

EFFECTIVENESS OF TELEPSYCHIATRY:
AN INTEGRATIVE LITERATURE REVIEW

by

Jeri Nagel Rudolf

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Kathleen Schachman, PhD, APRN

Approved for the College of Nursing

Helen Melland, PhD, RN

Approved for The Graduate School

Dr. Carl A. Fox

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ABSTRACT

The aim of this integrative literature review was to evaluate the state of the science to determine if telepsychiatry, though the use of videoconferencing, was as effective as a face-to-face method of service delivery for the treatment of psychiatric-mental health disorders. Geographical isolation, lack of access to mental health care, a shortage of mental health prescribers, and stigma contribute significantly to mental health disparities. Access to mental health care has proven to be a significant barrier for many people including those living in rural areas, the incarcerated, military personnel, the homeless, the elderly, or individuals with health related issues affecting their mobility (Anthony, Mertz Nagel, & Goss, 2010). Telepsychiatry in health care is an emerging technology that offers the potential to reduce these service disparities.

This literature review was organized and presented according to the methodology recommendations of Whittmore and Knafl (2005). Components of the research paper included are a presentation of the problem, literature review, a description of data analysis methods, presentation of findings, and discussion and summary. Seventeen primary research articles were evaluated comparing clinical outcomes using telepsychiatry to a more traditional, face-to-face method of intervention.

Telepsychiatry in health care has been proven to reduce mental health disparities for the rural and underserved populations by increasing access to mental health care, but research regarding the effectiveness of this technology has been limited. Demonstrated effectiveness of telepsychiatry must be established if the goal of widespread implementation is to be realized.

CHAPTER ONE

RESEARCH PROBLEM

Introduction

The use of technology in promoting mental health has a wide-range of applications, including cell phone texting, online forums for chatting and instant messaging, accessing information and peer support via websites and blogs, telephone psychotherapy, structured computer-aided therapy programs, and real-time videoconferencing. One such application, telepsychiatry, comprises one of the largest uses of telehealth nationwide (Antonacci, Bloch, Saeed, Yildirim, & Talley, 2008; Norman, 2006). The American Telemedicine Association (ATA, 2009) used telehealth as a broad term to describe remote health care services exchanged from one site to another via electronic communication. Telemedicine was used to describe direct patient clinical services exchanged from one site to another and telepsychiatry was psychiatry-specific. Telepsychiatry, defined for the purposes of this review, encompasses the delivery of psychiatric-mental health care from a remote location via videoconference technology (American Psychiatric Association, 1998). The technology has been used successfully for psychiatric consultation, assessment and diagnosis, medication management, individual and group therapy as well as education, transfer of medical data, and research (Baer, Elford, & Cukor, 1997; McGinty, Saeed, Simmons, & Yildirim, 2006).

Telepsychiatry has the potential to increase access to care for individuals such as those: 1) living in rural and remote areas, 2) incarcerated in prison or detention centers, 3) serving in the military, 4) homeless, 5) elderly, or 6) those with health issues affecting mobility (Anthony, Mertz Nagel & Goss, 2010).

Nursing stands to play a significant role in responding to the unmet psychiatric-mental health needs of those with access to care issues. The scope of practice and competencies of the advanced practice registered nurse (APRN), and specifically the psychiatric-mental health nurse practitioner (PMHNP), is very adaptable to the telepsychiatry practice setting. The American Nurses Association (2006) defined the practice of the psychiatric-mental health nurse practitioner as the following:

A specialized area of nursing practice committed to promoting mental health through the assessment, diagnosis, and treatment of human responses to mental health problems and psychiatric disorders. Psychiatric-mental health nurses provide comprehensive, patient-centered mental health care and outcome evaluation in a variety of settings across the entire continuum of care (p. 3, para 1). Further discussion of the role of the PMHNP is outlined later in this chapter.

Background and Significance

Historical Background

Research in the use of telepsychiatry has been ongoing for more than five decades. The first use of a two-way closed circuit microwave television in the field of mental health dates back to 1956. The application involved transmitting a live patient interview from a clinical site at the Nebraska Psychiatric Institute to an auditorium at the University of Nebraska where students witnessed an interview as it was being conducted

by a clinician (Baer, 1997; Smith & Allison, 2001). In 1961, psychiatric videoconferencing was used to conduct adult group psychotherapy (Baer, 1997).

Technological advances in telepsychiatry have paralleled advances made in computers, making equipment less expensive and easier to use (Baer, 1997; Norman, 2006). Despite these advances in technology, reports of its usefulness and patient satisfaction, telepsychiatry was used only sporadically in the 1960's and 1970's (Baer, 1997). In the 1990's, the Office of Rural Health Policy in the Federal Health Resources and Services Administration (HRSA) "provided new impetus to the field of telemedicine by making numerous outreach grants available to establish telemedicine programs to address the geographic maldistribution of health care resources" (Wells, 1999, p. 1, para 5).

In 1997, the *Harvard Review of Psychiatry* reported "enthusiasm and uniformly positive descriptive studies have not translated into widespread use of telepsychiatry due to concerns regarding cost effectiveness and prejudices of the users" (Baer, 1997, p. 7). The journal cautioned "against widespread implementation" of telepsychiatry but encouraged use on an "exploratory basis and with underserved populations" (p. 7).

Despite the cautions expressed by the *Harvard Review of Psychiatry* (1997), there is no denying the application of technology in health care. In 2005, 68% of the U. S. adult population reported using the Internet with 86 % of them accessing health or medical information (An, Hayman, Panniers, & Carty, 2007).

Incidence of Mental Illness

Mental health disorders are common in the United States (U. S.). According to the National Institutes on Mental Health (NIMH, 2010) approximately one in four Americans (26.2%) suffer from a diagnosable mental health disorder. Almost half (49%) of the U. S. adults will experience a diagnosable mental health problem at some time in their lives. The lifetime prevalence of a Diagnostic and Statistical Manual, 4th edition (DSM-IV) disorder including anxiety disorders, mood disorders, impulse-control disorders and substance disorders is 57.4% and the 12-month prevalence is 32.4% (NIMH, 2007). More than half of those with psychiatric-mental health disorders will never receive treatment. Approximately 6% of the U. S. population suffers from a serious mental illness. Mental disorders are the leading cause of disability in the U. S. and Canada for ages 15 to 44 years.

Cost of Mental Illness

The Agency for Healthcare Research and Quality (AHRQ) Medical Expenditure Panel Survey-Household Component (MEPS-HC) identified mental illness as one of the five most costly conditions for the U. S. civilian, non-institutionalized population occurring between the years 1996 and 2006 with mental health expenditures increasing the most during this time period (Soni, 2009). Also, during this same time period, the number of patients treated for mental disorders rose from 19 million to 36 million. The overall treatment costs rose from \$35 billion to \$58 billion, making it the costliest medical condition between 1996 and 2006 (Soni, 2009). The vast majority of these costs stem from disability rather than death as the

mortality for mental disorders is low (Insel, 2008). This finding was confirmed in *Mental Health: A Report of the Surgeon General* (1999) which stated that morbidity costs comprised approximately 80% of the indirect costs of all mental illness.

Also associated with the cost of mental health disorders are indirect costs such as the costs due to lost earnings. The National Comorbidity Survey Replication (NCS-R) estimated these losses cost society \$193.2 billion in 2002 (Kessler et al., 2008). Other indirect costs, associated with serious mental illness, include Social Security payments, homelessness, incarceration, the high rate of medical complications associated with mental illness due to poor health habits such as smoking, and the frequent use of high cost emergency room care as mortality for mental disorders is low (Insel, 2008).

Barriers to Seeking Mental Health Care

Geographic Isolation. People living in rural areas experience significant disparities in health status and access to care compared to their urban counterparts. While the incidence of serious mental illness is consistent across the urban-rural continuum, suicide rates are higher in the rural areas of the United States (Bushy, 2009). Bushy also reported that the health disparities associated with living in rural areas revolve around four major issues: availability, accessibility, acceptability, and affordability. Utilizing telepsychiatry provides the potential ability to overcome these disparities. Medical and mental health services are often inadequate in remote geographical areas but become available despite distance or travel barriers through this technology.

Shortage of Skilled Providers. The supply of skilled mental health professionals, in relation to this technology, is inadequate in many areas of the country, especially in rural areas (Antonacci et al., 2008; Richardson, Frueh, Grubaugh, Egede, & Elhai, 2009; Smith & Allison, 2001; Thomas Ellis, Konrad, Holzer, & Morrissey, 2009) with urban areas having three times more psychiatrists per 100,000 populations and more than 1.5 times non-psychiatrist mental health providers than rural areas. In summary, Thomas et al. (2009) reported 96% of U. S. counties had a severe shortage of mental health prescribers. While telepsychiatry does not increase the number of psychiatric-mental health providers, the technology provides a potential solution for the maldistribution of psychiatric-mental health providers. Telepsychiatry extends the reach of existing providers resulting in increased access to care through more efficient delivery of mental health services.

Stigma. Several studies in the literature confirmed that negative attitudes, which often underlies stigma, plays a major role in the acceptability of seeking mental health care (Gustafson, Preston, & Hudson, 2009; Golberstein, Eisenberg, & Gollust, 2008; Schomerus, Matschinger, & Angermeyer, 2009). Stigma and discrimination contribute to the economic poverty and social isolation of many persons experiencing mental illness (President's New Freedom Commission on Mental Health, 2003). While 62.8% of adults agreed that treatment could help persons with mental illness lead normal lives, only 37% of U. S. residents with severe mental illness received treatment and only 29 to 52% with major depression sought help during the first year of their illness (Schomerus et al., 2009). Golberstein, et al. (2008) reported "stigma

represents a form of discrimination and has been shown to have significant negative social, psychological, and clinical consequences for people with mental illness” (p. 398).

Rural dwellers, often characterized as mistrustful of outsiders (Bushy, 2008), may be resistant to seeking care from a psychiatric-mental health care provider who does not reside in their community yet telepsychiatry offers hope in reducing stigma, especially in rural areas, by protecting anonymity, as lack of anonymity leads some people to forgo care (Gustafson et al., 2009).

Lack of Mental Health Insurance Benefits. Rural dwellers are less likely to have health insurance coverage for mental and behavioral health services (Gustafson et al. 2009). The United States Department of Health and Human Services (USHHS) through the Health Parity and Addiction Equity Act (MHPAE, 2008) mandates that businesses employing more than fifty individuals provide employee mental health insurance benefits. Unfortunately, the MHPAE (2008) will not likely result in improved mental health insurance benefits for rural residents because rural workers are more likely to be employed by companies with fewer than 50 employees (Gustafson et al., 2009). While the cost of receiving mental health care for those utilizing telepsychiatry is not likely to be reduced when compared to traditional, face-to-face care, savings could be realized through reduced time away from work and decreased travel expenses (Pineau, Moqadem, St-Hilaire, Perreault, & Hamel, 2006).

Limitations of Telepsychiatry

The barriers to widespread application of telepsychiatry include legal and ethical implications such as privacy, security, confidentiality, and lack of economic studies analyzing cost and risk/benefit when compared to traditional psychiatry service delivery (Melaka & Edirippulige, 2009; Wells, 1999) as well as the lack of randomized-controlled trials demonstrating effective clinical outcomes (Hailey, Roine, & Ohinmaa, 2008; Hilty, Marks, Urness, Yellowlees, & Nesbitt, 2004; Wells, 1999). Also, telepsychiatry may also not be indicated for certain psychiatric populations including: 1) violent, unstable, or impulsive individuals, 2) persons who are suicidal or posing imminent danger, 3) those requiring special monitoring that is not available at the patient site, 4) those experiencing symptoms that might be exacerbated by use of the technology, 5) situations in which sharing news may cause significant emotional reactions, or 7) the visually, hearing, or cognitively impaired (Pineau, 2006). A discussion of privacy, confidentiality, informed consent and lack of RCT research studies follows.

