteoarthritis. Reduced muscle strength and unfavorable skeletal alignment further contribute to joint instability and cartilage loss. Metabolically, obesity induces a chronic low-grade inflammatory state characterized by elevated adipokines such as leptin and interleukin-6. These inflammatory mediators accelerate cartilage degradation and disrupt normal tissue repair processes, contributing to conditions like osteoarthritis even in non-load-bearing joints. Additionally, metabolic factors may predispose obese individuals to soft tissue injuries, including tendinopathies, by impairing tendon repair and resilience. This dual biomechanical-metabolic mechanism underscores the complex interplay driving the pathogenesis of obesity-related orthopedic disorders, affecting both bone integrity and soft tissue function.

Public Health-Related Issues

The obesity epidemic poses significant public health challenges due to its profound impact on orthopedic health and overall well-being. Orthopedic disorders linked to obesity, such as osteoarthritis and tendon injuries, reduce mobility, impair quality of life, and contribute to long-term disability. These conditions disproportionately affect underserved populations with limited access to healthcare, creating health disparities. The economic burden is substantial, encompassing direct costs like surgical interventions and physical therapy, and indirect costs due to lost productivity. Public health efforts must focus on prevention through community-based interventions promoting physical activity, healthy diets, and early screening for orthopedic complications in obese individuals. Additionally, healthcare systems must address barriers to care, including limitations in imaging modalities for obese patients and the need for specialized surgical expertise. Policies that encourage workplace wellness programs, urban planning to enhance physical activity, and subsidies for healthy food options are critical. Collaborative efforts involving policymakers, healthcare providers, and community organizations are essential to mitigate the orthopedic and systemic impacts of obesity.

Clinical Significance

Obesity, a multifactorial condition, significantly influences orthopedic health through biomechanical and metabolic mechanisms. Its prevalence makes it a common concern for orthopedic surgeons. While the relationship between obesity and osteoarthritis is well-documented, further exploration into the pathogenesis of obesity-associated soft tissue injuries could enhance both prevention and management strategies for these orthopedic complications. This underscores the need for continued research to address gaps in understanding and to develop comprehensive treatment approaches.

Diagnostic Techniques

Accurate diagnosis of obesity and its related orthopedic complications relies on a combination of clinical assessment and advanced imaging. Body mass index (BMI) remains the primary tool for diagnosing obesity, with a BMI ≥ 30 kg/m² considered clinically obese. However, BMI may not accurately reflect body fat distribution or its impact on musculoskeletal health. Waist-to-hip ratio and dual-energy X-ray absorptiometry (DEXA) scans provide more detailed assessments of fat distribution. In orthopedic evaluations, radiography is often used to identify structural joint damage, such as osteoarthritis, while magnetic resonance imaging (MRI) and computed tomography (CT) scans offer insights into soft tissue injuries, including tendon tears and cartilage loss. Emerging imaging modalities, such as ultrasound elastography, assess tissue integrity and inflammation, aiding in early diagnosis. Integration of diagnostic findings into a comprehensive clinical picture allows for tailored management strategies, addressing both obesity and its orthopedic sequelae.

Enhancing Healthcare Team Outcomes

Managing obesity-related orthopedic issues necessitates a multidisciplinary approach. Effective management requires the collaboration of a diverse healthcare team, including a nutritionist, an endocrinologist or internal medicine specialist for managing coexisting conditions such as diabetes or thyroid disorders, and a personal trainer to guide physical activity. In more severe cases, additional support from a bariatric nurse, psychologist or therapist, and a general surgeon specializing in bariatric procedures may be necessary. Interprofessional communication is critical to optimizing outcomes and improving team performance. For example, if a trainer observes that a patient engages in extensive daily exercise and a dietician confirms adherence to a healthier diet, this information may prompt the endocrinologist to conduct further metabolic evaluations. Additionally, physical therapists play an essential role by teaching patients exercises tailored to recovery from weight-induced injuries. Evidence from a systematic review indicates that dietary consultations improve dietary habits, cholesterol levels, blood pressure, and triglycerides [22] [Level 2]. In conclusion, employing interprofessional strategies significantly enhances patient outcomes in addressing obesity-related orthopedic conditions [Level 5].

