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Integrated Care of Chronic Illness: A Systematic Review

Joshua Goodwin

University of St. Thomas, Minnesota, jgoodwinucf@gmail.com

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Integrated Care of Chronic Illness: A Systematic Review

by

Joshua Goodwin, B.S.

MSW Clinical Research Paper

Presented to the Faculty of the

School of Social Work

St. Catherine University and the University of St. Thomas

St. Paul, Minnesota

in Partial fulfillment of the Requirements for the Degree of

Master of Social Work

Committee Members

Andrea Nesmith, Ph.D., LISW (Chair)

George Baboila, MSW, LICSW

Theresa McPartlin, MSW, LICSW

The Clinical Research Project is a graduation requirement for MSW students at St. Catherine University/University of St. Thomas School of Social Work in St. Paul, Minnesota and is conducted within a nine-month time frame to demonstrate facility with basic social research methods. Students must independently conceptualize a research problem, formulate a research design that is approved by a research committee and the university Institutional Review Board, implement the project, and publicly present the findings of the study. This project is neither a Master's thesis nor a dissertation.

Abstract

This systematic review examines the outcome of integrated care intervention on the treatment of chronic illness, specifically, HIV/AIDS and cancer. Twenty-three studies conducted between 2000 and 2015 were included for final review, assessed for quality, and thematically analyzed and organized by outcome measure. Studies reporting on survival rates for cancer patients did not report significant improvement for those receiving integrated psychological or psychosocial intervention, with the exception of a single study. More favorable outcomes were reported for integrated care interventions aimed at increasing quality of life and psychosocial wellbeing. Medical outcomes for HIV/AIDS patients were more promising, particularly in regard to immune system function and medication adherence. Psychosocial and behavioral outcomes for persons living with HIV/AIDS were less favorable, although these studies were least represented within the sample. Fifteen of the studies included for review reported significant outcomes for their primary measures as the result of integrated care interventions. Limitations are discussed and future research directions are suggested.

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Healthcare systems are in a constant state of evolution, and for more than a decade mental health services have become increasingly acknowledged as a core component of quality comprehensive primary care (World Health Organization, 2001). Mental illness has been shown to be one of the most costly conditions in the United States, with costs in excess of fifty billion dollars in 2006 (Agency for Healthcare Research and Quality, 2009). According to a 2013 survey by the Substance Abuse and Mental Health Services Administration [SAMHSA] (2014) more than 18% of adults in the United States reported experiencing mental illness symptoms in the past year. Mental health concerns are often treated solely in primary care settings, and only receive specialized care if referred by their general practitioner (Dennis, 2007; Rankin, 2005).

Unidentified mental health symptoms can present in primary care settings mimicking physical illness (known as somatization), resulting in the complication of diagnosis, and further distress on the patient (Gureje, Simon, Ustun, & Goldberg, 1997; Prince et al., 2007). Whether these patients are ever referred to or receive specialist mental health care depends largely on the training of the primary care physician, agency policy, availability of specialty providers, and adequacy of insurance coverage (Gask, 2005; Jenkins & Strathdee, 2000). Co-location of mental health services with primary care has been identified as a potential method to address the barriers to the coordination of these services, reduce cost of and delays between referral and care, and decrease stigma associated with the treatment of mental illness (Gröne & Garcia-Barbero, 2001; Kodner & Spreeuwenberg, 2002; Pomerantz, Cole, Watts, & Weeks, 2008).

Although integrated care has been identified as a potential method of improving physical healthcare across a wide spectrum of disorders; the present research will focus on integrated care of chronic, long-term, and life threatening disorders – specifically, HIV/AIDS and Cancer. Both diseases present significant public health concerns considering the prevalence of new diagnoses.

In 2011 alone, more than 49,000 new HIV infections were diagnosed in the United States (Centers for Disease Control (CDC), 2014). The American Cancer Society (ACS, 2015) estimates more than 1.6 million new diagnoses of invasive cancers and more than 1,500 Americans are expected to die of cancer each day of 2015. The rates of infection and potential lethality of both diagnoses present a challenge to all healthcare providers to improve standards of care, as well as participate in initiatives to prevent new infections of HIV and reduce preventable forms of cancer. To this end, research has shown that individuals suffering from co-morbid mental illness and substance use are not only at increased risk of HIV infection and worsened prognosis for treatment, they are more likely to spread HIV infection, and less likely to adhere to the rigorous medication regimens required in HIV treatment (Gonzalez, Mimiaga, Israel, Bedoya, & Safren, 2013; Kaaya et al., 2013; Prince et al., 2007). Treatment aimed at resolving underlying mental illness and substance misuse has the potential to be an effective intervention at improving adherence to treatment.

While numerous mental health and substance use concerns have been identified as risk factors for poor prognosis in outcomes for medical intervention, research has shown that interventions aimed at reducing depression improve outcomes, self-reported quality of life, and may be a predictive factor for mortality in individuals diagnosed with cancer (Giese-Davis et al., 2011; Goodwin et al., 2001; Satin, Linden, & Philips, 2009; Pinguart & Duberstein, 2010; Spiegel & Giese-Davis, 2003). Most research has merely suggested that referral to appropriate mental health services could be a way to provide such interventions, these referrals are not always made early in the primary course of treatment.

Barriers to Integrated Care

Communication has been identified as a significant barrier to effective collaboration between mental and primary health care providers, particularly in the United States (Gask, 2005; Jenkins and Strathdee, 2000; Kates, Crustolo, Farrar, & Nikolaou, 2001). Pecukonis, Doyle, & Bliss (2008) discuss the presence of a professional culture, in which the various disciplines involved in integrated care develop their own values, customs, jargon, and hierarchies of importance that results in what they call “profession-centrism” (p. 420). This phenomenon manifests as a biased “world-view” in which the healthcare professions become insular in their thinking, and as a result become less likely to collaborate effectively due to assumptions that their own discipline is best suited for handling the presenting problem (Pecukonis et al., 2008).

The structure of training and education for providers of the various disciplines involved in integrated care services is another barrier to effective integration. In the past, professional schools have provided limited exposure to and socialization with other disciplines as part of their curriculum. Cooper, Carlisle, Gibbs, and Watkins (2001) found that students’ attitudes toward cooperation among disciplines were improved by education specifically related to interdisciplinary learning, and that the earlier students are exposed to such collaboration in their curriculum the more likely they were to go on to an interdisciplinary practice after graduation. Despite this, even in the presence of significant overlap of subject matter, graduate and professional schools tend to “silo” their teaching to their program rather than provide students of complimentary disciplines (e.g. psychology and social work) the opportunity to learn from an interdisciplinary team (Pecukonis et al., 2008). Pershing and Fuchs (2013) describe numerous factors that have complicated improvements in eliciting change in medical education, and call for finding practical methods for preparing healthcare providers to be trained in a more team-based

approach. Many graduate students entering integrated care settings have limited exposure to other disciplines prior to graduation. Social workers, possessing a diverse skill-set as providers as well as mediators, are in a position to improve integration on many levels (Kaplan, Tomaszewski, & Gorin, 2004).

Implications for Social Work

The experience of the healthcare system, in integrated settings or not, is different for people of color and individuals living in poverty. From screening and diagnosis, to treatment and prognosis, racial and ethnic minorities experience disparities in care, poorer outcomes and are presented with different options for treatment (Institute of Medicine, 2002). Survival rates for various cancers have been found to be lower for African American patients compared to Whites, even when socioeconomic status (utilizing census tract poverty rate) is taken into account (Bach, Cramer, Warren, & Begg, 1999; Shavers & Brown, 2002; Ward et al., 2008). Poverty does, however, play a significant role in the likelihood that an individual will be diagnosed with cancer or contract HIV (ACS, 2015; CDC, 2014). Lower socioeconomic status is associated with a wide range of barriers to preventative care services, early screening and detection, and receipt of appropriate high-quality intervention – all of which are factors that contribute to poorer outcomes and, if addressed, have the potential to bridge the disparity in outcomes (ACS, 2015; Dignam, 2000). These racial and socioeconomic disparities are representative not only of concern to public health, but social justice as well.

The National Association of Social Workers' Code of Ethics principle of Social Justice calls on social workers to advocate for change to “ensure access to needed information, services, and resources” (National Association of Social Workers, 2008, Ethical Principles section, para.

3). The literature suggests that these are precisely the barriers facing persons of color and those living in poverty, which compels the profession of social work to action. Outreach services for community education and prevention, providing quality clinical services necessary for improved outcomes, and contributing to the professional literature through practice-informed research all present opportunities for the profession of social work to have a direct influence on the discrepancies found in the literature while simultaneously fulfilling the obligation to social justice outlined within its code of ethics.

Like the integrated care setting itself, the literature includes a broad spectrum of professional orientations. For this reason, a systematic literature review was selected as a methodology for the present research in order to synthesize findings from these various disciplines and present the findings in a manner that will highlight ways professional social work can improve integrated care and positively influence outcomes for individuals diagnosed with HIV/AIDS or cancer. This study aims to determine if the integration of mental health services as part of an interdisciplinary approach to the chronic care for patients with HIV/AIDS and cancer influences outcomes for those receiving treatment.