Privacy, Confidentiality, and Informed Consent. The Health Insurance Portability and Accountability Act (HIPPA) was enacted in 1996 to ensure that patient privacies are protected, that patients are sufficiently informed about their treatment to provide valid consent, and that clinicians adhere to appropriate standards of care (USDHHS, 2003). Stanberry (2001) reported that clinicians must ensure that electronic information is effectively protected against improper disclosure when it is disposed of, stored, transmitted, or received. While ensuring that HIPPA (1996) regulations are met is not

unique to telepsychiatry, there are some unique issues related to privacy, confidentiality, and informed consent.

The American Psychiatric Association (APA, 1998) reported that many states in the United States hold psychiatric records to a higher confidentiality standard.

Telepsychiatry patients must be informed if anyone other than the provider is present in the room at the provider site. The evaluation or treatment must be provided in an environment that can be reasonably expected to be free of intrusion. Documentation in the progress notes must include the location of the provider and patient, the type of equipment used and any malfunctions that may have affected clinical care.

Documentation must also include who was present during the office visit and their role.

The American Academy of Child and Adolescent Psychiatry (AACAP, 2008) recommends the use of a secure line such as an integrated service digital network (ISDN), T1 or T3 lines (generic term for telecommunications that provide high-speed, secure, point-to-point transmission), or the use of encryption software and secure servers if the internet (a public network connecting two specific internet protocol (IP) addresses) is used. The use of encryption and confidentiality clauses in service agreements may also be warranted to assure the integrity and quality of the analog/digital stream (APA, 1998). There is no national telemedicine license at this time; therefore, the psychiatric-mental health provider must adhere to the patient's state medical board (APA, 1998; ATA, 2009). Stanberry (2001) stated that education of clinical personnel regarding proper protections related to privacy, confidentiality, security, and informed consent is the clinician's responsibility and is required regardless of the treatment setting, although the

additional precautions (as described above) are needed when services are provided through technologies such as telepsychiatry.

Lack of Outcome Studies Demonstrating Effectiveness. The most significant shortcoming associated with telepsychiatry is the lack of rigorous outcomes studies that demonstrate clinical effectiveness and economic feasibility (Hailey et al., 2008; Hilty et al., 2004; Wells, 1999). The majority of published studies measure satisfaction and acceptability rather than clinical outcomes (Hilty et al., 2004)

The first RCT demonstrating the effectiveness of telepsychiatry, based on clinical outcomes, was published as recently as 2004 when Ruskin (2004) reported no differences in clinical outcomes when comparing in-person treatment of depressed patients with those treated remotely. A description of the various types of RCTs is described later in this review.

Strengths of Telepsychiatry

The greatest promise of telepsychiatry has been improving access to mental health care. It also offers potential cost savings, efficient health care delivery, and bridges for the currently fragmented systems of care experienced by rural health care consumers by creating “virtual treatment teams” (Wells, 1999). Other noted benefits of telepsychiatry included: 1) reduced travel time for providers and patients, 2) reduced wait-time to access services, 3) improved communication and collaboration among treatment team members, 4) improved treatment adherence, 5) a reduction in medication errors, 6) the potential to promote independent living, 7) the ability to remain in the community, and 8) reduced hospitalizations (Hilty, Luo, Morache, Marcelo, & Nesbitt, 2002).

Summary

Emerging technologies provide the means to overcome geographical distances that may hinder access and coordination of mental health care. Antonacci et al. (2008) reported that health care technologies, including telepsychiatry, “have the potential to solve accessibility, as well as the workforce shortage problem that directly affects access to care, especially in remote and underserved areas” (p. 254), a finding confirmed by others (Hogan, 2003; Smith & Allison, 2001). In addition, telepsychiatry also offers the potential to reduce the stigma associated with seeking mental health care, as well as decrease the health cost burden associated with untreated mental illness (Gustafson et al., 2009; Golberstein et al., 2008; Schomerus et al., 2009).

Limitations associated with telepsychiatry include avoiding the use of telepsychiatry with certain psychiatric-mental health populations, ensuring that HIPAA (2008) requirements are adhered to, and the lack of clinical outcome studies demonstrating the effectiveness of telepsychiatry (Hailey et al., 2008; Hilty et al., 2004; Pineau et al., 2006; Wells, 1999). Strengths associated with telepsychiatry applications include the potential for improved access to care, improved quality of care, reduced stigma, and reduced burden of cost associated with untreated mental illness (Hilty et al., 2002; Wells, 1999). Goal Six of the *President’s New Freedom Commission on Mental Health* specifically stated that “technology is used to access mental health care and information” (Hogan, 2004, p. 921).

The Role of Nursing in Telepsychiatry

Nursing, for the purposes of this review, is defined by the psychiatric mental health nurse practitioner (PMHNP) role. A description of the PMHNP role was provided on page 2 of this research paper. The American Telemedicine Association (ATA, 2009) stated that psychiatric nurse practitioners are educated and prepared to provide the full complement of psychiatric services, including primary mental health care services. The ATA (2009) also stated that it is reasonable to assume that the psychiatric-mental health nurses working in both the rural and urban setting could benefit from telehealth care.

Because the PMHNP and the patient are not in the same physical setting, the psychiatric-mental health provider must rely on the assistance of a telepresenter who may or may not be a nurse but is responsible for facilitating the telemedicine encounter. The telepresenter's role includes preparing the patient-site environment as well as the patient, remaining available to provide emotional support and implement emergency protocols if necessary, ensuring HIPPA regulations are adhered to (including obtaining a telemedicine consent), and providing follow-up care including patient education.

Practice guidelines for videoconferencing-based telepresenting have been drafted by the ATA (2011). These guidelines will be very helpful in supporting the PMHNP in implementing care. An exploration of the PMHNP scope of practice and competencies as they relate to telepsychiatry as well as a discussion of telepsychiatry practice guidelines follows.

PMHNP Scope of Practice

The American Nurses Association (ANA) *Scope and Standards for Mental Health Nursing* (2006) reported that it is within the scope of practice for the PMHNP to provide primary mental health services in a wide range of delivery settings. The PMHNP role is “autonomous and focused on the application of competencies, knowledge, and experience with individuals, families, or groups with complex psychiatric mental health problems” (ANA, 2006, p.15). Psychopharmacological interventions, psychotherapy, case management, consultation liaison, and clinical supervision are all within the PMHNP scope of practice (ANA, 2006).

PMHNP Competencies

The PMHNP scope of practice and standards of care are also guided by the National Organization of Nurse Practitioners Facilities (NONPF) *Domains and Competencies of Nurse Practitioner* (2006) and the *Psychiatric-Mental Health Nurse Practitioner Competencies* (2003). As a primary provider of psychiatric-mental health care, the PMHNP “synthesizes theoretical, scientific, and clinical knowledge for the assessment and management of both health and illness states” (Psychiatric-Mental Health Nurse Competencies, 2003, p. 5). The *Psychiatric-Mental Health Nurse Practitioner Competencies* (2003) have been endorsed by eleven national nursing organizations.

Many of the PMHNP competencies outlined by NONPF are directly applicable to the role assumed by the PMHNP when delivering psychiatric care via videoconference technology including: 1) assessment, diagnosis and treatment of psychiatric-mental health disorders, 2) establishment of the PMHNP-patient relationship, 3) collaboration with

members of the mental health team, 4) monitoring and ensuring the quality of health care, and 5) providing culturally-competent care and/or making such resources available.

Telepsychiatry Guidelines

Additional resources available for the PMHNP providing telepsychiatry services are provided by the American Telemedicine Association (ATA, 2009) and the American Psychiatric Association (APA, 1998). The two ATA resource documents relevant to the PMHNP in clinical practice are the *Evidence-Based Practice for Telemental Health* (2009) and the *Practice Guidelines for Videoconferencing-Based Telemental Health* (2009).

The *Evidence-Based Practice for Telemental Health* (2009) provides guidelines specific to clinical application of telepsychiatry including: 1) mental health evaluations, 2) the diagnostic interview, 3) medication management, 4) psychological, personality, and neuropsychological assessment; 5) ordering pertinent procedure and laboratory studies, 6) psychoeducation and 7) individual, group, marital, and family psychotherapy. Other topics addressed include psychiatric emergencies, services provided to special groups such as children or the elderly, seclusion and restraint, involuntary commitments, and incarceration.

The *Practice Guidelines for Videoconferencing-Based Telemental Health* (2009) guidelines were developed to provide standard operating procedures and protocols for administrative, clinical, and technical specifications. Physical room requirements are also addressed in these practice guidelines.

In summary, the PMHNP has scope of practice as well as practice guidelines to ensure safe and effective delivery of telepsychiatry services. They include the ANA *Scope and Standards for Mental Health Nursing* (2006), *Psychiatric-Mental Health Nurse Practitioner Competencies* (2003), the *Evidence-Based Practice for Telemental Health* (2009), the *Practice Guidelines for Videoconferencing-Based Telemental Health* (2009) and the APA (1998) *Telepsychiatry via Videoconferencing* resource document.

Nursing Research and Telepsychiatry

The field of telepsychiatry is moving forward rapidly. Better research is needed for telepsychiatry and more specifically, nursing-related telepsychiatry research (D. D. Clark, personal communication, February 26, 2011). A literature search of nursing research, specific to the PMHNP role in telepsychiatry, produced a single article. Steller (2006) described the advanced-practice, psychiatric nurse practitioner role in a rural pediatric clinic. The focus of this article was the PMHNP satisfaction when delivering care via telepsychiatry. Virtually all of the telepsychiatry research studies accessed by this researcher and included in this review were conducted by psychologists others in the medical profession.

Telepsychiatry was chosen as the focus of this nursing research, as opposed to telephone or internet intervention, because it is this researcher's belief that visual cues are an essential component to comprehensive, advanced practice psychiatric assessment, diagnosis, and intervention. Hilty et al. (2004) reported that technology, such as the telephone and e-mail may be used in certain clinical applications including depression and agoraphobia. Still image transfer does not appear adequate for telepsychiatry

because of the importance of nonverbal language in making a diagnosis. Another consideration in the decision to research telepsychiatry is related to the therapeutic alliance. Frueh et al. (2007) reported that telepsychiatry technology has been proven beneficial for positively promoting the therapeutic alliance. For these reasons, telepsychiatry, through the use of videoconferencing, was chosen as the focus of this review.

Theoretical Framework

Technological Competency as Caring in Nursing by Rozzano Locsin (2005) was the theoretical framework chosen to guide this research. The concept of technological competency as caring in nursing is relatively new. This practice model for nursing is essential due to the continuing advancement of technology in health care and the demands for nurses to be technologically adept at manipulating them.

Technological competency as caring delineates the relatedness and the needed link between technology, caring, and nursing. This theoretical framework is focused on the many ways nurses know persons and facilitates communication of caring while incorporating technological competency in nursing care delivery.

In Locsin's (2005) model, nursing is described as "knowing" persons. Technological competency is but one way that nurses come to "know" persons. The key components described by Locsin (2005) and used to guide this research included:

- technological competence in nursing illustrated as one way of knowing persons.
- technological competence in nursing used as one way of communicating caring in nursing.

- technological competence in nursing expressed through procedures facilitating nursing activities.
- technological competence in nursing as a conceptual model occurs when caring and technologies coexist in nursing.

Several nursing theorists have addressed the concepts--caring, nursing, and technology--exemplified by Locsin (2005). Caring in nursing has been described as the unifying feature of nursing (Lenninger, 1998). Burfitt, et al. (1993, as cited by Locsin, 2005) describe caring as “a mutual process in which intentions are joined to form a shared experience” (p. 74). Locsin further stated that, “in this mutual process, healing is an outcome that might otherwise be elusive” (p. 74). Locsin (2005) also stated that nursing is accomplished through acting on informed intention to care in creative ways that are personally and situationally meaningful while technology in nursing is expressed through procedures facilitating nursing activities.

Barnard and Sandelowski (2001) reported that medical technology is often charged with the dehumanization, depersonalization, and objectification of patients. It is also charged that nursing care can deprive patients of their individuality, subjectivity and dignity as human beings. Such critics argue that technology/scientific cure are “opposed and at odds with touch/humane care” (p. 368). Barnard and Sandelowski (2001) argue that technology/scientific cure is not necessarily at odds with touch/humane care but rather “specifically and deliberately enrolled on the service of that care. The effects of technology can be tempered through ethical awareness as nurses “work with, work around, and make compatible with supportive nursing care” (p. 368).

