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EASTERN KENTUCKY UNIVERSITY

Systematic Review of Integrating Care to Improve Quality of Life
Within Chronically Diseased Patients with Mental Illness

Honors Thesis
Submitted
In Partial Fulfillment
Of The
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By
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Systematic Review of Integrating Care to Improve Quality of Life
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Chronic disease and mental illness affects a multitude of individuals in the United States. Sufficient treatments exist for chronic diseases and mental illnesses, separately. However, a gap in care exists in individuals who have co-occurring conditions. The presence of one or more chronic conditions, or comorbidities, has been observed by several providers, yet there is a crucial need for integrated care in the case of chronically diseased individuals with mental illness. Increasing quality of life within this vulnerable population is a necessity. The purpose of this systematic review is to determine whether integrated care and collaboration between behavioral health and primary care practitioners would increase quality of life within individuals with a chronic disease and a mental illness. The implementation of integrated care, evidence-based practices, and holistically practices may provide a successful route of effective treatment within individuals with comorbidities. Researchers in a Texan study discovered that patients benefitted remarkably from the integration between mental health and primary care practices. The utilization of proper screening tools and inclusion of social and behavioral sciences in medical school curricula would afford providers in different disciplines to carry out integration techniques. While integration and collaboration could mark increase in quality of life within individuals with

comorbidities, limitations like lack of funding, lack of resources, and lack of time could be a barrier in implementing integration techniques in practice.

Keywords and phrases: comorbidity, chronic disease, mental health, mental illness, integration practice, Quality of Life, Health-related Quality of Life, systematic review

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INTRODUCTION

Multiple studies have been performed to evaluate the needs of individuals who have a mental illness or a chronic disease, but a gap exists in evaluating the needs of individuals with chronic diseases and a co-occurring mental illness. There is a significant portion of people who live in this realm, yet studies, although limited, reveal the necessity to investigate the needs of this population and evaluate what treatments or practices would be best suited to aid comorbid individuals to have a better quality of life. A possible reason as to why this populations' needs are not being investigated and met could be due to lack of integration between primary care and behavioral health or quality assessment which precedes proper treatment. Thus, the objective of this review is to clearly observe how integration of these practices could begin to provide solutions to meeting the needs of individuals who have a mental illness and a chronic disease.

Chronic Disease

The leading cause of sickness and death worldwide is chronic disease (Linardakis et al., 2015). There is an increase of chronic diseases worldwide which has reached a point where total burden outweighs that of maternal, infectious, and nutrition conditions (Busija et al., 2017). There has been a categorical transition within this past century in the

leading causes of death in the developed world from that of infectious diseases to chronic conditions (Cook & Harman, 2008). In addition, one in three adults worldwide have multiple chronic conditions, prompting pushes to research interventions and to shift policies in the healthcare system in order to meet the demands of the chronic disease crisis being observed today. In addition, researchers expect this burden to rise within years, necessitating a push for more primary care physicians (Hajat & Stein, 2018).

Various reasons for which a person can have a chronic disease exist. Some individuals are genetically predisposed or have pre-existing conditions that cause the development of a chronic disease. Some may be born with a chronic disease, and others may develop a chronic disease due to poor health choices. Depending upon the severity of the disease and the chronicity of it, an individual can have life-threatening symptoms which could lead to his or her own mortality. The severity of the chronic illness can be increased by several different factors which include but are not limited to the presence of another illness along with their primary chronic disease, cultural factors, built environment, socioeconomic factors like income inequality, political factors, and access to education. These social determinants of health are a way of gauging how health equity can be achieved in vulnerable populations like patients with chronic diseases (CSDH, 2008). Although this review will not cover the expanse of the importance of these social determinants of health, they are vital to understanding how chronic conditions develop and how changes in certain factors can promote quality of life.

As of recent years, treatment of chronic disease and its prevention has been the main goal of public health professionals and a multitude of primary care physicians (Salvalaggio et al., 2017). Preventative measures relayed from physician to patient

include the assessment of behavioral risk factors or lifestyles habits which are main contributors to chronic disease. Some of these risk factors include smoking, risky alcohol consumption, physical inactivity, obesity, and an unhealthy diet (Linardakis et al., 2015). While prevention of chronic disease development by assessing one's lifestyle habits has paved a clearer path for healthier living, mental health within primary care has often been neglected.

