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Appointment Follow-Up, Health Outcomes, and Hospitalizations for Individuals Receiving Psychological Treatment

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Walden University

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Sandra Silvestre

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Appointment Follow-Up, Health Outcomes, and Hospitalizations for Individuals
Receiving Psychological Treatment

by

Sandra Silvestre

MS, Walden University, 2016

MS, Walden University, 2014

MA, St. John's University, 2012

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

To improve how healthcare is being provided, many states have focused on enhancing patients' health experiences and outcomes and reducing the per capita cost of care. Even though appointment follow-up is an important part in outpatient treatment programs, not much is known about practical methods to help individuals with mental illnesses into ongoing treatment. The purpose of this quantitative study was to determine to what extent patient appointment follow-up adherence at a family health center in New York predicts negative health outcomes and hospitalizations among patients receiving psychological treatment. The theoretical foundation that framed this study was the theory of planned behavior. Two research questions measured whether there was statistically significant difference between the dependent variable (number of emergency room visits) and the independent variables (number of follow-up appointments and caseworker status). A causal-comparative research design was used to examine archival data, and multiple linear regression analysis was done to analyze the data. Findings indicated that the number of mental health visits and having a caseworker are important factors in appointment follow-up. The findings of this study have organizational and societal implications for social change. Government agencies as well as mental health advocates may benefit from the findings of this study, which can encourage more attention on the quality of care for those with mental health diagnoses. Thus, the findings may lead to developing improved care.

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Dedication

This dissertation is dedicated to my family. I would like to also dedicate this dissertation to a man who provided me with this answer, when I asked him this question, do you think that I can become a doctor in the field of psychology? Has it been done yet? “So, there you go, go ahead and do it” (Iloka, V., grandpa). I would also like to dedicate this dissertation to individuals who are survivors of domestic violence. Please know that everything is possible with God’s help and if you believe in yourself. Lastly and most importantly, this dissertation is dedicated to individuals diagnosed with mental illnesses and are having difficulties with their diagnosis and caring for themselves while dealing with such diagnosis.

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Chapter 1: Introduction to the Study

Introduction

Appointment follow-up is an important part in outpatient treatment programs for people who have a mental health diagnosis. Many strategies have been emerging to improve treatment engagement with a focus on identifying methods to change departmental strategies and overall approaches to the way individuals with mental illnesses are being treated. It is a challenge to engage individuals with mental illnesses into ongoing treatment. Evidence shows that there is a high disengagement rate, leading to poor clinical outcomes, relapse symptoms, emergency room visits, hospitalizations and or rehospitalizations (Dixon et al., 2016).

In this chapter, I provide the main topic of my study. This chapter is organized in the following way: background, problem statement, purpose of the study, research questions and hypotheses, the conceptual framework, nature of the study, definitions, assumptions, scope and delimitations, limitations, and significance of the study. I conclude the chapter with a summary of this study's main points.

Background of the Study

Many states, including New York State, have focused on enhancing the health of the population by addressing patients' health experiences and outcomes and per capita cost of care. Some initiatives have been focused on expanding and improving the quality and value within managed care contracts. For example, health home programs helps individuals with chronic conditions who might also have a dual diagnosis such as

substance usage and major depression or bipolar disorder and congestive heart failure (Gates & Rudowitz, 2014).

In addition to improving overall health, research has shown that enhancing the patients' experience in mental health services through patient-perspective of care can improve health outcomes (Carey, 2016). But there are organizational obstacles that impede accurate health care and positive health outcomes (Lawn, 2011). Follow-ups after hospital admissions are needed to lower the chances of psychiatric rehospitalization and suicide (Loch, 2014). However, there are barriers to appointment follow-ups such as low socioeconomic status Long et al. (2016). Appointment follow-up is important, especially as research continues to show that it is difficult to achieve at a high rate (New York State Department of Health Office of Quality and Patient Safety, 2015; Nuti et al., 2015).

Researchers have attempted to address this issue of low adherence to appointment follow-ups (Carey, 2016; Lawn, 2011; Lin & Wu, 2014; Loch, 2014; Long et al., 2016; Hoofnagle et al., 2007; New York State Department of Health Office of Quality and Patient Safety, 2015; Norbash et al., 2016; Nuti et al., 2015; Wu, Su, & Fu, 2012). However, though research has suggested that appointment follow-up is an important part of health recovery (Hoofnagle et al., 2007; Lin & Wu, 2014; Norbash et al., 2016; Wu et al., 2012), the focus continues to be on medical appointments in addition to medication adherence. This study was aimed at addressing the gap in knowledge in the field of psychology as it relates to the importance of appointment follow-up among individuals receiving psychological treatment, negative health outcomes, and hospitalizations.

Based on a review of the literature, there is no research on the relationship between appointment follow-up with a focus on mental health treatment, services, and negative health outcomes or future hospitalizations. Thus, this study can contribute to the literature in addition to affecting social change. For example, current research has shown that deterioration occurs when individuals with mental illnesses do not follow up with their appointments (Dixon et al., 2016). As a result, individuals are using the emergency room at a high rate, which impacts the per capita cost of care. This study has the potential to highlight the importance of appointment follow-up among individuals receiving psychological treatment, and it has the potential of addressing the gap in care within this population.

Problem Statement

It is not known how follow-up adherence is associated with outcomes of psychological patients at a family health center in New York. Follow-up refers to the timely surveillance of health status and guidance in a medical treatment regimen by various methods for patients who visited or were visited by medical staff (Lin & Wu, 2014). Adherence to follow-up is most commonly measured as the follow-up rate, which is also called the attendance rate (Lin & Wu, 2014). Appointment follow-up is an important part of health recovery (Hoofnagle et al., 2007; Lin & Wu, 2014; Norbash et al., 2016; Wu et al., 2012). For example, low appointment follow-up related to taking medication at preappointed times can reduce the effectiveness of the medication and may result in deterioration in health and possible hospitalization. Low follow-up of scheduled medical appointments can also affect health outcomes and increase the likelihood of

hospitalization. Although appointment follow-up is important, it is difficult to achieve at a high rate (New York State Department of Health-Office of Quality and Patient Safety, 2015; Nuti et al., 2015). According to several studies, only about 50% of patients adhere to medical treatment as prescribed (Brown et al., 2016; DiMatteo, 2004; Haynes et al., 2000; Luga & McGuire, 2014).

Multiple researchers have attempted to address the issue of low adherence to follow-up. For example, Vrijens et al. (2017) showed that appointment follow-up among patients taking blood pressure medication improved with medical supervision and patient-tailored and measurement-guided interventions, which can help achieve sufficient adherence to therapeutic drug regimens. Additionally, Smith et al. (2017) found that poor appointment follow-up among patients taking medication for dementia or cognitive impairment showed that there is a gap in knowledge on how specific cognitive domains contribute to medication nonadherence. However, Kannisto et al. (2014), Lin (2016), and Robotham et al. (2016) revealed that receiving a daily text message increased appointment follow-up among patients taking various types of medications.

Despite the research on appointment follow-up, there is a gap in the literature related to appointment follow-up associated with mental/psychological health treatment compliance. Therefore, this study was focused on the effects of appointment follow-up on emergency department visits/hospitalization for patients receiving psychological treatment/services in an intensive case management services compared to those who are not receiving case management services.

Purpose of the Study

The purpose of this quantitative, causal-comparative study was to determine to what extent patient appointment follow-up adherence at a family health center in New York predicts negative health outcomes and hospitalizations among patients receiving psychological treatment. Appointment follow-up to mental health treatment was measured by the rate of attended scheduled appointments within a 3-month period. I calculated the number of appointments attended during a successive 3-month period divided by the total of scheduled appointments during the same period. Hospitalization was measured as the number of times a patient was admitted to the hospital within the same 3-month period. Finally, negative health outcomes were measured by comparing the health status of a patient's treated health condition at the beginning and end of the 3-month period.

Research Questions and Hypotheses

The following research questions and hypotheses were intended to examine the efficacy of a family health center in New York through variables associated with appointment follow-up.

Research Question 1: Is the number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation, a significant predictor of the number of emergency room visits in the past 3 months?

H_0 1: The number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation, is not a significant predictor of the number of emergency room visits in the past 3 months.

H_{a1}: The number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation, is a significant predictor of emergency room visits in the past 3 months.

Research Question 2: Is there a significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation?

H₀₂: There is no statistically significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation.

H_{a2}: There is a statistically significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation.

Conceptual Framework

The purpose of this study was to determine to what extent patient appointment follow-up adherence at a family health center in New York is associated with negative health outcomes and hospitalizations among patients receiving psychological treatment. The theoretical framework that grounded the study is Ajzen's (1991) theory of planned behavior. The theory of planned behavior has been used to successfully predict and explain health behaviors that include smoking, drinking, health services utilization, breastfeeding, and substance use (Breuer et al., 2016; Cooke et al., 2014; Shi, Ehlers & Warner, 2014; Tengku Ismail et al., 2016). According to the theory of planned behavior, whether a planned behavior is executed depends on motivation (intention) and ability

(behavior control). This theory fit with the research, as it can serve as a framework for understanding whether a person will attend appointments after appointment follow up. According to the theory, appointment follow-up is more likely to be successful if the person both intends to keep his or her appointment and has the ability to attend the appointment.