Locsin's (2005) theoretical model is easily adapted to telepsychiatry.

Telepsychiatry illustrates the practice application of caring described by Locsin (2005) by extending services through the use of technology to those living in geographically isolated areas as well as the underserved. Care must be taken with the use of technology in nursing. Technology has the potential to bring the patient intimately closer to the nurse by enhancing the nurse's ability to know more about a person. Contrarily, the potential exists to increase the gap between the nurse and the patient through conscious disregard of the patient as an individual (Barnard & Sandelowski, 2001).

In summary, technology in nursing is understood as a means to attain the well-being of patients and to intentionally "know" a person as a whole and living person. Technology of nursing is the "practice application of caring in nursing" (Locsin, 2005, p. 112). Therefore, using Locsin's (2005) theoretical framework as a guide is beneficial to exploring the effectiveness of telepsychiatry for improving mental health care clinical outcomes.

Purpose

In spite of telepsychiatry's ability to increase access to care and demonstrated user satisfaction, questions persist regarding the use of this technology. One reason for this is likely due to the limited number of clinical outcome studies demonstrating telepsychiatry's effectiveness. In an effort to build the evidence supporting the use of telepsychiatry, it is important to empirically determine its effectiveness. The research question put forth in this review is as follows: Is telepsychiatry delivered via

videoconference as effective as a traditional, face-to-face delivery of mental health care? The purpose of this research is to conduct an integrative literature review comparing the effectiveness of telepsychiatry to a traditional, face-to-face delivery method of mental health care services.

Definition of Terms

As a condition of this literature search and to provide clarity and consistency throughout the literature review, the following terms will be defined: telepsychiatry, mental health care, face to face (F2F), and videoconference telepsychiatry (VCTP).

Telepsychiatry is defined by the National Library of Medicine as the “use of electronic communication and information technologies to provide or support clinical psychiatric care at a distance” (APA, 1998, p. 2, para, 5).

Mental health care, for the purposes of this research, is an umbrella term referring to services provided to treat behavioral mental health and/or psychiatric conditions. Such care includes, but is not limited to, psychiatric assessment and diagnosis; psychiatric intervention and follow-up in the form of symptom or medication management; and/or psychotherapy defined as “treatment by communication: a procedure undertaken in order to foster self knowledge for the purpose of changing [the patient’s] feelings and or his behaviors” (Campbell, 2004, p. 543-544).

Face to face care (F2F) refers to the traditional model of in-person delivery of psychiatric care in which the health care provider and the patient are situated in the same physical environment.

Videoconference telepsychiatry (VCTP) refers to a live, interactive, synchronous method of mental health/psychiatric service delivered from a remote location (APA, 1998, p. 10, para, 10).

Assumptions

Methodological Assumptions

This integrative nursing review includes the following methodological assumptions: a) an integrative review will provide a summary of past empirical and theoretical data resulting in a more comprehensive understanding of the implications and applications of telepsychiatry, b) data obtained will reflect current trends in telepsychiatry and yield relevant data regarding effectiveness, technological advantages and disadvantages as well as applications to clinical practice, c) research findings will have direct application clinical practice and policy development, d) the privacy and security of health information with telepsychiatry technology will be maintained, and e) findings will provide insight to determine if telepsychiatry offers promise in meeting the mental health needs of the underserved due to limited access to care and shortage of providers in rural areas.

Theoretical Assumptions

Assumptions pertaining to the theory presented in Locsin's (2005) *Technological Competence as Caring in Nursing* were also considered. These assumptions included the following: 1) technological competence may be illustrated as one way of knowing persons, 2) technological competence may be used to communicate caring in nursing, and 3) technological competence in nursing may be expressed through procedures facilitating nursing activities.

Organization of the Remainder of the Literature Review

This literature review was guided by nursing integrative review methodology proposed by Whittemore and Knafl (2005). Whittemore and Knafl (2005) present a systematic process of synthesizing and interpreting published experimental and non-experimental research. This integrative literature review is organized according to the following stages: 1) problem identification, 2) literature search, 3) data evaluation and analysis, and 4) presentation of findings. The introduction and statement of the problem have been addressed in chapter one.

Chapter Two provides an overview of the methods used to conduct the literature search. Components of the search include the databases accessed, search terms and the combinations of search terms used, supplemental search methods utilized, as well as a discussion of the findings. Chapter Three includes a description of the data-analysis methods. The plan for analyzing the data includes 1) a discussion of the overall quality of the literature, 2) a critique of each research article, and 3) a data reduction description based on inclusion/exclusion criteria. The data analysis methods chapter concludes with

categorizing data according to themes. Chapter Four consists of a comprehensive discussion of the research findings, further discussion of themes, discrepancies and gaps in the literature, and concludes with a summary of the findings. Chapter Five consists of project summary, conclusions, and implications for nursing, clinical practice, and research.

CHAPTER TWO

SEARCH METHODS

Literature Search

“A well defined literature search is critical for enhancing the rigor of any type of review because incomplete and biased searches result in an inadequate database and the potential for inaccurate results” (Whittemore & Knafl, 2005, p. 548). This literature search was conducted electronically. Such a search is efficient and effective but can result in yielding as few as 50% of eligible studies due to limitations associated with inconsistent search terminology and indexing issues (Whittemore & Knafl, 2005). To enhance the rigor of the literature search, the bibliographies of relevant articles and telemedicine journals were also searched.

Inclusion/Exclusion Criteria

The literature search was initiated by establishing inclusion criteria. The first criterion established was to include research studies measuring the effectiveness of telepsychiatry. In an effort to reflect current research, studies were limited to research dating back five years (2005-2010). Only peer-reviewed journals were accessed to ensure quality. Opinion articles, case reports, antidotes, and clinical descriptions were avoided as they do not include measurable clinical outcomes of efficacy. Patient and health care provider satisfaction studies were excluded for the same reasons. Studies including children and cognitive disorders were eliminated to narrow the research focus. Global research was included although all studies were written and published in English.

In conclusion, studies were limited to those evaluating the effectiveness of comprehensive psychiatric-mental health care service delivery for psychiatric-mental health services including assessment and diagnosis, psychiatric treatment and follow-up, and psychotherapy when delivered via telepsychiatry videoconferencing. A discussion of search methods and search findings follows.

Search Methods

Databases. An electronic search was completed using the following databases: Medical Literature On-Line (MEDLINE), the Cumulative Index to Nursing and Allied Health Literature (CINAHL), and PsycINFO (psychology on-line).

Search Terms. The search terms used were the following: *telepsychiatry, effectiveness, psychotherapy, randomized control trial, videoconferencing, nursing, and Locsin.*

Supplemental Search Methods. The bibliographies of selected articles were hand searched. Two telemedicine journals (*Journal of Telemedicine and Telecare; Telemedicine and e-Health*) were electronically searched for the previously mentioned time period (2005-2010).

Findings

MEDLINE. A search in MEDLINE utilizing the term *telepsychiatry* yielded 229 results. In an effort to narrow the search focus, the term *effectiveness* was added. This produced twenty four results. Nine of these articles were selected for further review.

One of the articles (Modai et al, 2006) met criteria and was selected for further review. Two meta-analysis review articles (Antonacci et al., 2008; Garcia-Lizana & Munoz-Mayorga, 2010) referenced primary research studies evaluating the effectiveness of telepsychiatry. The bibliographies of these articles were hand searched and nine studies were selected (De Las Cuevas, Arrendondo, Cabrera, Sulzenbacher, & Meise, 2006; Fortney et al., 2007; Frueh et al., 2006; Lexcen, Hawk, Herrick, & Blank, 2006; Manguno-Mire et al., Mitchell et al., 2008; Modai et al., 2006; O'Reilly, Bishop, Maddox, Hutchinson, & Takhar, 2007; Sheppard et al., 2006; Shore, Savin, Orton, Beals, & Manson, 2007; Urness, Wass, Gordon, & Bulger, 2006).

Three studies were selected from the eighteen articles listed in reference to the combination of search terms *telepsychiatry* and *clinical outcomes* (De Las Cuevas et al., 2006; Frueh et al., 2006; O'Reilly et al., 2007). *Telepsychiatry* and *randomized-control trials* resulted in thirteen findings, three of which met criteria for inclusion (De Las Cuevas et al., 2006; Frueh et al., 2006; O'Reilly et al., 2007). *Psychotherapy* and *videoconferencing* produced forty-seven results. Eight studies were selected for further review and four were chosen for inclusion based on inclusion criteria (Morland et al., 2010; Germain, Marchand, Bouchard, Drouin, & Guay, 2009; O'Reilly et al., 2007; Sheppard et al., 2006).

Fourteen studies were returned when *telepsychiatry* and *nursing* was searched but none met the inclusion criteria. *Telepsychiatry* and *Locsin* did not result produce any research findings. After comparing and eliminating duplicates from these search combinations, MEDLINE yielded a total of thirteen studies (see Table 1).

Table 1. MEDLINE Studies Meeting Inclusion Criteria

Study Year	Design	Purpose	Sample	Intervention
De Las Cuevas et al. (2006) Spain	RCT	Compare effectiveness of face to face (F2F) to videoconference telepsychiatry (VCTP)	n=140 rural and remote psychiatric outpatients	Psychiatric follow up: symptom and medication management, CBT
Fortney et al. (2006) USA	RCT	Collaborative care through VCTP	n=396 rural veteran outpatients with depression	Team Intervention (off site psychiatrist, nurse, pharmacist)
Frueth et al. (2007) USA	RCT	Compare effectiveness of VCTP verses F2F psychotherapy	n=38 rural veterans with PTSD	CBT
Germain et al. (2009) Canada	NRCT	Compare effectiveness of VCTP verses F2F psychotherapy	n=48 remote Canadian villagers with PTSD	Mental Status Exams, medication management, psychotherapy
Lexcen et al. (2006) USA	NRCT	Compare Intraclass Correlations (ICC) scores between F2F & VCTP assessments	n=72 forensic inpatients	Psychiatric Evaluation
Manguno-Mire et al. (2007) USA	RCT	Reliability of assessment tool administered F2F or VCTP	n=21 forensic inpatients	Psychiatric evaluation to evaluate competency to stand trial
Mitchell et al. (2008) USA	RCT	Compared effectiveness of CBT F2F verses VCTP	n=128 Patients with Bulimia Nervosa	CBT, supportive psychotherapy, medication management
Modai et al. (2006) Israel	NRCT	Effectiveness, safety, and satisfaction of VCTP compared to F2F @ two outpatient clinics	n=39 remote psychiatric outpatients	Outpatient psychiatric care, monitored for adherence and hospitalization
Morland et al. (2010) USA	RCT	Clinical effectiveness of CBT anger management group psychotherapy via VCTP compared to F2F	n=125 rural veterans with anger issues	Manual- based CBT anger management intervention
O'Reilly et al. (2007) Canada	RCT	Comparison of clinical outcomes after psychiatric consultation and brief follow-up F2F verses VCTP	n= 495 remote psychiatric outpatients	Psychiatric consultation with brief F/U: medication management, psychoeducation, supportive counseling, triage to other local services

Table 1 Continued

Sheppard et al. (2006) Australia	Pilot Study NRCT	Feasibility and efficacy of a psychological intervention provided via VCTP compared to F2F	n=34 rural patients with cancer diagnosis	Psychological intervention via VCTP
Shore et al. (2007) USA	RCT	Examine diagnostic reliability of Structured Clinical Interview for DSM (SCID)	n=53 rural American Indian veterans	Psychiatric assessment using SCID
Urness et al. (2006) Canada	NRCT	Mental health outcomes and acceptability of telepsychiatry as compared to F2F treatment	n=48 forensic inpatients	Psychiatric consultation

CINAHL. A search of the database CINAHL yielded significantly fewer results.

The search term *telepsychiatry* produced 58 results. When *effectiveness* was added to this search, seven articles were found. Of these studies, three studies had already been selected as a result of previous searches (Frueh et al., 2006; O'Reilly et al., 2007; Shore et al., 2007) and one was a review article (Garcia-Lizana & Munoz-Mayorga, 2010). The three remaining studies did not meet the established inclusion criteria.

