THE ROLE OF PHYSICAL HEALTH ON LIFE SATISFACTION IN PEOPLE WITH

SERIOUS MENTAL ILLNESS

A THESIS IN
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by

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THE ROLE OF PHYSICAL HEALTH ON LIFE SATISFACTION

IN PEOPLE WITH SERIOUS MENTAL ILLNESS

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ABSTRACT

The purpose of this study was to investigate the contribution of physical health and mental health on quality of life reports in people with serious mental illness. Examining the role of physical health is especially important in this population due to increased rates of medical comorbidity. This study differs from previous research as it directly compares the influence of mental health factors to physical health factors in a quality of life model. A total of 49 participants completed a quality of life inventory, a health survey, and provided subjective ratings of current clinical symptoms. Results indicate that people with SMI are at least as concerned with their physical health as they are their mental health. Findings further suggest that physical health is a stronger predictor of overall quality of life, even after controlling for depressive and psychiatric symptoms, and limitations due to mental health. Areas of future research are discussed.

APPROVAL PAGE

The faculty listed below, appointed by the Dean of the College of Arts and Science have examined a thesis titled "The Role of Physical Health on Life Satisfaction in People with Serious Mental Illness," presented by Amy L. Barnes, candidate for the Master of Arts degree, and certify that in their opinion it is worthy of acceptance.

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CHAPTER 1

OVERVIEW

The purpose of this study was to investigate predictors of quality of life in people

with serious mental illness (SMI). Quality of life measurement in people with SMI is an

evolving concept that consists of multiple domains including cognition, social and

occupational functioning, psychiatric symptoms, and health. While people with SMI

experience higher rates of medical comorbidity than the general population, quality of life

research to date has focused primarily on the mental health of people with SMI (Narvaez,

Twamley, McKibbin, Heaton, & Patterson, 2008), and neglected the domain of physical

health. Approximately 70% of people with schizophrenia have at least one medical health

condition and up to 33% have three or more concurrent health conditions. As such, the

early mortality rate among people with SMI is estimated at five times higher than the

general population (Kelly, Boggs, & Conley, 2007). Because of the high rate of medical

co-morbidities in this population, it is important to examine the effects of physical health,

in addition to mental health, on quality of life reports. This study investigated how

limitations due to physical health and mental health predict quality of life reports in people

with SMI. Including physical and mental health components into a unified view of overall

quality of life may better inform the currently fragmented system of medical and mental

healthcare for people with SMI (Miller, Pashall III, & Svendsen, 2006). Results found that

people with SMI reported lower quality of life than the general population, however did

not report significant differences between limitations due to physical health versus mental

health. Physical health did emerge as the strongest predictor of quality of life, above other factors such as depressive and psychiatric symptoms and role limitations due to mental health. Overall the results of this study provide evidence of the effect of physical health on quality of life and the importance of including physical health into comprehensive treatment and intervention services for people with serious mental illness.

CHAPTER 2

REVIEW OF THE LITERATURE

Quality of Life as Outcome Assessment

Quality of life in the serious mental illness literature is a broad concept

encapsulating many different domains including severity of psychiatric symptoms,

cognition, occupational and social functioning, physical health and the co-occurrence of

other psychiatric illnesses such as depression (Hewitt, 2007). Quality of life ratings by

people with SMI have been associated with differing levels of cognitive functioning, both

positive and negative psychiatric symptoms, access to social services, interpersonal

relationships, functional ability (occupational and daily living skills), and demographic

factors such as age, gender, education, and living situation (Matsui, Sumiyoshi, Arai,

Higuchi, & Kurachi, 2008; Narvaez et al., 2008).

Although current research in this area has failed to provide a uniform definition of

quality of life for people with mental illness, there are two general categories that have

been examined: 1) the subjective reports of people with SMI regarding the perception of

their own wellbeing, ability to function in daily life, and resources available to them and 2)

both subjective and objective reports of role limitations due to their mental health, physical

health and social and occupational functioning (Bow-Thomas, Velligan, Miller, & Olsen,

1999; Eack & Newhill, 2007). Subjective quality of life typically focuses on self-reports of

life satisfaction with family and social relationships, overall life satisfaction, and

functioning in activities of daily living. Subjective measures of quality of life also include

self-reports of severity of positive, negative and depressive symptoms. Objective quality of

life indicators are typically observable factors such as employment, living situation, marital status, and level of involvement in social activities (Narvaez et al., 2008). Current research has found the integration of both objective and subjective quality of life indicators to be more meaningful than examining either of them separately (Auquier et al., 2003).

Quality of life in people with SMI has become an important outcome assessment for both research and treatment (Dickerson et al., 2008; Evans, Banerjee, Leese, & Huxley, 2007; Folsom et al., 2009; Narvaez et al., 2008). Whereas cognition and psychiatric symptoms (both positive and negative) have typically been viewed as important objective indicators of quality of life, the measurement of subjective quality of life may be more meaningful in terms of improving overall quality of life in this population (Folsom et al., 2009). Indeed, there has been a shift in the mental health system toward a more personal recovery model that recognizes the importance of subjective experience (e.g., Andresen, Caputi, & Oades, 2010). As quality of life becomes an important outcome goal in mental health care and research, it is important to identify the primary domains that influence subjective quality of life reports, especially in the SMI population (Evans et al., 2007; Ritsner, Gibel, & Ratner, 2006).