Nature of the Study

The purpose of this study was to determine to what extent patient appointment follow-up adherence at a family health center in New York is associated with negative health outcomes and hospitalizations among patients receiving psychological treatment. A quantitative methodology was selected because it helps to confirm hypotheses and because it allowed me to use numerical data to determine whether appointment follow-up predicts emergency visits and the prevalence of negative health outcomes (see Muijis, 2012). I did not choose a qualitative approach because it is a subjective approach used to explore subjects (Creswell, 2014). The quantitative approach allowed me to assess whether there were statistically significant relationships between numeric variables, which was ideal for this study given that I used archival data (Creswell, 2014; Leedy & Ormrod, 2013). I also chose a quantitative approach because previous research conducted in this area have used the quantitative approach (Brown et. al., 2016; Brown & Bussell, 2011; DiMatteo, 2004; Haynes et al., 2000; Luga & McGuire, 2014).

Additionally, a causal-comparative design was used because the data for the independent variable was dichotomous (0 = no follow-up and 1 = received follow-up), and the data for the dependent variable was continuous (number of emergency visits).

The causal-comparative design is used to examine events that have already occurred and collect data to investigate a possible relationship between these events and subsequent characteristics or behaviors (Gates & Gates, 2013; Leedy & Omrod, 2013). This research design was appropriate for this study because there was no manipulation of the independent variables, and the events under observation (e.g., mental health follow-up and frequency of emergency room visits, which is an indicator of the number of negative health outcomes such as psychotic episodes, depression, delusions, and suicidal and homicidal thoughts) have already occurred.

Definitions of Terms

Care manager: A health care provider who provides care to patients by providing holistic care and by matching the patients' needs to services that help address those needs. A care manager plans and coordinates services in hospitals and clinics and ensures that healthcare facilities provide the most effective patient care. A care manager promotes comprehensive care management (Center for Medicare & Medicaid Services, 2018).

Health home program: A program that serves individuals with Medicaid who have two or more chronic conditions; who have one chronic condition and are at risk for a second one; and who have serious and persistent mental health conditions (Center for Medicare & Medicaid Services, 2018).

Psychological treatment: A general term for treating mental health problems via conversations with a psychologist, psychiatrist, or other mental health providers. During the treatment time, an individual learns about his or her diagnosis and his or her moods,

feelings, thoughts and behaviors. He or she would also learn coping skills to manage situations that are overpowering to his or her life (Mayo Clinic, 2018).

Assumptions

One assumption is that this study will promote changes in the way individuals with mental health needs are being provided clinical care. In addition, I assumed that the number of participants was going to meet the needs for the study and that this study was going to have enough statistical power to help future research. Moreover, I assumed that negative health outcomes can be turned into positive health outcomes and hospitalizations will be reduced. Finally, I assumed that the study will encourage organizations that provide mental health services to create interventions that will address people's health and health care cost.

Scope and Delimitations

One delimitation in this study was the focus on patients who have a mental health diagnosis and on the mental health diagnosis only. The rationale for this delimitation was to maintain homogeneity to the field of clinical psychology. Additionally, I was focused on individuals with a mental health diagnosis to align with the purpose of the study and not focus on overall medical health. Additionally, this study was only focused on patients from a specific family health center in New York.

Limitations

Research has viewed appointment follow-up adherence with attention on the medical aspect of a person's health care; however, I did not focus on individuals' medical diagnosis. One limitation that this study encountered is that it was not age specific.

Additionally, I did not look at patients from another family health center across New York. Thus, results do not generalize across conditions, ages, and in other hospital systems and parts of the country. This study also does not provide results specific to gender because I did not examine gender differences.

Significance of the Study

There is a lack of research on the relationship between follow-up of appointments for mental health treatment and negative health outcomes or hospitalizations. Consequently, the results of this study provide unique insights and contributions to the literature, as the results indicate that there is a significant relationship between appointment adherence and health outcomes and future hospitalizations. This study's results may lead to interventions and practices being developed to improve appointment adherence to minimize negative health outcomes. Finally, this study also has the potential to make a significant social impact given that the results are positive. If the interventions and practices to increase mental health appointment adherence are implemented on a widespread level in the mental health community, there should be an increase in adherence.

Summary and Transition

Appointment follow-up is an important part in outpatient treatment programs for people who have a mental health diagnosis. Many strategies have been emerging to improve treatment engagement because success in outpatient treatment programs requires that individuals adhere to their visits (Dixon et al., 2016). However, despite the evidence that aligns with the needs to address this issue, there is lack in research on appointment

compliance among individuals receiving psychological treatment. Thus, the purpose of this quantitative causal-comparative design study was to determine to what extent patient appointment follow-up adherence at a family health center in New York predict negative health outcomes and hospitalizations among patients receiving psychological treatment. The theoretical framework that grounded the study is Ajzen's (1991) theory of planned behavior. I used a quantitative methodology to determine, using numerical data, whether appointment follow-up predicted emergency visits and the prevalence of negative health outcomes.

The next chapter highlights further details on the importance of this study. The chapter also provides a review of the literature. Sections include the literature search strategy, theoretical foundation, and literature review related to key variables.

Chapter 2: Literature Review

Introduction

The purpose of this quantitative causal-comparative study was to determine to what extent patient appointment follow-up adherence at a family health center in New York predicts negative health outcomes and hospitalization among patients receiving psychological treatment. In this study, I attempted to demonstrate the importance of appointment follow-up, mental health treatment, and health outcomes. My intention was to investigate the difference between individuals having a caseworker and those who do not among people who have a psychological diagnosis. Appointment follow-up is an important part of health recovery (Hoofnagle et al., 2007; Lin & Wu, 2014; Norbash et al., 2016; Wu Su, & Fu 2012). However, about 50% of patients adhere to medical treatment as prescribed (Brown et al., 2016; DiMatteo, 2004; Haynes et al., 2000; Luga & McGuire, 2014).

Much research has been done on the importance of appointment follow-up, and many strategies have been emerging to improve treatment engagement. The focus of these strategies has been on identifying practical methods to change departmental strategies and overall approaches to the way individuals with mental illnesses are being treated. One of the initiatives is health home programs, which help individuals with chronic conditions and who might also have a dual diagnosis such as substance usage and major depression, or bipolar disorder and congestive heart failure, among other medical and mental health combinations (Gates & Rudowitz, 2014).

In this chapter, I include the literature review search strategies used for this study, the theoretical foundation of this study, and the literature review related to the rationale for this study.

Literature Search Strategy

To find peer-reviewed journal articles written within the appropriate time frame of 5 years, I searched Google Scholar, ProQuest Central, SAGE Publications, PsycINFO, Agency for Research and Quality, Mayo Clinic Proceeding, *The American Journal of the Medical Sciences*, *Patient Experience Journal*, *The Journal for Psychiatry and Neurological Sciences*, Health Psychology Review, Med Care, Pub Med Journal, Cochrane Database, U.S. National Library of Medicine National Institute of Health, Annals of Family Medicine, *Journal of Medical Internet Research*, PLoS ONE, Pearson Education, Psychology Research and Behavior Management, Science Direct Preventive Medicine, BMC Health Services Research, Implementation Science, and the New York State Department of Health-Office of Quality and Patient Safety. During my search, I noticed that there was not much research focused on appointment follow-ups among individual receiving mental health treatment. I used the following keywords to help in the search: *compliance and mental health*, *adherence and appointment follow-up*, *care coordination and mental health treatment*, *caseworker and adherence*, *depression and appointment follow-up*, *health care and compliance*.

Theoretical Foundation

To address the purpose the study, I used Ajzen's (1991) theory of planned behavior. The theory of planned behavior has been used to predict and explain health

behaviors that include smoking, drinking, health services utilization, breastfeeding, and substance use (Breuer et al., 2016; Cooke et al., 2014; Shi, Ehlers & Warner, 2014; Tengku Ismail et al., 2016). According to the theory, a behavior depends on motivation and ability. For instance, appointment follow-up is more likely if the person both intends to keep their appointment and has the ability to attend the appointment. Thus, this theory served as a framework for understanding whether a person will attend their appointment after appointment follow-up.

Literature Review

Implications of Past Research in Present Research

Quality of care. Quality care is important, especially in lower-income countries (Akachi & Kruk, 2017). Universal health care initiatives cannot be successfully executed if quality health care is not the main goal. Challenges include limited number of services, sensitive healthcare practices, and incomplete and unreliable data. To improve quality-of-care measurement that provokes people to follow up, changes have to be made in policy and the way care is to be provided (Akachi & Kruk, 2017).

Patient experience is also important in measuring and improving health care quality (Anhang et al., 2014). To have a high level of adherence in any type of prevention or treatment process, the patient's experience needs to be measured. Patients' experiences also need to be counted in patients' clinical outcomes and as part of the process to improve health care quality. Additionally, because it is important to comply with medical treatment, there is a need for preventive measures that will lead to adherence, to prevention, and better treatment process (Anhang et al., 2014). Individuals

and their experiences are important to consider in relation to receiving mental health care, the process of change, and improvement (Carey, 2016). It is important to include patients in decision making about their treatment, which involves viewing compliance from patients' perspectives rather than from a professional's perspective (Lawn, 2011). For example, individuals with intellectual disability and mental health problems have experienced distress and alienation, which suggests that they were not treated with dignity and respect (Venville, Sawyer, Long, Edwards, & Hair, 2015). Thus, it is important in how health care providers treat people and their expectations to follow up with care (Venville et al., 2015).