Mental Health

Mental health can be defined as “a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community” (WHO, 2012). Understanding the definition of mental health allows for the observance of the distinction between mental health and mental illnesses. Mental illnesses cover a wide array of diagnosable disorders and can be characterized by observed traits such as impaired functioning or changes in mood or behavior (Carter et al., 2015). The National Institute of Health (NIH) like the World Health Organization seeks to provide information regarding mental health. In 2017, NIH released documents and figures describing mental health in the United States. One important distinction to note in Figure 1 is that mental health affects the youngest population listed significantly more than the oldest population, and populations that identify as being 2 or more races or ethnicities have the highest rates of mental illness in America (Figure 1, Appendix A). This begs the questions, “Will mental illness persist in this generation, and if so, how does this affect development of chronic diseases in individuals?”

There has been significant progress in the assessment and treatment of various mental illnesses, however, patients with mental illness are still susceptible to experiencing stigma in the medical care setting. Less stigma exists in the context of mental health services than in primary care facilities (Saif et al., 2019). This may be due to the ability of mental health practitioners to assess patients in a more understanding manner than other practitioners.

It is well-known within the entire medical community that patients with mental illness have decreased life expectancy and increased mortality rates in comparison to the general population, and there has been a significant shift in practice that addresses the need to provide preventative care to patients who may be at risk for developing a mental illness. Yet, there seems to be a lack of understanding and/or communication between primary care physicians and their patients with mental illness. In one cross-sectional study, 53% of primary care physicians held the assumptions that their patients with mental illness care less than the general population about preventative care, while 88% of patients with mental illness stated that they were interested in learning more about preventative care. In the same study, both the primary care physicians and their patients with mental illness mostly agreed that additional support is needed for making lifestyle changes (Stumbo et al., 2018). While this study clearly presents the need for more physician-patient collaboration, implementing integration could be beneficial in closing this gap as well.

Comorbidity

Comorbidity can be described as two chronic conditions that coexist within an individual (Salive, 2013). The term encompasses widespread conditions, but the most common mental illnesses observed are depression and anxiety within people who have a chronic disease or condition. Again, it is well-known within the medical and public health community that comorbidities exist and that these comorbidities negatively affect those who have them. Because of the well-known nature of this issue, there is a need for further research on the issues of prevention and treatment of comorbidities, however, intervention programs to explain causal relationships and investigate behavioral risk factors are few (Linardakis et al., 2015).

Within Medicare beneficiary populations, comorbidities are common. Over 90% of individuals over 65 years old enrolled in the Medicare program with a chronic disease had a co-occurring chronic condition (Salive, 2013). Several studies have been able to shown the prevalence of depression and anxiety within people who have a chronic disease. Specifically, a cross-sectional, hospital-based study involving 60 chronic kidney disease patients undergoing hemodialysis found a third of their patients to have depression (Pindikura et al., 2019). Another cross-sectional study in India found that 48 of 100 hospital patients were discovered to have depression (Kesavareddy et al., 2019). One psychological study sought to assess socioeconomic links to depression and anxiety in individuals with systemic lupus erythematosus and observed anxiety in over a third of the patients that participated in the study (Azizodden et al., 2017). The rest of the results from the studies previously mentioned can be observed in Figure 2 in Appendix A.

While there has been a recent influx in studies showing the prevalence and existence of comorbidities, the issue still lies in how these comorbidities must be assessed and treated.

Quality of Life

In the past decade, the phrase “Quality of Life” and the meaning behind it has come to represent the overarching goal of the healthcare system. Quality of Life (QoL) is a measurement and perception that an individual has in their present circumstances (Ahmadi et al., 2013). The promotion of better quality of life in any individual is vital in determining what problems may be present, whether mental or physical, and in planning how to best provide treatment for those who may or may not be aware of conditions that they have. There is also another phrase that may be unfamiliar to some but encompasses a more specialized view of measuring an individual’s health. The phrase “Health-related Quality of Life” (HRQoL) is a more integrative measure of a person’s physical and mental wellbeing which includes a person’s social environment and their perception of it. Since a HRQoL measurement accounts for the physical, mental, emotional, and social aspects of an individual’s health, there is a logical argument to be made that assessments to determine HRQoL could require collaboration of different healthcare fields for proper and effective treatment of a person’s conditions (Ahmadi et al., 2013).