Quality of Life Reported by People with Serious Mental Illness

Compared with the general population, people with mental illness report a lower overall quality of life. Evans et al. (2007) compared quality of life ratings between people with serious mental illness, people with common mental disorders (CMD) and people without a mental health diagnosis in a two year longitudinal study. Participants with SMI were included based on the presence of delusions, hallucinations, thought disorder, a

psychotic illness of at least two years, and a minimum of two inpatient admissions related to their mental health. Participants were categorized into the CMD group if they reported moderate mental health symptoms. The control group reported no mental health symptoms and was considered asymptomatic. Quality of life was assessed using the Lancashire Quality of Life Profile (LQOLP) for the SMI group and the Quality of Life in the Community Scale (QOL-COMM) for the CMD and controls. These instruments included both subjective and objective assessment in life domains such as work, leisure, finance, living situation, family, social life and health. Health was a broad domain encompassing both mental and physical health combined. Significant differences were observed between the control group and both the SMI and CMD groups. Further, in the majority of life domains, the SMI and CMD groups did not significantly differ from each other. The results of this research show that people with mental illness and those with common mental disorders report lower quality of life ratings than the general population (Evans et al., 2007).

Ritsner, Kurs, Kostizky, Ponizovsky, & Modai (2002) reported further evidence of lower quality of life ratings using the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q) and the Lancashire Quality of Life Profile (LQOLP) in people with schizophrenia compared with people without mental illness. In this study, 199 participants with schizophrenia were administered a neuropsychological test battery and were interviewed about current symptom severity and type (positive and negative). Results indicate that for overall quality of life, individuals with schizophrenia reported significantly lower subjective quality of life scores compared with control participants.

Further analysis revealed that both measures were able to discriminate between persons with and without mental illness in the specific domains of physical health, leisure activities and social relationships. The Q-LES-Q was able to discriminate among groups in all domains including health, work, leisure, social relationships, life satisfaction, perceived quality of life index, subjective feelings, household duties and general activities. People with SMI typically report their quality of life as significantly lower than the general population (Ristner et al., 2002). As quality of life becomes an important target of outcome research, identifying key differences in quality of life in the SMI population can help to guide and focus current quality of life research.

Schechter, Endicott, & Nee (2007) also found that people with a history of mental illness report lower quality of life ratings than people with no history of mental illness and people with only one episode of mental illness. The results of this study found that people who were currently mentally ill reported the lowest quality of life, followed by people with a history of mental illness, who were not currently mentally ill. Quality of life was highest in people with either no history or only one episode of mental illness. These findings demonstrate not only that people with mental illness report lower quality of life than the general population, but also that a history of mental illness, even in the absence of current symptoms, is negatively associated with quality of life ratings.

Correlates with Quality of Life

To date, much of the research on quality of life in serious mental illness has focused on its relationship with cognitive and clinical symptoms. With regard to cognitive functioning, existing research generally indicates that quality of life may be only modestly

related to cognitive functioning, however results are mixed. In current models, cognition failed to continue to be a significant predictor with quality of life after adding other factors such as clinical symptoms and medical comorbidity. Matsui et al. (2008) investigated the effect of executive functioning and clinical symptoms on quality of life ratings in people with schizophrenia. A total of 53 participants were given a battery of neuropsychological tests. Clinical symptoms and quality of life were measured through interview by an experienced clinician. Results showed that memory and social skill performance predicted quality of life scores. Additionally, negative clinical symptoms (avolition and anhedonia) were strongly negatively associated with quality of life scores. Interestingly, after controlling for clinical symptoms, cognition was no longer strongly associated with the participant's quality of life ratings. Matsui et al. (2008) reported a small effect size when examining the relationship between various neuropsychological measures and quality of life impairment in people with schizophrenia.

These results are consistent with previous research by Wegener et al. (2005) who also found moderate correlations between cognition and quality of life. Overall, however, cognitive ability was less predictive of quality of life than were negative symptoms. Negative symptoms, such as anhedonia or avolition, in people with SMI were more strongly associated with quality of life than were positive symptoms. While previous research has found a significant relationship between negative symptoms, severity of symptoms and quality of life, the effect sizes were generally small and occasionally non-significant when controlling for depressive symptoms (Eack & Newhill, 2007; Holloway & Carson, 1999; Narvaez et al., 2008; Salokangas, Honkonen, Stengard, & Koivisto,

2006), which can be difficult to differentiate from primary negative symptoms in people with SMI.

Overall, research is inconsistent in its findings between symptomology and subjective quality of life. Ritsner et al. (2006) found that improvements in quality of life were positively correlated with reductions in clinical and depressive symptoms, however Narvaez (2008) found that symptom reduction alone did not translate into better subjective quality of life. In a meta-analytic review by Tolman and Kurtz (2010), effect sizes between cognition, executive functioning and quality of life were generally small, suggesting that there may be additional individual determinants of quality of life that may be more meaningful. Ritsner et al. (2006) suggested that medical comorbidity may be an underlying factor influencing both executive functioning deficiencies (including cognition) and lower quality of life ratings. Ritsner recommended future research using integrated global and health related quality of life measures such as the Q-LES-Q, which uses a broader domain of health including both physical and mental health satisfaction.

Medical Comorbidity

Medical comorbidity is much higher in the SMI population than in the general population and has become a focus of great concern (Kelly et al., 2007). Mortality rates in the SMI population are much higher than among people without SMI. The current average life expectancy of the general population is approximately 76 years; however, the life expectancy of people with schizophrenia is only 61 years (Kelly et al., 2007). As a result, serious mental illness is considered a life shortening illness. As much as 70% of people with schizophrenia have increased rates of medical comorbidities and as much as 33% of

this population suffers from at least three or more common medical disorders including hypertension, chronic obstructive pulmonary disease, and diabetes which are all associated with increased mortality rates and cardiovascular disease (Kelly et al., 2007).