Conceptual Framework

Integrated care is a concept that has been utilized in various ways to define systems of healthcare in the literature. The present research will examine integrated care with systems theory as the underlying conceptual framework. For this to be possible, it is important to carefully examine the definitions of integrated care within the literature and arrive at an operationalization useful to this study.

There are marked differences in the conceptualization and implementation of integrated care in various settings, disciplines, and between nations. A search of the literature revealed differences in conceptual models for integrated care as well as confusion related to the range of terms that have been applied to these models. “Coordinated care,” “seamless care,” and “collaborative care” among many others appear as nomenclature for the systems described in this research as integrated care (Nolte & McKee, 2008, p. 65). Lyngsø, Godtfredsen, Høst, and Frølich (2014) cite these discrepancies in definition as a barrier to studying, implementing, and evaluating integrated care. As such, some agreement must be reached within the conceptual framework of the present research in order to make meaningful study of the data collected. Depending on the discipline of the researchers defining integrated care (e.g. medicine, nursing, public health, etc.) the focus of the definition varies. Since the focus of this study is to examine outcomes relating to the treatment of co-occurring chronic physical illnesses (HIV/AIDS and cancer) with mental health symptoms, it is proposed that the definition utilized by Gröne and Garcia-Barbero (2001) in their work for the World Health Organization serve as the operational definition for this framework:

Integrated Care is a concept bringing together inputs, delivery, management and organization of services related to diagnosis, treatment, care, rehabilitation and health promotion. Integration is a means to improve the services in relation to access, quality, user satisfaction and efficiency. (p. 7)

From this definition the breadth of integrated care can be seen, with its components featuring administrative and organizational aspects featured in addition to the functional collaboration of care services seen by patients in integrated care settings. Although this study’s focus is primarily on outcomes related to the patient (micro-level change), the work necessary

between systems of care (e.g. interdisciplinary collaboration, helping patients successfully navigate and adhere to various treatment courses in less fully integrated settings) point to a potential role for professional social work in both practice and research. Additionally, these factors present a unifying theoretical orientation for the present research in systems theory.

Although systems theory's ability to operate as an organizing principle for social work practice has been questioned, it does provide a way of conceptualizing individual systems (in this case, human subjects) way of interacting reciprocally with environmental systems (e.g. the many elements of an integrated care setting (Friedman & Allen, 2011). Robbins, Chatterjee, & Canda (2012) propose three components of systems theory to conceptualize the relationship between systems: the focal system, its subsystems, and larger suprasystems (p. 37). Within the integrated care setting the patient is the focal system interacting with surrounding systems (care providers) who are attempting to intervene with the patient's subsystems (e.g. primary and secondary diagnoses, emotional state, etc.) at the same time as existing in the context of larger systems influencing care (e.g. insurance companies, professional associations, licensure boards). In this theoretical framework, systems can have a "horizontal relationship" (e.g. the relationship between collegial healthcare practitioners, or the presence of comorbid mental health symptoms in an individual with cancer) between systems or a "nested relationship" existing within larger systems (e.g. a cancer treatment facility within a larger healthcare network) (Robbins, Chatterjee, & Canda, 2012, p. 36).

Viewed in this context Gröne and Garcia-Barbero's (2001) definition of integrated care involves closing the distance between systems as a means of improving the quality and speed of exchanges in horizontally related care services in order to benefit the focal system: the patient. As noted previously, the larger healthcare systems within which the integrated care settings

presented in the literature are nested are diverse in nature, and are beyond the scope of the present research. Rather, it is proposed that this study will keep the patient as the focus, and examine the impact of improved engagement between care suprasystems on the patient's subsystems as evidenced by the outcome measures collected. This focus will guide the search process, including the selection of search terms and inclusion criteria.

There is a precedent for utilizing a systems-focused conceptual framework for research in integrated care, although it has primarily focused on defining the relationships between systems that comprise integrated care (Valentijn, Schepman, Opheij, & Bruijnzeels, 2013), attempted to establish and improve methods for researching the field of integrated care (Viktoria Stein & Rieder, 2009), or identify measurement instruments to evaluate the level of integrated health care delivery (Lyngsø et al., 2014). Although these studies focus on broader systems involved in integrated care, the underlying influence of systems theory is a helpful lens through which to analyze the research.

Methods

Inclusion Criteria

Topic. This systematic review includes only empirical studies on the treatment of HIV/AIDS or cancer in conjunction with mental/behavioral health treatment. The specific type of mental/behavioral health intervention was not specified, it must only have been offered as part of or in conjunction to the treatment of the primary presenting illness (HIV/AIDS or cancer). Only empirical studies were considered for inclusion.

Time Frame. Studies dating back to January 1, 2000 were considered for inclusion in the present study. A 15 year limit was chosen to help account for advances in other areas of

HIV/AIDS and cancer treatment, as well as advances in integrated care models, with the intent that the included studies would be utilizing similarly modern primary treatment modalities.

Design. Study designs to be considered for the systematic review included: experimental, matched or cohort group quasi-experimental designs, and secondary or retrospective analyses of clinical trials. The initial literature search indicated that these are common design types for the types of research included within the present review; however the comparison group strategies as well as use of repeated measures were rated for quality as a part of the data analysis.

Sample. Any age groups with the diagnosis of HIV/AIDS or cancer receiving integrated or simultaneous mental/behavioral intervention were considered for inclusion in the review. No minimum sample size was applied due to the small scale of some more remote HIV/AIDS treatment centers, particularly those outside of the United States and Europe. However, sample size was evaluated and rated in the data abstraction. Because the variance in available participants between HIV/AIDS and cancer treatment, the two illness categories had their sample sizes rated on separate scales.

Search Strategy. The search for this review utilized the following databases: SocIndex, PubMed, PsychInfo, and Medline. These databases were searched using the keywords: Cancer Treatment, HIV Treatment, HIV/AIDS, Integrated Care, Medication Compliance, Treatment Adherence, Mortality, Remission, Rehospitalization, Transmission, and Viral Load. Abstracts of the returned search results were then reviewed for inclusion in the final review. Flowchart of inclusion is displayed in Figure 1.