A search with the terms *telepsychiatry* and *clinical outcomes* yielded two studies. O'Reilly et al. (2007) had been previously accessed. The other finding was a systematic review that did not fall within the selected timeframe. *Telepsychiatry* and *randomized control trial* provided one feasibility study which was outside the scope of this review. *Telepsychiatry* and *nursing* returned four articles but they did not meet the inclusion criteria. *Telepsychiatry* and *Locsin* did not result in any findings.

A search using the terms *videoconferencing* and *psychotherapy* resulted in six articles. Five studies did not meet inclusion criteria. The sixth study had been selected for inclusion previously (O'Reilly et al., 2007). In summary, CINAHL produced three

relevant studies (Frueh et al., 2006; O'Reilly et al., 2007; Shore et al., 2007) although none were new findings.

PsycINFO. One hundred ninety six articles were found using the search term *telepsychiatry*. When paired with the term *effectiveness*, twenty five articles were found, two of them meeting the inclusion criteria (De Las Cuevas et al., 2006; Modai et al., 2006).

Telepsychiatry and *clinical outcomes* returned six studies. Frueh et al. (2007) and O'Reilly et al. (2007) had both been identified and selected from previous searches.

The search utilizing *telepsychiatry* and *randomized controlled trials* yielded three studies but none were appropriate for this literature review. *Telepsychiatry* and *nursing* resulted in six findings but none of them met the inclusion criteria. The search utilizing *telepsychiatry* and *Locsin* did not result in any findings.

Psychotherapy and *videoconferencing* resulted in eighteen findings, three of them meeting the inclusion criteria (Frueh et al., 2006; Germain et al., 2009; O'Reilly et al., 2007). However, none of the research articles were new findings.

Hand Searches. To enhance the rigor of the literature search, the bibliographies of all relevant articles were hand searched. Four studies were found as a result of this hand search, none of which had been accessed as a result of previous searches (Grady & Melcher, 2005; Singh, Arya, & Peters, 2007; Tuerk, Yoder, Ruggiero, Gross & Acierno, 2010; Williams, Ellis, Middleton, & Kobak, 2007). Hand searches of two telemedicine journals (*Telemedicine and e-Health* and the *Journal of Telemedicine and Telecare* did not result in new findings.

Table 2. Hand Search: Studies Meeting Inclusion Criteria

Study Year	Design	Purpose	Sample	Intervention
Grady & Melcer (2005) USA	Retrospective Record Review	Compare F2F & VCTP methods of delivery regarding treatment and outcomes variables	n=81 Military personnel and families	No difference in number of studies ordered, patients taking 2 or more psychiatric meds Medication/follow-up compliance higher with VCTP
Singh et al. (2007) New Zealand	Cross-sectional single cluster, balanced crossover, blind	Determine level of inter-method agreement between F2F and VCTP interview for routine psychiatric care of new outpatient referrals Comparison of F2F and	n=37 remote psychiatric outpatients	Diagnoses, risk assessment, clinical intervention
Tuerk et al. (2010) USA	Pilot Study NRCT	VCTP feasibility/clinical outcomes of Prolonged Exposure Therapy	n=39 rural veterans with PTSD	Manual based treatment of Prolonged Exposure Therapy for PTSD
Williams et al. (2007) USA	NRCT	Feasibility screening patients for clinical trials. Examined clinical outcomes/satisfaction/adherence in a mock clinical trial using VCTP	n=45 psychiatric outpatients	Psychiatric consultation and F/U of patients with psychiatric disorders for referrals from Primary Care Providers

In summary, this integrative review was guided by the methodology proposed by Whittemore and Knafl (2005). A systematic review of the literature was conducted via the electronic databases of MEDLINE, CINAHL, and PsycINFO using selected keywords. Supplemental search methods included a hand search of relevant bibliographies and an electronic search of two specific telemedicine journals. After critiquing all research findings, seventeen articles meeting the inclusion criteria were selected for inclusion in the review. The following chapter provides a description of the data analysis methods.

CHAPTER THREE

DATA ANALYSIS METHODS

The plan for data analysis included evaluation of the study via three approaches: 1) quality, 2) data reduction, and 3) identification of similarities, differences, and themes. After establishing that a study met inclusion criteria, the first approach was a critique of the literature quality. Whitemore and Knafel (2005) suggested that quality is represented through: 1) authenticity, 2) methodological quality, 3) informational value, and 4) representativeness of available primary sources. The studies chosen for inclusion were then critiqued according to methodology and design.

Data analysis included the essential components of 1) data reduction, 2) construction of data display tables, 3) data comparison, and 4) drawing of conclusions. Tables were then constructed to display data so that comparisons could be made and finally, the data was grouped into systematic categories to facilitate the identification of patterns, themes, and relationships. The essential components of data analysis including critiquing the quality of the literature, the process of data reduction, the construction of display tables to facilitate making comparisons, identifying themes, and drawing conclusions are described in greater detail in the following sections.

Quality of the Literature

The literature quality of each article was critiqued using a research appraisal checklist by developed by Duffy (as cited in Fain, 2009) as a guide. This checklist facilitates “critically appraising strengths and limitations of a research report” (p. 255).

The checklist categories recommended for assessment included evaluation of the title, abstract, problem statement, review of the literature, methodology (subjects, instruments, design), data analysis, discussion, and form and style (See Appendix A). While each study was critiqued for overall quality and according to the recommended checklist categories, no formal score was assigned to each study.

Data Reduction

After each study was evaluated for literature quality, the article was then critiqued and organized to facilitate data analysis based on study design, sample size, purpose, intervention, major findings, and strengths and limitations (See Appendix B). Further efforts for reducing data included construction of display tables, which facilitated making comparisons, and drawing conclusions.

Identification of Patterns and Themes

Display tables were constructed by organizing the studies according to patterns, themes, similarities and differences. Tables constructed grouping data by themes are included in the presentation of the findings.

At this stage of data analysis, gaps in the literature and discrepancies were identified. These early interpretive efforts of data analysis utilizing the methods described above helped provide clarity of the empirical findings. Chapter Four presents the discussion of findings.

CHAPTER FOUR

PRESENTATION OF FINDINGS

Overview

Seventeen studies were selected based on the literature quality and because they met the established inclusion criteria. These studies are illustrated in Table 3. The studies included a variety of psychiatric services including: 1) psychiatric assessment, 2) psychiatric follow-up such as symptom monitoring and medication management, and 3) psychological interventions using various forms of psychotherapy.

The discussion of findings will be presented and grouped according to the following categories: 1) study design, 2) purpose, 3) intervention, 4) outcome measures, and 5) length of follow-up. Table 3 includes the seventeen studies included in this literature review (See Table 3). The discussion of the findings will conclude with a summary.

Table 3. Studies Meeting Inclusion Criteria

Study Year	Design	Purpose	Sample	Intervention
De Las Cuevas et al. (2006) Spain	RCT	Compare effectiveness of face to face (F2F) to videoconference telepsychiatry (VCTP)	n=140 rural and remote psychiatric outpatients	Psychiatric follow up: symptom and medication management, CBT
Fortney et al. (2006) USA	RCT	Collaborative care through VCTP	n=396 rural veteran outpatients with depression	Team intervention (off site psychiatrist, nurse, pharmacist)
Frueh et al. (2007)	RCT	Compare effectiveness of VCTP verses F2F	n=38 rural veterans	CBT

Table 3. Studies Meeting Inclusion Criteria (Continued)

Study Year	Design	Purpose	Sample	Intervention
USA		psychotherapy	with PTSD	
Lexcen et al. (2006) USA	NRCT	Compare Intraclass Correlations (ICC) scores between F2F & VCTP assessments	n=72 Forensic inpatients	Psychiatric Evaluation
Manguno-Mire et al. (2007) USA	RCT	Reliability of assessment tool administered F2F or VCTP	n=21 Forensic inpatients	Psychiatric evaluation to evaluate competency to stand trial
Mitchell et al. (2008) USA	RCT	Compared effectiveness of CBT F2F verses VCTP	n=128 Patients with Bulimia Nervosa	CBT, supportive psychotherapy, medication management
Modai et al. (2006) Israel	NRCT	Effectiveness, safety, and satisfaction of VCTP compared to F2F @ two outpatient clinics	n=39 remote psychiatric out patients	Outpatient psychiatric care, monitored for adherence and hospitalization
Morland et al. (2010) USA	RCT	Clinical effectiveness of CBT anger management group psychotherapy via VCTP compared to F2F	n=125 rural veterans with anger issues	Manual- based CBT anger management intervention
O'Reilly et al. (2007) Canada RCT	RCT	Comparison of clinical outcomes after psychiatric consultation and brief follow-up F2F verses VCTP	n= 495 remote psychiatric outpatients	Psychiatric consultation with brief F/U: medication management, psychoeducation, supportive counseling, triage to other local services
Sheppard et al. (2006) Australia	NRCT	Feasibility and efficacy of a psychological intervention provided via VCTP compared to F2F	n=34 rural patients with cancer diagnosis	Psychological intervention via VCTP
Singh et al. (2007) New Zealand	Cross-sectional single cluster, balanced crossover, blind	Determine level of inter-method agreement between F2F and VCTP interview for routine psychiatric care of new outpatient referrals	n=37 remote psychiatric outpatients	Diagnoses, risk assessment, clinical intervention
Urness et al. (2006) Canada	NRCT	Mental health outcomes and acceptability of telepsychiatry as compared	n=48 forensic inpatients	Psychiatric consultation

Table 3. Studies Meeting Inclusion Criteria (Continued)

Study Year	Design	Purpose	Sample	Intervention
		to F2F treatment		
Williams et al. (2007) USA	NRCT	Feasibility screening patients for clinical trials. Examined clinical outcomes/satisfaction./adherence in a mock clinical trial using VCTP	n=45 psychiatric outpatients	Psychiatric consultation and F/U of patients with psychiatric disorders for referrals from Primary Care Providers

Summary of Literature

Quality

An evaluation of the quality of the literature includes assessment of the title, abstract, problem statement, review of the literature, methods (instruments, design, and methods), design, data analysis, discussion, and overall form and style (Fain, 2008). Each of the articles included for inclusion of this literature review was evaluated for quality. Although each study was not given a formal score, it had to clearly address the recommended categories outlined by Fain (2008) to be included in this review.

Eleven of seventeen studies , with the highest overall quality, included: De Las Cuevas et al. (2006), Fortney et al. (2007), Frueh et al. (2007), Germain et al. (2009), Grady & Melcer (2005), Mitchell et al. (2008), Morland et al. (2010), O'Reilly et al. (2007), Sheppard et al. (2006), Tuerk et al. (2010), and Manguno-Mire et al. (2007).

The studies were given a lesser quality designation if the assessment parameters were not easily or clearly presented. The remaining six studies, with lesser quality but still meeting the overall quality requirements for inclusion in this review included:

Lexcen et al. (2006), Modai et al. (2007), Shore et al. (2007), Singh et al. (2007), Williams et al. (2007).

Themes

After assessing the overall quality of the studies, tables were constructed to facilitate recognition of patterns or themes. A table summary of studies associated with each theme is included after each narrative discussion. The themes identified and presented here include 1) location, 2) design, 3) study populations, 4) sample size, 5) intervention, 6) outcome measures, and 7) length of follow-up.

Research Findings Based on Themes

Study Location

Studies analyzed in this literature review were conducted globally. Ten studies, reflecting the majority of research, were conducted in the United States (Fortney et al., 2007; Frueh et al., 2006; Grady & Melcher, 2005; Lexcen et al., 2006; Manguno-Mire et al., 2007; Mitchell et al., 2008; Morland et al., 2010; Shore et al., 2007; Tuerk et al., 2010; Williams et al., 2007). Canada was the location of three studies (Germain et al., 2009; O'Reilly et al., 2007; Urness et al., 2006). Single study locations represented in this review included Australia (Sheppard et al., 2006), New Zealand (Singh et al., 2007), Israel (Modai et al., 2006), and Spain (De Las Cuevas et al., 2006).