Several studies have been performed to assess life satisfaction and its correlation with HRQoL. Life satisfaction, which is one way that a person would describe their life in the context of cultural values and social support, can be a predictor of morbidity in an individual’s life. This perception of one’s own health can be seen in light of certain

statuses that a person may possess, such as marital status or socioeconomic status. Likewise, life dissatisfaction can be associated with lower HRQoL. A study using a telephone survey called the Behavioral Risk Factor Surveillance System reported in 2008 that over 5% of the American population had vocalized that they were dissatisfied or very dissatisfied with their own lives (Strine et al., 2007). There are many different methods or screening tools to measure QoL, HRQoL, and/or life satisfaction which is vital to providing effective treatment to an individual.

Gaps and Barriers

Most gaps in healthcare are observed because of health inequities, especially in vulnerable populations. These gaps in care and health inequities could be caused by a multiplicity of factors which include, but are not limited to lack of education, lack of fair employment and decent work, lack of social protections, and possibly lack of universal healthcare. The WHO have many plans to “crack the nut” on health equity by bridging the gap between governmental policy and community action (CSDH, 2008). As far as integration between distinct practices, the population that would most benefit would be individuals with severe mental illnesses, as they are the ones who receive limited primary care and are most at risk of developing chronic disease (Wells et al., 2019). There may be a tendency among providers to not recognize the right to health to all populations which is a significant gap in care to all people from all backgrounds (MacNaughton & McGill, 2019).

One gap observed in understanding the needs of populations with comorbidities include uncertainty about whether the symptoms of chronic disease caused the presence

of a mental illness or if an individual has a propensity for developing a mental illness without regard to symptoms of chronic disease. Further research needs to be performed to provide sufficient answers, however, the more pertinent issue lies in how the presence of both a chronic disease and a mental illness affects the overall well-being of individuals who have them.

METHODS

A systematic review was conducted to gather information online concerning comorbidities of older generations with inclusion of mental health, noncommunicable diseases, Quality of Life, Health-related Quality of Life, integration of care between primary care and behavioral health practitioners, holistic care within comorbid individuals, evidence-based practices within integrative care, and medical school curricula. The databases used in conduction of this study included Academic Search Complete, Cinahl Complete, Cochrane Library, and PubMed and PMC within the National Center for Biotechnology Information. The systematic review did not include vulnerable, younger generations like children with comorbidities, did not consider how other determinants of health could affect comorbid individuals, and did not consider in-depth the effect of comorbidities within vulnerable populations.

Also, mental illnesses of bipolar disorder and schizophrenia were not included in the searches. The search terms included but were not limited to various chronic diseases like “chronic obstructive pulmonary disease”, “cancer”, “chronic kidney disease”, and “lupus”, and mental health topics like “depression”, “anxiety”, and “stress”. Other search terms included the phrases and terms, “interdisciplinary”, “chronic disease”, “chronic

condition”, “mental illness”, “quality of life”, “health-related quality of life”, “preventative care”, “integrated care”, “integrated training”, “collaboration”, “immersive treatment”, “alternative treatment”, “holistic care”, “holistic treatment”, “evidence-based care”, “evidence-based practice”, “primary care”, and “mental health”, “patient care”, “patient outcomes”, “medical school curricula”, and “primary care shortage”. It should be noted that the majority of these terms and phrases were searched simultaneously to ensure the best, quantifiable results that pertained to the topic of interest.

FINDINGS

The findings within this systematic review include 26 articles that encompass the topics of integrative, evidence-based, and holistic practices, screening tools, and medical school curricula. Two tables, Table 1 and Table 2, have been created to condense some of the information of the findings regarding the topics of integrative practices and screening tools (Table 1, Table 2; Appendix A).

Integration Practices

Implementing integration of practices provides physicians and others in a transdisciplinary team with a clear direction of developing individual care plans that are comprehensive and tailored to provide the patient with the best treatment possible, otherwise known as a plan of care (Carter et al., 2015). Simple integration techniques such as patient health questionnaires can routinely be observed in physicians’ offices, yet issues can arise when patients do not feel comfortable sharing information about their mental health issues especially if their health care professional is perceived as being

disinterested or neglects to provide further support to the patient (Hudson, 2016).