Coronary heart disease (CHD) is currently the leading cause of death of all people in the United States and people with SMI are at elevated risk (Kelly, et al., 2007). In the general population, men have a 7.0% risk of developing CHD and women have a 4.2% risk. However, people with serious mental illness show even greater risks with men having a 9.4% risk and women having a 6.3% risk of developing CHD. Risk factors that influence the development of coronary heart disease in the psychiatric population include lifestyle factors, medication side effects and genetic predispositions (Kelly et al., 2007). These factors are particularly challenging to address in the SMI population due to difficulties with executive functioning, avolition, comorbid substance use, motivation, and lack of integrated treatment of mental and medical health care.

Greater physical health symptoms are typically associated with greater mental health symptoms. People with SMI have greater somatic concerns than the general population and seek emergency hospital care significantly more frequently than people without SMI (Hackman et al., 2006). Dixon, Postrado, Delhanty, Fischer, & Lehman, (1999) found that the number of increased medical conditions was related to lower subjective ratings of physical health, mental health and increased depressive symptoms. Dixon et al. (1999) found that, consistent with the general population, people with SMI also reported lower subjective quality of life ratings of both physical and mental health in the presence of increased medical illness. Dixon et al. also showed that people with an

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increased number of medical illnesses were able to accurately rate their physical health as poor. This level of accurate insight into physical health is noteworthy, in light of research on the limits of insight into mental illness for this population (Karow et al., 2008). As pointed out by Dixon et al. (1999), the inability to appropriately identify and describe a mental health problem is distinct from inability to appropriately identify and describe a medical health problem. Increased medical comorbidity, increased mortality and lower subjective quality of life ratings provide evidence of the impact of poor physical health on quality of life in people with serious mental illness.

Comprehensive View of Health

Co-occurring physical health problems, prevalent in the serious mental illness population may represent a distinct area of concern when evaluating the general domain of health, which typically encompasses both mental and physical health. Dickerson et al. (2008) found that people with SMI and co-morbid Type II diabetes reported significantly lower health related quality of life than people with SMI who did not have diabetes. Interestingly, among those with diabetes, there were no differences in the mental health domains of quality of life between people with and without a serious mental illness diagnosis. These results are also consistent with research by Salokangas et al. (2006) that showed people with schizophrenia and with severe physical illnesses reported significantly lower subjective quality of life both at baseline and at a three year follow up than people with schizophrenia without physical illness.

For this reason, recent quality of life research has focused on health related quality of life measures, which integrate both physical and mental health domains. The 2008 study

by Dickerson et al. purported to be the first in examining the impact of diabetes on subjective quality of life ratings in people with SMI. Due to the positive relationship found between physical health and quality of life and mental health and quality of life, it is important to view health as encompassing both physical and mental characteristics. This indicates an encouraging direction in SMI research incorporating physical health in addition to mental health concerns specifically when looking at quality of life.

Health Related Quality of Life

Health related quality of life (HRQoL) measurement typically encompasses both subjective perceptions and observable (objective) characteristics of health. Because people with serious mental illness typically struggle with physical health issues in addition to mental health issues, it may be more meaningful in this population to focus on health related quality of life, which adopts an integrated view of health including both physical and mental health limitations, rather than traditional quality of life measures. Originally designed to measure the impact of chronic disease on quality of life in people with cancer, HRQoL assessments have expanded into psychological research as an approach to wellness that includes mental and physical health (Porzsolt et al., 1996). HRQoL is defined as subjective reports of physical, emotional, cognitive and social and occupational functioning, and is intended to capture a wider array of concerns than traditional global quality of life assessments. This type of measurement is able to assess the impact of a broad definition of health and its impact on subjective life satisfaction (Auquier et al., 2003; Folsom et al., 2009; Porzsolt et al., 1996).

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Health related quality of life is distinct from global quality of life by addressing physical and mental health separately, whereas the most recent definitions of global quality of life represent overall life satisfaction, including three main dimensions of satisfaction/wellbeing: biological, psychological and social functioning (Marwaha et al., 2008). Quality of life is a developing concept. However, understanding the determinants of subjective satisfaction in the serious mental illness population is important in order to target areas for intervention. Specific to the SMI population, these include physical health, psychiatric symptoms, cognition and activities of daily living (ADL) in addition to demographic factors such as age, gender, education and socio-economic status. Currently, the majority of quality of life research in the serious mental illness population has focused primarily on mental health and social/occupational functioning. Recent quality of life research is expanding to simultaneously examine clinical, cognitive and functional predictors of quality of life, and health in the SMI population (Folsom et al. 2009; Narvaez et al., 2008). Future research can utilize health related quality of life measures as outcome assessments, thereby encompassing the physical and mental health care concerns of people with serious mental illness.

The Current Study

The purpose of this study was to examine the effects of physical health and mental health separately on subjective reports of overall quality of life in people with serious mental illness. As discussed previously, the impact of physical health, in addition to mental health, should be considered in psychological QOL research. Adopting an integrated view of health using the construct of health related quality of life can facilitate the identification

of individual predictors of life satisfaction, especially in the serious mental illness population. Specifically it is predicted that among persons with SMI, satisfaction with physical health will be lower than subjective reports of satisfaction with mental health. As a result of increased physical illness in the SMI population, it is predicted that the physical health component (PHC) of quality of life will be a stronger predictor of overall life satisfaction than will the mental health component (MHC) even after controlling for the effects of depression.