Table 4. Location of Studies

United States	Australia/New Zealand	Canada	Israel	Spain
Fortney et al. (2007)	Sheppard et al. (2006)	Germain et al. (2009)	Modai et al. (2006)	De Las Cuevas et al. (2006)
Frueh et al. (2006)	Singh et al. (2007)	O'Reilly et al. (2007)		
Grady & Melcer (2005)		Urness et al. (2006)		
Lexcen et al. (2006)				
Manguno-Mire et al. (2007)				
Mitchell et al. (2008)				
Morland et al. (2010)				
Shore et al. (2007)				
Tuerk et al. (2010)				
Williams et al. (2007)				

Study Design

The lack of randomized-control trials (RTC), often described as the gold standard in research study design, was identified as a major criticism of telepsychiatry research (Antonacci et al., 2008; Richardson et al., 2009). “While the research base for telemental health related interventions is slightly more than fifty years old, prior to 2003, the telemental health literature consisted of novel applications and case studies” (Richardson et al., 2009, p. 324). The research conducted using RCTs included seven studies (De Las Cuevas, et al., 2006; Fortney et al., 2007; Frueh et al., 2006; Manguno-Mire et al., 2007; Mitchell et al., 2008; Morland et al., 2010; O’Reilly et al., 2007). The three classifications of RCTs includes: 1) superiority trials, 2) noninferiority trials, and 3) equivalence trials. The differences, as defined by Polit & Beck (2008), are reflected in

methodology and reporting. Superiority trials hypothesize that one intervention is superior to another in a statistically significant way. The noninferiority trials attempt to determine whether a new treatment is no worse than a reference treatment. The equivalence trial attempts to determine that two interventions are indistinguishable from each other. The noninferiority trial was used by Morland et al. (2010). O'Reilly et al. (2007) used the equivalence trial. De Las Cuevas et al. (2006), Fortney et al. (2007), Manguno-Mire (2007), and O'Reilly et al., 2007 did not indicate which RTC methodology was used.

Non-randomized control trials (NRCT) were the study design choice in eight studies (Germain et al., 2009; Lexcen et al., 2006; Modai et al., 2006; Sheppard et al., 2006; Shore et al., 2007; Tuerk et al., 2010; Urness et al., 2006; Williams et al., 2007). Singh et al. (2007) utilized a cross-sectional, single cluster, crossover blind approach. Grady and Melcher (2005) conducted a retrospective record review.

Table 5. Study Design

Randomized Control Trial	Non-Randomized Control Trial	Retrospective Record Review	Cross-Sectional, Single Cluster, Crossover, Blind
De Las Cuevas et al. (2006)	Germain et al. (2009)	Grady & Melcer (2005)	Singh et al. (2007)
Fortney et al. (2007)	Lexcen et al. (2006)		
Freuh et al. (2006)	Modai et al. (2006)		
Manguno-Mire et al. (2007)	Sheppard et al. (2006)		
Mitchell et al. (2008)	Shore et al. (2007)		
Morland et al. (2010)	Tuerk et al. (2010)		
O'Reilly et al. (2007)	Urness et al. (2006)		
	Williams et al. (2007)		

Study Populations

Six of the studies were comprised of study participants with general psychiatric disorders such as posttraumatic stress disorder (PTSD), anxiety, depression (De Las Cuevas et al., 2006; Fortney et al., 2007; Modai et al., 2006; O'Reilly et al., 2007; Singh et al., 2007; Urness et al., 2006).

Veterans were the subjects in five of the studies (Frueh et al., 2006; Grady & Melcher, 2005; Morland et al., 2010; Shore et al., 2007; Tuerk et al., 2010) with varying psychiatric issues: 1) PTSD (Frueh et al., 2006; Tuerk et al., 2010), 2) general psychiatric disorders (Grady & Melcher, 2005), 3) PTSD with anger difficulties (Morland et al. (2010), and 4) the reliability of a psychiatric assessment tool in Native American veterans (Shore et al., 2007).

Forensic inpatients were the focus of two studies (Lexcen et al., 2006; Manguno-Mire et al., 2007). Lexcen et al. (2006) compared the correlation scores of forensic interview assessment scores, while Manguno-Mire et al. (2007) assessed the forensic patient's ability to stand trial. The subjects included in Mitchell et al., (2008) research were individuals with eating disorders.

Table 6. Study Populations

Veterans, Military	Psychotherapy	Forensic	General Psychiatric Disorders	Eating Disorder
Frueh et al. (2006)	Frueh et al. (2006)	Lexcen et al. (2006)	De Las Cuevas et al. (2006)	Mitchell et al. (2008)
Grady & Melcer (2005)	Germain et al. (2009)	Manguno-Mire et al. (2007)	Fortney et al. (2007)	
Morland et al. (2010)	Mitchell et al. (2008)		Modai et al. (2006)	
Shore et al. (2007)	Morland et al. (2010)		O'Reilly et al. (2007)	
Tuerk et al. (2010)	Sheppard et al. (2006)		Singh et al. (2007)	
			Urness et al. (2006)	

Sample Size

The sample size of the studies ranged from twenty one participants to four hundred ninety five. For the purposes of review, the studies were grouped as follows: 1) $n < 50$, 2) $n = 50-100$, 3) $n = 100-150$, 4) $n = 150-200$, 5) $n > 200$.

The greatest number of studies consisted of sample sizes less than fifty. Nine studies contained sample sizes less than fifty (Frueh et al., 2006; Germain et al 2009; Manguno-Mire et al., 2007; Modai et al., 2006; Sheppard et al., 2006; Singh et al., 2007; Tuerk et al., 2010; Urness et al., 2006; Williams et al., 2007). Four studies included 50-100 participants (Grady & Melcher, 2005; Lexcen et al., 2006; Shore et al., 2007; Tuerk et al., 2010). There were three studies with 110-150 participants (De Las Cuevas et al., 2006; Mitchell et al., 2008; Morland et al., 2010). No relevant studies were found with a sample size in the range of 150-200. The two largest studies, with samples greater than 200 participants, were conducted by Fortney (2006: $n=395$) and O'Reilly (2007; $n=495$).

Table 7. Sample Size

n<50	n=50-100	n=100-150	n=150-200	n>200
Frueh et al. (2006)	Grady & Melcer (2005)	De Las Cuevas et al. (2006)		Fortney et al. (2007)
Germain et al. (2009)	Lexcen et al. (2006)	Mitchell et al. (2008)		O'Reilly et al. (2007)
Manguno-Mire et al, (2007)	Shore et al. (2007)	Morland et al. (2010)		
Modai et al. (2006)				
Sheppard et al. (2006)				
Singh et al. (2007)				
Tuerk et al. (2010)				
Urness et al. (2006)				
Williams et al. (2007)				

Interventions

Broadly categorized, the interventions in this review included: 1) psychiatric assessment, 2) psychiatric follow-up, and 3) psychotherapy. The discussion of interventions will be presented alphabetically using these sub-categories.

Psychiatric Assessment. Four studies focused on the reliability of psychiatric assessment (Lexcen et al., 2006; Manguno-Mire et al., 2007; Shore et al., 2007; Singh et al., 2007). No differences in effectiveness based on clinical outcome measures were found in the studies with a psychiatric assessment focus.

Lexcen et al. (2006) examined intraclass correlations for interviews conducted by VCTP and F2F using the BPRS-A in combination with the MacCAT-CA. Manguno-Mire demonstrated high interrater agreement using only one assessment tool, the Georgia Court Competency Test-Mississippi State Hospital Revision (GCCT-MSH). As stated in the discussion of outcome measures above, Shore et al. (2007) utilized the Structured

Clinical Interview for DSM (SCID), and Singh et al. (2007) used the diagnostic codes from the DSM-IV-Axis I and the DSM-IV-Axis IV, Global Assessment of Functioning (GAF).

Psychiatric Follow-up. Likewise, no statistical differences were found in the studies evaluating the effectiveness of psychiatric follow-up (symptom and medication management). The eight studies evaluating the effectiveness of psychiatric follow-up included De Las Cuevas et al. (2006), Fortney et al. (2007), Grady & Melcher (2005), Modai et al. (2006), O'Reilly et al. (2007), Singh et al. (2007) Urness et al. (2006), and Williams et al. (2007). Research related to psychiatric follow-up accomplished specifically through collaboration (consultation) with primary care was conducted in three studies including: Fortney et al. (2007), O'Reilly et al. (2007), and Williams et al. (2007). A discussion of each study with a psychiatric follow-up follows.

De Las Cuevas et al. (2006) found no differences between the VCTP and F2F control group at 24 weeks. De Las Cuevas et al. (2006) studied clinical outcomes of 140 participants receiving psychotropic medications in combination with cognitive behavior therapy. All patients were diagnosed using the Composite International Diagnostic Interview (CIDI). Clinical outcomes were measured using the Symptom Checklist-90 Revised (SCL-90R) and the Clinical Global Impression rating at 2, 4, 8, 12, 16, and 24 weeks. This was the first RCT to use the same care provider, which offered control over a potential variable, the doctor-patient communication. At the same time, controlling this variable also introduced the possibility of care provider bias. Of interest in this study was the room design. The rooms occupied by the care provider and the participant were

designed as extensions of the other to help participants feel as if they were in the same room, removing the sense of distance and promoting a sense of privacy and closeness.

Fortney et al. (2007) was the second largest telepsychiatry study with 395 participants. It was also only one of three (Fortney et al., 2007; Mitchell et al., 2008; Modai et al., 2006) to continue follow-up for one year. The longer length of follow-up was useful in demonstrating that the effects could be maintained over time (Polit & Beck, 2008). The purpose of Fortney et al. (2006) research was to determine if a collaborative care model could be adapted to small clinics with no on-site psychiatrists without compromising treatment outcomes for patients experiencing depression. A variety of outcome measures were used including the Symptom Checklist-20 (SCL-20), changes in the Physical Composite Score (PCS) and the Mental Composite Score (MCS) of the Short Form Health Survey (SF-36), and changes in the Quality of Wellbeing (QWB) score. Fortney et al. (2006) found the collaborative TEAM approach did not alter provider intervention strategies or patient behavior responses, as illustrated by the lack of differences in the likelihood of having an active psychotropic prescription, as well as no differences observed in the number of visits made to their primary care providers. Interestingly, patients in the VCTP group had higher rates of medication adherence and were more likely to respond by six months and remit by 12 months. The intervention group also reported larger gains in mental health status and health-related quality of life as well as higher treatment satisfaction.

Grady and Melcer (2005) also studied patient outcomes in a retrospective record review of 81 participants receiving usual psychiatric services such as: mental status

exams, medication management, laboratory studies, and self-help recommendations. Similar to Fortney et al. (2006) findings, medication and follow-up compliance was higher in the VCTP group. There were no differences in the number of studies ordered, the number of patients taking two or more psychiatric medications, or self-help referrals. Like the study conducted by De Las Cuevas et al., (2006) all participants received care from the same care provider.

Modai et al. (2006) conducted a non-randomized controlled study (NRCT) of 39 participants receiving care in the outpatient psychiatric setting. Modai et al. (2006) found no statistical differences in the improvements on the BPRS and CGI rating scales of participants in both the F2F and VCTP groups. Similar to the findings reported by Fortney et al. (2007) and Grady and Melcer (2005), this study also confirmed higher adherence in the VCTP group. No statistical differences were found in the number of hospitalizations between the F2F and VCTP group.

O'Reilly et al. (2007) is the largest study included in this review with a sample size of n=495. The focus of this research was psychiatric consultation with interventions including medication management, psychoeducation, supportive counseling, and triage to other local services. This was the first study to utilize equivalence methods for the determination of sample size, analysis of data, and interpretation of results. No statistical differences were found in effectiveness between the two groups (F2F and VCTP) using the Global Severity Index (GSI) subscale of the BPRS and the Mental Health Composite Score (MCS), a subscale of the SF-36 as outcome measures. This study did include a high non-completion rate. Two possible factors were contributed to the low completion

rate: the clinical contact had ended months before the final research scales, and consultation was more readily available through the study than through regular local services.