Nursing and Interprofessional Team Interventions

Interprofessional interventions are critical in managing obesity-related orthopedic challenges. General practice nurses, bariatric nurses, personal trainers, and dietitians are pivotal members of such teams. While medications can address some causes of obesity, non-pharmacological approaches implemented by this interprofessional team, such as dietary modifications and structured physical activity, have proven effective in managing obesity [22][23].

Nursing and Interprofessional Team Monitoring

Continuous monitoring by an interprofessional team is integral to achieving success in weight management. Nurses, personal trainers, and dietitians collaborate to track calorie intake, monitor weight changes, and estimate energy expenditure through exercise. Emerging technologies, including wearable devices, now enable real-time monitoring of physical activity, providing patients and practitioners with actionable insights into progress and areas requiring adjustment [24].

Pharmacological Treatment

Pharmacological treatments for obesity are tailored to address its multifaceted etiology, targeting appetite regulation, fat absorption, and energy expenditure. Medications approved for long-term obesity management include orlistat, liraglutide, and semaglutide. Orlistat acts by inhibiting gastrointestinal lipase, reducing dietary fat absorption, while liraglutide and semaglutide, glucagon-like peptide-1 (GLP-1) receptor agonists, suppress appetite and delay gastric emptying. These agents are typically prescribed alongside lifestyle modifications. Short-term options such as phentermine, an appetite suppressant, may be used under careful medical supervision, particularly for individuals with obesity-related comorbidities like diabetes or hypertension. However, pharmacological interventions require close monitoring for potential side effects, including gastrointestinal disturbances, elevated heart rate, or psychological symptoms. Despite their efficacy, these treatments are not standalone solutions; they work best as part of a multidisciplinary approach. Additionally, adherence to medication regimens and addressing patient-specific factors such as contraindications and drug interactions are critical for optimizing outcomes.

Non-Pharmacological Treatment

Non-pharmacological approaches form the cornerstone of obesity management, emphasizing sustainable lifestyle changes. Dietary interventions focus on calorie restriction and balanced nutrition, incorporating low-calorie diets or intermittent fasting under professional guidance. Structured physical activity programs, including aerobic exercises and resistance training, enhance weight loss and metabolic health. Behavioral therapy addresses underlying psychological contributors to obesity, such as emotional eating, through techniques like cognitive-behavioral therapy (CBT). Surgical interventions, including bariatric procedures like gastric bypass or sleeve gastrectomy, are considered for severe obesity when other methods fail. These treatments, combined with long-term follow-up, ensure sustained weight management and reduced orthopedic complications.

Social Concerns

Obesity presents numerous social challenges, including stigma and discrimination, which impact mental health and access to healthcare. Individuals with obesity often face bias in medical settings, potentially delaying diagnosis and treatment of related orthopedic issues. Socioeconomic factors also influence obesity prevalence, as limited access to healthy food and safe exercise environments disproportionately affects low-income populations. Moreover, cultural norms and misconceptions about body image may hinder engagement in weight-loss efforts. Community-level interventions, including education campaigns and policy changes promoting healthier lifestyles, are essential for addressing these social barriers. Multidisciplinary approaches must consider these factors to ensure equitable care and improve outcomes.

Nursing Intervention Protocols for Obesity and Orthopedic Disorders

Obesity, with its associated orthopedic complications, necessitates a comprehensive and multidisciplinary approach to management. Nursing interventions are critical in providing holistic care that addresses both the physical and psychological needs of patients. These protocols emphasize patient education, weight management strategies, pain management, psychological support, and collaboration with the broader healthcare team to ensure optimal outcomes.

