



Population Health Management Telehealth Intervention Medical Research Treating Comorbid Clinical Obesity and Depression in Geriatric Patients Part One: Review of Tele-Medicine Scientific Research

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Introduction

Population Health Management Tele Health Intervention Medical Research Treating Comorbid Clinical Obesity and Depression in Geriatric Patients. Population health based epidemiologic studies have consistently shown a bidirectional relationship between obesity and depression [1-4]. This Comorbidity is an area of population health management (PHM) in high need of Behavioral Health Consultant - Doctor of Behavioral Health (BHC-DBH) intervention. Behavioral Health Consultants (BHC) has the skills required to address the global obesity epidemic when treating clinically obese geriatric patients with depression. This article is devoted to the goal of providing empirical support for future Telehealth and Tele-Medicine PHM programs in the areas of effectiveness, efficiency and cost effectiveness of the interventions and practice as a feasible treatment for clinical obesity and depression in senior adults Jones [5].

Review of Literature

The purpose of this review of literature is to synthesize and evaluate the effectiveness of a prescribed and monitored Telehealth physical activity (PA) intervention program for the treatment of clinically obese geriatric patients with depression [1]. It is well documented that multiple obesity-depression co-variations occur across populations [2,6-8]. A 2017 study by Pereira-Miranda, Costa, Queiroz, Pereira-Santos, and Santana, published in the Journal of the American College of Nutrition reports that patients with obesity were 32% more likely to have depression compared to those who were eutrophic (patients within the normal BMI range). Review of recent research data from another paramount study indicates that obesity is significantly associated with depression among obese healthcare workers Wisetborisut et al. [4].

Obesity is costing America \$605 billion annually, including over \$300 billion in direct healthcare costs and over \$300 billion in indirect medical costs [9,10]. One alarming study revealed that more than 78.6 Million (one-third) of adults in the United States are obese Ogden [11]. "No other human condition combines

obesity's prevalence and prejudice; sickness and stigma; death and discrimination" Downey [9]. The World Health Organization labels obesity as a public health pandemic and population health epidemic of worldwide proportions Hojjat [12]. Clinical obesity is defined and categorized by a body mass index (BMI) of 30 and above Garcia & Benavidez [13]. Depression is generally defined as a commonly occurring serious mental state, linked to diminished role functioning, quality of life, medical morbidity, and mortality characterized by a despondent lack of activity and pessimistic sense of inadequacy Kessler & Bromet [14], Princeton University Word Net [15]. Recent population-based studies support a new definition of the term metabolic depression; this is represented by prolonged depression in direct correlation with obesity [2,8].

Population Identification

The population is identified as geriatric patients (senior adults aged fifty years and older) diagnosed with comorbid clinical obesity and depression. By the year 2030, 132 million Americans will be older than 50 Housing Studies of Harvard University [16], and it is projected that half of the senior adult population will be obese in that same year Hojjat [12]. Further, the most notable increase in depression and obesity in the United States has been among senior adults Federal Interagency Forum on Aging-Related Statistics [17], Preiss et al. [3]. Population health epidemiologists have found the most significant prevalence rate of comorbid clinical obesity and depression as 66% reported in obese geriatric patients Preiss et al. [3]. Empirical research has also affirmed that "being obese or overweight is often associated with impaired quality of life and psychological well-being (PWB) in comparison with normal-weight people" Giuli et al. [7]. Moreover, there is myriad of evidence listing the geriatric patient population as having the highest rates of obesity Hojjat [12], Smith et al. [18].

Equivalently, depression is widespread and prevalent in geriatric patients. The National Institute of Mental Health calls depression in senior adults a serious population health concern

National Institute of Mental Health [19]. Surveys suggest from 15 to 50 percent of the geriatric population has experienced depression, while an additional 25 percent of senior adult individuals have long periods of persistent sadness [8,20,21] found that obesity can predict a course of late-life depression. These findings support a lifetime prevalence of comorbid obesity-depression as an emerging global health concern for the senior adult population.

Health Assessments and Screening Tools

For purposes of this literature review, the presence and severity of obesity is calculated, assessed and diagnosed by using the BMI measurement of $[\text{weight (lbs)}/\text{height (inches)}^2] \times 703$ Corbin [22]. "Studies have shown that BMI levels correlate with body fat and with future health risks. High BMI predicts future morbidity and death. Therefore, BMI is an appropriate measure for screening for obesity and its health risks. Lastly, the widespread and longstanding application of BMI contributes to its utility at the

population level. Its use has resulted in an increased availability of published population data that allows public health professionals to make comparisons across time, regions, and population subgroups" Centers for Disease Control [23]. BMI is the standard measure of obesity based on height and weight Corbin et al. [22], Pereira-Miranda et al. [20]. BMI categories are labeled in Table 1 below.

