The Influence of Obesity on Quality of Life: A Systematic Review

ABSTRACT

Introduction: The relationship between obesity and the quality of life (QoL) or health-related quality of life (HRQoL) has been confounded by several factors, including multi-morbidity. The objective of this study is to review and explore the relationship between obesity and quality of life, controlling for the long-term conditions alongside various demoic, health, and lifestyle factors within the general population.
Methodology: To achieve the objective, we have conducted a systematic review of 21 studies published between 2020 and 2024, focusing on the influence of obesity on individuals' quality of life. This systematic review employed a robust methodology that follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. It included studies published between 2010 and 2024, drawn from various databases, including SCOPUS, PubMed, Embase, and Google Scholar.
Results: The findings indicate that obesity is directly associated with reductions in the quality of life, including mental and physical health, activities of daily living, and psychological functioning. Obese persons have higher functional limitations levels than normal and overweight individuals, even as obesity has been linked to the development of various sleep disorders, including obesity hypoventilation syndrome (OHS) and obstructive sleep apnea (OSA).
Conclusions: The systematic review has disclosed the existence of a clear inverse relationship between increased weight status and decrease in the quality of life. Obesity significantly influences the quality of life of persons with obesity as it adversely affects individual's health and affects different aspects of the person's quality of life, including physical and psychological functioning, mental health and well-being, and body image, among others.

Keywords: Obesity; quality of life; body mass index; weight loss; and overweight.

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1. INTRODUCTION

1.1 Definition of Quality of Life in Relation to Obesity

Quality of life or Health-related quality of life (HRQoL) refers to the broader subjective concept embracing mental and physical health that are often in intricate correlations with various external factors, including socio-economic status, health, and environment, among other notable factors [1]. Consequently, obesity refers to a health condition characterized by excessive and abnormal fat accumulation, which is detrimental to the individual's health. In this regard, the World Health Organization categorizes obesity as having a body mass index (BMI) of over 30kg/m^2, even as severe obesity has been categorized as having a BMI of over 40kg/m^2 [1]. Obesity is attributable to an array of interrelated behavioral, biological, and environmental aspects, indicating the multifaceted origin and complexity of obesity [1-4].

1.2 Global Prevalence of Obesity

According to the World Health Organization (WHO), obesity's global prevalence rates have dramatically increased in the last forty years, from approximately 3.2% in 1975 to nearly 11% by the year 2016 for the adult males, as well as from 6.4% in 1975 to approximately 13% in adult females [1]. The observed prevalence patterns and trends have not been restricted to adult persons, given that the number of obese children and adolescents have equally risen from approximately 4% in the year 1975 to approximately 18% as at 2016. In comparison, as at the end of 2016, the WHO noted that the total number of obese and overweight individuals surpassed the overall number of people who were undernourished, as nearly 1.9 billion adult persons were obese and overweight in comparison to only 462 million adults who were underweight [2].

1.3 Effects of Obesity on Quality of Life

Obesity has been linked to an array of long-term health conditions, including the development of Type 2 diabetes, cardiovascular diseases, hypertension (HTN), respiratory complications, stroke, certain cancers, osteoarthritis, and reproductive health conditions and challenges, among others [1-3]. The probability of developing long-term conditions (LTCs) increases proportionately with BMI, regardless of gender and age [4]. Mental health conditions that include anxiety, sleep disorders, impaired self-image, and depression, are increasingly prevalent among obese persons, even as obesity-associated LTCs also affect the quality of life, influenced by medications, polypharmacy, and comorbidities [3-4].

Moreover, the increasing prevalence rate of obesity has resulted in not only public health concerns but also adverse socio-economic outcomes, including increments in cost of care, increase in the number of preventable deaths, reduction in the quality of life, decreases in labor productivity, and reduction in life expectancies. In concurrence with the rising incidence and prevalence rates of various chronic and non-communicable disease, the upsurge in obesity cases has turned out as amongst the most significant population health risks that continue to contribute to mortality, morbidity, and disability-adjusted life years (DALYS) across the globe [3]. In this regard, the WHO has maintained that obesity and overweightness kills more individuals compared to undernutrition kills for a larger proportion of the globe's population [1].