Like O'Reilly et al. (2007), Urness et al. (2006) also focused on psychiatric consultation. The outcome measure in this study of 48 participants was the MCS and PCS of the SF-36. Urness et al. (2007) found no changes in the PCS or MCS in the F2F group. The VCTP group had significant improvements in the MCS but no changes in the PCS.

The final psychiatric follow-up study included in this review was completed by Williams et al. (2007). This study was a mock clinical trial to determine the feasibility of recruiting and screening patients in the primary care setting to clinical trials. Williams et al. (2007) examined clinical outcomes, as well as satisfaction and adherence. This pilot study evaluated the effectiveness of collaborative care between primary care providers and psychiatrists for participants experiencing depression, generalized anxiety disorder (GAD), or Panic Disorder. A major limitation associated with this study was that researchers did not identify which psychiatric services participants received but did measure outcomes using the HAM-D, HAM-A and the Panic Disorder Severity Scale (PDSS). Significant improvements in all outcome measures were reported.

Psychotherapy. The six studies evaluating the effectiveness of psychotherapy interventions were done by Frueh et al. (2006), Germain et al. (2009), Mitchell et al. (2008), Morland et al. (2010), Sheppard et al. (2006), and Tuerk et al. (2010). Of these studies, cognitive behavior therapy (CBT) was the psychological intervention in four

studies (Frueh et al., 2006; Germain et al., 2009; Mitchell et al., 2008; Moreland et al., 2010). Exposure therapy (ET) was utilized in the study by Tuerk et al. (2010) and the psychological intervention was unspecified in the Sheppard et al. (2006) research.

The four studies including participants experiencing PTSD were Frueh et al. (2006), Germain et al. (2009), Morland et al. (2010), Tuerk et al. (2010). In the Sheppard et al. (2006) research, participants were experiencing anxiety associated with a diagnosis of cancer. Psychotherapy, combined with psychiatric follow up, was also a component of some studies discussed previously (De Las Cuevas et al., 2006; Grady & Melcher, 2005; O'Reilly et al., 2007). Similar to studies evaluating the effectiveness of psychiatric assessment and follow-up, psychotherapy delivered via VCTP was found to be as effective as the F2F delivery method.

Frueh et al. (2007) conducted a RCT of 38 veterans receiving cognitive behavior therapy (CBT) in participants with diagnosis of PTSD. These researches found no statistical differences in effectiveness of patient outcomes using the SCL-90-R and the BDI outcome measures, although the F2F group of participants did report more comfort in talking to their therapist and had better treatment adherence.

Germain et al. (2009) also utilized CBT as an intervention for persons experiencing PTSD. No differences in symptomology, level of anxiety, or level of functioning were found between the F2F and VCTP groups. The outcome measures used in this study included the Modified PTSD Symptom Scale (MPSS), the BDI-D, and the BDI-A. This study also demonstrated no differences in the therapeutic alliance between the two groups.

Mitchell et al. (2008) also found no statistical differences in effectiveness between the F2F and VCTP groups. Mitchell et al. (2008) studied the effectiveness of CBT in 128 participants with eating disorders. Mitchell et al.'s (2008) research included a high attrition rate that reduced their ability to detect differences in outcomes. No differences were found between groups with regard to the EDE scales, RSE, or SF-36 scores. Differences in the abstinence rates and the bingeing/purging rates were not statistically different. There were also no statistical differences in the Ham-D and BDI scores.

Morland et al. (2010) was the only noninferiority RCT. Like the other studies evaluating the effectiveness of psychotherapy delivered via VCTP, Morland et al. (2010) also found no differences between the F2F and VCTP groups of 125 male veterans treated for PTSD using CBT. Both groups showed significant and clinically meaningful improvements in the State-Trait Anger Expression Inventory-2 (STAXI-2) and the Novasco Anger Scale total score (NAS-T) outcome measures.

Sheppard et al. (2006) conducted research evaluating the effectiveness of psychological intervention delivered via VCTP in 34 patients experiencing anxiety associated with an accompanying cancer diagnosis. This pilot study did not include a F2F control group and did not specify the specific psychological intervention used but did include outcome measures for the intervention. The outcome measures used were the Hospital Anxiety and Depression Scale (HADS) and the Functional Assessment of Cancer Therapy-General (FACT-G) Version 4 and both reflected significant and positive changes. The researchers reported possible confounding variables that could have

contributed to the positive changes such as medicate intake, type of cancer, time since diagnosis, stage of treatment, and age.

The research by Tuerk et al. (2010) is the final study included in this review. Tuerk et al. (2010) is also a NRCT pilot study. In this study, 39 participants (F2F n=20, VCTP n= 12) received weekly manual-based prolonged exposure therapy treatments for PTSD. The outcome measures used included the PTSD Checklist-Military Version (PCL) and the Beck Depression Inventory (BDI-II). Both groups showed significant reductions in PTSD pathology. The study did reflect higher non-complication rates in the VCTP group. In spite of the findings indicating there was no difference in the two methods of service delivery (F2F and VCTP), there were instances in which discrepancies were observed and are noted in the following section of this literature review.

Table 8. Study Interventions

Psychiatric Assessment	Evaluation/Follow-Up	Psychotherapy
Lexcen et al. (2006)	De Las Cuevas et al. (2006)	Frueh et al. (2006)
Manguno-Mire et al. (2007)	Fortney et al. (2007)	Germain et al. (2009)
Shore et al. (2007)	Grady & Melcer (2005)	Mitchell et al. (2008)
Singh et al. (2007)	Modai et al. (2006)	Morland et al. (2010)
	O'Reilly et al. (2007)	Sheppard et al. (2006)
	Urness et al. (2006)	Tuerk et al. (2010)
	Williams et al. (2007)	

Clinical Outcome Measures

All of the studies included in this review reported using instruments that had been tested for validity and reliability. Clinical outcome measures varied considerably across the research studies even among similar research populations. For example, both Lexcen et al. (2006) and Manguno-Mire et al. (2006) compared the effectiveness of F2F versus VCTP assessment in the forensic population. Lexcen et al. (2006) used two assessment tools, the Brief Psychiatric Rating Scale (BPRS) and the MacArthur Competence Assessment Tool-Criminal Adjudication (MacCAT-CA) to measure the presence and severity of psychopathology in study participants while Manguno-Mire et al. (2007) used only the Georgia Court Competency Test-Mississippi State Hospital revision (GCCT-MSH) for assessment. There were no other similarities among the tools used for psychiatric assessment as Shore et al. (2007) utilized the Structured Clinical Interview for DSM (SCID), and Singh et al. (2007) used the diagnostic codes from the DSM-IV-Axis I and the DSM-IV-Axis IV, Global Assessment of Functioning (GAF).

The Hamilton Rating Scale for Depression (HAM-D) was the most commonly used outcome measure (Frueh et al., 2006; Germain et al., 2009; Mitchell et al., 2008; Tuerk et al., 2010; Williams et al., 2007) for participants experiencing depression/anxiety. The Brief Psychiatric Rating Scale (BPRS) was also commonly used (Lexcen et al., 2006; Manguno-Mire et al., 2007; Modai et al., 2006; O'Reilly et al., 2007) as was the Symptom Checklist (De Las Cuevas et al., 2006; Fortney et al., 2007; Frueh et al., 2006). Regarding the Symptom Checklist (SCL), De Las Cuevas et al. (2006) used a total score (SCL-90) and Fortney et al. (2007) and Frueh et al. (2006) used

a subscale (SCL-20). The Clinical Global Impressions (CGI) scale was used by De Las Cuevas et al., 2006; Modai et al., 2006; O'Reilly et al., 2007; Williams et al., 2007) but Modai et al. (2006) and O'Reilly et al. (2007) used the CGI –Severity Index (CGI-S) and De Las Cuevas et al. (2006), Modai et al. (2007) and Williams et al. (2007) used the CGI-Improvement (CGI-I). The Short Form Health Survey (SF-36) which includes the Mental/Physical Composite Score (MCS/PCS) was used by Fortney et al.(2007), Mitchell, et al. (2007), O'Reilly et al. (2007), and Urness et al. (2006).

Several studies (Frueh et al., 2006; Germain et al., 2009; Morland et al., 2010; Tuerk et al., 2010) described outcomes related to a diagnosis of Posttraumatic Stress Disorder (PTSD) but lacked a common outcome measure. Frueh et al. (2006) and Tuerk et al. (2010) used the PTSD Checklist-Military Version (PCL-M) while Germain et al. (2009) used the Modified PTSD Symptom Scale (MPSS) and Morland et al. (2010) used the Physician Administered PTSD Scale (CAPS) for diagnostic purposes and the State Trait Anger Expression Inventory-2 (STAXI-2) and Novasco Anger Scale total score (NAS-T).

The remaining clinical outcome measures utilized in these research studies and discussed here were used infrequently or one-time only. Examples of such clinical outcome measures included the Patient Health Questionnaire (PHQ) used by Fortney et al. (2007) and Williams et al. (2007), the Panic Disorder Severity Scale (Williams et al., 2007), the Beck Depression Inventory (BDI) (Frueh et al., 2006; Mitchell et al., 2008), or the Rosenberg Self-Esteem Scale (RSE) and Eating Disorders Evaluation (EDE) used by Mitchell et al. (2007).

Table 9. Clinical Outcome Measures

Assessment	Clinical Outcomes Anxiety/Depression	Clinical Outcomes PTSD	Clinical Outcomes Anger
Brief Psychiatric Rating Scale (BPRS)	Clinical Global Impression-Severity (CGI-S)	PTSD Checklist-Military Version (PCL)	State-Trait Anger Expression
MacArthur Competence Assessment Tool (Lexcen et al., 2006)	(Modai et al., 2010; O'Reilly et al., 2007)	(Frueh et al., 2006; Tuerk et al., 2010)	Inventory, Novasco Anger Scale-Total Score (Morland et al., 2010)
Georgia Court Competency Test-Mississippi State Hospital Revision (Manguno-Mire) et al., 2007)	Clinical Global Impressions-Improvement (CGI-I)	Modified PTSD Symptom Scale (MPSS)	
	(De Las Cuevas et al., 2006; Modai et al., 2006; Williams et al., 2007)	(Germain et al., 2009)	
Structured Clinical Interview for DSM (SCID) (Shore et al., 2007))	Symptom Checklist 90 Revised (SCL-90)	Assessment of Current Functioning (ACF)	
	(De Las Cuevas et al., 2006)	(Germain et al., 2009)	
DSM-IV Diagnostic Codes	(SCL-20) Depression only	Distance Communication Comfort Scale (DCCS)	
Global Assessment of Functioning (GAF) (Singh et al., 2007)	(Fortney et al., 2007; Frueh et al., 2006)	(Germain et al., 2009)	
	Beck Depression Inventory (BDI), Hamilton-Rating Scale-Anxiety, Hamilton-Rating Scale-Depression		
	(Frueh et al., 2006; Germain et al., 2009; Mitchell et al., 2008; Tuerk et al., 2010; Williams et al., 2007)		
	Quality of Well Being (QWB)		
	(Fortney et al., 2007))		
	Quality of Life (SF-12)		
	(Urness et al., 2006)		
	Functional Assessment of Cancer Therapy-General (FACT-G)		
	(Sheppard et al., 2006)		
	Patient Health Questionnaire (PHQ)		
	(Fortney et al., 2007; Williams et al., 2007)		
	Panic Disorder Severity Scale (PDSS)		
	Hospital Anxiety and Depression Scale (HADS)		
	(Sheppard et al., 2006)		
	Short Form Health Survey		

Table 9 Continued

(SF-36) Mental/Physical Composite Score (MCS/PCS) (Fortney et al., 2007; Mitchell et al., 2008; O'Reilly et al., 2007; Urness et al., 2006)
Brief Psychiatric Rating Scale (Lexcen et al., 2006; Manguno-Mire et al., 2007; Modai et al., 2006; O'Reilly et al., 2007; Lexcen) et al., 2006)
Global Assessment of Functioning (GAF) (Grady & Melcer, 2005; O'Reilly et al., 2007)
Eating Disorders Evaluation (EDE) (Mitchell et al., 2008)
Rosenberg Scale (Mitchell et al., 2008)

Length of Follow-up

The length of follow up in the research studies ranged from a one-time assessment with no follow-up to one year. The length of follow-up, in an intervention study, is an indication of the strength of the therapy intervention and measure of effectiveness by demonstrating that the interventions were able to be maintained over time (Polit & Beck, (2008). Studies consisting of a one-time assessment with no follow-up included Lexcen et al. (2006), Manguno-Mire et al. (2007), Shore et al. (2007), and Singh et al. (2007). Follow-up limited to post-treatment was noted in three studies (Germain et al., 2009; Grady, & Melcer, 2005, Tuerk et al., 2005). Follow-up continuing up to three months was conducted by Frueh et al. (2006); Sheppard et al. (2006); Urness et al. (2006); and

Williams et al. (2007). Six month follow up was included in three studies (De Las Cuevas et al., 2006; Morland et al., 2010; O'Reilly et al., 2007). One year follow up was pursued in three studies (Fortney et al., 2007; Mitchell et al., 2008; Modai et al., 2006).