The first aim of this study was to determine if people with serious mental illness more subjectively rate satisfaction with physical health as lower than satisfaction with mental health. The first hypothesis was that people with serious mental illness would report overall lower subjective satisfaction with their physical health than their mental health.

A second aim of this study was to determine if role limitations due to physical health concerns influenced quality of life ratings greater than role limitations due to mental health concerns. It was hypothesized that the concurrent subjective satisfaction of physical health of people with serious mental illness would be more predictive of overall life satisfaction than would mental health.

CHAPTER 3

METHODOLOGY

Participants

A total of 49 participants (24 female and 25 male) with serious mental illness, ages 18 to 65 (mean = 45.51 ±10.57), were recruited from a community mental health center day program. Participants were included in the study if they had been previously diagnosed with schizophrenia, schizoaffective disorder, bipolar disorder I or II, or major depressive disorder (MDD). The Structured Clinical Interview for DSM Disorders (SCID; First, Spitzer, Gibbon, & Williams, 1996) was used to confirm diagnosis. Exclusionary criteria included known neurological disease, developmental disability, significant sensory/physical impairment that would affect task performance (e.g. blindness), or substance abuse/dependence in the prior 30 days. All study procedures received approval from the institutional review board at the University of Missouri-Kansas City. This research was conducted as part of larger study investigating cognition and everyday life skills.

Procedure

Participants were recruited via case management staff at a community mental health center. A brief phone screening was administered by researchers in order to determine study eligibility. Testing was completed in a private room at the community mental health center in one or two sessions totaling 3 to 5 hours. All participants provided informed consent. In addition to a demographic profile which included a checklist of

current medical conditions, participants also completed a quality of life inventory, and a health survey. Participants also completed a measure of depression and were interviewed about current psychiatric symptoms, as described below.

Measures

Quality of Life, Enjoyment, and Satisfaction Questionnaire

An abbreviated form of the Q-LES-Q, the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q-18; Endicott, Nee, Harrison, & Blumenthal, 1993; Ritsner, Kurs, Gibel, Ratner, & Endicott, 2005) was used to measure overall quality of life. The Q-LES-Q-18 produces a general or overall quality of life index score, which was used as the outcome variable for the purposes of this study. A total of 18 core questions address physical health (items 1-4), subjective feelings (items 5-9), leisure time activities (items 10-12), social relationships (items 13-17) and satisfaction with medication (item 18). The Q-LES-Q-18 also includes five additional questions that ask about overall satisfaction with social relationships, the ability to function in daily life, economic status, overall sense of wellbeing, and overall life satisfaction and contentment during the past week. The general quality of life index score is derived by taking the average of scores for the first 18 items.

Ritsner et al. (2005) evaluated 339 participants with SMI and found the Q-LES-Q-18 to be a highly reliable, valid and stable measure of self-reported life satisfaction. Cronbach's alpha was between .74 and .97 indicating a moderate to high internal consistency. Construct validity was demonstrated through the ability of the Q-LES-Q-18 to discriminate between participants with and without SMI, with control participants yielding

higher mean scores (reporting higher quality of life). Test-retest reliability scores were high, 0.90 for outpatient participants and 0.86 for control participants.

<center>Short Form Health Survey</center>

The Short Form Health Survey (SF-36; Ware, Snow, Kosinski, & Gandek, 1993) is a 36 item generic measure of subjective health which includes questions about function and dysfunction, distress, well-being, and both objective and subjective evaluations of general health status (Hewitt, 2007). Widely used in many populations as a health related quality of life assessment, the SF-36 contains two primary components, the physical health component (PHC) and the mental health component (MHC), which were used as predictor variables in predicting quality of life (Hewitt, 2007; Ware et al., 1993).

The SF-36 has extensive reliability and validity evidence, including research in the serious mental illness population (Auquier et al., 2003; Burke, Burke, Baker, & Hillis, 1995; Hewitt, 2007; Pukrop et al., 2003). Internal consistency estimates for the general population exceed 0.90 for both the PHC and MHC summary scales (Ware et al., 1994). Median internal consistencies for the SF-36 dimensions are 0.79 (range 0.60 to 0.92) for people with depression and 0.83 (range 0.71 to 0.89) for people with schizophrenia. Discriminant validity is evidenced through correlational research showing a non-significant relationship between psychiatric symptoms and quality of life ratings in people with schizophrenia (Pukrop et al., 2003). Convergent validity is evidenced by strong positive correlations between the SF-36 and the S-QoL (Schizophrenia Quality of Life; Auquier et al., 2003), and MSQoL (Modular System for Quality of Life; Pukrop et al., 2003). Intra-class correlations for test-retest reliability of the SF-36 (paper version) range

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from 0.54 to 0.88 among people with psychiatric symptoms (Burke et al., 1995). For this study, the SF-36 scales of interest were the MHC and PHC, which were calculated into standardized scores using means and standard deviations from the 1998 U.S. general population norms. Standardized scores were created using the SF-36v2 software scoring program. These scales share a common metric, with a range of 0-100, a mean of 50, and a standard deviation of 10.

Hamilton Depression Rating Scale

The Hamilton Rating Scale for Depression (HAM-D; Hamilton, 1967) is a widely used instrument designed to quantitatively assess the severity of depressive symptoms. Consisting of 23 items, the HAM-D assesses multiple symptoms of depression including suicidality, anhedonia, insomnia, anxiety, and feelings of helplessness and guilt. Higher scores indicate more depressive symptomology. The HAM-D was chosen as a predictor for this study because it is reportedly less sensitive to somatic complaints, common in the serious mental illness population, than other measures of depression (Hamilton, 1967).