1.4 Obesity Trends in High- and Low-Income Countries

Though initially linked to developed high-income nations, obesity rates have drastically risen in developing low and middle-income nations [1]. For instance, as at 2016, the prevalence rates of obesity were 5.8% in low-income nations, 7.3% in lower-middle-income nations, 14.3% in upper-middle-income nations, and 25.9% in high-income nations [4, 5]. Consequently, low-income nations have, in recent times, experienced drastic increase in obesity rates, rising from below 1% of their populations in 1975 to approximately 5.8% as at the end of the year 2016 [4]. The observed movement from undernutrition to over-nutrition has rapidly happened in the low-income nations and middle-income nations, even as obesity has become an increasingly significant public health concern compared to hunger [5].

2. MATERIALS AND METHODS

To collect the relevant literature and data regarding the influence of obesity on quality of life, we conducted an in-depth and extensive literature search on different databases, including PubMed, SCOPUS, Web of Science, and Google Scholar. Thus, for this systematic review, only English language published studies, published between 2015 and 2024 were selected. Additionally, of the articles and reports chosen, epidemiological studies and guidelines with de-identified participant data in addition to different multi-center studies and review articles that have been published in high-impact journals. This was subsequently followed by the comparison of studies in order to identify the various duplicate studies from the same publication years, even as studies with increasingly logical details were included. Additionally, a number ofMeSHkeywords were utilized in the literature search, including Obesity, Quality of Life, Body Mass Index, Weight Loss, and Overweight. The in-depth literature search conducted yielded a total of 1052 studies.

2.1 Inclusion and Exclusion Criteria

Following the removal of identified duplicates, pertinent literature was additionally subjected to a selection process comprising three distinct phases. The initial phase entailed the screening of the selected studies' titles and abstracts. The second phase entailed the exclusion of studies found to be irrelevant to this study. The final phase entailed the comprehensive assessment of the full-text of the chosen studies with the

objective of ensuring that only apt and pertinent studies are included in the systematic review. A team of three independent reviewers was tasked with carrying out the three phases of literature screening. All potential discrepancies were aptly resolved through the use of consensus and consultations.

Still, the study's inclusion and exclusion criteria entailed original studies, including crossover design studies, prospective cohort design studies, and randomized controlled trials, which met all the set inclusion criteria as follows: articles that focus on effects of obesity on health-related quality of life; articles on the outcomes of obesity management interventions in children and adults; and articles published between 2015 and 2024 in |English language. Consequently, narrative reviews, opinion pieces, editorials, and funded clinical studies were excluded. The initial assessment of the abstracts and titles resulted in the exclusion of 356 articles. Additionally, important data derived from the literature that met the inclusion criteria were extracted as follows: (a) the general attributes of the study, such as the authors' names, year of study and publishing, and the method of sampling used; (b) the study population attributes, including age, gender, sample size, and race, as well as follow-up; (c) the intervention type utilized and duration of the intervention, as the proposed interventions; and (d) the studies' main findings.
Lastly, this study has utilized the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines in the process of selecting pertinent literature. The database search resulted in the retrieval of 1052 articles. The subsequent screening of the literature resulted in the removal of 356 duplicates and another 280 articles found to be ineligible through automation. A total of 416 articles were subjected to further screening leading to the removal of an additional 105 articles were also removed for a number of notable reasons, such as failure to align with the study objectives, non-peer-reviewed journal articles, dissertations, and original studies published in non-English languages. Therefore, 311 articles were sought for retrieval resulting in the removal of 96 studies for being irretrievable. The remaining 215 articles were assessed for eligibility leading to the exclusion of 194 studies for various reasons, including preprints (48 studies); failure to asses targeted interventions (51 studies); irretrievable full-text (85 studies); and protocol (12 studies). Of the studies, 21 met the inclusion criteria and were included in this systematic review.

