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Narrative Review of Obesity in Aging Populations

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ABSTRACT

Obesity in aging populations has become a pressing global public health concern as demographic shifts increase the proportion of older adults worldwide. This narrative review synthesizes current evidence on the epidemiology, mechanisms, health consequences, measurement challenges, and management of obesity among older adults. The prevalence of obesity continues to rise more rapidly in the elderly than in younger age groups, driven by globalization, lifestyle transitions, and physiological changes inherent to aging. Pathophysiological mechanisms, including metabolic dysregulation, sarcopenic obesity, chronic inflammation, and insulin resistance, interact to accelerate functional decline and biological aging, a phenomenon increasingly described as "obesageing." Health consequences are profound, with obesity exacerbating multimorbidity, disability, cognitive impairment, frailty, and mortality. Standard obesity metrics, particularly BMI, remain inadequate for older populations due to age-related changes in body composition, necessitating improved classification systems and broader use of alternative measures such as fat mass index and muscle-based indicators. Evidence-based management options, lifestyle, pharmacologic, and surgical, demonstrate potential benefits but require cautious, individualized implementation to avoid exacerbating frailty, sarcopenia, and chronic disease. Barriers across individual, provider, and system levels continue to impede optimal treatment, highlighting the need for integrated care models, community-based solutions, and supportive policy environments. Significant research gaps persist, especially in longitudinal trajectories of aging with obesity, functional outcomes, interventional safety, and the role of emerging technologies. As the dual burden of aging and obesity intensifies globally, prioritizing geriatric-specific strategies and interdisciplinary research is essential for improving health, independence, and quality of life in older adults.
Keywords: Aging populations, Sarcopenic obesity, Obes-ageing, Geriatric health, and Chronic disease risk.

INTRODUCTION

A narrative synthesis of the body of knowledge on obesity in older adults is warranted, clarifying the current epidemiological situation, incriminating mechanisms, adverse outcomes, relevant measurement approaches, potential interventions, and persisting gaps in knowledge. The global demographic shift toward an older age structure is occurring at an unprecedented speed, with the number of older persons projected to reach two billion by 2050 [1]. These changes are accompanied by an increasing burden of overweight and obesity in the same age group [2]. A comprehensive understanding of the scope and implications of obesity in aging populations is therefore timely. As people age, a series of physiological changes linked with the aging process take place, including alterations in the regulation of energy balance, accumulation of ectopic fat. A cadre of distinct societal, psychological, physiological, and medical factors embeds conditions of vulnerability that can lead to obesity. Obesity in older adults has been associated with accelerated biological aging [3]. Obesity has deleterious effects on many organ systems, both directly and through incidental effects on age-related chronic conditions. Given the striking projected demographic change toward an older population and the simultaneous escalation in obesity, it is critical to delineate cutting-edge knowledge concerning obesity in aging to advance research and inform policy, clinical care, and education [2]. Many researchers equate aging with the erosion of homeostatic mechanisms that protect body weight when energy intake exceeds energy expenditure and posit that the inability to control increases in energy intake leads to the development of obesity. Such a characterization might fit many younger

individuals who were previously able to maintain a stable weight for years but then experience a weight gain that appears to accelerate with advancing age and/or the onset of certain age-related diseases [3]. Obesity itself can be marked by alterations in age-related physiology. Higher percent body fat and lower fat-free mass can increase multisystem vulnerability associated with biological age, keeping homeostatic pathways intact.

Epidemiology and Prevalence of Obesity in Older Adults

The steadily increasing trend of globalization and urbanization among older adults has been found to have a considerable impact on bodily mass index (BMI), and a "widening gap" between age groups has become evident in many countries [3]. Indeed, a substantial number of large international studies reported a dramatic increase in the prevalence of obesity among older adults in many countries between 1990 and 2009 [3]. To achieve maximum longevity and to maintain a better performance among older populations, several extensive surveys have been carried out to measure certain factors, including body mass index (BMI), meal frequency, sleeping hours, and fat mass index (FMI) [4]. Obesity measurement and defining the level of obesity among the older adult population has always been problematic, as sarcopenia becomes a critical condition, and other measuring factors are of great importance [6]. Most of the studies reported to favour BMI as the only measuring factor, but great variations in research still exist. Other measuring criteria like fat mass index (FMI), body contour, waist circumference, calf circumference (a surrogate measure of skeletal muscle mass) have been taken into consideration but have not been thoroughly studied 5.26 Distributed and characterized by age and body fatness Worldwide, the relationship between obesity and aging has been generally ignored among various Nations; meanwhile, evidence has proved that not every country within the global share the same property of the inextricable correlation between aging and the gaining of obesity across different nations. Inner Japan demonstrates the other side due to its unique eating habits and food structure established upon the ground of active seafood culture and Asian Pan-Asian diet and health system [5].