Researchers investigating a case study concerning the integration of primary care into ten community mental health centers in Texas discovered positive coordination between primary health care providers and mental health providers and noted physicians' and patients' perception of improvements due directly to the integration of care within the study. While the integration of primary care into mental health centers allowed for improved communication between providers which overflowed into proficient care for patients, the viability of continued integration was contingent upon funding for resources, recruitment and retention of providers, and covering costs of patients i.e. insurance and billing Medicare or Medicaid (Wells et al., 2019).

Other integration techniques include the provision of case managers, social workers, or other non-physician care managers. While these techniques are more generally used in hospitals, specifically in the context of interdisciplinary teams, the majority of the burden to facilitate discussion from patient to healthcare professional seems to fall on social workers (Ai et al., 2010). The biggest barrier to an interdisciplinary approach is the separation of perspectives, learning techniques, phraseology, work methods, and role in society. Yet, because health is not just one subject matter to be discussed, it relies on so many different disciplines to get a well-rounded and thorough view of a person's health (MacNaughton & McGill et al., 2019).

Evidence-based Practices

Evidence-based practice (EBP) is a notable process designed to use best, current practices and research within the context of healthcare to make informed decisions

regarding a person's health (Parrish, 2018). Physicians and public health specialists performed a study within veterans with chronic obstructive pulmonary disease with depression with intent of examining how evidence-based depression treatment in these individuals is affected by care setting. An effective treatment for depression exists because of antidepressant treatment guidelines in clinical settings implemented by the American Psychiatric Association, yet the researchers were right to think that care setting would impact the effectiveness of treatment. The researchers witnessed how location of care was an important factor in receiving proper depression treatment according to concordant guidelines. The researchers were also able to communicate the efficiency in care for mental health in different practices. After adjusting other factors, the researchers were still able to conclude that these veterans who were seen in mental health centers were 7 times more likely to receive proper depression treatment than those seen in primary care only (Jordan et al., 2007). While these results may be due to some of the gaps in care within the U.S. Department of Veteran Affairs, this research is helpful in determining how a multitude of health care settings can affect patient outcomes of treatment.

Researchers conducted a study in Bahrain to examine associations between attitudes of mental health stigma and attitudes concerning implementation of evidence-based practices within health care physicians. The researchers utilized screening tools, Evidence-Based Practice Attitude Scale and Opening Minds Stigma Scale for Healthcare Providers, to note differences and determine concrete evidence of association between stigma and EBP. Their findings did reinforce ideas with other studies that expressed health care providers have certain amounts of stigma regarding individuals with mental

illness. The researchers also discovered that psychiatric providers in more frequent contact with their patients demonstrated less stigma than the providers in primary health care facilities. Although some of their results were not statistically significant, this correlation adds to the continual conversation concerning stigma towards mental illness in primary care settings (Saif et al., 2019).

Doctors who are familiar with the gaps between behavioral health and primary care have endeavored to propose certain practices that are rooted in providing solutions for treatment of patients with comorbidities. One proposed intervention, analyzed within cancer patients with depression, named Improving Mood- Promoting Access to Collaborative Treatment (IMPACT) was evaluated for efficacy in this population. The collaborative-based program came as a result of the disparity observed between availability of evidence-based treatment of depression within cancer patients and lack of putting into practice these treatments in primary care settings. The researchers, investigating this evaluation of IMPACT, revealed that this collaborative program was more effective in treatment of depression within primary care cancer patients (Fann et al., 2009). The findings of this IMPACT study prove to be a key insight in the discussion of valuable care in patients with a chronic disease and a mental illness.

Screening tools

Screening tools in the healthcare system are used to properly measure QoL or HRQoL, to determine chronicity of a long-term disease, to find out the severity of a mental illness, to assess behavioral risk factors, and the list goes on. Without the use of screening tools, research would be ineffective, and clinical practice would be severely

inhibited in virtually every field. Thus, it is a goal of this systematic review to consider various screening tools and their effect within research and clinical practice.