Table 10. Length of Follow-Up

One-time Assessment	Pre/Post Treatment	Up to 3 months	Up to 6 months	Up to 1 year
Lexcen et al., (2006)	Germain et al. (2009)	Frueh et al. (2006)	De Las Cuevas et al. (2006)	Fortney et al. (2007)
Manguno-Mire et al. (2007)	Grady & Melcer (2005)	Sheppard et al. (2006)	Morland et al. (2010)	Mitchell et al. (2008)
Shore et al. (2007)	Tuerk et al (2010)	Urness et al. (2006)	O'Reilly et al. (2007)	Modai et al. (2006)
Singh et al. (2007)		Williams et al. (2007)		

In summary, the findings of the studies included here suggest there are no statistical differences in clinical outcomes between psychiatric services delivered via telepsychiatry and F2F intervention. Comparisons were made regarding the overall quality of the studies as well as location, study design, populations studied, sample size, interventions used, clinical outcomes measures, and length of follow-up. The findings confirm that there are no statistical differences in effectiveness when psychiatric-mental health services, such as assessment, psychiatric follow-up, and psychotherapy were delivered either by VCTP or a more traditional, F2F service delivery method.

Discrepancies

All of the studies included in this literature review support the effectiveness of telepsychiatry but discrepancies noted. An observed discrepancy related to treatment adherence. Fortney et al. (2007), Grady and Melcher (2005), and Modai et al. (2006) all

reported better treatment adherence in the VCTP group while this was refuted in the research by Frueh et al. (2006) who reported better treatment adherence in the F2F group.

Closer inspection of Fortney et al. (2007) also revealed discrepancies. In these findings, participants in the VCTP group were more likely to respond but not remit at six months and had significantly greater odds of remitting but not responding at twelve months. The VCTP group also experienced greater changes in the MCS at twelve months although this was not evident at six months.

Gaps in the Literature

Nursing Research. The lack of research regarding the role of nursing in telemedicine generally, and telepsychiatry specifically was confirmed by this literature review. The PMHNP is competent and currently practicing in the telepsychiatry setting yet this is not reflected in the literature. Further nursing research is needed, by nursing and for nursing, regarding the role in the telepsychiatry practice setting.

Theoretical Framework. While Locsin (2005) specifically addressed the use of technology in nursing, no studies were found in the literature in which Locsin (2005) served as a theoretical guide. With the ever increasing use of technology to deliver care in nursing practice, the integration of technological competence in nursing as one way of knowing persons, as well as a method of communicating caring, warrants further research consideration.

Culturally Competent Care. Another observation reflecting gaps in the literature was the lack of studies regarding the ability to effectively provide culturally appropriate care via telepsychiatry. This is of special importance when considering that services are provided remotely, rather than locally. Services obtained locally enhance the likelihood that the provider is from a similar cultural background or at the very least, more accepted by the community, which would enhance the ability to provide culturally competent care and promote the therapeutic alliance. Further research is needed in this area.

Lack of Randomized-Controlled Trials. The lack of randomized controlled trials also represented a significant gap in the literature. While published studies using RCT's were found, the number was limited. The greatest majority of studies in the literature were focused on patient and/or provider satisfaction rather than clinical outcomes related to effectiveness of telepsychiatry. Establishing user acceptability and satisfaction prior to studying clinical outcomes made sense, but the transition to research based clinical outcomes or effectiveness of telepsychiatry was less than anticipated.

Populations Benefiting from Telepsychiatry. Finally, this review demonstrated that a variety of populations were studied (veterans, forensic patients, and patients with general psychiatric conditions or eating disorders). Lacking in the research was identification of which interventions were most beneficial to specific populations, as well as identification of which interventions were most effectively delivered.

Conclusions

The purpose of conducting this integrative literature review was to determine if delivery of telepsychiatry via VCTP is as effective as traditional F2F (in-person) delivery of psychiatric services. A literature review reflecting the most current research (2005-2010) demonstrated the effectiveness of the telepsychiatry method of service delivery although research findings about the effectiveness of this method of psychiatric service delivery were hampered by significant limitations. A discussion of limitations follows in Chapter Five.

A significant number of research studies have been done to evaluate patient satisfaction with telepsychiatry (Hilty et al., 2004; Richardson et al., 2009) and while satisfaction is a necessary to ensure utilization of the technology, it does not in itself evaluate effectiveness. A better evaluation of effectiveness would be based on clinical outcomes, which were the focus of this review.

Although the research conducted to date supported the effectiveness of telepsychiatry, gaps in the literature were noted. Nursing research related to telepsychiatry and the role of the advanced practice nurse was not evident in the research, nor was there evidence of application of Locsin's (2005) *Technological Competency as Caring in Nursing*. Also lacking in the research was any reference to providing culturally competent care. Finally, while studies of effectiveness of telepsychiatry were noted, the number of studies conducted was limited and the research did not identify which psychiatric-mental health interventions best served specific populations.

In summary, the research demonstrated the effectiveness of telepsychiatry. Typical psychiatric-mental health services were as effectively delivered via VCTP as traditional, F2F intervention. Gaps in the literature were noted. The following chapter will provide discussion and summary, including strengths and limitations of the research findings, as well as implications for nursing, clinical practice, and research.

CHAPTER FIVE

DISCUSSION AND SUMMARY

Discussion

A literature review was completed evaluating seventeen research studies meeting the inclusion criteria. The research findings confirmed there were no statistical differences in clinical outcome measures of psychiatric-mental health services delivered remotely via videoconferencing and traditional, face-to face mental health care.

The majority of research studies included in this literature review was conducted in the U. S. Other countries represented included Canada, Australia, New Zealand, Israel, and Spain. The studies employed several research designs such as randomized controlled trials, nonrandomized controlled trials, and retrospective record review.

Populations studied included veterans, forensic inpatients, individuals with general psychiatric disorders and those with eating disorders. Sample sizes varied from n=21 to n=495, with the greatest majority of research studies consisting of < 50 participants.

Various forms of psychiatric intervention were employed including psychiatric assessment, psychiatric follow-up, and various forms of psychotherapy. The majority the studies compared the effectiveness of telepsychiatry to F2F methods of service delivery. There was no consistency among the clinical outcome measures used. The most frequently used clinical outcome measures included: 1) the Clinical Global Impressions-Severity and Clinical Global Impressions-Improvement; 2) the Symptom Checklist-90

Revised, or the Symptom Checklist-Depression only; 3) the Hamilton Rating scale-Depression, or the Hamilton Rating Scale-Anxiety; and 4) the PTSD Checklist-Military Version. Length of follow-up varied from a one-time assessment to follow-up continuing for up to one year.

Strengths

There were a number of strengths associated with the studies included in this literature review. The overall quality of the research studies reviewed was very good. Strengths of the research also included the use of rigorous research methods. The demographics and number of participants in the control group were well matched to the intervention group. The research studies reported using instruments that had proven validity and reliability. The studies documented the statistical analysis methods as well as the significance of the research findings. The findings and summaries were clearly presented.

Limitations.

Limitations Related to Methodology. Limitations of this literature review include time-frame restrictions, the availability of published research articles, and research evaluating a single clinical outcome measure; the effectiveness of telepsychiatry. Approximately one year was dedicated to the search, synthesis, and writing of the literature review.

A second time-frame limitation was the inclusion of articles published only during the five year period of 2005-2010. This was done to facilitate a comprehensive

review of current research while at the same time limiting the number of research articles to a manageable number.

Research was conducted utilizing the Montana State University library system. While it comprises several comprehensive databases, it may not include all articles published on this topic. Another limitation was that the studies be published in English, which may not accurately reflect research being done on a globally.

Finally, the effectiveness of telepsychiatry in this review was limited to measurable effects of clinical outcomes comparing F2F and VCTP without consideration of other contributing factors such as the quality and dependability of the technology used, the special skills or training needed by the health care provider, cost effectiveness, or patient and provider acceptability.

Limitations Related to the Research Studies. There were also significant limitations associated with the research studies. Most notably was the overall paucity of research regarding the effectiveness of telepsychiatry. There were a small number of randomized controlled trials. The greatest majority of sample sizes were small which precluded generalizing to larger populations.

There were a limited number of psychiatric disorders studied and there was no indication of which interventions best served specific psychiatric-mental health disorders. There was also no consistency of outcome measures used even among similar studies.

The length of follow-up included in the studies was highly variable and, therefore, it was difficult to establish if results of the interventions could be maintained overtime.

Finally, the effectiveness of telepsychiatry is multi-factorial and dependent on more than the single outcome measure (clinical outcomes) evaluated in this literature review. Such factors include the dependability of the technology used, the additional provider training needed for effective telehealth delivery of service, patient and provider satisfaction and willingness to participate, and the ability to provide culturally appropriate care to culturally diverse populations and geographical areas.

Implications for Nursing and Clinical Practice

The PMHNP role is well suited to the practice of telepsychiatry. The role of the PMHNPs is expanding and evolving in response to the shortage of mental health prescribers in the U. S. as well as the disparities created by limited access for people living in rural areas otherwise underserved. The PMHNP is trained to deliver primary mental health services in a variety of settings. Telepsychiatry represents a variation of a practice setting.

The telepsychiatry setting does require a unique set of skills, such as technological competency, which as Locsin (2005) described as one way of knowing persons and communicating caring while engaged in delivery of nursing care. Telepsychiatry also presents ethical and legal challenges related to privacy, security, confidentiality, licensure, as well as ensuring safety and maintaining high quality health care.

Discussions of implications for clinical practice have been hampered by the lack of empirical research demonstrating the effectiveness of this technology. Further research is needed to build evidence for clinical practice applications.

Implications for Research

More research studies are needed to build the evidence demonstrating the effectiveness of telepsychiatry. The number of studies found in the literature was limited. Also limited were studies documenting which interventions were indicated or contraindicated for specific psychiatric populations.

Research related to technology in nursing was found while conducting the literature review, but most was in reference to other modalities such as the telephone, and asynchronous internet modalities such as email or internet-based psychotherapy programs. Research by nursing and about the nursing role in telepsychiatry was very limited. Further research, in all areas of telepsychiatry, as well as replication of the current studies, is needed to add to the science and continue building the evidence. Finally, research regarding cultural competency in effective service delivery is needed.

Summary

In conclusion, this integrative review supports the effectiveness of telepsychiatry as an effective method of psychiatric-mental health service delivery. The number of research studies demonstrating the effectiveness of telepsychiatry was limited. Telepsychiatry has the potential to improve access, quality, and accessibility of mental health care but further clinical outcome studies are needed to establish the effectiveness of method of service delivery as well as establish which psychiatric-mental health populations and interventions are best served in the telepsychiatry setting.

Telepsychiatry has implications for the rural and underserved populations. Telepsychiatry also offers a potential solution to the workforce shortage of providers

through improved access to care. Stigma and the costs associated with the burden of untreated mental illness could also potentially be reduced. Further research is needed to add to the existing body of research if telepsychiatry is to be embraced and implemented on a widespread basis. Further research is also needed regarding the role of nursing in implementing telepsychiatry technology.