1. Patient Education and Behavioral Support

Patient education is a cornerstone of nursing interventions for obesity management. Nurses play a pivotal role in teaching patients about the importance of balanced nutrition, regular physical activity, and the potential impact of excess weight on joint health. Educating patients about the link between obesity and orthopedic disorders, particularly osteoarthritis, is essential for fostering understanding and compliance with treatment protocols. Nurses should emphasize the role of weight reduction in alleviating symptoms and improving mobility. Behavioral support is equally critical. Nurses can guide patients through structured weight loss programs that incorporate goal-setting, self-monitoring, and regular follow-ups. The use of cognitive-behavioral strategies to address emotional eating or lack of motivation is also beneficial. For example, nurses may introduce techniques such as stimulus control, where patients are taught to avoid triggers for overeating, and mindfulness training to enhance awareness of eating behaviors. By promoting healthy lifestyle changes and building a sense of ownership over their health, nurses facilitate long-term weight management.

2. Nutritional Interventions

Nurses collaborate with dietitians to develop tailored nutrition plans for patients with obesity and orthopedic issues. Nutritional interventions aim to reduce caloric intake while ensuring that the body receives sufficient nutrients to support bone and joint health. For patients with osteoarthritis or other musculoskeletal conditions, incorporating anti-inflammatory foods such as omega-3 fatty acids, fruits, and vegetables is important for managing symptoms and improving overall joint function. In addition to dietary modification, nurses assist patients with meal planning, portion control, and healthy cooking techniques. Regular monitoring of weight loss progress, dietary adherence, and patient satisfaction with dietary changes is essential. Nurses must also assess for potential nutrient deficiencies, such as calcium or vitamin D, which are common in patients with obesity and contribute to bone health. Collaborating with dietitians and other healthcare professionals, nurses can provide a well-rounded approach that aligns dietary changes with the patient's medical and orthopedic needs.

3. Physical Activity Promotion

Encouraging and facilitating physical activity is another key intervention in the management of obesity and its orthopedic sequelae. Nurses assess patients' physical abilities and limitations related to obesity, particularly joint pain and stiffness, and collaborate with physiotherapists to design safe, effective exercise programs. Weight-bearing exercises should be carefully adjusted to prevent further damage to already compromised joints. Nurses educate patients on the importance of regular physical activity for weight loss, improving cardiovascular health, and alleviating musculoskeletal pain. Activities like walking, swimming, and cycling are often recommended for obese patients, as they place less strain on the joints while providing effective cardiovascular benefits. Additionally, nurses can guide patients through strength training exercises to enhance muscle mass, which is particularly beneficial for knee osteoarthritis, as it improves joint stability and reduces pain. Nurses should monitor patients for signs of exercise-related injuries, especially in those with significant weight-related orthopedic concerns, and ensure that exercise plans are adapted as the patient's condition improves. Encouraging consistent activity and tracking progress can help patients build confidence and maintain motivation.

4. Pain Management

Pain management is integral to the care of obese patients with orthopedic disorders, as joint pain is a common complaint. Nurses must assess the severity and impact of pain on a patient's daily functioning and collaborate with physicians to develop a multimodal pain management plan. Non-pharmacological

strategies, such as heat and cold therapy, may be used to manage pain in the joints. Cold packs can reduce inflammation, while heat therapy can relax tense muscles and improve circulation. Pharmacological interventions may also be necessary, particularly in patients with severe osteoarthritis or other musculoskeletal disorders. Nurses are responsible for administering prescribed medications, monitoring for side effects, and educating patients about safe usage. Non-steroidal anti-inflammatory drugs (NSAIDs), acetaminophen, or topical analgesics may be prescribed to relieve pain and inflammation. For patients with chronic pain, nurses may assist with transitioning to long-term pain management strategies, including the use of adjunct therapies like transcutaneous electrical nerve stimulation (TENS) or acupuncture. In cases where pain is not adequately managed with non-pharmacological or pharmacological interventions, nurses should facilitate referrals to pain management specialists or orthopedic surgeons for further evaluation.