Intervention strategies for improving patient adherence to follow-up. Proper implementations of interventions for appointment follow-up can help in address patients' needs such as patients with diabetes (Nutti et al., 2016). Further, teamwork can provide cohesiveness that is needed across clinical interventions to obtain positive outcomes (Nutti et al., 2016). One of the ways to increase appointment follow-up is financial incentives. Research has indicated a positive correlation between appointment compliance and financial incentives, which improved habitual health-related behaviors and helped reduce health inequalities (Mantzari et al., 2015). However, these changes only last for a short period, and disease burden remained an issue (Mantzari et al., 2015). Thus, there are other variables that impede compliance. For example, individuals who suffer with medical problems often suffer from dual diagnosis and do not follow up in mental care or medical care (Mantzari et al., 2015). Therefore, it is important to find the best way to address appointment compliance.

Another way to improve patient adherence to follow-up is mobile technology (Lin & Wu, 2014). Lin and Wu (2014) suggested that using short message services and telephone reminders was an effective way of improving appointment follow-ups. However, more research needs to be conducted on addressing potential barriers.

Adherence and health care cost. Adherence causes a number of complications that can lead to hospitalizations and even death; typically when there is no appointment compliance, there is no medication adherence (Luga & McQuire, 2014). Thus, health care costs are higher when patients do not follow up. Some determinants of patient adherence need to be considered such as income and sociocultural factors, which affect health literacy, and behavioral factors, which relate to cognitive functions and mental illnesses (Luga & McQuire, 2014). Thus, collaboration is needed to achieve medication compliance and address these determinants (patient related, provider related, and external factors). Noncompliance affects the cost of health care and individuals' ability to receive care and to recover from aftercare, meaning that when individuals undergo certain procedures, they might not be able to follow up. Making sure that patients have accessibilities to comply with their appointments is a part of proper discharge follow-up (Torpie, 2014).

Predictors and barriers of follow-up. There are demographic and clinical predictors of outpatient mental health clinic follow up after inpatient psychiatric hospitalization (Marino et al., 2016). Research has indicated that approximately 51% of young adults enrolled in Medicaid attended their follow-up appointment with outpatient facilities when appointments were made within 30 days after initial discharge from the

hospital. However, a cooccurring substance use disorder meant that they were more likely to follow up after 180 days only if they have had prior outpatient mental health services. Findings have also indicated that low income/socioeconomic status, age, being male, substance, having a comorbid disorder, and the severity of the mental illness were all predictors for the lack of follow up (Long et al., 2016; Marino et al., 2016). Mental health issues like delusions, motivation gaps, psychotic disorganization, and personal hostility also lead to emergency visits and poor follow-up (Cakir, Ilnem, & Yener, 2010). Moreover, transitional support is important to have positive outcome in appointment follow-ups (Marino et al., 2016).

Follow-up is important because it prevents negative health outcomes and rehospitalization. Patient follow-up after discharge from medical hospitalization lowers the chances of psychiatric rehospitalization and suicide (Loch, 2014). Additionally, consistent and regular follow-up reduces the need for hospitalization (Carlos Jackson et al., 2015). Such revisits to hospitals include emergency admissions.

The role of care coordination. Avery (2014) emphasized the importance of caseworker and care coordination in addressing the American health care crisis that has fragmented the U.S. Health Care System. The author highlights that individuals suffering from mental illness are at a greater risk of chronic health conditions and increased mortality as well as a high level of health care disparities. The author discussed factors that have been contributors to the health care crisis, including changes in diet and lifestyle. In addition, other factors that were highlighted were the lack of screening and outreach to identify changes in health care. Avery (2014) continues his argument

indicating that a fragmented health care system causes poor health outcomes; only 40% of individuals with depression in the United State receive treatment and that less than half of those received adequate care. Information provided by the author provides much emphasis on collaborative care and caseworkers/care managers as team players as a great system working toward repairing the U.S. health care system.

In 2016, the Agency for Healthcare Research and Quality also highlighted that care coordination or better said having a caseworker/care manager, is essential for improving health care and having positive health outcomes. The agency highlighted on the importance of preventable emergency department visits and avoiding hospitalization, which can be improved with the support of caseworkers'/care managers' support.

Summary and Conclusions

Chapter 2 contained a literature review about research studies that are related to the construct of interest and the chosen methodology that has been chosen with a focus on this study. I was able to investigate further about why appointment follow-up is an important part in outpatient treatment programs for people who have a mental health diagnosis. I provided information that demonstrates that appointment follow-up is an issue that needs to be addressed. Furthermore, I introduced information about the number of strategies that have been emerging in past years to improve treatment engagement. I also provided information that showed that despite the evidence supporting the need to improve appointment follow-up, there is a deficit in research that focus on appointment compliance among individuals receiving psychological treatment. In this literature review, I included studies that inform us about the negative

consequences of non-compliance and how not following up with appointments causes disparities in the health care system. This study had a focus on individuals receiving mental health treatment. To fill the research gap, I investigated on appointment follow-up with a focus on people with mental illnesses. What is known is that individuals are having a hard time following up with their appointments. What is not known is how to address the problem as it is now affecting Medicaid costs.

This study has the potential to have a practical application. The hope is that mental health services providers would become empowered to create the appropriate interventions. I have investigated on the importance of appointment follow-up looking at various researches (Akachi & Kruk, 2017; Carey, 2016; Lawn, 2017; Lin & Wu, 2014; Nuti et al., 2015). Among those were the impact of intervention on appointment and clinical outcomes, beyond patient-centered care, quality of care, compliance, concordance, and patient-centered care, and intervention and strategies for improving patient adherence to follow-up and others.

The literature review process provided me with a lot of information that further clarified the purpose of this study. The review highlighted the importance of appointment follow-up on individuals with mental illness and provided me a greater emphasis for the need of appropriate interventions to address the issue (Carey, 2016; Dixon et al., 2016; Gates & Rudowitz, 2014; Lawn, 2011; Loch, 2014; Long et al., 2016; Nuti et al., 2015; New York State Department of Health Office of Quality and Patient Safety, 2015).

Chapter 3: Research Method

Introduction

The purpose of this quantitative causal-comparative study was to determine to what extent patient appointment follow-up at a family health center in New York predicts negative health outcomes and hospitalization among patients receiving psychological treatment. Appointment follow-up is an important part in outpatient treatment programs for people who have a mental health diagnosis. Many strategies have been emerging to improve treatment engagement, as a high disengagement rate leads to poor clinical outcomes, relapse symptoms, emergency room visits, hospitalizations and or rehospitalizations (Dixon et al., 2016). This study aimed to answer the following research questions:

Research Question 1: Is the number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation, statistically significantly in predicting the number of emergency room visits in the past 3 months?

Research Question 2: Is there a statistically significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation?

There is a lack of research supporting the importance of appointment follow-up among individuals receiving psychological treatment. Appointment follow-up is a problem that affects not just the individual but also the health care system and health insurance per capita (Hoofnagle et al., 2007; Lin & Wu, 2014; New York State Department of Health-Office of Quality and Patient Safety, 2015 Norbash et al., 2016;

Nuti et al., 2015; Wu et al., 2012). The results of this study could contribute to the literature related to whether relationships between appointment adherence and health outcomes and future hospitalizations are significant. Information obtained in this study can inform organizations about the needs surrounding the mental health population. In this chapter, the research design, rationale, methodology, threats to validity, and ethical procedures are discussed. The chapter concludes with a summary.

Research Design and Design Rationale

I applied a quantitative causal-comparative design, which is also referred to as the ex-post facto design, because it is used to find relationships between the independent and dependent variables and determine any relationships among groups. This design is used to evaluate the relationship between the independent and dependent variables after an event or action has occurred (independent and dependent variables) and characteristics and behaviors (Leedy & Ormrod, 2018). The causal-comparative design was appropriate for this study because I sought to understand the relationship between the independent variables that have already occurred (e.g., number of mental health visits and caseworker status) and a continuous dependent variable that has already occurred (e.g., number of emergency room visits in the past 3 months). In this study, there were four control variables, two independent variables, and one dependent variable. The control variables were age, gender, and socioeconomic status, (0 = have a car; 1 = do not have a car). The first independent variable was the number of mental health follow-up appointments. The second independent variable was caseworker status (have a caseworker vs. do not have a caseworker). Finally, the dependent variable was number of emergency room visits in

the past 3 months. There were no direct manipulations of the independent variable with the causal-comparative design, so no causal conclusions can be made.

Additionally, I used a quantitative approach because the qualitative methodology was not appropriate for this study. The qualitative methodology uses open-ended survey questions, as opposed to the closed-ended questions used in this study (Creswell, 2014). Further, the qualitative method is considered an inductive approach that seeks to answer *how* and *why* questions (Creswell, 2014). Thus, the quantitative method was the appropriate method for this study.