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APPENDICES

APPENDIX A

RESEARCH APPRAISAL CHECKLIST

Research Appraisal Checklist

Title

1. The title is readily understood
2. The title is clear
3. The title is clearly related to content

Abstract

4. The abstract states the problem and, where appropriate, hypotheses clearly and concisely
5. Methodology is identified and described briefly
6. Results are summarized
7. Finding and/or conclusions are stated

Problem Statement

8. The general problem of the study is introduced early in the report
9. Questions to be answered are stated precisely
10. Problem statement is clear
11. Hypothesis to be tested are stated precisely in a form that permits them to be tested
12. Limitations of the study can be identified
13. Assumptions of the study can be identified
14. Pertinent terms are/can be operationally defined
15. Significance of the problem is discussed
16. Research is justified

Review of the Literature

17. Cited literature is pertinent to research problems

18. Cited literature provides rationale for the research
19. Studies are critically examined
20. Relationship of problem to previous research is made clear
21. The conceptual framework/theoretical rationale is clearly stated
22. Review concludes with a brief summary of relevant literature and its implications to the research problem under study

Methodology: Subjects

23. Subject population (sampling frame) is described
24. Sampling method is described
25. Sampling method is justified
26. Sample size is sufficient to reduce type 2 error
27. Standards for protection of subjects are discussed

Methodology: Instruments

28. Relevant reliability data from previous research are present
29. Reliability data pertinent to the present study are reported
30. Relevant previous bullet at the data from previous research are presented
31. Politically data pertinent to present study are reported
32. Methods of data collection are sufficiently described to permit judgment of their appropriate in this to the present study

Design

33. Design is appropriate to study questions and/or hypotheses
34. Proper controls are included where appropriate
35. Confounding/moderating variables are/can be identified
36. Description of design is explicit enough to permit replication

Data Analysis

- 37. Information presented is sufficient to answer research questions
- 38. Statistical tests are identified and obtained values are reported
- 39. Reported statistics are appropriate for hypothesis/research questions
- 40. Tables and figures are presented in an easy-to-understand, informative way

Discussion

- 41. Conclusions are clearly stated
- 42. Conclusions are substantiated by the evidence presented
- 43. Methodological problems in the study are identified and discussed
- 44. Findings of the study are specifically related
- 45. Implications of the findings are discussed
- 46. Results are generalized only to population on which study is based
- 47. Recommendations are made for further research

Form and Style

- 48. The report is clearly written
- 49. The report is logically organized
- 50. The donor the report displays an unbiased, impartial, scientific attitude

APPENDIX B

CRITIQUE OF RESEARCH STUDIES MEETING INCLUSION CRITERIA

Author Year Location	Design	Purpose	Sample	Intervention	Outcome Measures	Major Findings
Las Cuevas et al. (2006) Spain	RCT	Compared effectiveness of routine telepsychiatry (VCTP) service versus conventional face to face (F2F)service delivery	n=140	Evaluation of psychiatric illness, psychotropic medication management, CBT	Clinical Global Impressions Symptom Checklist-90 Revised (SCL-90R)	No differences between groups in all outcome measures @ 24 weeks
Fortney et al. (2006) USA	RTC	Determine if collaborative care treatment model could be adapted to small clinic setting without compromising depression treatment outcomes	n=396	TEAM Intervention consisting of primary care provider and off-site telepsychiatrist, depression nurse, pharmacist	Symptom Checklist (SCL-20) PHQ9 Short Form Health Survey (SF-36) Mental Composite Score (MCS)/Physical Composite Score Quality of Wellbeing Score (QWB)	No significant differences in likelihood of having an active prescription @ 6/12 months, no difference in number of PC visits, intervention group had higher med adherence Pts more likely to respond but not to remit @ 6 months, more likely to remit @ 12 months. Both had improvement in MHC scores @ 12 mo but not in PCS.

						Quality of Being score higher in intervention group
Frueh et al. (2007) USA	RTC	Compare effectiveness of VCTP and F2F delivery of CBT for combat-related PTSD	n= 38	CBT (14 wks/90 min sessions)	Life Events Questionnaire (LEC) PTSD Checklist-M (PCL-M) Symptom Checklist-90 Revised (SCL-90-R) Global Severity Index (CSI) Beck Depression Inventory (BDI) Modified PTSD Symptom Scale (MPSS) Beck Depression Inventory (BDI)	No differences in clinical outcomes @ 3 month F/U No differences in satisfaction F2F reported more comfort in talking with their therapist, F2F had better treatment adherence
Germain et al. (2009) Canada	NRTC	Compare effectiveness of CBT for PTSD administered F2F or VCT	n=48	CBT manual-based treatment (16-25 weeks)	Beck Anxiety Inventory (BAI) Assessment of Current Functioning (ACF) Composite score of all six measures (Prior calculated)	No differences in symptomology, level of anxiety/ depression, ACF perception of physical/mental health
Grady & Melcer (2005) USA	Retrospective Record Review	Compare similarities/ differences of F2F	n=81	Mental Status Exams, medication management with psychotherapy,	Changes in Global Assessment of Functioning (GAF),	Medication/follow-up compliance higher with VCTP

		& VCT methods of delivery regarding treatment and outcomes variables		laboratory/procedures ordered, self-help recommendations (90 min assessment, 30 minute F/U)	comparisons of medication compliance/follow-up, number of laboratory/procedures ordered, rapport and therapeutic alliance, self-help recommendations, number of medication prescribed	No difference in number of studies ordered, patients taking 2 or more psychiatric meds, self help referrals, or assessment of suicidal, homicidal ideation or psychosis Mean change in GAF scores significantly less for F2F
Lexcen et al. (2006) USA	NRCT	Compare Intraclass Correlations (ICC) between two scores of two raters on instruments administered to 72 forensic inpatients	n=72	Psychiatric evaluation by 3 methods : F2F administration/VCTP observation; VCTP administration/onsite observation, and F2F administration/onsite observer	MacArthur Competence Assessment Tool-Criminal Adjudication (MacCAT-CA) Georgia Court Competency Test-Mississippi State Hospital Revision (GCCT-MSH)	BPRS-A ICC were good to excellent MacCAT-CA ICC were good to excellent
Manguno-Mire et al. (2007) USA	RCT	Investigated the reliability of a standardized competency assessment tool comparing F2F and VCT assessment of	n=21	Psychiatric evaluation to evaluate competency to stand trial	Interrater reliability of Brief Psychiatric Rating Scale (BPRS) and McArthur Competence Assessment tool	No differences in modality and degree of rater agreement (rater scores not influenced by format of assessment

					(MacCAT-CA)	
		inpatient forensic psychiatric patients competency to stand trial				
Mitchell et al. (2008) USA	RTC	Comparison of F2F and telemedicine efficacy of CBT for bulimia nervosa	n=128	Manual-based CBT, Supportive psychotherapy & Psycho-education for BN (16 weeks), medication management	Eating Disorder Examination (EDE) Hamilton Depression Score (HAM-D) Rosenberg Scale (RSE) Self Esteem SF-36 (SF-36)	Changes occurred more rapidly in F2F., differences in purging frequency @ 12 significantly lower in F2F., no differences in binge eating episodes @ 3 & 12 mo., purging frequency significantly lower @ 12 mo much lower in VCTP-CBT. No difference in EDE Restraint, Weight Concern scales, Rosenberg Self-Esteem or SF-36 scores , greater reductions in EDE & HAM-D in F2F., no change in BDI
Modai et al. (2006) Israel	NRCT	Effectiveness, safety, and satisfaction of VCT compared to F2F @ two outpatient clinics	n=39	Outpatient psychiatric care monitored for adherence, hospitalizations, patient and therapist satisfaction, and costs	Brief Psychiatric Rating Scale (BPRS) and Clinical Global Impression Scale (CGI)	Significant improvements on BPRS and CGI scales for F2F and VCT P, adherence twice as high in the VCTP, mean hospitalizations were not significantly increased, costs higher

						in VCT groups
Morland et al. (2010) USA	RCT (Non-inferiority)	Demonstrate clinical effectiveness of CBT anger management group psychotherapy via telemedicine videoconferencing compared to F2F service delivery	n=125	Manual- based CBT anger management intervention using identical protocol in each group (2 sessions/week over 6 weeks) in both groups	State-Trait Anger Expression Inventory-2 (STAXI-2) Novaco Anger Scale total score (NAS-T) PTSD Checklist-Military Version (PCL-M)	Both groups showed significant and clinically meaningful improvements in STAXI-2 (anger expression & trait anger) and NAS-T (total anger symptoms) Changes in PTSD symptoms: significant reduction on PCL-M in both groups but unable to conclude VCTP non-inferior on PCL-M outcomes In person reported higher group therapy alliance
O'Reilly et al. (2007) Canada	RTC	Comparison of clinical outcomes after psychiatric consultation and brief follow-up in patients randomly assigned to F2F or VCTP	n=495	Psychiatric consultation with brief F/U consisting of medication management, psychoeducation, supportive counseling , triage to other local services	Brief Symptom Inventory (BSI) Global Severity Index (GSI) subscale Medical Outcomes	No significant difference on measures of services provided Both groups reported less distress from symptoms on BSI and improved mental health on SF-36 scales after clinical intervention

					Study Short Form (SF-36) MCS	Moderate satisfaction levels on CSQ-8
					Client Satisfaction Questionnaire (CSQ-8)	
Sheppard et al. (2006) Australia	Pilot Study (NRCT)	Feasibility and efficacy of a psychological intervention provided via VCTP	n=34	Psychological Intervention via VCT 1 hour sessions held weekly or biweekly	Hospital Anxiety and Depression Scale (HADS)	Significant changes on HADS in means scores of depression and anxiety over time
					Functional Assessment of Cancer Therapy General (FACT-G) Version 4	Quality of life (FACT-G) scores reflected emotional and functional well-being improved significantly,
					Patient Satisfaction Survey	social well-being subscale did not reflect significant change as this sample was above normative levels even at pre-treatment
Singh et al. (2007) New Zealand	Cross-sectional, single cluster, balanced crossover, blind study	Determine level of inter-method agreement between F2F and VCTP interview for routine psychiatric care of new outpatient referrals of a general adult psychiatric	n=37	Diagnoses, risk assessment, clinical intervention	Risk assessment schedule (RAS) List of the psychiatric intervention (LIPI)	Overall agreement between modalities was substantial

		unit					
Tuerk et al. (2010) USA	Pilot Study NRCT	Comparison of F2F and VCTP feasibility and clinical outcomes of Prolonged Exposure Therapy for PTSD patients	n=39 veterans with PTSD	Manualized treatment of Prolonged Exposure Therapy for PTSD	PTSD Checklist-military Version (PCL) Beck Depression Inventory-II (BDI-II)	Both groups showed significant reductions in self-reported PTSD pathology on PCL and BDI-II, non-completion rates higher in VCT	
Urness et al. (2006) Canada	NRCT	Mental health outcomes and acceptability of telepsychiatry as compared to F2F treatment	n=48	Psychiatric consultation	Quality of Life Questionnaire (SF-12) Mental Health Composite Scale (MCS)/Physical Composite Scale (PCS) Client Satisfaction survey	F2F reported: 95% satisfied with treatment outcomes 95% supported/encouraged, 90% comfortable with ability to talk VCT reported: 96% satisfied with treatment outcomes 78% supported/encouraged 85% comfortable with ability to talk 93% felt they could present the same	

						information as F2F
						F2F: no changes in MCS or PCS in pre/post scores
						VCT: significant change in pre/post MCS, no difference in PCS scores
Williams et al. (2007) USA	NRCT	Feasibility of identifying, recruiting/screening primary care patients for clinical trials. Examined clinical outcomes, satisfaction, and adherence in a mock clinical trial using VCTP	n=45	Psychiatric consultation and F/U of patients with Major Depressive Disorder (MDD), Generalized Anxiety Disorder (GAD), or Panic Disorder (PD) for referrals from Primary Care Providers	Patient Health Questionnaire Clinical Global Impressions of Change Scale (CGI-C) Hamilton Depression Rating Scale (HAMD) for MDD Hamilton Anxiety Rating Scale (HAMA) for GAD Panic Disorder Severity Scale (PDSS) for PD	Significant improvements in all three cohorts