One advantageous tool that has been used in determining the severity of anxiety and/or depression in multiple populations is the Hospital Anxiety and Depression Scale (HADS). The HADS measure results in a score that can range from 0 to 42 and includes 7 items quantifying depression and 7 items quantifying anxiety. Each item has a score from 0 to 4 with 0 relating to absence of symptoms and 4 relating to strong prevalence of anxiety and/or depressive symptoms. The HADS measure is helpful in measuring both anxiety and depression while still being able to differentiate the symptoms of each into two distinct scales. The property of this measure aids researchers and clinicians to evaluate whether a person has depression and/or anxiety as the cut-off score of each scale is greater or equal to 8 (Azizoddin et al., 2017).

Other screening tools have been shortened with key components of longer surveys or questionnaires in order to gain adequate understanding of certain symptoms or measures of severity without compromising time. An example of this type of screening tool that has been shortened from a 53-item Brief Symptom Inventory is the Brief Symptom Inventory-18 (BSI-18) which measures severity of physical symptoms and prevalence of anxiety or depression. Utilizing the BSI-18, researchers measuring these aforementioned symptoms in older cancer patients were able to draw associations between the oldest age included, 80 years and older, and severity of symptoms. The investigators were also able to reveal a positive relationship between somatic symptoms and presence of depression and/or anxiety (Cohen, 2013).

While shortening questionnaires, surveys, and other screening tools may skew assessment results in clinical practice, these abridged tools do have a place in research. There may be a need for more comprehensive screening tools that can be just as effective in research as in clinical practice. A condensed view of the screening tools discovered in the majority of the findings are located in Appendix A (Table 2; Appendix A).

Holistic Practices

While treatment of physical and mental health is currently observed in the context of distinct practices, assessing one's health is lacking if the whole person is not considered. Comprehensive assessment and awareness from medical practitioners achieves better health outcomes (Carter et al., 2015). Siobhan Tranter and Meghan Robertson discuss the importance of health promotion in patients with mental illness by properly assessing an individual's physical needs using holistic techniques. Specifically, they mention the necessity to address six areas in assessment that most commonly affect individuals with mental illness. These areas include assessment of eye conditions, reproductive health, dental health, drugs and alcohol, smoking, and metabolic syndrome. These six areas encompass the risk factors associated with mental health patients, which if left untreated, could potentially lead to a chronic disease (Tranter & Robertson, 2019).

Proper assessment fuels proper treatment, so holistic treatments can and should be discussed in internal medicine. Yoga is a prime example of a holistic treatment that has been recognized as a medical, therapeutic treatment. The goal of yoga, stemming from its traditional background, is to unify body and mind for healthier well-being, but in modified practice, exercise-based yoga has had similar effects due to focusing one's

mental energy on postures of the body. In practicing yoga, individuals with chronic disease have observed reduction of pain related to the chronic disease. While no association exists between practicing yoga and improvement of mental health, there is correlation between increased physical health and practice of yoga under natural circumstances relative to the individual (Cramer et al., 2013).

Another holistic treatment that has yet to gain traction in the medical community is virtual environment therapy (VET), otherwise known as virtual reality therapy. In an ever-increasing technological world with high rates of stress, using VETs as medically-supervised meditation could provide a relaxing and promising treatment for patients with mental illness. These treatments allow for manipulation of particular programs to provide the patient with the treatment most suitable to their present condition. Also, VETs allow for individualized, sensory experiences to promote stress reduction effects adding to the overall experience (Moller et al., 2017). One study using this immersive treatment for phantom limb pain observed in two participants with transtibial amputations resulted in significant reduction of pain following each treatment and lowered pain levels between each VET session. While the cause of phantom limb pain is unclear, the implications for this study could be far-reaching into treatment of mental health and other chronic conditions (Ambron et al., 2018). In another study utilizing VET in 20 patients with mental illness, perceived stress and tension levels decreased significantly. The researchers mentioned how similar outcomes could be witnessed in ordinary occurrences like experiencing the outdoors on a nature walk (Moller et al., 2017). Harnessing these experiences that induce relaxation, reduce stress, and present low risk of adverse effects

could be incorporated into common practice for the betterment of individuals with comorbidities.