Brief Psychiatric Rating Scale- Expanded

The Brief Psychiatric Rating Scale-Expanded (BPRS–E; Lukoff, Nuechterlein, & Ventura, 1986) is a rapid assessment of psychopathology symptoms. The BPRS-E is administered via clinical interview and responses are scored on a 7 point Likert type scale ranging from "not present" to "extremely severe". Ratings of tension, emotional withdrawal, mannerisms/posturing, motor retardation, blunted affect and uncooperativeness are scored by the interviewer based on clinical observation. Ratings of

conceptual disorganization, unusual thought content, anxiety, guilt, grandiosity, depressed mood, hostility, somatic concern, hallucinations, and suspiciousness are provided through self-report. Answers are scored from 1 to 7 for each item and a summative score indicates current levels of psychopathology symptoms within the last two weeks. For the purposes of this study, only the summative score was used as a predictor to assess current psychiatric symptoms.

Statistical Analysis

Hypothesis One

The first hypothesis was that people with SMI would report lower satisfaction with their physical health than their mental health. In addition to a total overall score, the SF-36 yields two sub-domain scores: a mental health component (MHC) and a physical health component (PHC). A paired samples t-test was used to determine if there were significant mean differences between reported satisfaction with physical health and mental health scores on the SF-36.

Hypothesis Two

The second hypothesis predicted that physical health would influence overall quality of life greater than mental health. In order to identify significant predictors of quality of life in people with serious mental illness, hierarchical linear regression was used with overall quality of life (Q-LES-Q) as the outcome variable and depression (HAM-D; step one of regression), psychiatric symptoms (BPRS-E; step two), and role limitations due to mental (MHC; step three) and physical health (PHC; step four) as predictor variables.

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CHAPTER 4

RESULTS

Descriptive Data

Of this sample, 46.9% (n=23) had a SCID-confirmed diagnosis of schizophrenia,

10.2% (n=5) with schizoaffective disorder, 28.6% (n=14) with major depressive disorder,

and 12.2% (n=6) with bipolar disorder. One participant did not fully complete the SCID,

but had a chart diagnosis of schizophrenia. Participants were primarily African American

(63.3%, n=31), followed by Caucasian (26.5%, n=13), and multi-racial (10.2%, n=5). The

majority of participants reported never being married (46.9%, n=23), and remaining

participants reported being either divorced/ widowed/separated (36.7%, n=18) or

married/living together (16.3%, n=8). Reported educational levels included some high

school (34.7%, n=17), high school graduate or GED (28.6%, n=14), post high school

(2.0%, n=1), some college (32.7%, n=16) and college beyond a bachelor's degree (2.0%,

n=1). Most participants reported living independently (65.3%, n=32) while remaining

participants reported living with relatives (14.3%, n=7), living in supervised care housing

(12.2%, n=6), being homeless (6.1%, n=3), or living in a long term care facility (2.0%,

n=1). Approximately 91.8% (n=45) reported not being currently employed. See Table 1.

Table 1. Descriptive Characteristics

Total N = 49	N (%)
Gender	
• Male	25 (51%)
• Female	24 (49%)
Race	
• African American	31 (63.3%)
• Caucasian	13 (26.5%)
• Multi-Racial	5 (10.2%)
Marital Status	
• Never married	23 (46.9%)
• Divorced/Widowed/Separated	18 (36.7%)
• Married/Living together	8 (16.3%)
Education	
• Less than high school	17 (34.7%)
• High school/GED	14 (28.6%)
• Post high school/no college	1 (2%)
• Some college	16 (32.7%)
• College beyond 4 year degree	1 (2%)
Living Situation	
• Lives independently	32 (65.3%)
• Lives with relatives	7 (14.3%)
• Supervised care housing	6 (12.2%)
• Long term care facility	1 (2%)
• Homeless	3 (6.1%)
Vocational Status	
• Unemployed	45 (91.8%)
• Employed	4 (8.2%)

There were no significant group differences on predictor or outcome variables based on diagnosis, age, race, marital status, or living status, however males reported significantly lower HRQOL due to physical health than females. Means and standard deviations for all primary measures are reported in Table 2.

Table 2. Means and Standard Deviations for All Measures

Total N = 49	Mean (*SD*)
Q-LES-Q	3.43 (*0.60*)
HAM-D	19.51 (*10.50*)
BPRS-E	44.92 (*9.84*)
MHC (n = 47)	39.38 (*11.90*)
PHC (n = 47)	42.76 (*9.75*)

NOTE: Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire-23 (Score is average of questions 1-18), HAM-D = Hamilton Depression Rating Scale, BPRS-E = Brief Psychiatric Rating Scale-Expanded, MHC = Mental Health Component of the SF-36, PHC = Physical Health Component of the SF-36.