2.2 Quality Assessment

The quality of the included studies was assessed using the Appraisal Tool for Cross-Sectional Studies, which refers to the 20-item critical appraisal tool developed for cross-sectional studies. Three authors were selected and tasked with independent assessment of every study, even as another two authors were tasked with confirming the assessments. Any potential disagreement or discrepancy was solved using group discussions.

2.3 Data Extraction

The researchers developed a form for data extraction with the objective of extracting relevant data from the studies included. This was followed by the collection of data regarding the attributes of the reviewed studies, including the sample size, authors' names, year of publication, location, findings, research design, stigma prevalence, correlates, and impacts on the health outcomes. The authors independently extracted the data, and potential discrepancies were solved through group discussions. The PRISMA flow diagram has been presented in Fig. 1and indicated the process of article selection.

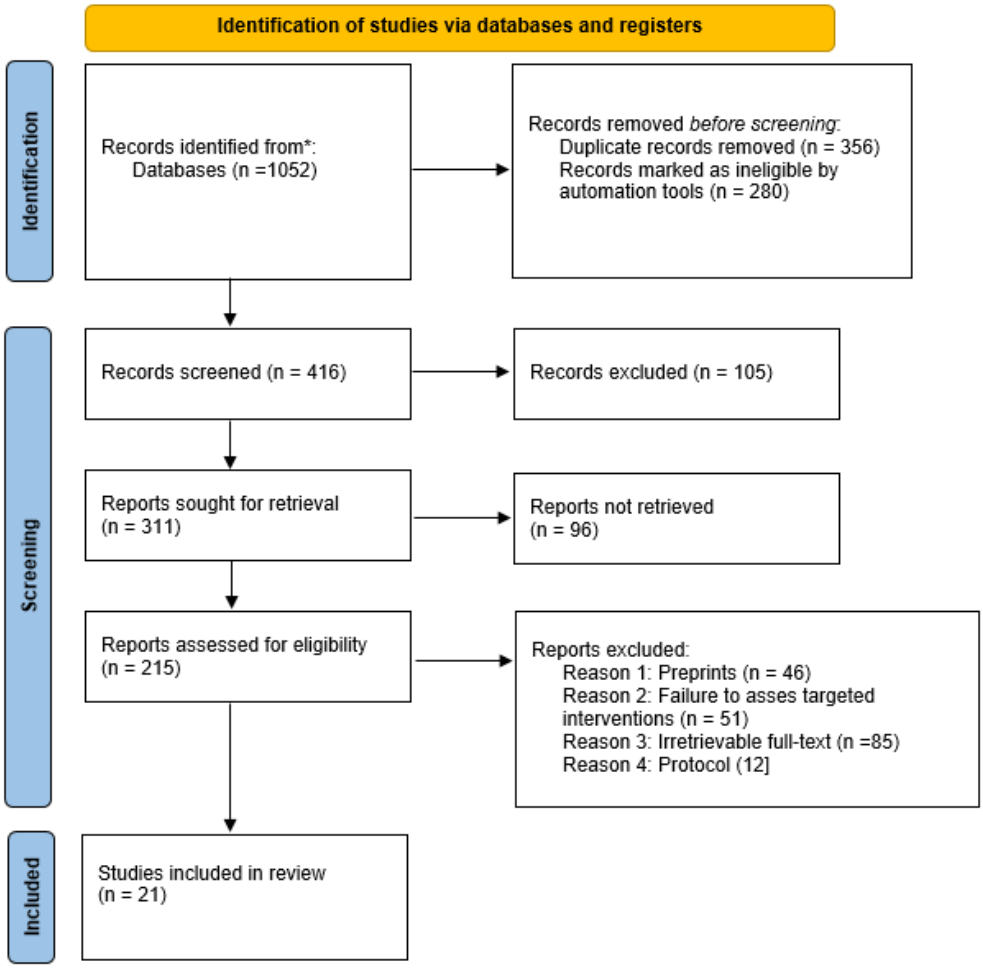

Fig. 1. PRISMA flow diagram indicating the article selection process for this systematic review

Table 1. A summary of the studies selected and included in this systematic review