Curricula

Education is the most effective tool to prompt a change in the field of medicine. Curricula in medical schools across the United States must constantly be changing to meet demands of the evolving profession. In addition to these demands, the issues within the health care system are more complex than solving them by changing medical school curricula, however, investigating what is taught in medical school could provide some assistance in reducing some of the problems observed in the medical care system. The issue lies in the overfull curricula that already exists in medical schools, thus additions to curricula may potentially be burdensome for the medical students and the schools when adjustments are required. Although there have been shifts in beliefs on what needs to be considered in providing for patient needs like social determinants or behavioral risks, the orthodox practice still judges that anatomy and biochemistry are most critical in evaluating human diseases. This may be the present reality, but there have been significant pushes to integrate more of social and behavioral sciences in medical school curriculum (Satterfield et al., 2010).

One effective method that has been integrated into understanding competencies more in-depth is through simulation exercises. Simulation-based medical education (SBME) allows for growth in clinical skills for practitioners to effectively treat their patients. In one study reviewing the efficacy of SBME, researchers determined that inclusion of SBME could lead to higher student competencies and increased comfort from

medical students in providing patient care. Also, this SBME study is being considered a monumental breakthrough for medical education in developing critical skills (Sperling et al., 2013). Simulation experiences could be one way to incorporate various topics like those found in behavioral health within primary healthcare curricula.

Competencies expressed in both public health and primary care overlap, yet no formal curriculum exists to allow integration and effective interplay between the two fields (Truglio et al., 2012). The idea of well-implemented public health competencies within medical school curricula have gained medical student approval as public health is an important topic to discuss, but the issue lies in the lack of interest in comparison to the clinical constituents of medical education. Putting into effect public health or behavioral health subjects in non-lecture formats could be better received by medical students (Navinan et al., 2011).

DISCUSSION

Distinct practices like the fields of global health and primary care are always evolving as better ways of providing care are introduced. With the rise of not only chronic disease but mental illness worldwide, the need for integration to treat both conditions simultaneously is necessary. Large amounts of overlap in providing care to both of these vulnerable populations prompt a change in the way primary care physicians assess and provide treatment to their patients (Truglio et al., 2012). Another field that is changing to provide best level of care to patients with mental illness is behavioral health. Behavioral health and primary care can be integrated to treat chronic conditions or diseases simultaneously with mental illnesses.

One area of discussion is the apparent need of providers in the United States. In 2006, the American College of Physicians expressed the necessity to bolster the rate of internal medicine physicians observed in the United States, as the backbone of the healthcare system is primary care. The society introduced certain reforms needing to take place in the form of government policies to prevent an impending collapse of primary care medicine. They conclude that their strategy to redesign the healthcare system would allow primary care physicians to center care on the needs of their patients. Continuing that discussion in 2018, the American College of Physicians prompted the federal government to take action to the growing crisis that is still present. One of the initiatives for policy makers' considerations was to "adopt a patient-centered physician guided model of health care delivery to provide Americans with optimal care" (American College of Physicians, 2008).

This is the overarching goal for any healthcare professional convicted to provide the best level of care to their patients, particularly for those concerned with seeking best practices to improve quality of life within patients who have a chronic disease and a mental illness. The American College of Physician's proposed strategies have the intention of increasing the rate of primary care physicians in the United States. It could be considered that integration of practices could effectively lift some of the burden on internal medicine physicians by creating interdisciplinary teams and promoting collaboration among different health fields.

One medical doctor, Wayne J. Katon, expresses his expertise on how to best carry out evidence-based treatments of depression to the sizeable population of patients with chronic disease. He writes, "Since most patients with comorbid depression and chronic

medical illness are seen by primary care physicians and/or medical specialists, integrating depression services into these systems of care is a logical way to deliver mental health services to larger populations” (Katon, 2012). If the goal of the healthcare system is to thoroughly assess a person’s needs with compassion and to properly provide effective treatment or management tailored to the mental and physical health needs of the patient, then the most logical way to perform these actions is through intentional collaboration and integrated care between practices. Although further concrete evidence needs to be performed, there is confidence in vocalizing that integration between primary care and behavioral health could increase quality of life within chronically diseased patients with mental illness.