Data Analysis

Hypothesis One

A paired samples t-test was used to determine if participant's standardized scores on the PHC (M=42.76, *SD*=9.75) significantly differed from scores on the MHC (M=39.38, *SD*=11.90) of the SF-36 health related quality of life measure. Our first prediction was not confirmed and results showed that on average, PHC scores did not significantly differ from MHC scores within the SMI sample, *t*(46)=1.40, *p*=.169, *d*=.29. These results provide evidence that on average, participants did not report greater role limitations due to physical health than mental health. See figure 1.
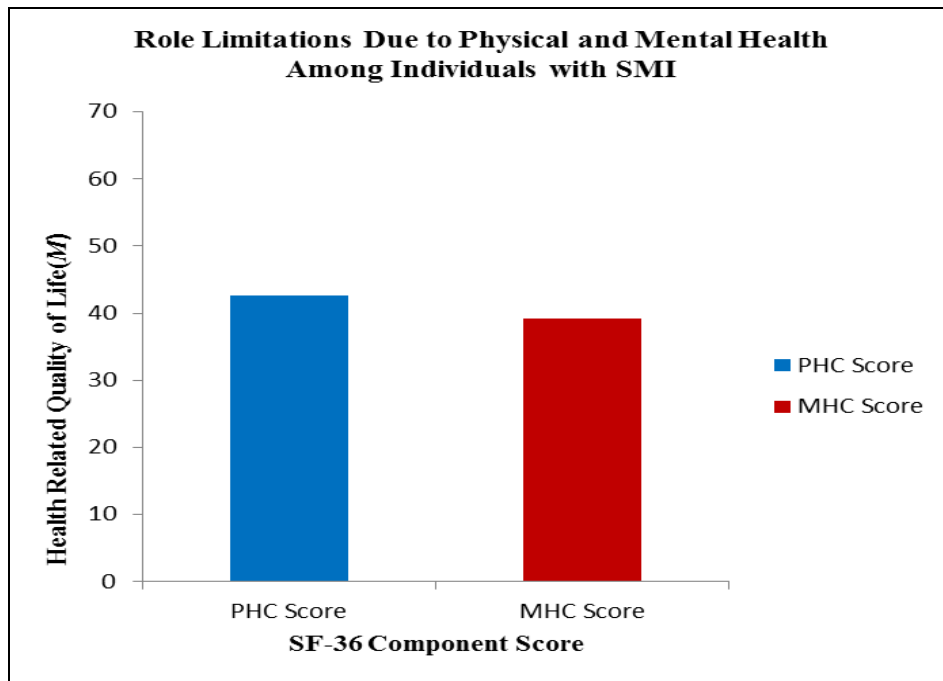

Figure 1.

Hypothesis Two

Hierarchical regression was used in order to identify significant predictors of

quality of life in people with SMI. Quality of life (Q-LES-Q) was used as the outcome

variable and depression (HAM-D), psychiatric symptoms (BPRS-E), and role limitations

due to physical (PHC) and mental health (MHC) were predictor variables. Predictors were

entered in individual blocks with the HAM-D being entered in Step 1, the BPRS-E in Step

2, MHC in Step 3, and PHC in Step 4. The rationale for this order of entry included

controlling for the effects of depression and psychiatric symptoms on overall quality of

life. It was predicted that role limitations due to physical health would significantly predict

quality of life above what could be explained by depressive and psychiatric symptoms and

mental health factors, therefore MHC was entered prior to PHC. Results are summarized in

Tables 3 and 4.

Bivariate correlations revealed significant relationships among quality of life and

the following measures: the HAM-D ($r = -.383$, $p<.05$), the number of reported medical

conditions ($r = -.481$, $p<.001$), the MHC ($r = .460$, $p<.001$), and the PHC ($r = .524$,

$p<.001$). Demographic factors such as educational level, psychiatric symptoms as

measured by the BPRS-E, age, gender, race, marital status, living situation and work status

were not significantly related to quality of life scores in this sample. All correlations were

in the expected direction.

The overall regression, including all four predictors, was statistically significant, R

$= .78$, $R^2 = .61$, adjusted $R^2 = .57$, $F(4, 42) = 16.14$, $p<.001$, indicating that overall quality

of life scores were predicted quite well from this set of four variables, with approximately 78% of the variance in quality of life scores accounted for by the model.

To assess the contributions of individual predictors, the t ratios for the individual regression slopes were examined for each variable in the step when it first entered the analysis. In Step 1, depression was statistically significant, $t(45) = -2.33$, $p<.05$, $R^2 = .107$. Psychiatric symptoms as measured by the BPRS-E did not significantly increase R^2 when it was entered in Step 2, $t(44) = -.193$, $p>.05$, $R^2_\Delta < .001$, $F_\Delta=.037$. MHC scores significantly increased R^2 when it was entered in Step 3, $[t(43) = 2.45, p<05, R^2_\Delta = .109, F_\Delta=5.99]$ indicating that less role limitations due to mental health significantly predicted higher overall quality of life scores. PHC significantly increased R^2 when it was entered into the fourth and final step, $[t(42) = 6.43, p<.001, R^2_\Delta = .388, F_\Delta=41.38]$ indicating that physical health significantly predicted overall quality of life scores above what could be explained by depressive and psychiatric symptoms and role limitations due to mental health. The slopes of all predictors had the expected signs. Results are summarized in Table 4.

Table 3. Summary of Bivariate Correlations Among Quality of Life and the HAM-D, BPRS-E, MHC and PHC.

	Quality of Life	*HAM-D*	*BPRS-E*	*MHC*
HAM-D	-.383**			
BPRS-E	-.255	.685***		
MHC	.460**	-.656***	-.387***	
PHC	.524***	-.088	-.085	-.167

NOTE: HAM-D = Hamilton Depression Rating Scale, BPRS-E = Brief Psychiatric Rating Scale-Expanded, MHC = Mental Health Component of the SF-36, PHC = Physical Health Component of the SF-36. *p is significant at the 0.05 level (two-tailed), **p is significant at the 0.01 level (two-tailed), ***p is significant at the 0.001 level (two-tailed).