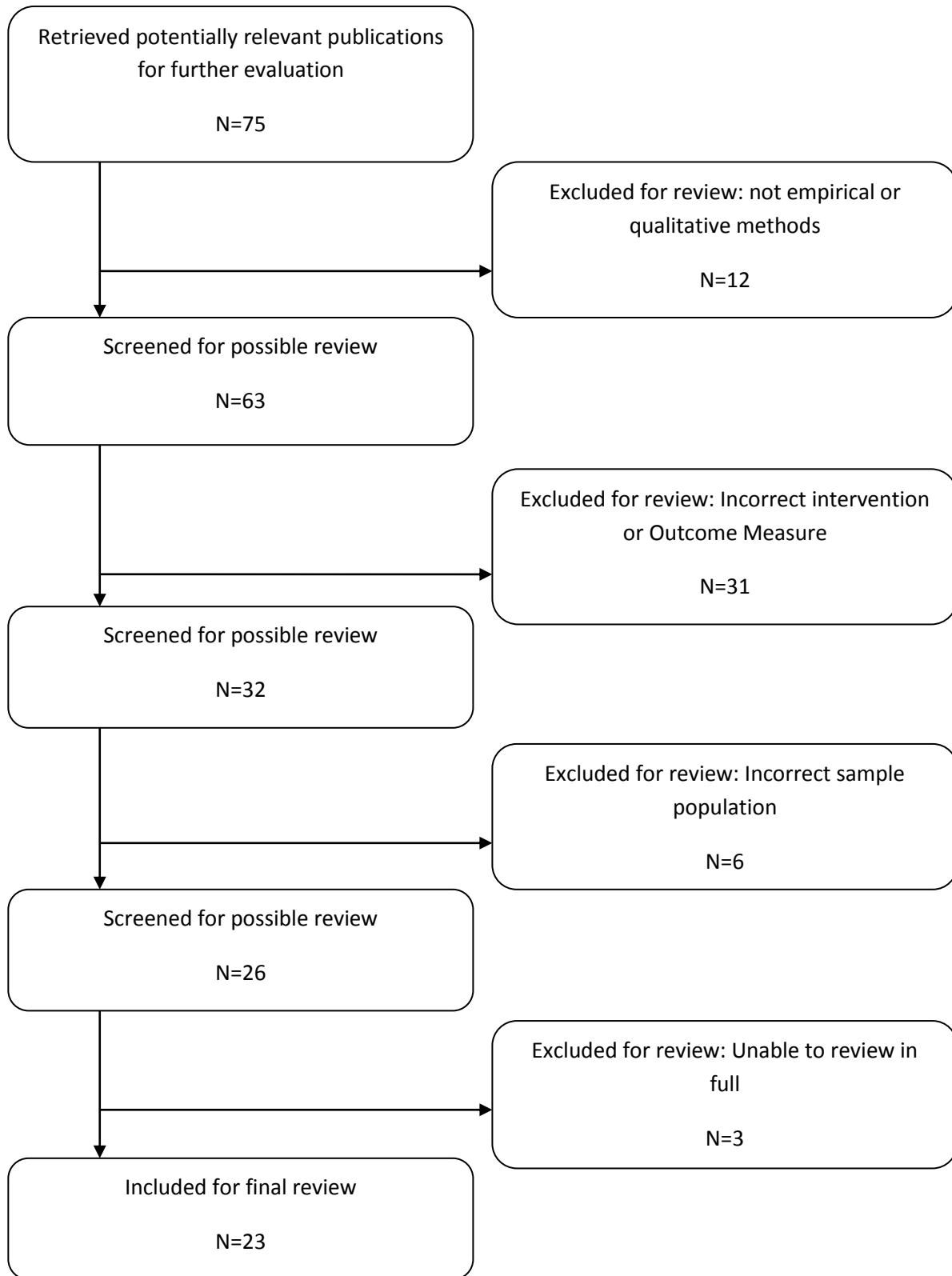


Figure 1. *Flowchart of Literature Retrieval*

Data Abstraction

Assessment of Studies. Once articles were identified for inclusion in the study, an assessment was conducted to rate the quality of each study. The studies were scored on a 3-point scale in four categories: sample size, use of repeated measures, use of comparison group, and type of outcome measure. Sample size rating was dependent upon the population studied, as the initial search of the literature revealed differences between common study sizes and availability of larger groups for cancer-related research. See Table 1 for complete scoring methods. For HIV/AIDS studies, samples less than 25 were rated (1), samples between 26 and 75 (2), and samples greater than 75 were rated (3). In cancer studies, samples less than 100 were rated (1), those including 101-200 participants (2), and samples greater than 200 were rated (3). Studies which utilized a cross-sectional or point-in-time measure were rated (1), studies using pre and post-testing (2), and those using more than two or more repeated measures were rated (3). Use of comparison groups was included in the abstraction, with studies using no comparison group rated (1), use of non-equivalent comparison groups (2), and randomly assigned comparison groups rated (3). Note that any secondary or retrospective analysis included was rated on the use of comparison groups in the original study. Finally, the outcome measure used in the study was rated with self-report rated lowest (1), a standardized measurement tool (e.g. Beck Depression Inventory) rated (2), and administrative or laboratory data such as mortality reports or HIV viral load rated highest (3). Scores of 1 will be operationalized as “poor”, 2 as “moderate,” and 3 as “high” quality. A final quality score was calculated for each study included in the review with the above criteria by taking the sum of each rated quality score. The final scores ranging 9-12 were deemed “high” quality, those scoring 5-8 as “moderate” quality, and 1-4 “low” quality.

Each included study was then placed into the data abstraction tool (Table 2) and organized for qualitative analysis by theme.

Table 1. *Criteria for Assessment of Article Quality*

Method	Quality		
	1 (poor)	2 (moderate)	3 (high)
Sample size (HIV Study)	<25	26-75	>75
Sample Size (Cancer Study)	<100	101-200	>200
Repeated Measures	Cross-Sectional	Pre/Post Testing	≥ 2 Repeated Measure or Longitudinal
Comparison Group	None	Non-equivalent comparison group	Randomly assigned
Outcome Measure Source	Self-Report	Standardized Measurement Tool (e.g. Beck Depression Inventory)	Administrative or Laboratory Data Set (e.g. mortality reports or viral load)

Findings

Qualitative Analysis of Retrieved Studies

Once abstraction from Table 2 was completed, the data was organized by findings and themes emergent in the included literature. Once individual quality scores were summed, they were averaged within each identified theme. The included studies are organized thematically in two ways: by primary diagnosis (cancer or HIV/AIDS), and outcome measures. Two groups of outcome measure were identified by diagnosis: medical and biopsychosocial. Medical outcomes for cancer studies were survival and recurrence of cancer. Medical outcomes for HIV/AIDS studies included viral load, CD4 count (immune function), and medication adherence.

Biopsychosocial outcomes for both diagnoses included responses to standardized assessments of

Table 2. *Data Abstraction and Quality Rating Tool*

Authors	Sample Size	Repeated Measures	Comparison Group	Outcome Measure †	Quality Rating
<i>Cancer Studies</i>					
Andersen et al. (2008)	227 (3)	>2 (3)	Randomly Assigned (3)	ALD (3)	High (12)
Beutel et al. (2014)	157 (2)	>2 (3)	Randomly Assigned (3)	SMT (2)	High (10)
Choi et al. (2012)	237 (3)	Longitudinal (3)	Randomly Assigned (3)*	ALD (3)	High (12)
Cohen & Fried (2007)	114 (2)	>2 (3)	Randomly Assigned (3)	SMT (2)	High (10)
Fann et al (2009)	215 (3)	>2 (3)	Randomly Assigned (3)*	SMT (2)	High (11)
Fawzy, Canada, & Fawzy (2003)	68 (1)	Longitudinal (3)	Randomly Assigned (3)*	ALD (3)	High (10)
Fredenburg & Silverman (2014)	11 (1)	Pre/Post Test (2)	Randomly Assigned (3)	SMT (2)	Moderate (8)
Goodwin et al. (2001)	235 (3)	>2 (3)	Randomly Assigned (3)	ALD (3)	High (12)
Hopko et al. (2011)	80 (1)	>2 (3)	Randomly Assigned (3)	SMT (2)	High (9)
Jacobsen et al. (2014)	711 (3)	>2 (3)	Randomly Assigned (3)	SMT (2)	High (11)
Kissane et al. (2007)	227 (3)	>2 (3)	Randomly Assigned (3)	ALD (3)†	High (12)
Léon-Pizarro et al. (2007)	66 (1)	>2 (3)	Randomly Assigned (3)	SMT (2)	High (9)
Lerman et al. (2012)	68 (1)	Pre/Post Test (2)	Randomly Assigned (3)	SMT (2)	Moderate (8)
Phipps et al. (2012)	171 (2)	>2 (3)	Randomly Assigned (3)	SMT (2)	High (10)
Scheier et al. (2005)	224 (3)	>2 (3)	Randomly Assigned (3)	SMT (2)	High (11)
Spiegel et al. (2007)	125 (2)	Longitudinal (3)	Randomly Assigned (3)	ALD (3)	High (11)
<i>HIV/AIDS Studies</i>					
Belanoff et al. (2005)	59 (2)	Pre/Post Test (2)	Randomly Assigned (3)	ALD (3)	High (10)
Bormann et al. (2006)	93 (3)	>2 (3)	Randomly Assigned (3)	SMT (2)	High (11)
Himelhoch et al (2013)	34 (2)	>2 (3)	Randomly Assigned (3)	SMT (2)†	High (10)
Khachani et al (2012)	50 (2)	>2 (3)	None (1)	ALD (3) †	High (9)
Lovejoy et al. (2015)	295 (3)	>2 (3)	Randomly Assigned (3)	SMT (2)	High (11)
Merkel et al. (2013)	206 (3)	Pre/Post Test (2)	None (1)	ALD (3) †	High (9)
Surilena et al. (2014)	148 (3)	>2 (3)	Randomly Assigned (3)	SMT (2)	High (11)

Note: Parenthetical number denotes categorical quality rating (See Table 1); ALD = Administrative or Laboratory Data (e.g. mortality or viral load); SMT = Standardized Measurement Tool (e.g. Beck Depression Inventory);

* Denotes retrospective or secondary analysis of clinical trial; † Indicates that more than one measure was used and study was rated on highest quality measure

various psychological and emotional distress, quality of life measures, and behavioral outcomes. Although there are studies included which examined outcome measures from both groups, the researcher categorized them based on the original authors' identified primary outcome measure when possible.

As seen in Figure 1, 75 studies were initially retrieved and screened for possible inclusion following the initial database searches. Forty nine studies were excluded based on the intervention or outcome measures utilized, sample population, or because they were qualitative studies or not empirical in design. Three studies were excluded because they could not be reviewed in full. In total, 23 studies are included in the present review (16 cancer, 7 HIV/AIDS).

Six cancer studies reported a medical outcome as the primary measure (Andersen et al., 2008; Choi et al., 2012; Fawzy, Canada, & Fawzy, 2003; Goodwin et al., 2001; Kissane et al., 2007; Spiegel et al., 2007) and the remaining 10 utilized a biopsychosocial outcome as the primary measure (Beutel et al., 2014; Cohen & Fried, 2007; Fann, Fan, & Unützer, 2009; Fredenberg & Silverman, 2014; Hopko et al., 2011; Jacobsen et al., 2014; León-Pizarro et al., 2007; Lerman, Jarski, Rea, Gellish, & Vicini, 2012; Phipps et al., 2012; Scheier et al., 2005). These studies are summarized and displayed in Table 3 and Table 4.

Table 5 summarizes the four HIV/AIDS studies which reported a medical outcome as the primary measure (Belanoff et al., 2005; Khachani et al., 2012; Merkel et al., 2013; Surilena et al., 2014). The remaining three HIV/AIDS studies utilizing a biopsychosocial primary outcome measure are summarized in Table 6 (Bormann et al., 2006; Himelhoch et al., 2013; Lovejoy, Heckman, Sikkema, Hansen, & Kochman, 2015).