Authors	Study title	Publication year	Summary of findings
Lee HA, Park H.	Comorbidity network analysis related to obesity in middle-aged and older adults: findings from Korean population-based survey data.	2021	By performing a comorbidity network analysis, the study has disclosed interconnected diseases linked to obesity in older adults, demonstrating how obesity contributes to various multifaceted health profiles.
Wanjau MN, Aminde LN, Veerman JL	The avoidable disease burden associated with overweight and obesity in Kenya: A modeling study.	2022	The study has approximated the burden of preventable diseases attributable obesity, and pointed to the significant preventable health burden.
Valenzuela PL, Santos-Lozano A, Barrán AT, et al.	Joint association of physical activity and body mass index with cardiovascular risk: a nationwide population-	2022	The study disclosed that BMI and physical activity are closely linked to cardiovascular disease risk, further demonstrating that regular physical activity reduces the CVD

Authors	Study title	Publication year	Summary of findings
	based cross-sectional study.		risk even in individuals in higher BMI categories.
Mejaddam A, Krantz E, Höskuldsdóttir G, et al.	Comorbidity and quality of life in obesity–a comparative study with the general population in Gothenburg, Sweden.	2022	The study disclosed that obesity's comorbidity with different conditions adversely affected the quality of life in comparison to the general population.
Kotanidou EP, Tsinopoulou VR, Karasogiannidou V, et al.	Evaluation of Health-Related Quality of Life in Adolescents with Obesity: A Randomized Qualitative Study Among Healthcare Professionals.	2024	The study evaluated the quality of life in obese adolescents and disclosed that decrements in health-related quality was linked to obesity's physical and social impacts.
Stenholm S, Koster A, Alley DE, Houston DK, et al.	Joint association of obesity and metabolic syndrome with incident mobility limitation in older men and women—results from the Health, Aging, and Body Composition Study.	2010	The study disclosed that, in older persons, both obesity and metabolic syndrome increased the risk of mobility restrictions.
Sarwer DB, Polonsky HM.	The psychosocial burden of obesity. Endocrinology and Metabolism Clinics.	2016	The study focused on the psychosocial effects of obesity, including its effects on stigma and mental health.
Darimont T, Karavasiloglou N, Hysaj O, Richard A, Rohrmann S.	Body weight and self-perception are associated with depression: Results from the National Health and Nutrition Examination Survey (NHANES) 2005–2016.	2020	The study disclosed that obesity was linked to depression, resulting from aspects of weight stigma and self-perception.
Melamed OC, Selby P, Taylor VH	Obesity, Mental Health, and Health-Related Quality of Life.	2024	The study assess the effects of obesity on mental health and quality of life and disclosed the existence of a sturdy correlation between obesity and psychological distress.
Sarma S, Sockalingam S, Dash S.	Obesity as a multisystem disease: Trends in obesity rates and obesity-related complications.	2021	The study explored obesity as a multisystem disease, disclosing obesity's role in the escalation of systemic and metabolic complications.
Lewandowska J, Tomaczak M, Wilk I, Lwow F.	Obesity and low levels of physical activity are associated with a decreased health-related quality of life in postmenopausal women: A Wroclaw pilot study.	2021	The study has disclosed that postmenopausal women with obesity and who engage in low physical activity experienced significant reductions in the quality of life, indicating the significance of lifestyle adjustments for quality-of-life enhancements.
Meixner L, Cohrdes C, Schienkiewitz A, Mensink GB.	Health-related quality of life in children and adolescents with overweight and obesity: results from the German KIGGS survey	2020	The study reported that overweight and obesity in adolescents was linked to lower health-related quality of life, underlining the effects and importance of effective early weight management.