Methodology

Population

The general population refers to the group of people to which the research outcomes can be generalized (Leedy & Ormrod, 2018). For this study, the general population was mental health patients in the United States who receive outpatient treatment. There are approximately 8.9 million adults suffering from mental illnesses in the United States every year. Only 44% of these individuals have received outpatient services (American Psychological Association, 2018). The target population is defined as the subset of the general population from which respondents will be recruited (Leedy & Ormrod, 2018). In this study, the respondents were recruited from a family health center in New York.

Sampling and Sampling Procedures

A probability sampling approach includes random sampling techniques to create a sample, but a nonprobability sampling approach uses a nonrandom process for creating a

sample (Leedy & Ormrod, 2018). I used a nonprobability sampling approach, where all patients who have been in the outpatient treatment program for at least 1 year were included in the study. This sampling approach was chosen for two reasons. First, because all the data were in archival formats and were relatively easy to access. Second, patients with a minimum of 12 months were chosen because given the rate of new patients at the family health center in New York, this would produce a minimum sample size of 80 respondents. Thus, psychological patients who have been in the outpatient program at the family health center in New York for at least 12 months were included and those who were excluded had been patients for less than 12 months. Men and women were included to create a balance. Participants ranged in demographic data that included age, gender, and socioeconomic status.

Power Analysis

A power analysis was conducted using G*Power (Erdfelder & Buchner, 1996) to determine the minimum sample sized needed to conduct this study with a statistical power of .80. The sample size was calculated for a multiple linear regression with four control variables and two independent variables. A medium effect size ($f^2 = .15$) and an error probability of .05 were used to calculate sample size. The results of the power analysis indicated a minimum sample size of 98 needed for this study (see Figure 1).

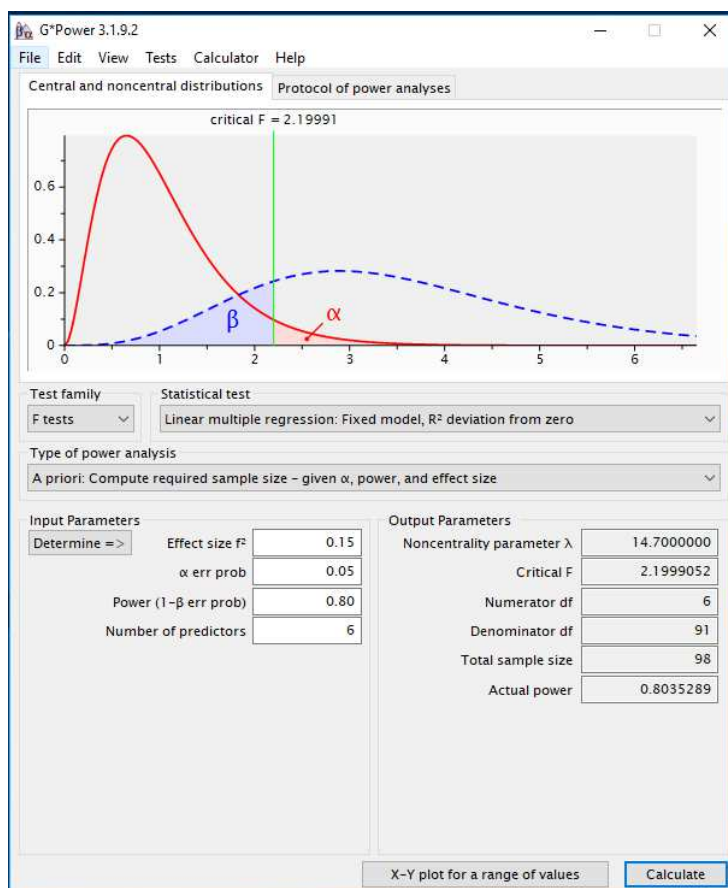


Figure 1. G*Power sample size results.

Procedures for Recruitment, Participation, and Data Collection

Data for this study were housed at a family health center in New York. The archival data only included mental health patients who have been receiving outpatient care from the family health center for at least 12 months. The archival data consisted of age, gender, socioeconomic status, follow-up appointments kept and missed, caseworker status, and number of emergency visits in the past 3 months. The archival data file did not contain any personally identifiable information. Only arbitrary numbers were used to identify patients. I corresponded with the department of research at the family health center in New York and followed up with the appropriate protocols that serve as

guidelines to gain permission to use the archival data. In addition, I also conformed to Walden University's IRB guidelines for using archival data.

The specific steps for accessing the data were as follows: I contacted the director of patient records and submitted a request for the specific data requirement. Upon their review and interest, the director of patients' records and appointed personnel provided an excel file of patients who have received mental health treatment for at least 12 months at the family health center in New York. Only patient data contained in the data file were used for this study. Once the data file was received from the director of patient records, it was imported into SPSS. Once the data were imported into SPSS, the sample size was examined to determine if it met the minimum required by the power analysis. Finally, after the sample size requirements were met, the data collection process ended, and the data analysis phase began. The sample size requirements were not met at first try, so an additional request for sample was placed with the director of patients' records and individuals in charge of providing permission.

Archival Data

Archival data were used for this study because clinical information about individuals with mental health illnesses is sensitive and are protected under government regulations and includes no personal identifiable information. In addition, information would be more accurate because depending on the severity of the diagnosis, people often forget if they followed up. Research shows that individuals with mental health diagnosis are an at-risk population. Therefore, their willingness and or abilities to respond might be low or inaccurate, which is why using archival data helped me find the information

needed for the study. Additionally, archival data go directly to the source, allowing the researcher to have access to specific information with specific details, and archival data are excellent sources because the data have already been collected (Vartanian, 2011). In addition, such data can be valuable and have not been analyzed.

Data Analysis

The objective of this data analysis was to explore the following research questions and test the formulated hypotheses.

Research Question 1: Is the number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation, a significant predictor of the number of emergency room visits in the past 3 months?

H_01 : The number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation is not a significant predictor of the number of emergency room visits in the past 3 months.

H_a1 : The number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation is a significant predictor of emergency room visits in the past 3 months.

Research Question 2: Is there a significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation?

H_02 : There is no statistically significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation.

H_{a2} : There is a statistically significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation.

For the first research question in this study, a multiple linear regression model was used to determine if the number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation, significantly predicts the number of emergency room visits in the past 3-months.

For the second research question, a dummy multiple linear regression model was used to determine if there is a significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation (Field, 2013; Tabachnick & Fidell, 2013). According to Field (2013), "...ANOVA is just a special type case of regression. This surprises many scientists because ANOVA and regression are used in different situations" (p. 350). Field (2013) continues saying, "...the variance-ratio method becomes extremely unmanageable in unusual circumstances such as when you have unequal samples sizes. Therefore, just as the independent sample t -test could be represented by the linear regression equation, ANOVA can be represented by the multiple regression equation in which the number of predictors is one less than the number of categories of the independent variable" (p. 350). In the multiple linear regression model, caseworkers' status was coded as 0 for no- caseworkers, and 1 for having a caseworker. If, after entering the control variables, the p -value is significant,

then there is a statistically significant mean difference in the number of emergency room visits during the previous three months (Field, 2013; Tabachnick & Fidell, 2013).

After the data collection period ended, the data were imported into SPSS v22. There were three phases in the data analysis process. They include the data preparation phase, the preliminary analysis phase, and the primary analysis phase. In the data preparation phase, data are first checked for data entry errors and missing values. If errors or missing values are found, the original data source were checked to correct the errors. If the data entry errors cannot be corrected, the respondents with incomplete data errors were excluded from the analyses. Similarly, any participant who had missing data were excluded from the analysis. To avoid the possibility that, after excluding any incomplete data, the sample size might become smaller than the required minimum sample size, more than the minimum data were collected.

The second phase was the preliminary analysis phase. During this phase, the parametric assumptions of the regression analysis model were tested. These included linearity, homoscedasticity, normality of the standardized residuals, and multicollinearity (Field, 2013; Tabachnick & Fidell, 2013). To test for linearity and homoscedasticity, plots of the standardized residuals and standardized predicted values were reviewed. If the plots are curvilinear, then there is violation in the assumption of linearity (Field, 2013; Tabachnick & Fidell, 2013). Additionally, if the shape of the plots is rectangular or uniform in shape, then there is no violation of the assumption of homoscedasticity. Normality is tested by generating a histogram of the standardized residuals. If the histogram is relatively normal in shape, then there is no violation of the assumption of

normality. Finally, the variance inflation factor (VIF) is used to determine multicollinearity. If the VIF for each variable is less than 10, then there is no issue with multicollinearity (Menard, 1995).

The final phase is the primary analysis phase. During this phase, two multiple linear regressions analyses were used to test the null hypotheses of research questions one, and two. For both regression analyses, the control variables age, gender, and socioeconomic status, along with the independent variables were entered into the model. According to Field, (2013), “the *F*-test tells us whether using the regression model is significantly better at predicting value of the outcome than using mean of the outcome” (p. 202). For both research questions, one and two, if the *p*-value is less than .05, then the respective null hypothesis is rejected. Thus, indicating, that for the first hypothesis, the number of mental health follow-up appointments is a good predictor of emergency room visits, while statistically controlling for age, gender, socioeconomic status, and transportation. Similarly, for the second hypothesis, if the null hypothesis is rejected, then there is a statistically significant mean difference in the number of emergency room visits between those who have a caseworker and those who do not while controlling for age, gender, socioeconomic status, and transportation.