Table 3. *Summary of Studies on Cancer Survival and Recurrence*

Author(s)	Sample	Intervention & Comparison	Measures	Outcome
Andersen et al. (2008)	<i>N</i> = 227, women with stage II or III breast carcinoma	Psychologic Intervention, 26 sessions (weekly for 4 months, monthly for 8 months afterward). Comparison Group received assessment only.	Cancer recurrence and Mortality Data (Social Security Death Index) at 7-13 years post-intervention follow-up	Reports statistically significant ↓ for both measures.
*Choi et al. (2011)	<i>N</i> = 237, patients with solid tumor cancer (73.4% female, 92.8% Caucasian).	Cancer Care Intervention (10-session Cognitive Behavioral Program) compared to TAU.	Mortality Data (Medical Records)	Intervention did not significantly influence median survival.
*Fawzy et al. (2003)	<i>N</i> = 68, patients with malignant melanoma (33 male, 35 female).	Six weekly, 90 minute groups on health education, stress management, coping skills, and psychological support compared to TAU.	Cancer recurrence and Mortality Data at 10 year follow-up.	Reports no significant ↓ in recurrence or ↑ in survival at follow-up.
Goodwin et al. (2001)	<i>N</i> = 235, women with metastatic breast cancer expected to survive ≥3 months.	SEGT intervention. Comparison group received educational materials only.	<i>Primary</i> : Survival. <i>Secondary</i> : Psychosocial Function	No significant ↑ in survival. Reports significant ↓ in 5 psychological distress measures.
Kissane et a. (2007)	<i>N</i> = 227, women with advanced breast cancer.	Weekly 90 minute SEGT intervention. Comparison group attended 3 weekly, 1 hour relaxation classes.	<i>Primary</i> : Survival. <i>Secondary</i> : QoL-30, IES, Mini-MAC	No significant ↑ in survival. Significant ↑ in social functioning, and ↓ in both helplessness and intrusive thoughts.
Spiegel et al. (2007)	<i>N</i> = 125, women with metastatic or locally recurrent breast cancer.	Weekly SEGT + Education compared to education only.	Survival (Family or physician contact, Social Security Death Index)	No significant ↑ in survival reported.
Average Quality Score = 11.5 (HIGH)				

Note: * Denotes Retrospective or Secondary Analysis; ↑ = increase; ↓ = decrease; TAU = treatment as usual; SEGT = Supportive-Expressive Group Therapy; QoL-30 = Quality of Life Questionnaire; IES = Impact of Events Scale; Mini-MAC = Mental Adjustment to Cancer Scale

Table 4. *Summary of Studies on Biopsychosocial Outcomes in Cancer Treatment*

Author(s)	Sample	Intervention & Comparison	Measures	Outcome
Beutel et al. (2014)	<i>N</i> = 157, breast cancer patients with comorbid depression.	Short-term Psychodynamic Psychotherapy (STPP) compared to TAU	Remission of depression symptoms, HADS, SCID, QoL-30	Intent to Treat analysis indicates almost 2x remission rate for STPP group and significant HADS and SCID improvement.
Cohen & Fried (2007)	<i>N</i> = 114, early-stage breast cancer patients.	Three groups: Cognitive Behavioral (CB) x RGI x waitlist control.	BSI, GSI, FSI, PSS, MSQ, MHLC and self report of adherence to home practice.	CB and RGI both significant ↓ in psychological distress over control. RGI greater ↓ in fatigue, and had greater home adherence.
Fann et al. (2009)	<i>N</i> = 215, cancer patients ≥ 60 years old with major depressive or dysthymic disorder.	IMPACT intervention compared to TAU.	SCL-20, self report of quality of life, and Sheehan Disability Scale.	Intervention group 2x as likely respond to depression treatment, report ↑ in depression-free days than TAU.
Fredenburg & Silverman (2014)	<i>N</i> = 11, hospitalized cancer patients receiving bone marrow transplant	Cognitive Behavioral Music Therapy compared to waitlisted control.	Multidimensional Fatigue Inventory (MFI)	Reports no significant between-group differences on MFI scores.
Hopko et al. (2011)	<i>N</i> = 90, women with breast cancer (93% Caucasian).	PST compared to BATD.	HRSD, BDI-II, EROS, BAI, QOLI, SF-36, MSPSS, CSQ	Intent to Treat analysis indicates both interventions statistically significant for gains across outcome measures.
Jacobsen et al. (2014)	<i>N</i> = 711, patients receiving hematopoietic cell transplantation.	Four groups: Exercise x Stress Management x Exercise + Stress Management x TAU.	SF-36, CTXD, PSQI	Reports no significant differences among groups on all three primary measures based on Intent to Treat analysis.
León-Pizarro et al. (2007)	<i>N</i> = 66, breast and gynecologic cancer brachytherapy patients.	RGI and education compared to education-only control.	HADS and Spanish language quality of life questionnaire (CCV).	Reports significant ↓ in depression, anxiety, and body discomfort for RGI group.

Lerman et al. (2012)	<i>N</i> = 68, female cancer patients ≥18 years old.	Mindfulness-Based Stress Reduction (MBSR) compared to waitlisted control.	QLQ-30 BR23, SOSI, SCL 90-R	Reports significant improvement in QLQ-30, SCL-90-R, and six of eight SOSI subscales for MBSR.
Phipps et al. (2012)	<i>N</i> = 171, child-parent dyads (children undergoing stem cell transplantation).	Three groups: child-focused intervention x parent and child-targeted intervention x standard care.	Children’s Depression Inventory, Children’s Health Questionnaire, Benefit Finding Scale for Children.	Reports significant ↓ in depression and post-traumatic stress symptoms over time across the sample, but no significant difference between groups
Scheier et al. (2005)	<i>N</i> = 252, women ≤50 years of age with stage 0, I, or II breast cancer and ≤ 10 positive lymph nodes.	Three groups: Education x Nutrition x TAU.	<i>Primary:</i> Center for Epidemiological Studies Distress Scale and SF-36	Reports significant ↓ in depression symptoms and ↑ in physical function for both intervention groups at 13 month follow-up.

Average Quality Score = 9.7 (HIGH)

Note: ↑ = increase; ↓ = decrease; TAU = treatment as usual; HADS = Hospital Anxiety and Depression Scale; SCID = Structured Clinical Interview for DSM-IV Axis I Disorders; RGI = Relaxation and Guided Imagery; BSI = Brief Symptom Inventory; GSI = Global Severity Index; FSI = Fatigue Symptom Inventory; PSS = Perceived Stress Scale; MSQ = Mini Sleep Questionnaire; MHLC = Multidimensional Health Locus of Control; SCL (20 or 90)= Symptoms Checklist; PST = Problem-Solving Therapy; BATD = Behavioral Activation Therapy for Depression; HRSD = Hamilton Rating Scale for Depression; BDI-II = Beck Depression Inventory-II; EROS = Environmental Reward Observation Scale; BAI = Beck Anxiety Inventory; QOLI = Quality of Life Inventory; SF-36 = Medical Outcomes Study Short Form; MSPSS = Multidimensional Scale of Perceived Social Support; CSQ = Client Satisfaction Questionnaire; CTXD = Cancer Treatment and Distress; PSQI = Pittsburgh Sleep Quality Index; QLQ-30 = Quality of Life Questionnaire; SOSI = Symptoms of Stress Inventory.

Table 5. *Summary of Studies on HIV/AIDS Medical Outcomes*

Author(s)	Sample	Intervention & Comparison	Measures	Outcome
Belanoff et al. (2005)	<i>N</i> = 59, patients who had been HIV-seropositive for ≥ 6 months, over age 21, and receiving standard care.	Twelve weeks of 90 minute SEGT intervention plus HIV education compared to education-only control.	CD4 Count, Viral Load, ART Adherence (self report).	Reports statistically significant \uparrow in CD4 count, \downarrow in viral load for SEGT group. No significant between-group difference in ART adherence.
Khachani et al. (2012)	<i>N</i> = 50, HIV/AIDS patients in Morocco with limited literacy and financial resources. 60% of sample was in AIDS-stage of progression.	Psychoeducation program with 3 to 5 one hour sessions from multidisciplinary team. No comparison group.	ART Adherence, HIV treatment and transmission knowledge, Health Related Quality of Life, CD4 Count, and viral load.	Adherence optimal at baseline, no change. Reports significant results across all other measures. \uparrow knowledge and CD4 count, and \downarrow viral load (undetectable in 72% at final follow up).
Merkel et al. (2013)	<i>N</i> = 206, HIV-positive adolescents between 11 and 19 years old in rural Rwanda.	Broad community outreach, HIV and sexual health education, home-based and group therapy. No comparison group.	Care retention, mortality, viral load, and CD4 count.	97.5% care retention. 80% of patients achieved virologic suppression after 1 year of ART. One death reported, median CD4 count increase of 347 cells/mm ³ .
Surilena et al. (2014)	<i>N</i> = 148, female subjects with AIDS in Indonesia.	Intensive (8 sessions/week: 6 individual, 2 group) Rational-Emotive Behavioral Therapy (REBT) Intervention compared to control (assessment only).	<i>Primary</i> : ART Adherence. <i>Secondary</i> : SRQ-20 (Self-Reporting Questionnaire – Mental Health)	Reports statistically significant \uparrow in ART adherence for REBT after 5 weeks, and \downarrow in mean SRQ-20 score (mental health symptoms).
Average Quality Score = 9.75 (HIGH)				

Note: \uparrow = increase; \downarrow = decrease; SEGT = Supportive-Expressive Group Therapy; CD4 Count = Immune Function Measure (higher is better); Viral Load = Copies of HIV in plasma (lower is better); ART = Antiretroviral Therapy.