5. Psychological Support and Mental Health

The psychological component of obesity management cannot be overlooked. Nurses are often the first healthcare professionals to recognize signs of depression, anxiety, or low self-esteem in obese patients, particularly those with orthopedic conditions who may be experiencing mobility issues. Nurses should provide emotional support, encourage open communication, and actively listen to patients' concerns. In addition to direct emotional support, nurses can facilitate referrals to mental health professionals, such as psychologists or therapists, who can help address the emotional and psychological challenges associated with obesity. Cognitive-behavioral therapy (CBT) and other forms of counseling can be effective in helping patients address the underlying causes of obesity, such as emotional eating, and develop healthier coping mechanisms. Nurses can also support patients through behavior modification strategies, helping them address negative body image and fostering a sense of self-efficacy. Supporting mental health is crucial for long-term success in managing obesity and orthopedic complications, as psychological well-being directly impacts motivation and adherence to treatment protocols.

6. Interprofessional Collaboration and Coordination

Obesity management requires a team-based approach, and nurses play a critical role in coordinating care across disciplines. The healthcare team for obese patients with orthopedic disorders may include physicians, dietitians, physical therapists, psychologists, and surgeons. Nurses act as a liaison between team members, ensuring that communication is clear and timely. By facilitating interprofessional collaboration, nurses ensure that all aspects of a patient's care plan are addressed, from nutritional needs and pain management to physical activity and mental health support. Regular case reviews and updates among team members are vital to ensuring that the patient's condition is continuously reassessed and that treatment plans are adjusted as needed. Through effective communication and collaboration, nurses contribute significantly to improving patient outcomes, ensuring that patients receive comprehensive, individualized care that addresses all aspects of their obesity and orthopedic issues. Nursing intervention protocols for obesity and orthopedic disorders require a multifaceted, patient-centered approach. Nurses play a vital role in educating patients, promoting behavior change, providing psychological support, and managing pain. By working collaboratively with other healthcare professionals, nurses ensure that patients receive the most comprehensive care possible, improving both the management of obesity and the prevention or mitigation of orthopedic complications. Effective nursing interventions not only alleviate the physical symptoms of obesity-related orthopedic issues but also empower patients to achieve lasting lifestyle changes that promote overall health and well-being.

Conclusion:

Obesity, a complex condition with multifactorial origins, presents significant challenges in the realm of orthopedic health. It is widely recognized as a leading contributor to the development and progression of various orthopedic disorders, most notably osteoarthritis, tendon injuries, and fractures. The biomechanical consequences of obesity, such as altered gait and joint misalignment, directly affect the integrity of load-bearing joints, while the metabolic effects, including chronic inflammation and adipokine production, exacerbate cartilage degradation and soft tissue injuries. This dual impact of obesity on bone and soft tissue underscores the complexity of managing obesity-related orthopedic conditions. The

epidemiology of obesity-related orthopedic disorders reveals a concerning trend, with increasing prevalence across diverse populations. Obesity is not only a risk factor for the initiation of these conditions but also accelerates their progression, leading to reduced mobility and quality of life. Soft tissue injuries, particularly tendinopathies, and fractures in specific locations, such as the ankle and humerus, are more common in obese individuals. The overall impact of obesity on public health is substantial, contributing to increased healthcare costs and long-term disability. Addressing obesity-related orthopedic disorders requires a comprehensive approach, combining pharmacological and non-pharmacological treatments. Pharmacological interventions, such as GLP-1 receptor agonists and orlistat, are effective tools in weight management. However, these treatments must be part of a broader, integrated care strategy that includes lifestyle modifications like dietary changes, physical activity, and behavioral therapy. Surgical interventions may be considered in severe cases of obesity but are typically reserved for patients who have not responded to other methods. A multidisciplinary approach is critical in optimizing care for obese individuals with orthopedic disorders. The role of healthcare professionals, including physicians, dietitians, physical therapists, and nurses, is vital in managing these patients. Nurses, in particular, play a central role in patient education, monitoring, and supporting lifestyle modifications. Nursing interventions such as regular weight tracking, dietary counseling, and encouragement of physical activity can significantly enhance patient outcomes. Furthermore, the use of wearable devices and other technologies allows for real-time monitoring, empowering both patients and healthcare providers to make informed decisions regarding treatment adjustments. In conclusion, obesity-related orthopedic disorders represent a significant and growing public health issue. A multifaceted, integrated approach to treatment, involving both pharmacological and non-pharmacological interventions, is essential in managing these conditions. Nurses, in collaboration with other healthcare professionals, are essential to providing effective care and improving patient outcomes. Continued research is necessary to further understand the pathophysiology of obesity-related orthopedic disorders and to develop more targeted interventions.