Table 1: BMI Categories.

BMI Senior Adult Population Scoring and Categories	
Category	BMI
Underweight	<18.5
Normal weight	18.5-24.9
Overweight	25-29.9
Obese	>30
Corbin et al. [21], Garcia [28]	

For purposes of this literature review, the presence and severity of depression will be assessed by using The Merck Manual of Geriatrics (GDS-15) Geriatric Depression Scale Sheikh & Yesavage [24]. Both health assessment screening tools have reports of strong validity and reliability Corbin et al. [22], Li et al. [25]. While many clinicians believe that this comorbid geriatric population is too difficult to assess with the Structured Clinical Interview for DSM Disorders (SCID), Marc et al. [26], report that the GDS-15 is easier to administer, offers valid assessment across the geriatric population age range of fifty years and older, education levels, race and gender.

Risk Stratification

"The next step in the population health process is to stratify patients into meaningful categories for patient-centered intervention targeting, using information collected in the health assessments" Care Continuum Alliance [27]. With obesity and depression, the comorbid occurrence of the behavioral and the medical condition will be addressed, yet obesity would be the medical condition sending the patient to the primary care physician

(PCP) for treatment Jones [5]. The patients are referred to the BHC by their PCP after they have been diagnosed with clinical obesity and depression. The identified population of clinically obese geriatric patients with severe depression (BMI score of ≥ 30 and GDS-15 score of ≥ 12) fall in the high-risk category on the newly branded Population Health Alliance PHM care continuum Care Continuum Alliance [27]. Many PHM programs target the high-risk population, however obese individuals with mild depression (BMI score ≥ 30 and GDS-15 score of 5-11) and no depression (BMI score of ≥ 30 and GDS-15 of ≤ 4 score) also benefit from PHM interventions O'Donnell [28].

Engagement and Intervention

Health professionals from multiple disciplines concur on the myriad of mental health and physical health benefits that a PA program can provide senior adults Benavidez [29], Corbin et al. [22]. PA has been shown as one of the most effective treatments for obesity and depression in geriatric patients Garcia [30], Xin et al. [21]. Monitoring PA is a key component of weight loss and mental health intervention programs Turner-McGrievy et al. [31]. With ninety-five percent of American adults owning a cell phone, despite level of income and or race, and eighty-eight percent of the United States population having Internet access, a truly prodigious Telehealth opportunity for administering PHM intervention programs presents itself Jones [21], Maheu et al. [32], Pew Research [33].

A Telehealth program for clinically obese geriatric patients is a high risk PHM intervention however, it could also be utilized across the Population Health Alliance care continuum including but not limited to; chronic disease management, prevention, health promotion and or wellness Care Continuum Alliance [27]. Telehealth provides accessibility, affordability, anonymity, acceptability, and adaptability TeleMental Health Institute. Empirical research has affirmed that Telehealth intervention, with a frequency of three to five times per week, can facilitate weight loss and have a beneficial effect on the overall mental health of clinically obese geriatric patients [30-35].

Review of Literature Conclusion

The analysis of this review of literature is in consonance with current research and recent empirical studies. Clinical obesity, one of the major causes of preventable disease and one of the largest epidemics facing patients today, has more than doubled in the last three decades Chang et al. [2], Preiss et al. [3]. This information is disconcerting and it is vital that healthcare professionals demonstrate healthy behaviors while counseling clinically obese and overweight depressed patients to become physically active through behavioral health, lifestyle medicine, and population health interventions. This can be achieved by emphasizing the benefits of participating in PA program and by providing education on how to overcome perceived and real barriers to healthy activities Garcia [35]. Because there is strong relationship between depression and obesity, PHM intervention programs must address this comorbidity. The intersection of obesity and depression in PHM cannot be

oppressed or ignored. Synthesis of the research across studies supports the consistent and positive effects of PA on mental health in obese senior adults with depression [36-40]. The reduction in depressive symptoms in clinically obese adults with depression is important in the interest of managing obesity and ultimately eliminating obesity-related morbidity and mortality Xin et al. [21]. Based on this literature review, it is hypothesized that, a monitored PHM Telehealth PA intervention program will have a beneficial effect on clinical obesity and depression among geriatric patients [41-43].

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