LIMITATIONS

Though it is agreed upon by many healthcare professionals that collaboration efforts and integrative practices should be the norm in the healthcare system, there are limitations that could act as barriers to this transition. One issue could be found in changing medical school curricula since there is a burden within medical schools to balance many disciplines and content areas with an invariable amount of time (Satterfield et al., 2010). Another limitation could be in solving the issue of how to inform providers who have been out of medical school for many years. This review did not perform further searching of what is required of providers in practice in furthering their medical education.

Another topic for consideration is solving issues of funding in integrating practices. Funding is one of the many vehicles that drives research and provision of

resources in healthcare. This issue was prevalent in the Texas study in which positive results were observed due to integrating primary care practices in mental health centers, but the study was halted due to lack of resources resultant of deficient funds (Wells et al., 2019). If continual influx of resources was permitted either from government policy or community involvement, there would be more concrete evidence of the positive effects that result from integration of care.

Lastly, the biggest limitation that could bar integration efforts is time. Using multiple evaluation tools and patients seeing multiple providers in one care setting could consume a lot of provider time which could result in time taken away from patient care.

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APPENDIX A

Figure 1. Past year prevalence of any mental illness among U.S. Adults in 2017 with inclusion of sex, age group, and race/ethnicity. Graph from National Institute of Mental Health.

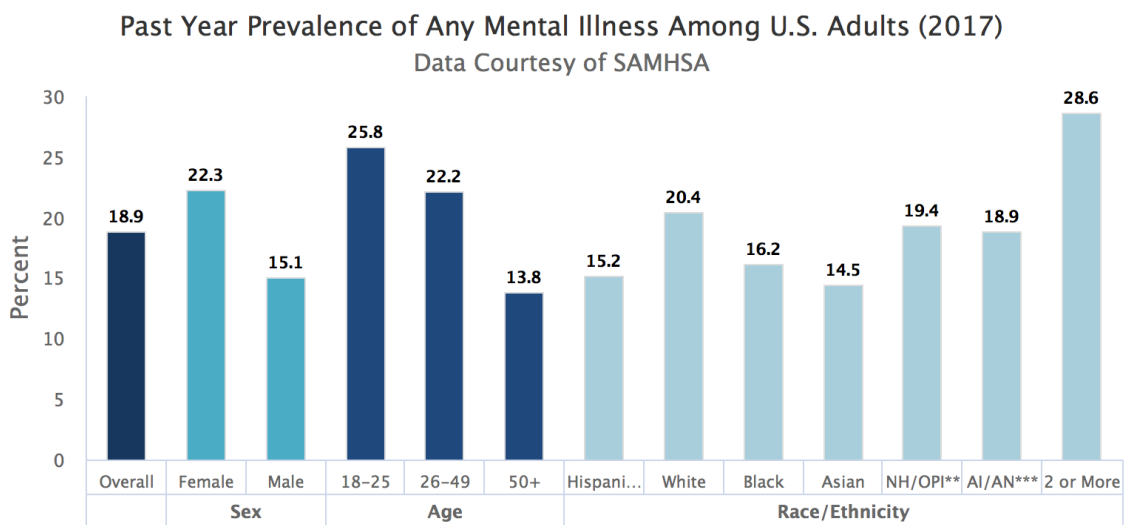


Fig. 1. Past Year of Prevalence of Any Mental Illness Among U.S. Adults, 2017. Graph from National Institutes of Mental Health, *Prevalence of Any Mental Illness*, (Data adapted from Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health, 2018). Online.

Figure 2. *Percentage of depression and anxiety in systemic lupus erythematosus patients, chronic obstructive pulmonary disease patients, and chronic kidney disease patients undergoing hemodialysis.*