Table 4. Summary of R^2 Changes at Each Step in the Hierarchical Regression.

	B (SE)	β	R^2_Δ	F_Δ
Step 1				
• Constant	3.765 (175)			
• HAM-D	-.018 (.008)	-.328*	.107*	
Step 2				
• Constant	3.384 (.401)			
• HAM-D	-.017 (.011)	-.302		
• BPRS-E	-.002 (.011)	-.038	.001	.037
Step 3				
• Constant	2.774 (.576)			
• HAM-D	.001 (.013)	.026		
• BPRS-E	-.005 (.011)	-.094		
• MHC	.021 (.009)	.441*	.109*	5.99*
Step 4				
• Constant	.374 (.557)			
• HAM-D	.014 (.009)	.255		
• BPRS-E	-.006 (.008)	-.096		
• MHC	.034 (.007)	.700**		
• PHC	.039 (.006)	.656**	.388***	41.38***

NOTE: One predictor entered in each step of the model in a user-determined sequence. HAM-D = Hamilton Depression Rating Scale, BPRS-E = Brief Psychiatric Rating Scale-Expanded, MHC = Mental Health Component of the SF-36, PHC = Physical Health Component of the SF-36. *p is significant at the 0.05 level (two-tailed), **p is significant at the 0.01 level (two-tailed), ***p is significant at the 0.001 level (two-tailed).

Secondary Model

A separate hierarchical regression was used to identify significant predictors of quality of life in people with serious mental illness, without controlling for depression. Predictors were entered in individual blocks with the BPRS-E being entered in Step 1, MHC in Step 2, and PHC in Step 3. The overall regression, including all three predictors, was statistically significant, [R = .76, R^2 = .58, adjusted R^2 = .55, $F(3, 43)$ = 20.15, $p<.001$], indicating that overall quality of life scores could be predicted quite well from this set of three variables, with approximately 76% of the variance in quality of life scores accounted for by the model. Psychiatric symptoms again were not able to significantly predict overall quality of life [$t(45)$ = .27, $p>.05$, R^2 = .061], however both MHC [$t(42)$ = 5.27, $p<.001$, R^2_Δ = .157, F_Δ=8.80] and PHC [$t(42)$ = 6.16, $p<.001$, R^2_Δ = .367, F_Δ=37.99] remained significant, even without controlling for depressive symptoms. Model summary is reported in table 5.

Table 5. Summary of R^2 and F Values for the Model at Each Step in the Hierarchical Regression Not Controlling for Depressive Symptoms

Predictors Included	R^2 for Model	F for Model	F_Δ
BPRS-E	.061	2.90	
MHC	.217	6.10**	8.80*
PHC	.584	20.15***	37.99***

 NOTE: BPRS-E = Brief Psychiatric Rating Scale-Expanded, MHC = Mental Health Component of the SF-36, PHC = Physical Health Component of the SF-36. *p is significant at the 0.05 level (two-tailed), **p is significant at the 0.01 level (two-tailed), ***p is significant at the 0.001 level (two-tailed).

Additional Analyses

A separate one sample t-test revealed that participants' standardized PHC scores [$t(46)$=-5.086, $p<.001$, d=-1.05] and MHC scores [$t(46)$=-6.116, $p<.001$, d=-1.26] were lower than standardized population PHC and MHC scores (M=50.00, SD=10.00). These results are consistent with previous research showing lower health related quality of life in people with SMI compared with the general population (Evans et al., 2007; Folsom et al., 2009; Ritsner et al., 2002; Schechter et al., 2007).

Bivariate correlations revealed significant associations between the MHC of the SF-36 and with years of education ($r = .332$, $p<.05$), positive and negative symptoms as measured by the BPRS-E ($r = -.387$, $p<.01$), and depressive symptoms as measured by the HAM-D ($r = -.656$, $p<.001$). Bivariate correlations also demonstrated a significant negative relationship between the PHC of the SF-36 and the number of reported medical conditions

(r = -.464, p<.001). Age, gender, race, marital status, living situation and work status were not significantly related to MHC or PHC scores in this sample.

CHAPTER 5

DISCUSSION

The purpose of this study was to investigate the predictive ability of the PHC of the SF-36 on subjective quality of life in people with serious mental illness. Previous quality of life models have shown mixed results when investigating the factors that influence QOL in this population. Due to the high prevalence of medical comorbidity, and research within the general population showing lower quality of life among people with physical health limitations, this study examined health related quality of life due to physical health factors as distinct from mental health factors. This study differs from previous research in that it directly compared self-reported role limitations due to physical health to self-reported role limitations due to mental health.

The first hypothesis for this study, that participant's reports of role limitations due to physical health would be higher than role limitations due to mental health factors, was not supported. Although there were no differences in the MHC and PHC scores of the SF-36, these results are still meaningful as they show that people with SMI are at least as concerned with their physical health as they are their mental health. Compared with the general population, health related quality of life in this sample was significantly lower, and is consistent with previous research. These results demonstrate that people with SMI report as many role limitations due to physical health as they do mental health. The recognition of physical health care needs is consistent with national and state mental health initiatives which utilize both mental health and physical health as part of a whole-body approach to wellbeing.