Table 6. Summary of Studies on HIV/AIDS Biopsychosocial Outcomes

Author(s)	Sample	Intervention & Comparison	Measures	Outcome
Bormann et al. (2006)	N = 93, adults that have been HIV-positive ≥6 months, 18-65 years old, and free from drug or alcohol use for ≥ 6 months.	Mantram repetition training group (Five 90-minute weekly sessions plus four weekly follow up phone calls) compared to basic HIV education group sessions.	Intrusive thoughts (IES), Stress, (PSS), Anxiety (STAI), Anger (STAI-SF), Depression (CES-D), Quality of Life (Q-LES-Q), Spiritual Wellbeing (FACIT-SpEx).	Neither group showed significant ↓ in intrusive thoughts. Mantram group significant for ↓ trait-anger, and ↑ spiritual faith and spiritual connectedness measures. High attrition rate.
Himelhoch et al. (2013)	N = 34, HIV-positive patients living in low-income urban areas with co-occurring depression. Primarily minority sample with 94.1% identified as Black.	Telephone-based Cognitive Behavioral Therapy (T-CBT) compared to traditional 60 minute face-to-face CBT.	<i>Primary:</i> Depression (HAM-D and QID-SR). <i>Secondary:</i> self-reported ART adherence.	Reports no significant between-group difference on HAM-D or QID-SR. T-CBT group significantly more likely to report ART adherence.
Lovejoy et al. (2015)	N = 295, HIV-positive adults ≥age 50 with co-occurring mild to severe depressive symptoms.	Three group RCT: 12 session coping improvement group based on TMSC x 12 session 90 minute interpersonal support group intervention x individual therapy upon request.	<i>Primary:</i> Sexual risk behaviors. Depressive symptoms (GDS) tracked to analyze effect of depression symptoms on risk-behavior.	Reports no significant difference in risk-behavior by intervention condition. Depression symptom improvement noted, but not primary outcome of study.
Average Quality Score = 10.67 (HIGH)				

Note: ↑ = increase; ↓ = decrease; IES = Impact of Events Scale; STAI = Spielberger Trait-Anxiety Inventory; STAI-SF = Spielberger Trait-Anger Inventory-Short Form; CES-D = Center for Epidemiological Study-Depression Scale; Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire; FACIT-SpEx = Functional Assessment of Chronic Illness Therapy Spiritual Well-being; HAM-D = Hamilton Rating for Depression Scale; QID-SR = Quick Inventory of Depression-Self Report; ART = Antiretroviral Therapy; RCT = Randomized Clinical Trial; TMSC = Transactional Model of Stress and Coping; GDS = Geriatric Depression Scale.

Effect on Cancer Survival and Recurrence

Of the six studies examining survival and recurrence of cancer as the primary outcome measure, five reported no significant effect on survival rate (Choi et al., 2012; Fawzy et al., 2003; Goodwin et al., 2001; Kissane et al., 2007; Spiegel et al., 2007). The overall quality rating of the studies included in this theme was High (11.5). Only Andersen et al. (2008) reported statistically significant findings for survival. Women with stage II and stage III breast carcinoma who had been surgically treated and were awaiting adjuvant cancer therapy were included in the study. The intervention in this study was called Psychologic Intervention, but it is notable that the treatment condition aimed to address not only psychological function, but make significant changes in health and quality of life-influencing behaviors such as nutrition, physical activity, smoking cessation and improve compliance with cancer treatment. Patients in the treatment condition ($n = 114$) met weekly in small groups for 4 months and monthly for 8 months thereafter for a total of 26 sessions in a 12 month period with education in progressive muscle relaxation, coping strategies, diet and exercise. The authors reported a high attendance rate among participants. The control group ($n = 113$) received assessment only utilizing the same psychological and behavioral data collected for the treatment group (and at times corresponding to the completion of the intervention for treatment group). Both groups received recommended medical follow-up as appropriate. Survival was calculated based on Social Security Death Index 7 to 13 years after intervention. Mortality data was collected for all original participants and recurrence status for 93% of patients. Anderson et al. (2008) reported lower risk for both disease recurrence (hazard ratio = 0.55; $p = 0.34$) and lower risk for breast cancer death in the treatment condition (hazard ratio = 0.44; $p = 0.016$).

Three other randomized clinical trials examined survival in breast cancer patients specifically (Goodwin et al., 2001; Kissane et al., 2007; Spiegel et al., 2007) but none reported significant association with their integrated care protocol and survival. These studies attempt to replicate the findings of an earlier clinical trial by Spiegel, Bloom, Kraemer, & Gottheil (1989) on the effect of supportive-expressive group therapy (SEGT) on survival for women receiving treatment for breast cancer. These studies utilized similar methodologies for the SEGT intervention condition, including weekly 90 minute meetings in small groups and fidelity assuring measures were employed in all three studies including standardized trainings, workshops materials, and supervision for group leaders. Women in the control condition in the study by Kissane et al. (2007) received instruction in self-directed relaxation using tape recordings. Control group patients in the studies by Goodwin et al. (2001) and Spiegel et al. (2007) were given access to educational materials on breast cancer, nutrition, and relaxation strategies. In all three studies, women in the intervention condition were given access to the same materials as the control condition, so that the only difference between groups was the SEGT.

All three studies found no significant effect on survival for the intervention group, but Goodwin et al. (2001), reported significantly lower scores on secondary outcome measures of total mood disturbance ($p < 0.001$), depression ($p < 0.001$), tension-anxiety ($p = 0.003$), anger-hostility ($p = 0.002$), and confusion-bewilderment ($p = 0.002$) in the intervention condition utilizing the Profile of Mood States questionnaire. These intervention effects were noted to be greater in women who reported more initial distress at baseline.

Likewise, Kissane et al. (2007) reported that although SEGT did not significantly improve survival (median survival 24 months for intervention condition and 18.3 months in

control), the intervention did have significant impact quality of life and psychological secondary outcomes. The authors reported significant improvement in the SEGT group on the EORTC QoL C-30 Social Functioning Scale ($p = 0.003$), reductions in helplessness-hopelessness subscale of the Mini-Mental Adjustment to Cancer Scale ($p = 0.03$) and reduction in intrusive thoughts on the Impact of Event Scale ($p = 0.04$). The results of these studies point to the potential for integrated psychological intervention, such as SEGT, to improve the subjective quality of life of women undergoing breast cancer treatment. However, none of these studies met their aim at replicating the improvement in survival observed by Spiegel et al. (1989).

The final two cancer studies focused on survival and recurrence of cancer similarly reported a lack of significant improvement as the result of their intervention (Choi et al., 2011; Fawzy et al., 2003). Both were retrospective analyses of randomized control trials. Choi et al. (2011) examined impact of a ten-session individual cognitive behavioral symptom management program known as the Cancer Care Intervention (CCI) on survival in patients of solid tumor cancer during their first round of chemotherapy. Patients in the intervention condition ($n = 118$) received the CCI intervention in addition to usual care in contrast to the control condition patients who received usual care alone ($n = 119$). It is noteworthy that the majority of participants were Caucasian (92.8%) and female (73.4%), so the ability to generalize the findings of this study is limited. No significant difference was reported in mortality between the CCI group ($n = 61$) and care as usual ($n = 65$).

The retrospective analysis conducted by Fawzy et al. (2003) similarly found no significant difference between intervention and control groups for recurrence ($p = .31$) or survival ($p = 0.39$) in patients with melanoma. The demographics of the patients in this study was more evenly distributed between genders (33 males and 35 females) than those in Choi et

al.'s (2011) study, and the intervention was more holistic than the CCI. It is noteworthy that there was similarity to the intervention condition utilized by Andersen et al.'s (2008) that found significance for survival and included four components: health education, stress management, coping skills and group psychological support. Despite similar methods, Fawzy et al. (2003) found that improvement in survival and reduction of recurrence had been weakened at 10 year follow-up (compared to their earlier follow-up studies at five and six years, respectively). The remaining cancer studies included in the present review focused primarily on these biopsychosocial outcomes as the result of their various interventions.

Effect on Biopsychosocial Outcomes in Cancer Treatment

Ten of the included studies reported on the effects of integrated care programs on the biopsychosocial wellbeing of individuals undergoing cancer treatment. Overall quality of the studies within this theme was assessed to be high (9.7). The lowest rating studies in this theme received the lowest marks due to small sample sizes. Three studies examined the influence of psychological intervention on emotional wellbeing and quality of life for cancer patients with a comorbid depressive disorder (Beutel et al., 2014; Fann et al., 2009; Hopko et al., 2011) and each reported significant results on their primary outcomes. In a retrospective analysis of an earlier randomized control trial, Fann et al. (2009) compared efficacy of the IMPACT intervention, a protocol using highly integrated levels of psychosocial intervention in which a depression care manager (nurse or clinical psychologist) worked with the patient and their primary care doctor in their primary care clinic and provided a range of interventions including behavioral activation and Problem-Solving Treatment (PST) and psychopharmacological intervention, compared to treatment as usual. This study employed repeated measures at five time points post-baseline, and found that patients in the intervention condition (n = 112) were twice as likely to have a response

to depression treatment at 12 months, higher remission of depression symptoms at 6 and 12 months, and had more depression-free days through the first year post-baseline than those in the control condition ($n = 103$).