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السمنة واضطرابات العظام: نظرة عامة، علم الأوبئة، التشخيص، الصحة العامة، العلاج الدوائي، وبروتوكولات التدخل الترميزي.

الملخص :

الخلفية: تعتبر السمنة مشكلة صحية عامة هامة، حيث تزداد معدلات انتشارها في جميع أنحاء العالم. تساهم السمنة في العديد من الأمراض المصاحبة، بما في ذلك اضطرابات العظام المختلفة، مما يؤثر بشكل كبير على الصحة العامة وجودة الحياة. تؤثر السمنة على صحة العظام من خلال آليات حيوية وآليات أيضية، مما يؤدي إلى حالات مثل التهاب المفاصل العظمي، إصابات الأنسجة الرخوة، والكسور. تتطلب العلاقة المعقدة بين السمنة واضطرابات العظام نهجاً متعدد الجوانب للتشخيص والعلاج، بما في ذلك التدخلات الدوائية، الاستراتيجيات غير الدوائية، وبروتوكولات الرعاية الترميزية.

الهدف: يستعرض هذا المقال تأثير السمنة على اضطرابات العظام، ويعالج علم الأوبئة، الفسيولوجيا المرضية، التشخيص، العلاج، وبروتوكولات التدخل الترميزي. يهدف إلى تقديم فهم شامل للعلاقة بين السمنة والمشاكل العظمية، مع تسليط الضوء على الحاجة إلى نهج متكامل للرعاية الصحية.

الطرق: يراجع هذا المقال البيانات من الدراسات الوبائية، التجارب السريرية، والإرشادات الخبراء لتقديم نظرة عامة على اضطرابات العظام المرتبطة بالسمنة. تشمل المجالات الرئيسية التي تم فحصها التأثيرات البيوميكانيكية للسمنة، التأثيرات الأيضية، ودور مختلف الأساليب التشخيصية والعلاجية في إدارة هذه الحالات. يناقش المقال أيضاً دور التمرّيز والفرق متعددة التخصصات في تحسين رعاية المرضى.

النتائج: تم تحديد السمنة كعامل خطر رئيسي لالتهاب المفاصل العظمي، إصابات الأنسجة الرخوة، والكسور، مع ارتباط زيادة مؤشر كتلة الجسم بتدهور المفاصل وإجهاد الجهاز العضلي الهيكلي. العلاجات الدوائية، مثل أورليستات وعوامل تنشيط مستقبلات GLP-1، فعالة في إدارة السمنة، في حين أن التدخلات غير الدوائية، مثل التغييرات في النظام الغذائي، التمرين، والعلاج السلوكي، تشكل الركيزة الأساسية للعلاج. تلعب الرعاية متعددة التخصصات، بما في ذلك التدخلات التمرّيزية، دوراً حيوياً في إدارة مشكلات العظام المتعلقة بالسمنة.

الخلاصة: تتطلب اضطرابات العظام المرتبطة بالسمنة نهجاً شاملاً ومتعدد التخصصات للعلاج. من الضروري استخدام التدخلات الدوائية وغير الدوائية لإدارة السمنة والتقليل من تأثيرها على صحة العظام. يعد دور الممرضين في مراقبة المرضى، وتثقيفهم، ودعمهم من خلال تعديلات نمط الحياة والالتزام بالعلاج أمراً بالغ الأهمية لتحقيق النتائج المثلى.

الكلمات المفتاحية: السمنة، اضطرابات العظام، التهاب المفاصل العظمي، العلاج الدوائي، التدخلات التمرّيزية، الصحة العامة، متلازمة الأيض.