Pathophysiological Mechanisms Linking Obesity and Aging

Aging and obesity are two of the greatest public health challenges the globe faces today. In 2015, over 600 million adults aged ≥65 years lived worldwide [1]. By 2050, this figure is projected to increase from 12% to over 22% in High-income countries and from 4% to over 10% in Low-income countries [4]. Simultaneously, obesity has emerged as a global epidemic, with over 640 million obese individuals identified worldwide in 2016. The coordination of multiple efforts to comprehend how obesity and aging are interconnected has become paramount, given that both conditions lead to the emergence of several comorbidities, including cardiovascular disease, diabetes, dyslipidemia, osteoarthritis, sleep apnea, and various cancers [2]. To aggregate the evidence that has accrued towards understanding the underlying connections between obesity and aging, Ghosh et al. developed the term "obesageing"[6]. The interactions between obesity and aging are ubiquitous at both cellular and organismal levels. Obesity and aging provoke a range of cellular and molecular dysfunctions independently; however, the physiological disruptions induced by both obesity and aging largely overlap, thus allowing both physiological disturbances to amplify the deleterious consequences of the other condition. Both phenomena are linked through metabolic disruption, tissue dysfunction, and the establishment of a pro-inflammatory state involving various types of cells [7]. Adiposity increases throughout growth and development, and while the gradual loss of fat mass heralds a climacteric phase for women, trunk or abdominal obesity predominates in both genders throughout adult life. However, sarcopenic obesity (loss of muscle mass with preservation of body fat or gain in body fat) comes to prevail only in the aging population. Both phenomena are similarly orchestrated by insulin resistance but lead to these hallmarks through distinct cellular and molecular mechanisms [8]. Multiple lines of evidence indicate that adiposity and the accompanying metabolic disturbances also accelerate different hallmarks of aging and increase the risk of developing the functional and cognitive frailty that precedes intrinsic aging. This concept has already been termed "obesageing" [5].

Health Consequences of Obesity in the Elderly

The elderly comprise the only age group for which obesity prevalence is continuing to rise [5]. Seventy to eighty percent of elderly people with obesity also suffer from disabilities. The reasons that explain how obesity and aging interact to accelerate the individual's trajectory toward limits of functioning span functional, health, and social domains. Among the oldest individuals in the population, the pattern of obesity continues to exert this deleterious effect on the individual's stamina and, thus, resistance to fatigue. Obesity incurs greater health and economic burdens on old people than on young and middle-aged individuals [3]. Diseases linked to obesity, such as hypertension, hyperlipidemia, diabetes, sleep apnea, osteoarthritis, cancer, and cognitive dysfunction, frequently affect older people [4]. The direct loss of life expectancy because of obesity is more pronounced in older people compared to younger and middle-aged individuals, and the acute requirement for institutionalization due to obesity is also primarily concentrated among the elderly [4]. Therefore, older people with obesity have an tilted risk for mortality and institutionalization compared with younger individuals. With regard to obesity perception, elderly people tend to perceive the conceptualization of this condition differently from younger and middle-aged

individuals; they may not strongly identify as suffering from obesity, and obesity is not emphasized in account-aiding dialogues about chronic illness [5]. The elderly are the only age group in which obesity prevalence continues to rise; among these individuals, 70%–80% with obesity suffer disability [3]. The consequences of obesity and aging accelerate the trajectory toward functional limits via functional, health, and social channels. Among the oldest subgroups, this burden also detrimentally influences stamina and resistance to fatigue [3]. Moreover, the health and economic burdens of obesity in later life exceed those for younger and middle-aged adults. Obesity-related comorbid conditions such as hypertension, hyperlipidemia, diabetes, sleep apnea, osteoarthritis, cancer, and cognitive dysfunction are more prevalent in older persons [5]. Obesity also exerts a greater impact on direct loss of life expectancy and institutionalization risk for older individuals than for younger groups, and the urgency of institutionalization is similarly concentrated in this age bracket. Consequently, the excess mortality and institutionalization risks remain more pronounced in older individuals with obesity [3]. Older adults also hold a different conceptualization of obesity from younger populations; at the point of account aiding, this demographic tends to deny identification with obesity and view it as less salient compared to chronic conditions [7].

Measurement and Classification Considerations in Aging Populations

As individuals age, a myriad of metabolic, physiological, and functional changes occur, which particularly intensify after the age of 60. These changes hinder lifestyle choices that help preserve optimal weight, and result in meaningful alterations in body composition [5]. Because of the importance of maintaining an appropriate body mass throughout life, an increasing emphasis on a better understanding of body fat distribution, physiological and metabolic health status, exercise capacity, and functional capacity is expected [3]. Aging is often associated with a more qualitative transformation of the metabolic profile of body weight excess, a relationship that has been emphasized through the introduction of differentiated classification systems, which serve as functionally relevant objectives [6]. Age-related biological changes are a source of subjectively important information required for a better understanding of certain issues, such as cachexia or sarcopenia with adiposity surplus [3]. Differentiated classification systems serve to meet current challenges inclusion of accurate techniques for measuring body composition across a wide range of settings, patient populations and target groups; reliability of measurements techniques or procedures; the appropriateness of categorization criteria and associated cut-off points; ease of introduction of age-related methodology concepts; inclusion of ordinary yet informative supplementary indicators; better approach to handle the considerable deviation and disparity in public health trends; use of different sources of gathering follow-up and longitudinal information such as upon submission and further statistical analysis of prospective data [5]. A wide spectrum of processes marked by important biological, physiological, functional, and cellular irregularities, accentuated by aging, evolves during several life-cycles [4]. The acceptance of older subpopulations and more advanced biological assessment techniques for determining physiological health forms the basis for the incorporation of foundational forward-looking concepts aimed at more effective service provisioning. Restoration of independence, mobility, and health status throughout aging constitutes the leading international public health goals. When combined with targeting obesity, population-wide recovery of functions allows tackling the internationally recognized precipitating challenge of maintaining normal aging [3]. These wider considerations form the broader contextual understanding required for better perceiving, overseeing, and determining more excess body mass-oriented concerns following remaining defined obesity indicators still in use with respect to adult society more generally[2].