Threats to Validity

External Validity

This study was based on the archival data from a family health center in New York databases. Participants in this study were males and females with mental health diagnosis. This study attempted to determine the extent of patients’ appointment follow-

up and how such might predict future negative health outcomes and future hospitalizations. The setting for this study was a family health center in New York looking at those patients who have a caseworker and have been in the program for approximately 12 months. The research questions were: (a) Is the number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation significantly predict the number of emergency room visits in the past 3 months? and, (b) Is there a significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation? The hope is that the results of this study can be applied outside the family health center in New York and that other researchers will be able to replicate and provide further recommendations on how to best address the needs of individual with mental illnesses receiving psychological treatment.

Ethical Considerations

This study was conducted in a clear and succinct manner. The aim at providing clarity and being concise helped prevent any conflict, not just in the process of gaining permission, but also at the time of data analysis. I obtained permission from a family health center in New York to use the archival data necessary for the study; I complied with Walden University IRB's process for using archival data. I maintained confidentiality at all times. Participants' information were kept anonymous; information was kept secure in my home where my work was done; the data file will be kept in a secure computer that has no access to the internet, for three years. After three years, the files will be destroyed from my computer. I will protect the integrity of both Walden

University and the family health center in New York who granted permission. I did not have access to the data until Walden's IRB granted me permission to do so (IRB approval no. 12-03-18-0433621).

Summary

Chapter 3 discussed the purpose of the study, the methods that were used in this study and the tools that were used to assess participants and their behavioral patterns. This chapter included the research design and the rationale for such; it also included the methodology; this chapter also included the study's population, sampling and sampling procedure, the setting, the number of participants, the analysis, and the ethical considerations. This study acquired data from a family health Center in New York Health Systems. I used a quantitative casual-comparative design, sometimes referred to as ex-post facto research. Multiple linear regressions models were used to evaluate the relationships between the independent and dependent variables.

Chapter 4 addresses the results and shows findings about the needs of individuals with mental illnesses and their struggles when receiving treatment. It also provides additional information for future work on appointment follow-ups among individuals receiving psychological treatment. This chapter describes the results using tables that will best display the findings. The analysis explains as well as the research questions and hypotheses and the significance of the research questions in relation to the study.

Chapter 4: Results

Introduction

Appointment follow-up, mental health treatment, and health outcomes are essential topics to building a health care system that values patients' care and the quality of that care. Appointment follow-up is important for health recovery (Hoofnagle et al., 2007; Lin & Wu, 2014; Norbash et al., 2016; Wu Su, & Fu 2012). Research has been done on the importance of appointment follow-up to address the issue of low adherence and the high disengagement rate that leads to poor clinical outcomes, relapse symptoms, emergency room visits, hospitalization and rehospitalizations (Dixon et al., 2016). Many strategies have also been emerging about the way individuals with mental illnesses are being treated.

The goal of this study was to investigate how having a caseworker benefits individuals with a mental health diagnosis and determine their abilities to follow-up with their mental health appointments. The purpose of this quantitative causal-comparative design study was to determine to what extent patient appointment follow-up adherence at a family health center in New York predicts future negative health outcomes and future hospitalization among patients receiving psychological treatment. The research questions and hypotheses that frame this study are:

Research Question 1: Is the number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation, a significant predictor of the number of emergency room visits in the past 3 months?

H_01 : The number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation, is not a significant predictor of the number of emergency room visits in the past 3 months.

H_a1 : The number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation, is a significant predictor of emergency room visits in the past 3 months.

Research Question 2: Is there a significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation?

H_02 : There is no statistically significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation.

H_a2 : There is a statistically significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation.

This chapter covers six topic areas. A description of the sample is given, followed by the summary of results. Next, the detailed results are provided, which include the three phases of the data analysis process, data preparation, preliminary analysis, and primary analysis. Finally, this chapter concludes with a chapter summary.

Data Collection

I used archival data from a family health center in New York. The respondents were mental health patients who have been receiving outpatient care from a family health

center in New York for at least 12 months. The archival data file variables were age, gender, socioeconomic status, transportation status, follow-up appointments kept and missed, caseworker status, and number of emergency visits in the past 3 months. No personally identifiable information was contained in the data file. I used a nonprobability sampling approach, where all patients who have been in the outpatient treatment program for at least 1 year were included in the study.

Sample

A power analysis was conducted using G*Power (Erdfelder & Buchner, 1996) to determine the minimum sample sized of 98 respondents needed to conduct this study with a statistical power of .80. There were 329 total respondents in this study, of which 43.8% were male. The average age of the respondents was 43.6 years ($SD = 16.2$), and respondents were just below the poverty level at 90%. Federal poverty level percentage is calculated by dividing income by the poverty guideline form from the federal government and multiplying that by 100 (e.g., 1 person household = $(\$10,000/\$12,060) * 100 = 82.9\%$; HealthCare.gov). Therefore, percentages below 100 are incomes below the poverty level and percentages greater than 100 are incomes above the poverty level. None of the respondents needed transportation and most (89.4%) did not have an active caseworker. Complete details of the respondent demographics are contained in Table 1.

Table 1

Frequencies for Demographics

	<i>N</i>	%	<i>M</i>	<i>SD</i>
Age	329		43.60	16.10
Gender				
Male	144	43.8%		
Female	185	56.2%		
Needs Transportation				
No	329	100%		
Yes	0	0%		
Has Caseworker				
No	294	89.4%		
Yes	35	10.6%		
Poverty Level				
Percent Below Poverty Level	227	69.0%		
Percent Above Poverty Level	97	29.5%		
Follow-up Visits				
No	60	18.2%		
Yes	269	81.8%		
Emergency Room Visits				
No	0	0%		
Yes	329	100%		

Data Analysis and Results

Before the analyses were conducted to answer the two research questions, the data were examined for errors and missing values using the frequencies procedure in SPSS. There were 569 initial respondents in the data file. There were three respondents who had data errors for age, where the age was indicated as 90+. These three respondents were given the age of 90 because 90+ is non-descript, and there was no indication of what age values were selected. Additionally, the lowest value of the range was 90; therefore, all respondents were at least 90 years old. There were no other respondents or variables with data errors. There were 240 respondents who did not have a socioeconomic designation (federal poverty level percentage value). These respondents

were removed from the study. This left a total of 329 respondents. Missing value analysis indicated that there were no statistically significant differences in number of emergency room visits or number of follow-up visits between the group with missing socioeconomic data and those with non-missing socioeconomic data. See Table 2 for results of the independent samples *t* test.

Table 2

Independent Samples T Test for Emergency Room and Follow-Up Visits

	Missing		Non-Missing		<i>t</i>	<i>Df</i>	<i>p</i>	Mean Difference	95% CI
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
ED Visits	8.95	12.38	11.23	21.11	-1.58	580	.132	-2.28	[-5.26 - .69]
Follow-up Sum	4.52	6.76	5.77	9.88	-1.71	580	.089	-1.25	[-2.69 - .19]

Note. Calculated by missing value status of socioeconomic variable

Research Question 1

Is the number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation, a significant predictor of the number of emergency room visits in the past 3 months?

To address this research question, a multiple linear regression analysis was conducted. The independent variable was number of mental health follow-up appointments (continuous), and the control variables were age (continuous), gender (nominal), socioeconomic status (continuous), and transportation status (nominal). Because none of the respondents needed transportation, this variable was not entered into the analysis. The dependent variable was number of emergency room visits

(continuous). Before the regression analysis was conducted, the assumptions of the linear regression model were tested. These included normality of the standardized residuals, linearity, multicollinearity, and homoscedasticity (Field, 2018 & Pallant, 2016). The results of these tests follow.

Multicollinearity was measured using the VIF. VIF scores for the variables were below the value of 10 threshold (Field, 2018 & Pallant, 2016). The VIF for socioeconomic status was 1.04, gender was 1.02, age was 1.04, and follow-up was 1.02. The test of normality of the standardized residuals revealed that the histogram was relatively normal. Therefore, data may be assumed to be normally distributed (see Figure 2).