Authors	Study title	Publication year	Summary of findings
Abdullah A, Wolfe R, Stoelwinder JU, et al.	The number of years lived with obesity and the risk of all-cause and cause-specific mortality.	2011	The study has demonstrated positive correlations between the years that an individual lived with obesity and the increased risk of all-cause and specific mortality, suggesting the importance and need for earlier obesity interventions.
Kotsis V, Tsioufis K, Antza C, et al.	Obesity and cardiovascular risk: a call for action from the European Society of Hypertension Working Group of Obesity, Diabetes and the High-risk Patient and European Association for the Study of Obesity: part B: obesity-induced cardiovascular disease, early prevention strategies and future research directions.	2018	The study's call to action accentuates obesity's role in the development of cardiovascular disease while also outlining early prevention interventions.
Martin S, Tyrrell J, Thomas EL, et al.	Disease consequences of higher adiposity uncoupled from its adverse metabolic effects using Mendelian randomisation.	2020	The study showed that higher adiposity independently contributed to several diseases, regardless of the metabolic complications.
Lavie CJ, Pandey A, Lau DH, Alpert MA, Sanders P.	Obesity and atrial fibrillation prevalence, pathogenesis, and prognosis: effects of weight loss and exercise.	2017	The study disclosed that physical activity and weight loss were effective in reducing atrial fibrillation risk in persons with obesity, underscoring lifestyle adjustment benefits.
He C, Zhang M, Li J, et al.	Novel insights into the consequences of obesity: a phenotype-wide Mendelian randomization study.	2022	The study has linked obesity to different adverse health outcomes, thereby supporting targeted interventions.
Brock JM, Billeter A, Müller-Stich BP, Herth F.	Obesity and the lung: what we know today.	2021	The study discussed the various ways obesity affects lung function, highlighting the need for integrated obesity and respiratory management.
Ardissino M, Reddy RK, Slob EA,	Sleep disordered breathing, obesity and atrial fibrillation: A Mendelian randomisation study.	2022	The study highlighted the existing association between obesity, sleep-disordered breathing, and atrial fibrillation, underscoring the significance of effective obesity management to minimize arrhythmia risks.
Strausz S, Ruotsalainen S, Ollila HM,	Genetic analysis of obstructive sleep apnoea discovers a strong association with cardiometabolic health.	2021	The study has revealed a sturdy correlation between obstructive sleep apnea and cardiometabolic health, and implicated obesity as major risk factor.
Chan PF, Tai BC, Loo G, et al.	Optimal body mass index cut-offs for identification of patients with coronary	2016	The study has disclosed that optimal BMI cut-offs for identification of coronary artery

Authors	Study title	Publication year	Summary of findings
	artery disease at high risk of obstructive sleep apnoea.		disease patients at high risk of developing obstructive sleep apnea have been proposed, suggestive of the need for customized screening strategies.

3. DISCUSSION

Obesity prevalence has significantly increased in the last two decades globally [6]. A number of studies have reported several impacts of obesity on the quality of life of the obese persons. Thus, obesity, which is typified by excessive adiposity, while not benign, predisposes the affected persons to an array of interconnected diseases, resulting increased risk of complex (above four v) and simple (two comorbid diseases) multi-morbidity in obese persons, in instances where they are compared against normal weight persons [6]. For instance, a Finnish large cohort study comprising 114,657 persons aged between 16 and 78 years and with a 12.1 years mean follow-up period, disclosed that obese individuals were five times highly prone to develop simple multimorbidity and over 12 times highly prone to develop intricate multimorbidity, with a sturdy correlation disclosed in individuals with severe obesity [7]. The dose-response correlations existing between obesity and multimorbidity has additionally been noted in various populations, including Asian and American populaces [8, 9]. According to Wanjau et al., the proportion of the disability-adjusted life years, which refers to the composite measurement of every health loss in a given population, that is contributed by obesity has significantly increased from the initial 3.9% reported in 1990 to approximately 6.4% as reported 2017, making it one of the major risk factors affecting health and quality of life, globally [10]. As such, obesity has a significant influence on the quality of life as it adversely affects individual's health and remains a global public health challenge, and affects different aspects of the person's health and quality of life as discussed below.