Management and Intervention Strategies for Obesity in Older Adults

Obesity in older adults (≥65 years) presents unique challenges for prevention and treatment. Dual mechanisms of obesity and aging increase vulnerability in older populations, further complicating weight-loss strategies and healthcare access [4]. Safety concerns about eliminating excess calories remain heightened for those with comorbidities. With one-third of older adults already obese, functional independence and quality of life are at risk [6]. Prevalence rates are trending upward among older adults, mirroring younger populations. Current socioecological factors lag in community accessibility and reimbursement equity, hindering effective intervention uptake across various settings [3]. With these aspects in mind, options for managing obesity in older adults fall into three major categories: lifestyle, pharmacologic, and surgical. Each option has advantages, limitations, and safety considerations influenced by geriatric syndromes and chronic diseases. Lifestyle treatments include various dietary protocols, physical-activity prescriptions, and different types of exercise or resistance-based training. Evidence indicates that modest caloric restriction initiates weight loss, reduces fat mass, preserves lean mass, improves fitness, amplifies the positive effects of exercise, and increases mobility [5]. Activity prescriptions, diet and activity combination recommendations, resistance training, and aerobic programs have all yielded statistically significant improvements while adhering to safety precautions [5].

Barriers, Facilitators, and Implementation In Clinical and Community Settings

A variety of barriers and facilitators hinder the timely and effective management of obesity among older adults at the individual, provider, and system levels [7]. Patient-centred treatment must contend with components specific to the geriatric population, necessitating concerted effort at both community and policy levels if obesity management is to be optimally pursued [6]. Scalable initiatives, the judicious harnessing of technology, and approaches focusing on prevention can help mitigate the burden of obesity on older persons despite the many difficulties involved. While obesity affects physical health, such as frailty, dyspnoea, and mobility, the detrimental psychosocial impact cannot be overlooked [5]. Proactive policies that encourage healthy physical, dietary, and asset exposure, as well as attention to equitable access to healthy urban settings and active opportunities, can help curtail supporting behaviours during population ageing [8].

Gaps in Knowledge and Future Research Directions

Excellence in knowledge translation, encompassing epidemiological evaluation and a translational approach. Recommended to study longitudinal data on obesity and aging together, including interventional trials around brain health, risk stratification, and integrated care pathways [5]. Prioritization on effectiveness and safety of tailored lifestyle and pharmacotherapy interventions [7]. Obesity prevalence in older cohorts is steadily rising. Existing population studies characterize obesity, its trend, specialized interventions, and address the epidemiological knowledge gap. A thorough ageing-obesity literature review highlights postponed intervention and identification of priority questions for the preparation of the aging and obesity proposal. Urgency for interdisciplinary collaborations integrating relevant geriatric parameters [8-12].

CONCLUSION

The convergence of global population aging and rising obesity prevalence presents an urgent public health challenge with far-reaching clinical, social, and economic implications. Aging fundamentally alters metabolic physiology, body composition, and energy regulation, creating conditions that heighten vulnerability to weight gain and obesity-related complications. Obesity in older adults accelerates biological aging, contributes to multimorbidity, reduces functional capacity, increases disability and frailty, and elevates the risks of mortality and institutionalization. Despite widespread recognition of these threats, current measurement and classification tools remain poorly suited to aging bodies, underscoring the need for more precise assessments that capture fat distribution, muscle mass, and functional status. Effective management of obesity in older adults requires a nuanced approach integrating lifestyle modification, pharmacotherapy, and surgical options while prioritizing safety, preservation of lean mass, and maintenance of independence. Persistent barriers ranging from patient-level misconceptions to systemic gaps in care delivery continue to impede progress, demonstrating the need for improved clinical guidelines, equitable access to interventions, and innovative community-based strategies. Moving forward, interdisciplinary research that bridges gerontology, metabolic science, and public health is essential. Priorities include longitudinal studies that examine obesity trajectories in aging, tailored intervention trials, advancements in geriatric risk stratification, and integrated models of care that address both functional and metabolic health. Addressing these gaps will strengthen our capacity to mitigate the burden of obesity in older adults and support healthier, more resilient aging populations worldwide.

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