Hopko et al. (2011) compared the efficacy of PST (the intervention used by Fann et al. (2009)) and Behavioral Activation Therapy for Depression (BATD) in a sample including all stages of cancer, but was demographically homogenous (93% Caucasian, 7% African American). The BATD protocol focused primarily on encouraging behaviors designed to elicit pleasant responses and reinforce behaviors supportive of positive mood states and quality of life. Treatment fidelity was insured by audio taping all sessions of both interventions and sessions were randomly selected for review in individual supervision. Intent to treat analyses indicate that both were effective interventions and the researchers reported significant gains on all outcomes including mood, symptom severity, social support, physical function, and satisfaction with treatment. Treatment effects remained significant at 12 month follow up. Limitations of the study cited by the authors include the overwhelmingly Caucasian sample, and the difficulty of separately examining anxiety and depression due to their comorbidity.

Beutel et al. (2014) was a unique finding in that it was the only study included which utilized a psychodynamic intervention condition. Short-term psychodynamic psychotherapy (STPP) was compared to a control group receiving treatment as usual, but it is noteworthy that those in the control group were not precluded from seeking and receiving other forms of psychotherapy or antidepressant medication treatment. Results indicated almost twice the depression remission rates at end of treatment between intervention and control arms (44% and 22%, respectively, $p = .007$). Researchers noted that the results of this study were limited by attrition as nearly a third of patients dropped out of the study. This was accounted for by

including drop-outs as failures in the intent to treat analysis, however. The secondary outcomes in this study the Hospital Anxiety and Depression Scale (HADS-D) and the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID) both demonstrated significant improvement in the STPP condition compared to control group ($p = 0.004$ and $p = 0.075$, respectively).

Three studies examined the effect of structured relaxation and stress reduction interventions on biopsychosocial outcomes in cancer treatment (Cohen & Fried, 2007; León-Pizarro et al., 2007; Lerman et al., 2012). Although these three randomized clinical trials each reported significant findings, it is important to note they have comparatively smaller sample sizes compared to most of the other cancer studies included within this review. All three of these studies also recruited only female participants (due to the type of cancers in the sample). Both Cohen & Fried (2007) and León-Pizarro et al. (2007) employed relaxation and guided imagery (RGI) as an intervention for female patients undergoing cancer treatment. Cohen & Fried (2007) utilized a three group design in which stage I and II breast cancer patients were randomly assigned to RGI intervention ($n = 39$), cognitive behavioral (CB) group therapy ($n = 38$), or the control condition ($n = 37$). The CB group received weekly, 90 minute interventions (in groups of 6 to 8) focused on core cognitive principles (e.g. identifying automatic thoughts and cognitive restructuring) as well as behavioral interventions such as activity scheduling. The RGI group met in similar intervals with interventions focused on deep breathing and guided imagery. Both groups practiced skills within session in addition to homework activities and were also encouraged to seek mutual aid and support from other group members. Control group patients were waitlisted and allowed to join an intervention group after the final follow-up measure of the study. Both intervention groups were noted to have significant improvement in psychological distress over the control condition, but RGI resulted in greater reduction in fatigue and sleep

disturbances. The researchers report a significant interaction between adherence to home practice of skills learned in group to Global Severity Index (GSI) score changes, sleep difficulty and fatigue, but not stress or health locus of control. Notably, the RGI group demonstrated a significantly greater adherence to this self-practice. It is important to note that this study took place in Israel. However, beyond Hebrew fluency, the inclusion criteria for the study and description of the sample did not include any other ethnic or cultural data.

In contrast, the study by León-Pizarro et al. (2007) involved a two group design in a Spanish hospital setting for gynecologic and breast cancer patients. Both the control group ($n = 34$) and intervention group ($n = 32$) received the same 45 minute intervention in which they were educated on the cancer treatment (brachytherapy) that they were to receive during their hospitalization and were encouraged to explore anxieties and fears associated with the treatment with a professional. The intervention group received an additional training in RGI and received audiocassettes with instructions in relaxation and breathing exercises. Baseline measures of anxiety and depression using the Hospital Anxiety and Depression Scale (HADS) and quality of life (CCV – a Spanish language assessment tool) were acquired, with measures during hospitalization and at follow up. The intervention group demonstrated significant reduction in reduction of anxiety ($p = 0.008$) and depression ($p = 0.03$). Compared to the control, body discomfort (a subscale of the CCV) was significantly reduced as well. The authors of this study point out not only the significance of their findings but highlight the value of RGI as a simple, inexpensive intervention that can be carried out with little additional time or resources.

Lerman et al. (2012) employed a mindfulness based stress reduction (MBSR) intervention for female cancer patients to examine the intervention's impact on quality of life using the European Organization for Research and Treatment of Cancer Quality of Life

Questionnaire (EORTC QLQ-30), Symptoms of Stress Inventory (SOSI), and medical and psychological symptoms using the Symptoms Checklist (SCL 90-R). The intervention group (n = 48) received training in meditation and yoga, mindfulness skills and breast-self examination in weekly classes and a weekend retreat over the course of two months. The control group (n = 20) were waitlisted for the intervention, but required to not practice yoga or meditation during the wait period. Participants in the treatment condition demonstrated significant improvement in EORTC QLQ-30 scores ($p = 0.005$), as well as on six of eight SOSI subscales (with the exception of Cognitive Disorder and Upper Respiratory subscales). SCL-90 subscale scores were also significantly improved in the treatment group post-intervention ($p \leq 0.023$), while the control group had no significant improvement on all three measures.

Collectively, these three studies support stress reduction and relaxation as effective treatments for women undergoing cancer treatment, at least on their biopsychosocial wellbeing. Reduction in depression and anxiety, improved perceptions of quality of life, sleep quality and other symptoms associated with hospital stays and otherwise grueling cancer treatments point to a potential place for these interventions in standard practices – especially considering the simplicity of the interventions used. Stress reduction was combined with broader psychosocial intervention in two other studies examined which met was met with mixed results. Jacobsen et al. (2014) and Scheier et al. (2005) both employed stress reduction as part of their intervention with patients undergoing cancer treatment; however both studies introduced a wider range of lifestyle interventions as part of their treatment condition.

In a study of patients undergoing Hematopoietic Cell Transplantation (HCT) Jacobsen et al. (2014) examined the impact of various psychosocial interventions on the Medical Outcomes Study Short Form (SF-36, a tool which captures physical and mental wellbeing following

medical treatment), Cancer Treatment and Distress (CTXD) and sleep quality using the Pittsburgh Sleep Quality Index (PSQI). The study utilized a four group design to compare exercise training (n = 180), stress management training (n = 178), exercise plus stress management (n = 178), and treatment as usual (n = 175). All four groups received a DVD with educational information about HCT treatment with broad suggestions for minimizing stress during the procedure. The exercise interventions included walking 3 to 5 times per week (20-minutes each), while the stress management intervention used breathing and progressive muscle relaxation and guided imagery. The study found no significant differences on any of the primary outcomes across the groups. The authors note that other studies found that similar interventions have been shown to be effective, but were unable to replicate the findings here.

Scheier et al. (2005) conducted a three arm study investigating the efficacy of either an educational intervention group (n = 70) which included interpersonal skills, stress and anxiety management, and education on the effects of cancer and cancer treatment, a nutritional intervention group (n = 78) aimed at developing healthier diets, monitoring food intake, and other lifestyle interventions over usual care (n = 76) in young women with stage 0, I, or II breast cancer. Primary outcome measures were depressive symptoms, measured with an abbreviated Center for Epidemiological Studies Depression Scale (CED-S), and health related quality of life using the SF-36. Mediating measures for the study included Intrusive Thoughts (IES, Impact of Events Scale), Self Efficacy and Self Concept (using scales developed specifically for this study), Cancer Concerns (Profile of Concerns about Breast Cancer Scale), and Coping (COPE Scale). All three groups demonstrated fewer depressive symptoms over time, but neither treatment group differed from control at T2 (post intervention). Significant reduction in depression symptoms and improvement in physical function was reported at T3 (13 month

follow up) for intervention conditions with no significant between-group difference for active treatment arms.

The remaining two cancer studies (Fredenberg & Silverman, 2014; Phipps et al., 2012) utilized the most unique interventions in the present study, defying further categorization. Fredenberg and Silverman (2014) investigated the impact of cognitive behavioral music therapy (CBMT) on cancer related fatigue (CRF) in adult, hospitalized patients receiving blood and marrow transplant (BMT). CRF, according to the researchers, is prevalent in cancer patients and impacts wellbeing across the biopsychosocial spectrum. Although their study was mixed-methods, including a follow-up qualitative component, the present research examined the quantitative measure – the Multidimensional Fatigue Inventory (MFI; a 20-item measurement tool) as the primary outcome measure. The intervention group (n = 7) received the CBMT, which involved patient-preferred music with the provider continually checking in with the patient to encourage active patient monitoring of internal states, reflecting on positive thoughts and feelings, encouraging physical rhythmic movement, and finally a homework task to help generalize the intervention post-session. The control group (n = 4) were wait-listed for the intervention. MFI scores were compared pre and post-intervention for the qualitative component of the study. There were no significant between-group differences in fatigue were found, but patients in the intervention condition reported lower general and physical fatigue, while those in the control condition had marginally higher MFI scores on all fatigue domains between pre and post-test time points. The researchers acknowledged the limitations of the study, including the extremely small sample size (n = 11) and very brief period of intervention and monitoring.