Still, regarding the influence of obesity on physical function as an aspect of quality of life, it is noteworthy that obesity places a number of physiological demands on the functioning of multiple organs, including the vascular system and heart, respiratory system, skin, and musculoskeletal system. However, obesity's effects on the skin is mostly marked by an increase in sweating, lower extremities swelling and discoloration, and cutaneous infections [11]. Other key symptoms, including gastroesophageal reflux/heartburn alongside urinary incontinence have been attributed to an increase in the intra-abdominal pressure [11]. The physical effects of obesity in relation to the quality of life of obese persons is mainly evaluated using the generic health-related quality of life instruments under a number of domains, including bodily pain, role limitations resulting from physical challenges, and physical functioning [12]. This systematic review has disclosed significant positive correlations between obesity and physical functioning in obese individuals, with palpable patterns in high prevalence odds of functional limitations and activities of daily living (ADL/IADL) impairments, particularly in obese females [12].

Further, the findings of the study conducted by Kotanidou et al. has additionally disclosed that free of the physical activity level, obese persons have higher functional limitations levels that normal and overweight individuals [13]. The sturdy correlation between obesity and functional limitations/disability, especially in females, has been reported in several studies, with the overall disability risk in obese females being four times higher than in normal weight females. On the other hand, in obese males, the correlations between functional limitations and activities of daily living impairments was found to be less strong compared to in women [13]. A number of earlier studies have disclosed that self-reported functional restrictions increased with obesity or higher BMI [14]. Additionally, obesity has been found to have independent influence with regard to onset of impairments with regard to lower body mobility, strength, and ADL [12]. Nevertheless, contradictory to the findings of this systematic review, a study conducted by Stenholm et al. disclosed that physical activity was a key protective factor with regard to reduction of impairment of physical functioning regardless of the weight category, thereby contributing to the extant evidence that physical activity is beneficial to obese persons [15].

Still, the other notable influences of obesity on quality of life regards its effects on an individual's psychological functioning. In this regard, a

number of comprehensive studies have disclosed that approximately 20% to 60% of obese persons, particularly those with severe obesity, tend to suffer from mental illness [16]. The percentages are characteristically higher in comparison to those of the general population. Similarly, a number of previous studies have disclosed the extant relationship between obesity and depression [16]. For instance, individuals with severe obesity have been found to be nearly five times more prone to have experienced episodes of major depression in the last 12 months in comparison to normal weight individuals [17]. Moreover, the correlation between severe obesity and depression has been acknowledged to be stronger in women compared to men, and this has been attributed to the increased emphasis of the society on thinness as a key attribute of female beauty [18]. It is approximated that a third of bariatric surgery candidates have reported having clinically significant depression symptoms during the surgery time, while approximately 50% have reported having a depression history [19]. The underlying rationale for such higher prevalence rates have not been well comprehended; however, it might be attributed to the experience of stigma and discrimination due to being overweight, occurrence of eating disorders, and physical pain presence and additional impairments in the quality of life [16]. In concurrence, Puhl maintains that severe obesity may contribute to an individual's experience of discrimination, even as obese persons have a lesser likelihood of completing high school, are less prone to marry, and characteristically earn lesser compared to normal weight persons [20]. Further, obese persons are regularly subjected to discrimination in a number of contexts, including employment, healthcare, and educational settings [21]. Such experiences are likely to be widespread among individuals with severe obesity.

Further, obesity influences quality of life through its impact on mental health treatment. Many individuals with obesity tend to seek assistance from mental health services with their eating disorders and to cope with the psychological aspects of the eating disorder [22]. Studies have disclosed that approximately 50% of patients seeking bariatric surgery have a history of mental health treatment: up to 40% of obese persons seeking bariatric surgery are treated with psychoactive substances at the time of the surgery [23, 24]. The use of most psychotropic medications, including antipsychotics and certain antidepressants, result in adverse effects that include weight gain and impaired weight loss. Currently, fewer studies have focused on the pharmacokinetics of psychiatric medications and their subsequent interactions with different bariatric operations in relation to the quality of life of obese persons seeking treatment [23]. Nevertheless, it has been acknowledged that the absorption of psychiatric medications is altered after the surgical procedure and onset of weight loss, in addition to causing significant fluctuations in body weight, even as the fat mass might influence the effectiveness of treatment and medications tolerability. Moreover, a number of comorbid conditions have been linked to obesity, including dementia and Alzheimer's Disease, cellular stress in the brain regions involved in disease advancement [22, 24]. A recent Australian study conducted on diabetes, obesity and lifestyle has also disclosed the existence of correlations between obesity and depression, with depression being twice higher in obese individuals compared to the normal weight persons [23].