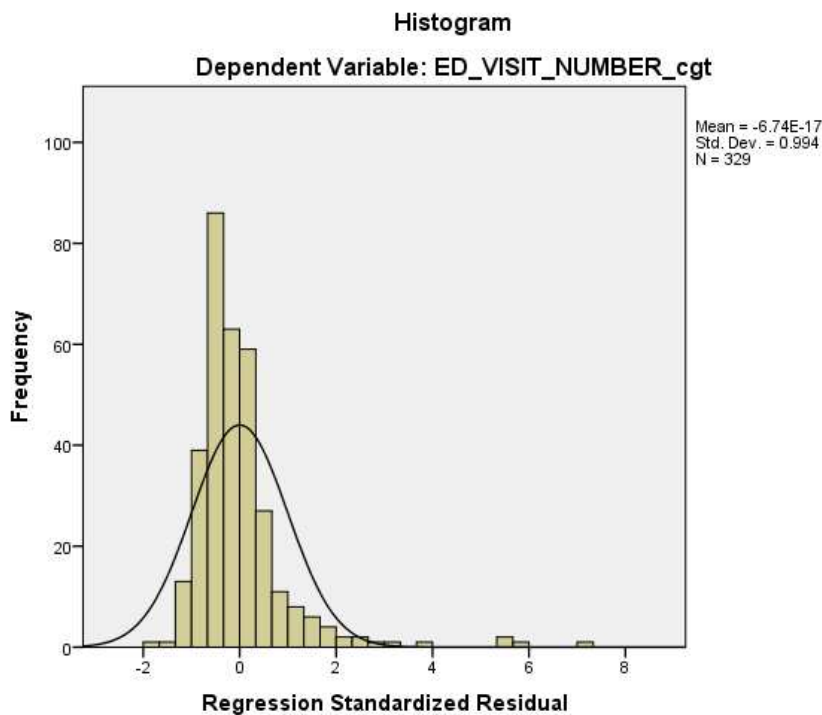


Figure 2. Histogram of the standardized resituedeal is relatively normal.

To test linearity and homoscedasticity, plots of the standardized residuals were created and the standardized predicted values were computed. The plots revealed no curvilinear shape, so therefore, there was no violation in linearity (Field, 2018 & Pallant, 2016). Additionally, the plots were generally rectangular in shape, indicating no violation in homoscedasticity (see Figure 3).

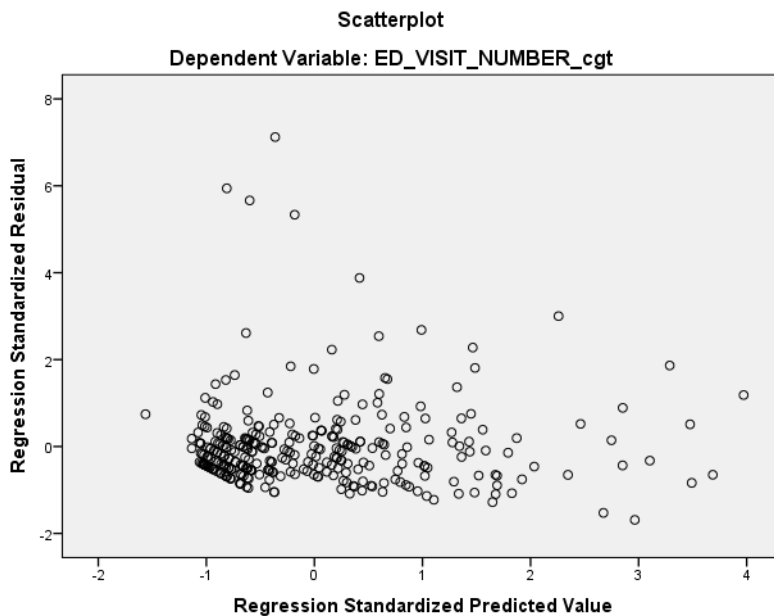


Figure 3. Plot of the standardized residuals and the standardized predicted value. The plot is relatively rectangular in shape, indicating no violation in linearity or homoscedasticity.

When the multiple regression analysis was performed with the control variables; age, gender, and socioeconomic status, the model was not significant, $F(3, 325) = 2.29$, $p = .078$, $R^2 = .021$. However, when follow-ups was added to the model, the model became statistically significant, $F(4, 324) = 142.53$, $p < .001$ where the amount of variance explained by the model was 63.8% ($R^2 = .638$), see Table 4. The change in R^2 from .021 to .638 was significant, $p < .001$, see Table. A review of the coefficients indicated that

two independent variables made a significant contribution to the final model, as shown on Table 5. Socioeconomic status (federal poverty level percentage) was significant ($Beta = -.08, p = .015$), indicating that increases in socio-economic status were associated with decreases in emergency room visits. Follow-ups also made a significant contribution to the model ($Beta = .794, p < .001$), where increases in follow-ups were associated with increases in emergency room visits. This is because the number of follow-up visits was associated with the length of time in the treatment program.

Table 3

Model Summary for Research Question 1

Model	R	R ²	Adjusted R ²	SE of estimate	R ² change	Change statistics			
						F change	df1	df2	Sig. F change
1	.144	.021	.012	7.42469	.021	2.289	3	325	.078
2	.799	.638	.633	4.52337	.617	551.619	1	324	.000

Table 4

Regression ANOVA for Research Question 1

Model		SS	df	MS	F	p
1	Regression	378.532	3	126.177	2.289	.078
	Residual	17915.955	325	55.126		
	Total	18294.486	328			
2	Regression	11665.151	4	2916.288	142.530	.000
	Residual	6629.335	324	20.461		
	Total	18294.486	328			

Table 5

Regression Coefficients for Research Question 1

Model	Unstandardized coefficients		Standardized coefficients			Collinearity statistics	
	B	SE	Beta	t	P	Tolerance	VIF
1							
Constant	11.380	1.324		8.596	.000		
Gender	.351	.830	.023	.424	.672	.989	1.011
FPL %	-.006	.003	-.120	-2.153	.032	.965	1.036
Age	-.047	.026	-.101	-1.812	.071	.973	1.027
2							
Constant	4.491	.858		5.233	.000		
Gender	-.846	.508	-.056	-1.664	.097	.979	1.021
FPL %	-.004	.002	-.083	-2.443	.015	.963	1.038
Age	-.008	.016	-.017	-.503	.616	.963	1.039
Follow-up	1.216	.052	.794	23.487	.000	.980	1.021

Note. FPL = federal poverty level

Research Question 2

Is there a significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation?

To address Research Question 2, a multiple regression analysis was conducted using a dichotomous caseworker status variable and the control variables of age, gender, and socioeconomic status. If the caseworker variable is significant, that means that there is a statistically significant mean scores difference in number of follow-up appointments between those who have a caseworker and those who do not (Field, 2018 & Pallant, 2016). Like analysis of covariance, the linear regression is a general linear model (Hair et. al., 2018; Tabachnick & Fidell, 2012). The advantage of using regression over ANCOVA is related to ANCOVA's limitations associated with homogeneity of variance of regression slope, which is very difficult to achieve. Given this, Hair et. al., (2018) and

Tabachnick and Fidell, (2012) recommend alternative approaches, including dummy variable multiple regression. Therefore, the multiple regression was chosen to address this research question.

As discussed previously, the assumptions of the linear regression model were tested. These included normality of the standardized residuals, linearity, multicollinearity, and homoscedasticity (Field, 2018 & Pallant, 2016). The results of these tests follow.

Normality was not violated, as the histogram of the standardized residuals was relatively normal (see Figure 4). Additionally, there was no violation in the assumption of multicollinearity, as none of the variables has a VIF value of 10 or greater (see Table 8). The scatterplot of the standardized residuals and the standardized predicted values indicated that there was no violation in the assumption of linearity, as the plots were not curvilinear in shapes. Finally, there was no violation in homoscedasticity, as the plots were relatively rectangular in shape (see Figure 5).

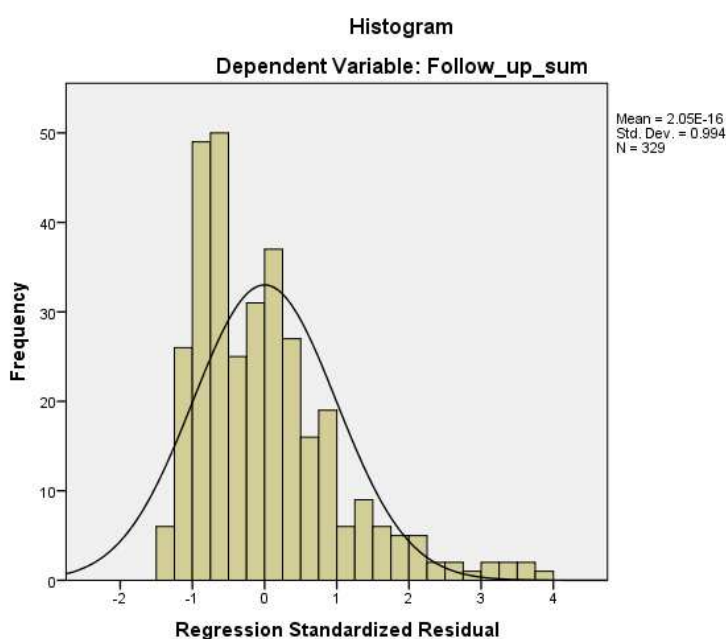


Figure 4. Histogram of the standardized residual is relatively normal.