Phipps et al. (2012) was distinctive in the retrieved studies in that it was the only intervention to engage both the cancer patient, in this case children undergoing stem cell

transplantation (SCT), and their parent. The three-group design randomized 171 child-parent dyads into child-targeted intervention, child and parent-targeted intervention, or standard care conditions. Each intervention began at admission of episode of care for SCT, continued for three weeks, with outcomes measured at admission and 24 weeks post-SCT. Notable demographics from the study sample included ethnicity (70.7% White, 16.5% Black, 5.2% Hispanic, 3.4% Asian, 5.1% Other/Unknown) and the parent/caregiver with the child (82.4% Mother, 11.7% Father, 5.8% other). Primary outcome measures for the study were the Children's Depression Inventory (CDI), the Children's Health Questionnaire (CHQ) and the Benefit Finding Scale for Children (BFSC). The CDI assessed depressive symptomology. The CHQ (which had two separate versions, one for the child and one for the parent) assessed physical functioning, pain, general health, as well as mental health, behavior and self-esteem. Finally, the BFSC measured appraisal of outcomes following an "adverse event," in this case, a serious illness. The child intervention included half hour massages three times weekly for three weeks in addition to a psychoeducation intervention with "humorous materials" delivered by a research assistant therapist. The parents in the intervention condition received the same massage therapy as the children, but instead of the humor intervention were given training in relaxation (e.g. breath awareness, guided imagery) and encouraged to use a "relaxation CD" daily (p. 764). The results demonstrated a significant change in depression symptoms over time ($p < 0.001$), however, there was no significant difference between groups ($p > 0.7$), nor was there a significant group by time interaction ($p > 0.10$). Similarly, there was significant improvement in posttraumatic stress symptoms from admission to 24 week follow up ($p < 0.001$), but no significant between group difference ($p > 0.3$) or significant intervention effect ($p > 0.4$). In all study participants there was across the board improvement on CHQ-child and CHQ-parent subscales over time with the

exception of CHQ-child physical function subscale ($p = 0.08$), but no significant group or group by time differences ($p \geq 0.1$). Although the intervention did not demonstrate significant impact, the researchers cite the broad general improvements across the study population as a potential explanation.

Effect on Medical Outcomes for HIV/AIDS

Four studies examined the effects of integrated care interventions on medical outcomes on HIV/AIDS. The average quality rating assessed within this theme was high (9.75). Belanoff et al. (2005) and Surilena et al. (2014) investigated the impact of group psychotherapy intervention on viral load, CD4 count, and/or antiretroviral therapy (ART) adherence. Belanoff et al. (2005) conducted a 12-week supportive-expressive group therapy (SEGT) intervention with the treatment group ($n = 32$) which included weekly 90 minute sessions focused on social support, symptom management, communication skills and emotional expression plus an education intervention that included materials selected by physicians and researchers specialized in HIV/AIDS. Individuals randomly assigned to the control condition ($n = 27$) in this study received the education materials only, and were asked not to participate in any outside group or individual psychotherapy for the duration of the study. Pre and post-test measures of CD4 count (immune function), viral load, and medication adherence (self-reported) were taken for both groups. Statistically significant improvement in CD4 count was reported in the intervention condition ($p = 0.033$), but not in the control ($p = 0.31$). Laboratory viral load data demonstrated no significant change in the control condition ($p = 0.32$), but a significant decrease for those receiving SEGT ($p = 0.029$). There was no significant between group difference in viral load changes ($p = 0.13$). ART adherence was similar across both conditions, with 71.4% in the

control group reporting zero days skipped, and 70.6% of SEGT patients reporting zero days of skipped medication.

Examining the impact of rational-emotive behavioral therapy (REBT) group intervention on ART adherence, Surilena et al. (2014) conducted a single-blinded randomized control trial for women living with HIV/AIDS in Indonesia. Secondary outcome measures for the study were biopsychosocial in nature, measured by the SRQ-20 (Self-Reporting Questionnaire), a standardized assessment of mental health. Of those that remained for the final analysis, those randomized to the treatment condition ($n = 72$) received 8 sessions per week of REBT (6 individual, 2 group). Participants in the control condition ($n = 76$) did not receive REBT intervention, but both groups completed the SRQ-20 and monitored ART adherence by viral load (blood titer) and self report at the same interval. In reporting results, ART adherence based on viral load titer was not analyzed, as the majority of participants had undetected viral load (< 400 copies/mL). Despite this, mean self-reported ART adherence was significantly improved in the intervention group compared to control ($p < 0.000$) with optimal adherence achieved after the fifth week of the intervention. Results indicate a decreased mean SRQ-20 score ($p < 0.000$) for REBT group over control. The results of this study support REBT as a potentially effective intervention for both improved ART adherence and psychosocial wellbeing for women living with HIV/AIDS, although the sample was ethnically and culturally homogenous, so the ability to generalize the findings to other populations is limited.

Two studies conducted research nonrandomized trials of integrated psychoeducation interventions (Khachani et al., 2012; Merkel et al, 2013). Khachani et al. (2012) investigated the impact of psychoeducation on adherence to treatment, measured by the AIDS Clinical Trials Group (ACTG) questionnaire, knowledge of HIV treatment and transmission, health related

quality of life (HR-QoL, assessed with EQ5D tool), as well as laboratory reports of CD4 count and plasma viral load. All measures were collected at baseline (M0), and after 3 (M3) and 6 months (M6). Participants ($n = 50$) were recruited from a hospital in Morocco and enrolled in the treatment condition which included 3 to 5 sessions of intervention focused on education and psychological support. Notable demographics include mean age of 38 years, 52% of participants were illiterate, 62% unemployed, and 60% of the sample were diagnosed at the AIDS stage of disease progression. Significant results were reported across all outcome measures. Results indicated 98% adherence at baseline with no significant change over the course of the intervention ($p = 0.266$). HIV/AIDS and treatment knowledge increased significantly from baseline to M6 ($p < 0.001$). Significant improvement in CD4 count was observed from baseline to M6 ($p < 0.001$), a 92% increase in median CD4 cell count. Undetectable viral load was observed in 52% of patients at baseline and 72% at M6 ($p = 0.05$). Although this study was not a randomized trial, the results across the spectrum of outcomes are compelling, particularly when accounting for the vulnerability of patients in the sample. The researchers noted that the large percentage of patients in the AIDS stage, and the improvement they experienced from ART maintenance as part of the study, may have been a significant factor determining adherence.

Merkel et al. (2013) similarly employed an integrated psychosocial approach to a small two-site trial in rural Rwanda. The intervention employed was tailored specifically toward adolescents aged 11 to 19. Protocol included free laboratory testing, medication refills, screenings for comorbid infections and malnutrition. The intervention included a community outreach with home-based therapies, visits from social workers and nurses, biopsychosocial education (on HIV and its treatment), sexual health and social worker-led group counseling. Outcome measures included care retention, mortality, viral load and CD4 count. In total, 206

patients (106 male, 100 female) were enrolled in the program, 10 transferred elsewhere, 4 were lost to follow up and 1 died while in the program, leaving 191 patients retained throughout the study. There was 97.5% care retention with median follow-up of 4.6 years. After one year of ART treatment, 80% of patients achieved virologic suppression (< 50 copies/mL) and 87% achieved viral loads below 500 copies/mL. The study presents several limitations, including limited generalizability, lack of comparison group, and the researchers acknowledge that data analysis includes all patients who were enrolled in care for the duration of the study with no way to account exactly which or how many services in which each patient participated.

Effect on Biopsychosocial Outcomes for HIV/AIDS

The remaining three included studies reported on outcomes relating to biopsychosocial wellbeing for persons living with HIV/AIDS (PLWHA). The quality rating assessed within this theme was also high (10.67). Bormann et al. (2006) and Lovejoy et al. (2015) conducted randomized clinical trials investigating the impact of group-intervention on biopsychosocial outcomes for PLWHA. Bormann et al (2006) explored the efficacy of a mantram-repeating intervention compared to control group. The mantram intervention condition (n = 46) met in groups of 8 to 15, 90 minutes per week, for 5 consecutive weeks, with phone calls for 4 weeks afterward and concluding with a final session in week 10. Patients in the intervention received education on how to choose a mantram and strategies for utilizing mantram repetition and mindfulness in groups conducted by psychiatric mental health nurses. Between session mantram use was measured using wrist counters. The control group condition (n = 47) patients met at the same interval, but reviewed videotapes on HIV-specific topics (e.g. medication, nutrition, treatment) and participated in group discussions reviewing material presented. Primary outcome measures for the study were Intrusive Thoughts (Impact of Events Scale; IES), Stress (Perceived

Stress Scale; PES), Anxiety (Spielberger Trait-Anxiety Inventory), Anger (Spielberger Trait-Anger Inventory-Short Form), Depression (Center for Epidemiological Study-Depression Scale; CES-D), Quality of Life (Quality of Life Enjoyment and Satisfaction Questionnaire; Q-LES-Q), and Spiritual Wellbeing (Functional Assessment of Chronic Illness Therapy Spiritual Well-being (FACIT-SpEx). Twenty-seven participants dropped out of the study post-randomization, 66 completed measures at all time points. Results revealed that neither group was associated with reduction in intrusive thoughts. No group interaction was reported for stress, trait-anxiety, or depression. The mantram group demonstrated significantly reduced trait-anger, however. Participation in the mantram group was predictive of increased spiritual faith and spiritual connectedness on the FACT-SpEx. Limitations of the study include a self-selected sample, attrition rate, and non-blinded group leaders.