Still, obesity influences the quality of life through its adverse effects on the general health of individuals with obesity. Thus, the adipose tissue hypertrophy has been linked to increased release of pro-inflammatory adipokines and the subsequent infiltration of macrophage cells [25]. Moreover, the inability of adipose tissue to expand indefinitely causes lipotoxicity and obligatory fat deposition in healthy non-adipose tissues, such as the heart, liver, pancreas and kidneys[26, 27] This further leaders to the development of a pro-inflammatory and insulin-resistant environment even as an increase in mechanical hypertrophy occurs due to increment in the adipose tissue mass[26, 28], which are mostly pathophysiological factors responsible for development of various diseases, including cardiovascular diseases, musculoskeletal disorders such as osteoarthritis, type 2 diabetes mellitus (T2DM), and certain cancers, including colon, breast, and endometrial cancers. The different musculoskeletal disorders that include low back pain and osteoarthritis are directly related to higher BMI, as a result of the excessive strain on body joints and inflammation [29]. excessive weight has also been linked to greater risk of future functional limitations in old age, and a graded correlation between obesity and disability measures, such as difficulties in performing activities of daily living has been established [29]. Therefore, there are several logical pathways correlating the outcomes with the exposure, including plausibility, which is amongst the most significant principles in the determination of causal relationships [29]. Still, existing evidence has additionally indicated the

role that obesity plays in the development of type 1 diabetes mellitus (T1DM), as several surveys conducted in the UK and North America have disclosed increased prevalence rates of obesity in individuals with T1DM [30]. Further, studies have hypothesized that insulin resistance attributable to obesity might be responsible for increased loss of β pancreatic cells as a result of the severe proinflammatory state and excessive stimulations [31, 32]. The observed causal role has been aptly supported by a number of Mendelian randomization (MR) studies, despite the observation that the extant evidence remains inconsistent, in comparison to the evidence on the relationship between obesity and T2DM, even as a higher heterogeneity has been observed between different studies [33].

Additionally, regarding the influence of obesity on general health as an aspect of quality of life, it has been noted that, obese persons have twice more prevalence rates of hypertension (HTN) compared to normal weight individuals [34]. Even as the obesity-induced hypertension mechanisms tend to differ, as they involve insulin, adipokines, free fatty acids, cytokines, and renin–angiotensin–aldosterone system, they are often interrelated, even as their eventual common pathways include extracellular fluid overload alongside activation of the sympathetic nervous system [34, 35]. As such, obesity remains amongst the notable established risk factor for development of HTN, and the causal role has been proven by various MR surveys [33, 36], especially the role of increased adiposity that has increasingly high ectopic and visceral fats, which is unfavorable metabolic profile [36]. Studies have also disclosed consistency between increased HTN prevalence and obesity, particularly in males [37].

Obesity has also been acknowledged to increase the risk of cardiovascular disease and events, mostly through mechanisms that include secretion of hypofibrinolytic factors, adipokines, and proinflammatory cytokines, which joint results in increased levels of oxidative stress alongside endothelial dysfunction, which, in turn, leads to the development of atherosclerosis [38]. Moreover, the increased adiposity often leads to haemodynamic alterations through different metabolic and neurohormonal abnormalities, resulting in the left ventricular (LV) hypertrophy and the consequent dysfunction, which results in the failure of LV. The failure of LV, which is attributable to pulmonary arterial hypertension from hypoxia as a result of obesity hypoventilation syndrome (OHS) and obstructive sleep apnea (OSA), might consequently result in the failure of the right ventricular [39]. The obesity's causal role has been disclosed and proven by a number of MR surveys [33, 36, 40], even as sturdy correlations have been noted between obesity and heart failure, then obesity and coronary artery disease, and lastly, obesity and stroke [33, 36]. Additionally, atrial fibrillation (AF) is another cardiovascular disease that has been linked to obesity, with obesity being considered an independent risk factor in AF development, even following the accounting for OSA [39]. To this end, various studies have further indicated the existence of sturdy graded correlations between obesity and the risk of developing persistent AF, and heightened risk of post-ablation AF [39]. The mechanism that links obesity to the development of AF is increasingly intricate and has not been fully understood, with higher left ventricular and atrial abnormalities, alterations in hemodynamics, inflammation, neurohormonal and metabolic abnormalities, as well as increased pericardial and epicardial fat, being regarded as possible causal mechanisms [39]. A number of MR surveys have equally supported such causal relationships and have consistently indicated that genetically predicted obesity is linked to persistent AF [33, 36, 41].