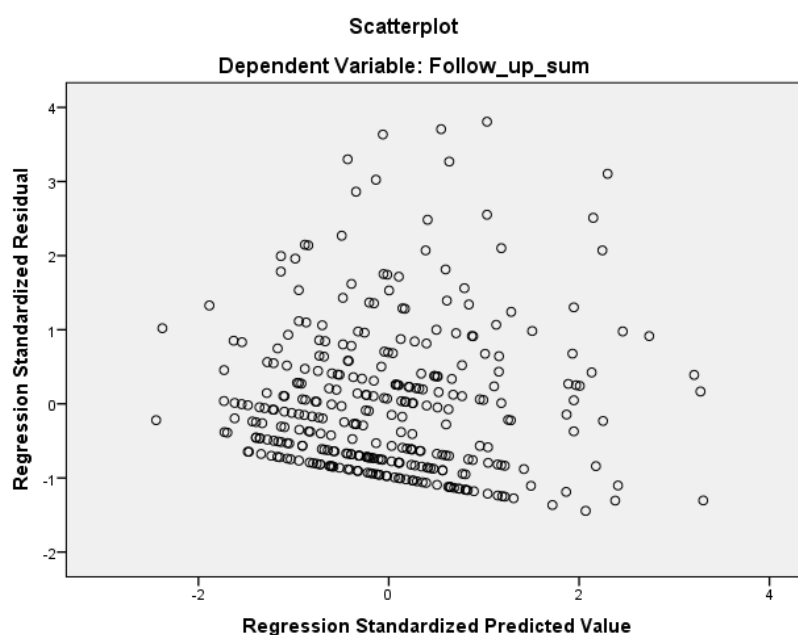


Figure 5. Plot of the standardized residuals and the standardized predicted value. The plot is relatively rectangular in shape, indicating no violation in linearity or homoscedasticity.

Initially, the control variables were added to the model, where the dependent variable was number of follow-ups. These included age, gender, and socioeconomic status. The results indicated that the model was not significant, $F(3, 325) = 2.25, p = .082, R^2 = .020$. However, when caseworker status ($0 = \text{no}, 1 = \text{yes}$) was added to the model, the model became statistically significant, $F(4, 324) = 4.15, p = .03$ where the amount of variance explained by the model was 4.9% ($R^2 = .049$), see Table 7. The change in R^2 from .020 to .049 was significant, $p = .002$, see Table 6. A review of the coefficients' table indicated that two predictor variables made a significant contribution to the final model, as shown on Table 8. Gender was significant ($Beta = -.13, p = .017$), indicating that females ($M = 5.08, SD = 5.29$) had significantly more follow-ups than

males ($M = 4.17$, $SD = 4.24$). Caseworker status ($0 = \text{no}$, $1 = \text{yes}$) also made a significant contribution to the model ($Beta = .171$, $p = .002$), where those who had a caseworker ($M = 6.77$, $SD = 5.71$) had significantly more follow-ups than those with no caseworker ($M = 4.43$, $SD = 4.71$). Based on these results of the entire model, the null hypothesis (the number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation is not a significant predictor of the number of emergency room visits in the past 3-months) was rejected.

Table 6

Model Summary for Research Question 2

Model	R	R ²	Adjusted R ²	SE of estimate	R ² change	Change statistics			
						F change	df1	df2	Sig. F change
1	.143	.020	.011	4.84615	.020	2.254	3	325	.082
2	.221	.049	.037	4.78289	.028	9.655	1	324	.002

Table 7

Regression ANOVA for Research Question 2

Model		SS	df	MS	F	p
1	Regression	158.795	3	52.932	2.254	.082
	Residual	7632.695	325	23.485		
	Total	7791.489	328			
2	Regression	379.656	4	94.914	4.149	.003
	Residual	7411.834	324	22.876		
	Total	7791.489	328			

Table 8

Regression Coefficients for Research Question 2

Model	Unstandardized coefficients		Standardized coefficients			Collinearity statistics	
	B	SE	Beta	t	p	Tolerance	VIF
1							
Constant	5.665	.864		6.557	.000		
Gender	-.032	.017	-.105	-1.895	.059	.973	1.027
FPL %	.984	.542	.100	1.818	.070	.989	1.011
Age	-.002	.002	-.047	-0.835	.404	.965	1.036
2							
Constant	5.682	.853		6.663	.000		
Gender	-.040	.017	-.133	-2.395	.017	.948	1.055
FPL %	1.037	.535	.106	1.940	.053	.988	1.012
Age	-.001	.002	-.036	-.651	.516	.961	1.040
Follow-up	2.705	.870	.171	3.107	.002	.965	1.036

Note. FPL = federal poverty level

Summary

There were two research questions in this study. The first research question asked if the number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation is a significant predictor of the number of emergency room visits in the past 3 months. The results indicated that after controlling for age, gender, and socioeconomic status, mental health follow-up appointments was a significant predictor of number of emergency room visits. The second research question asked if there is a significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation. The results indicated that those who had a caseworker had significantly more follow-ups than those with no caseworker.

In Chapter 5 the results of the study are discussed in the context of the literature review and the theoretical framework. Chapter 5 also includes a discussion of the

limitations, recommendations for future research and implications of the study. The chapter ends with the chapter conclusions.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative study was to determine to what extent patient appointment follow-up adherence at a family health center in New York predicts negative health outcomes and hospitalizations among patients receiving psychological treatment. Archival data were obtained from an urban community outpatient family health center database to examine risk factors that contribute to appointment follow-up. Archival data are excellent sources because the data have already been collected (Vartanian, 2011). The archival data consisted of age, gender, socioeconomic status, transportation status, follow-up appointments kept and missed, caseworker status, and number of emergency visits in the past 3 months.

I used a quantitative causal-comparative design, which is also referred to as the ex-post facto design because it is used to find relationships between the independent and dependent variables or determine any relationships that already exist among groups. There were no direct manipulations of the independent variable with the causal-comparative design, so no causal conclusions can be made. The causal-comparative design helped to understand the relationship between the independent variables (number of mental health visits and caseworker status) and a continuous dependent variable (e.g., number of emergency room visits in the past 3 months). The following research questions were addressed: “Is the number of mental health follow-up appointments, controlling for age, gender, socioeconomic status, and transportation, a significant predictor of the number of emergency room visits in the past 3 months?” and “Is there a

significant mean difference in mental health follow-up appointments between those who have a caseworker and those who do not, controlling for age, gender, socioeconomic status, and transportation?” A multiple linear regression analysis was conducted to address these questions. Null hypotheses for both research questions were rejected, as results revealed statistically significant mean scores.

Interpretation of the Findings

In this quantitative research study, I tested the hypotheses for two research questions. Based on the results, there are variables that are influential to appointment follow-up among individuals receiving psychological treatment. Evidence showed that the number of mental health visits and having a caseworker are important factors in appointment follow-up.

The literature also provides evidence that indicates that demographic and clinical predictors are important to consider among individuals in outpatient mental health clinics (Marino et al., 2016). The literature indicated that patient follow-up after discharge from medical hospitalization and regular follow-ups lowers the chances of psychiatric rehospitalization and suicide (Carlos Jackson et al., 2015; Loch, 2014). Additionally, care coordination, or having a caseworker/care manager, is essential for improving health care and having positive health outcomes (Agency for Healthcare Research and Quality, 2016).

In this study, the null hypotheses were rejected, indicating that the number of mental health follow-up appointments and whether an individual has a caseworker, controlling for age, gender, socioeconomic status, and transportation, is a significant

predictor of emergency room visits. However, although transportation has been an important variable, it was removed because that the data showed that no patients were in need of such services.

Research Question 1

For Research Question 1, the null hypothesis was rejected. There was a significant association between emergency room visits in the past 3 months and the number of mental health follow-up appointments, controlling for age, gender, and socioeconomic status. The evidence showed that the more participants followed up with their appointments, the more they went to the emergency room. This was inconsistent with what was expected, which was that there would be fewer emergency room visits the more follow-up appointment a respondent had. However, people who were in the program longer (e.g., 2 years) had more emergency room visits than those who were in the treatment program for shorter periods of time (e.g., 2 months). Therefore, number of emergency room visits is more a reflection of time in treatment than the efficacy of treatment. Additionally, gender was influential, as females had more follow-ups than males, and participants who had a higher socioeconomic status visited the emergency room less.

Research Question 2

For Research Question 2, the null hypothesis was rejected. There was a significant association between participants who had a caseworker and those who did not, while controlling for age, gender, and socioeconomic status. The evidence showed that participants with a caseworker were more adherent to their appointments.

Theoretical Foundation

The theoretical framework that grounded the study is Ajzen's (1991) theory of planned behavior. At its core, the theory of planned behavior has been used to successfully predict and explain health behaviors. These health behaviors include smoking, drinking, health services utilization, breastfeeding, and substance use (Breuer et al., 2016; Cooke et al., 2014; Shi, Ehlers & Warner, 2014; Tengku Ismail et al., 2016). According to the theory of planned behavior, whether a planned behavior is executed depends on motivation (intention) and ability (behavior control). This theory fits well with the research as it served as a framework for understanding whether a person was going to attend his/her appointment after appointment follow up.

Each research question was guided by Ajzen's theoretical ideology, with the assumption that appointment follow up is more likely to be successful if the person both, intends to keep his/her appointment, and has the ability to attend the appointment. Ajzen's theoretical ideology was effective in the results of this study, we were able to understand that individuals actually did have the intentions to follow up with their appointments and that in some instances they did followed up. Additionally, we were also able to understand that having a caseworker (ability) is helpful when we think about ways to assist individuals with mental illnesses to be compliant with their mental health care, such care including appointment follow-up.