Lovejoy et al. (2015) conducted a three-arm randomized control trial comparing the efficacy of two group interventions against individual therapy upon request for 295 HIV-positive adults \geq age 50 with mild to severe depressive symptoms. Patients in the coping improvement group (n = 104) participated in a 12-session intervention based on the Transactional Model of Stress and Coping and focused on appraisal of stressors, problem and emotion-focused coping skills, and interpersonal support. Those in the interpersonal support group (n = 105) also participated in 12 session 90 minute groups, each focused on a specific topic selected by the facilitators such as sexual risk behavior and nutrition. Half of the group time was spent watching a video on the topic, with the other half a group discussion. The final group received individual therapy upon request (ITUR; n = 86) and did not participate in an active intervention, but were not prevented from receiving up to 12 sessions of individual therapy (29% of the participants in this group did, in fact, seek individual therapy). The intervention condition groups were

conducted separately for men who have sex with men (MSM), heterosexual men, and women. All groups were facilitated by trained Masters Degree holding clinicians. The primary outcome for this study was sexual risk behavior reported on an audio-computer assisted self-interview (A-CASI). Depressive symptoms using the Geriatric Depression Scale (GDS) were tracked to analyze the effect of reduced depression symptoms on sexual risk behavior. Results indicated that, overall, sexual risk behavior did not differ by intervention condition. Although 30% of participants endorsed reduced depressive symptoms from baseline to 12-month follow up, no significant interaction between time and depression change, or sexual risk behavior manifested ($p \geq 0.14$). These results indicate that both conditions may have potential for amelioration of depression symptoms, but no significant impact on sexual risk behavior was observed.

The final study included for review compared the efficacy of telephone-based Cognitive Behavioral Therapy (T-CBT) with more traditional 60-minute face to face CBT (Himelhoch et al. (2013). Primary outcome was reduction in depressive symptoms on the Hamilton rating for depression scale (HAM-D) and the quick inventory of depression-self report (QID-SR) with a secondary outcome of ART adherence based on self-reported pill counts at random intervals. Thirty-four participants in low-income urban areas diagnosed with HIV and depression were included in the study and assigned to T-CBT ($n = 16$) or face to face CBT ($n = 18$). The T-CBT treatment condition included 11 manualized sessions of CBT for depression (including behavioral activation and cognitive restructuring) over 14 weeks. Face to face CBT was the control condition for the study with 11 sessions of 60 minute contact without study supervision. 94.1% of study participants in this sample identified as Black, 5.7% Hispanic, 2.9% American Indian, and 2.9% as other. No statistically significant difference was reported between groups on depression outcomes on the HAM-D ($p = 0.32$) or QID-SR ($p = 0.28$). There were no significant

differences in patient reported satisfaction between groups ($p = 0.38$), however those in the T-CBT were significantly more likely to remain adherent to ART medication over the course of treatment ($p = 0.04$). Although the authors acknowledged several limitations of their study, including that the design was for feasibility rather than hypothesis testing, and that results were not assessed for sustained improvement over time, the results of this study show promise for interventions that can reach individuals who otherwise may not be able to consistently attend in person CBT for depression among those living with HIV/AIDS.

Discussion

This review presents a snapshot of recent attempts to examine the efficacy of various integrated psychological or psychosocial interventions on improving outcomes for those receiving treatment of HIV/AIDS or cancer. Of the studies included for review, 12 (52.2%) reported significant results, 5 (21.7%) reported mixed findings (i.e. significance for secondary but not primary outcomes), and 6 (26.1%) failed to report significance. In general, the quality of the studies included was high, with only two studies (8.7%) assessed as Moderate Quality, and none rating Low (Table 2). The average quality score assessed for the included studies was 10.3 with the lowest scoring an 8, and the highest a perfect 12.

There is a notable amount of variance in the methodology of intervention employed in these various studies, which is to be expected considering the breadth of the definition of integrated care. Despite this, the results of the studies presented point to the potential positive impact that the integration of psychological and psychosocial interventions can have for PLWHA and individuals battling cancer. These results may not stand alone as evidence for the

effectiveness of integrated care for HIV/AIDS and cancer; they do present a compelling case for further inquiry.

Although many studies have reported promising results, many have also presented significant restrictions on generalization. From homogenous demographic representations, small sample sizes, questionable statistical power (particularly in retrospective analysis), and the effects of countless mediating variables for which various researchers have struggled to account, the limitations of the current research are acknowledged. Particularly contentious has been the ongoing research on the efficacy of psychotherapeutic interventions (integrated or otherwise) on survival in cancer patients. In their attempts to replicate the improved survival for breast cancer patients receiving SEGT reported by Spiegel et al., (1989) three studies presented in this review failed to post significant results. Although Spiegel and others have continued on this research path, editorial publications have been published refuting their results and claim that their results are misleading (Coyne, Thombs, Stefanek, & Palmer, (2009). Despite this, integrated care has the potential to produce more robust results beyond the impact of psychotherapy alone due to the multifaceted and interdisciplinary approach.

Not included in this review were interventions aimed at substance use disorders, which can be of particular importance in mitigating sexual risk behavior for PLWHA, as well as reducing mortality (Newville & Haller, 2010; DeLorenze, Satre, Quesenberry, Tsai, & Weisner, 2010). Health literacy, the capacity to access and understand information from healthcare providers and make informed decisions has also been shown to negatively impact outcomes for PLWHA (Murphy et al., 2010). Furthermore, socioeconomic factors have been associated with negative outcomes, particularly viral suppression, for African American and other minority groups compared to Caucasians (Shacham, Nurutdinova, Onen, Stamm, & Turner-Overton,

2010). The interaction of these variables on outcomes for PLWHA and individuals battling cancer may have a significant existing research base that was outside of the scope of inclusion for this study. Additionally, the three studies that were unavailable for full review and subsequently excluded may have provided additional support for or against the interventions presented here.

A further limitation to the present study is the phenomenon of publication bias. All research contained within this review were published within peer-reviewed journals, as such, are vulnerable to publication bias. That is, published research tends to favor the report of positive results (the rejection of the null hypothesis) (Upton & Cook, 2014). Studies reporting negative results may have been completed but failed to be included for publication, thus potentially skewing the results presented within systematic review or meta-analyses conducted on the subject. Due to publication bias, interventions previously found to be ineffective may continue to be studied unnecessarily due to the lack of negative results present in the literature.

Implications for Social Work

The sheer complexity of navigating the systems of both HIV/AIDS and cancer treatment indicates a role for social work in practice. Social workers, particularly those in medical settings are frequently called on to mediate between the numerous systems with which our clients are engaged. The promising results presented within this review are indicative of numerous potential ways to improve quality of life and promote self-efficacy in patients receiving HIV/AIDS and cancer treatment. Many of the interventions examined across both diagnoses included multiple areas of function, beyond simply providing mental health care such as group or individual psychotherapy. Social workers possess a skill set that may be uniquely suited to

providing these interdisciplinary intervention techniques, and helping clients to bring together systems of care in a way that most effectively reflects their needs. Social work's devotion to cultural responsiveness may also help to facilitate access for sociocultural groups that have been linked with higher risk for negative outcomes associated with medical treatments.

Facilitating access to needed treatment has not only implications for practice, but also for policy. Disparities in healthcare access have roots in numerous systemic factors influenced directly by policy. Private health insurance availability directly influences routine health screenings that could detect both HIV/AIDS and cancer earlier, resulting in better prognostic outcomes. Furthermore, mental health symptoms that could result in development of comorbid substance use or other behavioral outcomes that result in higher risk for contracting serious chronic illness such as HIV/AIDS and cancer. Racial inequalities resulting in income gaps, unemployment, food insecurity, exposure to job-related carcinogens in blue collar workers, and education opportunities all have the potential for mediating outcomes across the populations described in this study and each have macro-level policy implications for professional social work.

Future research, from a social work perspective, could help examine the influence of these mediating variables identified in the various studies presented here. There is likely a significant intersection in the research interest of medicine, social work, public health and epidemiology that could produce robust data that helps identify ways to alleviate not only the suffering of individuals undergoing treatment for HIV/AIDS and cancer, but to ideally ameliorate the need for treatment by helping to reduce the transmission of HIV and the development of cancer. Future study of integrated care for chronic illness could benefit from more extensive qualitative analysis, particularly research focused on individual patients, in order

to provide insight into the subjective experience of integrated care for chronic illness. Social work research, in this way, could provide a medium through which the voices of cultural, ethnic, and racial minorities can be represented in the emerging literature. It is hoped that such research would further illustrate the intersection of the experience of HIV/AIDS and cancer treatment with living in poverty, or minority group membership. Returning to the systems focused conceptual framework which guided this study, future research could examine other variables surrounding the client system (e.g. family members, housing situations, education, work experience, etc.) Ideally, the findings presented within this study demonstrate the need for further research by social workers to develop more responsive systems of outreach, education and prevention for both HIV/AIDS and cancer, and include the communities in which we work in the development of programs best suited to serve their needs.

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