Lastly, obesity has been linked to the development of obstructive sleep apnoea and hypoventilation syndrome, which affect the quality of life of obese persons. Thus, the increment in the intrathoracic and intra-abdominal pressures due to disproportionate adiposity obstructs the lung's inflation, which has a significant effect on the functioning of the lungs, resulting in ventilation perfusion imbalances and hypoventilation [42]. The obesity constellation, daytime hypoventilation, mainly marked by hypoxaemia and hypercapnia, as well as sleep-disordered breathing, devoid of an alternative hypoventilation cause, is referred to as OHS, and with an approximated prevalence rate of 20% in obese persons seeking treatment for sleep-disordered breathing [43]. Nevertheless, OSA is the most widespread sleep-disordered breathing in obese persons, given that the accumulation of fats around the upper respiratory system predisposes one to a potential airway collapse [42]. Studies have also disclosed that approximately 50% of individuals suffering from OSA are obese, even as nearly 40% to 90% of overweight individuals have OSA [42, 43]. In concurrence with the epidemiological observations and the existing genetic correlation between obesity and OSA, a recent study has disclosed that obesity that is genetically predicted has a stronger association with OSA, which supports the causal effects of obesity on

OSA [44]. An additional study with 587 participants has also disclosed that persons with OSA had obesity or considerably higher BMI, in addition to obesity being a significant OSA predictor following adjustments for HTN and smoking, in line with the extant overall evidence [45].

3.1 Study Strengths and Limitations

This systematic review has a number of strengths, including the observation that it has utilized studies with larger samples, which has enabled the effective studying of different impacts of obesity on quality of life for younger and elderly persons. This makes the findings of the study increasingly generalizable to different populations across the globe. Moreover, through the systematic review of the various studies, the present study has effectively incorporated studies comprising varied population subgroups, including ethnic and racial groups and genders, which enables the expansion of the possibility for developing a comprehensive and broader public health impact in the dissemination of this study's findings. Moreover, the other key strength of this study entails the observation that the systematic review has utilized an effectual methodology, which enabled the identification of various apt and high-quality studies for inclusion. Nonetheless, among the notable limitations include the observation that the correlations between obesity and quality of life are prone to influences by various confounding and interacting variables that have not been assessed in this study, including the effect of medications for obese persons with comorbid conditions in relation to the quality of life.

4. CONCLUSION

In conclusion, this systematic review has found a correlation between obesity and the quality of life of obese and overweight persons, disclosing that there is an inverse correlation between obesity status and decrement in the quality of life. For instance, the study has disclosed the existence of a direct correlation between obesity and the development of obstructive sleep apnea and hypoventilation syndrome, which affect the quality of life of obese persons. However, the study has also disclosed that obesity is inversely linked to increased risk of cardiovascular disease and events. With these findings, it is our hope that targeted interventions will be developed to enable development of treatment and therapeutic procedures that will enable persons with obesity to have better quality of life. Moreover, it is recommended that prospective studies should be conducted with the focus on the bidirectional correlations between obesity, gender, and quality of life. This will enable better understanding of how obesity affects the quality of life in males and females, as well as enable development of suitable targeted interventions for males and females with obesity.

DISCLAIMERS

This article has not been submitted to other publications and/or presented at conferences or meetings.

Regulatory Approval or Research Subject Protection Requirements: This manuscript does not require regulatory approval.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology.

Details of the AI usage are given below:
1. Grammarly was used in editing and correcting semantics

CONSENT AND ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

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