In order to investigate the relative contribution of physical health in subjective QOL, the second hypothesis proposed that physical health of people with SMI would be more predictive of overall quality of life than would mental health. In the current model, the PHC was able to explain a substantial amount of variance in quality of life scores beyond what was already explained by mental health factors. Depressive symptoms, role limitations due to mental health, and role limitations due to physical health significantly increased the predictive ability of an overall QOL model, and independently, were significant related to quality of life. Positive and negative symptoms, as measured by the BPRS-E, did not significantly add to the explained amount of variance in the model. Correlational analyses also failed to demonstrate a significant relationship between psychiatric symptoms and quality of life, which is consistent with previous research (Ritsner et al., 2006). Although role limitations that people experienced due to mental illness did influence overall quality of life ratings, the role limitations people with SMI experienced due to physical health was significantly more distressing. Overall, 78% of the variance in quality of life scores was explained from this proposed model. Consistent with hypothesis two, PHC provided the strongest unique predictive contribution to subjective QOL even after controlling for other predictive factors such as depression and mental health.

Depression was included as the first predictor in the model in order to capture its unique contribution to overall quality of life. Independently, greater depressive symptoms were predictive of lower quality of life, however this relationship did not remain significant with the inclusion of positive and negative symptoms and health related quality

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of life scores. Depression and quality of life were negatively associated, indicating that people who reported greater depressive symptoms also reported a lower quality of life. These results provide evidence that although depression and quality of life are strongly related, additional factors such as physical health also have a strong influence on subjective quality of life.

MHC also emerged as a significant predictor of overall quality of life even after controlling for symptoms. The MHC component of the SF-36 is comprised of questions related to overall mental health, energy and fatigue, social functioning, and role limitations due to mental health problems. Because people with serious mental illness typically report difficulties in these life domains, this finding was not unexpected, and highlights areas to target for intervention and research. Construct validity for the model is supported with MHC emerging as an independent predictor in the proposed model, as it would be expected that people with serious mental illness would also report significant role limitations due to mental health.

Most importantly, and the overall purpose of this study, was that PHC was able to significantly predict overall quality of life scores after controlling for the effects of depression, psychiatric symptoms, and mental health factors. The PHC component of the SF-36 is comprised of questions related to general health, physical functioning, bodily pain, and role limitations due to physical health problems. This is especially noteworthy given that the mean scores of role limitations due to physical and mental health were not significantly different, indicating a stronger effect of physical health, rather than mental health, on quality of life. Given the high rates of medical co-morbidity, it may be more

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meaningful to focus on health -related quality of life, as measured by the SF-36 in a SMI population.

Interestingly, in a second regression model that did not control for the effects of depression, positive and negative psychiatric symptoms independently were not a significant predictor of quality of life, however MHC and PHC continued to explain up to 76% of overall quality of life scores. This model also continued to show physical health as the strongest predictor of quality of life. Interpretation of this model suggests that although depressive symptoms are a unique contributor to overall quality of life, physical health remains a distinct area of concern affecting quality of life in people with SMI.

Limitations

One of the primary limitations of this study was the lack of statistical power to include additional predictors in the model. Previous research has shown both community and social functioning as being significantly related to quality of life in people with SMI, however this limited sample size did not allow for testing of additional predictors (Test et al., 2005; Tolman & Kurtz, 2010). Other published quality of life models have found a significant effect of social factors on quality of life in people with SMI. For example, Dufort, Dallaire, & Lavoie (1997) found that an effective social support network was able to independently account for 16% of overall variance in a six factor global quality of life model. It is therefore important to note that the model proposed in the current study is not comprehensive, but represents the role of more global factors (overarching mental health and physical health) that impact quality of life. Future research should include additional

known predictors of QOL into a more comprehensive model including physical, mental and social factors.

A further limitation of this study is that generalization may be weak within the SMI community. The participants in this sample were all participating in a formally structured outpatient day program with convenient access to medical care, mental health care and case management. As such, the results of this sample may not be replicated in individuals in other contexts. However, it could be hypothesized, that in a less comprehensive treatment environment, people without access to health care would most likely report even greater difficulties due to physical and mental health, which would further strengthen the model. Further research should help clarify the potential role of health care access on QOL.

Also, variance explained in the model by physical health may be artificially inflated due to item overlap between the PHC component of the SF-36 and the Q-LES-Q that is not present within the MHC. Specifically, the Q-LES-Q contains a subdomain of physical health that includes four of the 18 total items. Therefore, internal validity may be weakened by using this particular health survey in order to predict overall quality of life.

Last, accuracy of data collected by self-report is questionable, and much of the data in this study was subjective, which may differ from objectively measured mental and physical health. It could be argued, however, that subjective assessment of quality of life may be the most meaningful constructs to capture in QOL research.

Conclusion

Overall, outcome research has revealed that improvements in cognition, reduction of psychotic symptoms, and access to social services may be necessary, but not sufficient

methods of improving quality of life in people with serious mental illness (Test et al., 2005; Tolman & Kurtz, 2010). Physical illness has become a cornerstone feature of serious mental illness, and an overwhelming body of evidence shows that individuals with SMI have increased mortality rates more than five times higher than the general population (Kelly et al., 2007). In light of current findings, researchers and clinicians should focus on a comprehensive view of health, addressing both the mental and physical health concerns and limitations in people with serious mental illness. There is growing recognition that recovery and QOL improvements are realistic goals for persons with schizophrenia and as such, there is a need for research on relevant outcomes such as people's subjective experience of quality of life. Current quality of life research indicates increasing concern and self-reported dissatisfaction with physical health (Dufort et al., 1997). As quality of life becomes an important goal for outcome research, incorporating physical health into a comprehensive model of overall wellness may have positive implications for recovery among persons with SMI. Given the importance placed on subjective and recovery-based treatment orientations, it is important for research to continue to explore the strengths and limitations of quality of life measures in persons with SMI.

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