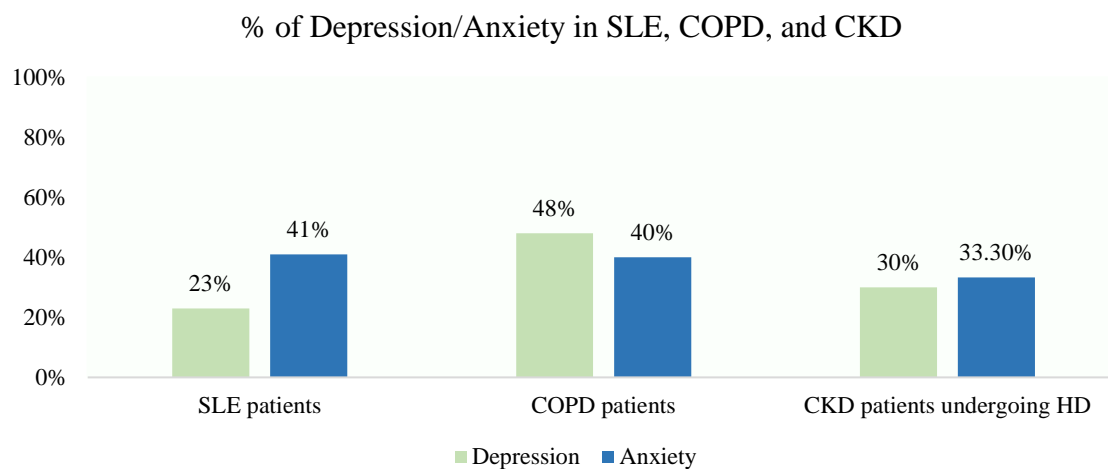


Table 1. Findings of Systematic Review including type of study, study sample, comorbidities present, presence of integrated care, and notes about outcome of each study.

Author(s)	Study Sample	Type of Study	Comorbidity/ies	Integrated Care?	Notes about Outcome
Cramer, et al., 2013	186 patients from German Dept. for Internal and Integrative Medicine	Case-control	Chronic disease concerning rheumatology, gastroenterology, pulmonology, and cardiology	Yes	Yoga observed to have increased physical health
Straßner, et al., 2019	264 patients of general practice facility in southern Germany	Exploratory, cluster-randomized controlled trial	3 or more comorbidities, unspecified	Yes	Effects of study protocol still to be determined
Kristofferzen, et al., 2018	292 patients from regional hospital and rural hospital in central Sweden	Cross-sectional; correlational	Chronic heart failure, end-stage renal failure, neurological disorders, and unspecified mental illness	No	Investigation found coping strategies as important factors to consider in patients with comorbidities
Kesavareddy, et al., 2019	100 patients from Government TB and Chest Hospital in India	Cross-sectional	Chronic obstructive pulmonary disease, depression, anxiety, and stress	No	Study sought to determine prevalence of COPD with depression, anxiety, and stress
Pindikura, et al., 2018	60 patients from Narayana Medical College and Hospital in India	Cross-sectional	Chronic kidney disease (undergoing haemodialysis) and depression/anxiety	No	Study sought to determine prevalence of depression and anxiety in CKD patients undergoing hemodialysis
Azizodden, et al., 2017	128 patients from southern California	Not given; analysis of reserve capacity factors	Systemic lupus erythematosus and depression/anxiety	Yes	Lower socioeconomic status found to correlate with anxiety and/or depression

Cohen, 2014	321 cancer patients from Rambam Oncology Institute in northern Israel	Exploratory	Unspecified cancers, depression, and anxiety	Yes	Call of action for better assessment of comorbidities in practice
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Table 2. Screening tools included in the findings with inclusion of goals and outcomes within each study.

Source	Tool(s)	Goal	Outcomes
Cohen, 2014	Brief Symptom Inventory-18	Determine intensity of mental illness and somatic symptoms in older cancer populations	Intensity of mental illness and somatic symptoms observed in older ages
Azizoddin, et al., 2017	Hospital Anxiety and Depression Scale	Self-reported measure to assess anxiety and depression prevalence and severity in SLE patients	23% of SLE patients had depression and 41% of SLE patients had anxiety
Spitzer, et al., 2011	Composite International Diagnostic-Screener; Mini Mental State Examination	Assess ICD-10 mental illnesses and disorders and assessment of cognitive functioning in COPD patients	Mental health issues were observed in 35.7 % of patients
Kesavareddy, et al., 2019	Depression Anxiety and Stress Scale; Sarason Social Support Questionnaire	Assessment of anxiety, depression, stress and social support within COPD patients	Depression was observed in 48% of patients, anxiety in 40%, and stress in 40% of patients.
Pindikura, et al., 2018	Hamilton rating scale for depression and anxiety (HAM-D; HAM-A)	Determine anxiety and depression within patients with chronic kidney disease undergoing hemodialysis	Depression was observed in 30% of patients; Anxiety was observed in 33.3% of patients