Limitations of the Study

For this study, archival data were used. Therefore, there were very few limitations. Archival data are excellent sources because the data have already been

collected (Vartanian, 2011). The data were used for the purpose of this research, which was to have availability in using protective information and the accuracy of such in a responsible manner. Prior to the data analysis, there was no guarantee that the data file was going to answer the formulated research questions. That being said, there were 240 respondents who did not have a socio-economic designation (Federal Poverty Level percentage value), those respondents were removed from the study. Additionally, transportation was also removed given that the data file indicated that all participants had their transportation needs met. This study did not focus on individuals' medical diagnosis. This study did not focus on patients from various family health center across New York and therefore, results may not generalize across conditions, ages, in other hospital systems, and parts of the country.

Recommendations

To best determine to what extent patient appointment follow-up adherence at a family health center in New York is associated with future negative health outcomes and future hospitalizations among patients receiving psychological treatment, more research needs to be done. Areas that can be looked into are age specifics, comparison between other family health centers providing the same services, and also adding other areas of health such as substance usage, and other medical diagnosis such as diabetes and or hypertension along with the mental health diagnosis. Another recommendation for future studies could be using primary data, instead of secondary data. This way, one can take a better look at other variables such as transportation status, which was removed from this study.

Implications

The findings of this study are pivotal to various stakeholders (i.e., organizations providing mental services, management, providers, and policy holders) whose involvement are essential to successful engagement in appointment follow-up among individuals receiving psychological treatment. The comprehensive examination of the specific findings in this study, will hopefully entice organizations to begin to address gaps that are significant and do exist in the current literature. The outcome of this study can lead to positive social change.

The findings of this study uncovered actions that can lead to possible social change at various levels: This study also has the potential to have important practical applications; interventions and practices could be developed to increase and improve appointment adherence and or promote service improvement.

The purpose of this study was to determine to what extent patient appointment follow-up adherence at a family health center in New York predicts future negative health outcomes and future hospitalizations among patients receiving psychological treatment. The specific variables that were measured and the findings of such could be beneficial for developing resources that can best assist individual receiving psychological treatment.

With social change in mind, findings such as those presented in this study can be distributed across organizations in an effort to spread knowledge and understanding of the importance of appointment follow-up among individuals receiving psychological treatment.

Conclusion

The results of this study support the importance of appointment follow-up among individuals receiving psychological treatment. The lack of appointment follow-ups has increased the health care cost per capital making this issue, a real social issue. Research has shown that enhancing the patients' experience in mental health services through patient-perspective of care can be beneficial because negative health outcomes can be improved (Carey, 2016). In addition, organizational failures have been proven to impede accurate health care and positive health outcomes (Lawn, 2011). Initiatives that paid focus on expanding and improving the quality and value within managed care contracts are beneficial because they will focus on identifying and addressing underlying issues within organizations with systems that poorly serve individuals receiving psychological treatment and their inability to follow up and how not following up with treatment can lead to health deteriorations.

The findings of this research and future research may help improve and or create systems that pay focus on individual receiving psychological treatment in outpatient mental health settings across health care systems not just in New York City, but across the world.

References

- Agency for Healthcare Research and Quality. (2016). Trends in care coordination measures. Retrieved from <http://www.ahrq.gov>
- Ajzen, I. (1991). Organization behavior and human decision. *Elsevier Inc.*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Akachi, Y., & Kruk, M. E. (2017). Quality of care: Measuring a neglected driver of improved health. *Bulletin of the World Health Organization*, 95(6), 465–472. <http://doi.org/10.2471/BLT.16.180190>
- American Psychological Association. (2018). Data on behavioral health in the United States. Retrieved from <http://www.apa.org/helpcenter/data-behavioral-health.aspx>
- Anhang Price, R., Elliott, M. N., Zaslavsky, A. M., Hays, R. D., Lehrman, W. G., Rybowski, L., . . . Cleary, P. D. (2014). Examining the role of patient experience surveys in measuring health care quality. *Medical Care Research and Review: MCRR*, 71(5), 522–554. <http://doi.org/10.1177/1077558714541480>
- Avery, M. (2014). The role of the care coordinator in providing integrated care for safety-net populations. Retrieved from https://www.cibhs.org/sites/main/files/file-attachments/5_role_of_the_care_coordinator_paper.pdf
- Breuer, E., Lee, L., DeSilva, M., & Lund, C. (2016). Using theory of change to design and evaluate public health interventions: A systematic review. *Implementation Science*, 11(1), 63. <https://doi.org/10.1186/s13012-016-0422-6>
- Brown, M. T., & Bussell, J. K. (2011). Medication adherence: WHO Cares? *Mayo Clinic Proceedings*, 86(4), 304–314. <http://doi.org/10.4065/mcp.2010.0575>

- Brown, M. T., Bussell, J., Dutta, S., Davis, K., Strong, S., & Mathew, S. (2016). Medication adherence: Truth and consequences. *The American Journal of the Medical Sciences*, 351(4), 387–399. <https://doi.org/10.1016/j.amjms.2016.01.010>
- Çakir, F., İlnem, C., & Yener, F. (2010). Compliance to follow-up and treatment after discharge among chronic psychotic patients. *Dusunen Adam: The Journal of Psychiatry and Neurological Sciences*, 8, 50–59. <http://dx.doi.org/10.5350/dajpn2010230108t>
- Carey, T. A. (2016). Beyond patient-centered care: Enhancing the patient experience in mental health services through patient-perspective care. *Patient Experience Journal*, 3(2), 46–49. Retrieved from <http://pxjournal.org/journal/vol3/iss2/8>
- Center for Medicare and Medicaid Services. (2018). Care management. Retrieved from <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/Care-Management.html>
- Center for Theory of Change. (2016). What is theory of change? Retrieved from <http://www.theoryofchange.org/what-is-theory-of-change/>
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, California: SAGE Publications.
- Cooke, R., Dahdah, M., Norman, P., & French, D. P. (2016). How well does the theory of planned behaviour predict alcohol consumption? A systematic review and meta-analysis. *Health Psychology Review*, 10(2), 148–167. <http://doi.org/10.1080/17437199.2014.947547>
- DiMatteo, M. R. (2004). Variations in patients' adherence to medical recommendations:

A quantitative review of 50 years of research. *Med Care*, 42(3), 200–209.

Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/15076819>

Dixon, L. B., Holoshitz, Y., & Nossel, I. (2016). Treatment engagement of individuals experiencing mental illness. *World Psychiatry*, 15(1), 13-20.

<https://doi.org/10.1002/wps20306>

Erdfelder, E., Faul, F., & Buchner, A. (1996). G-power: A general power analysis program. *Behavior Research Methods, Instruments, & Computers*, 28, 1–11.

<https://doi.org/10.3758/BF03203630>

Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). Thousand Oaks, California: SAGE Publications.

Gates, B., & Gates, M. (2013). Types of evaluation designs. Retrieved from

<https://www.urbanreproductivehealth.org/toolkits/measuring-success/types-evaluation-designs>

Gates, A., & Rudowitz, R. (2014, September 29). An overview of delivery system reform incentive payment (DSRIP) waivers. *KFF: Henry Kaiser Foundation*. Retrieved

<https://www.kff.org>

Haynes, R. B., Montague, P., Oliver, T., McKibbin, K. A., Brouwers, M. C., & Kanani, R. (2002). Interventions for helping patients to follow prescriptions for medications. *Cochrane Systematic Review*.

<https://doi.org/10.1002/14651858.cd000011>

Hoofnagle, J. H., Doo, E., Liang, T. J., Fleischer, R., & Lok, A. S. (2007). Management of hepatitis B: Summary of a clinical research workshop. *US National Library of*

Medicine National Institute of Health, 45(4), 1056–1075.

<https://doi.org/10.1002/hep.21627>

Isaaz, K., Iuga, A. O., & McGuire, M. J. (2014). Adherence and health care costs. *Risk Management and Healthcare Policy*, 7, 35–44.

<http://doi.org/10.2147/RMHP.S19801>

Jackson, C., Shahsahebi, M., Wedlake, T., & DuBard, C. A. (2015). Timeliness of outpatient follow-up: An evidence-based approach for planning after hospital discharge. *Annals of Family Medicine*, 13(2), 115-122.

<http://dx.doi.org/10.1370/afm.1753>

Kannisto, K. A., Koivunen, M. H., & Välimäki, M. A. (2014). Use of mobile phone text message reminders in health care services: A narrative literature review. *Journal of Medical Internet Research*, 16(10), e222. <http://doi.org/10.2196/jmir.3442>

Lawn, S. (2011). Compliance, concordance, and patient-centered care. *Patient Preference and Adherence*, 5, 89–90. <https://doi.org/10.2147/ppa.s17822>

Leedy, P. D., & Ormrod, J. E. (2013). *Practical research: Planning and design* (10th ed.). Upper Saddle River, NJ: Pearson Education.

Lin, H., & Wu, X. (2014). Intervention strategies for improving patient adherence to follow-up in the era of mobile information technology: A systematic review and meta-Analysis. *PLoS ONE*, 9(8), e104266.

<http://doi.org/10.1371/journal.pone.0104266>

Lin, C.-L., Mistry, N., Boneh, J., Li, H., & Lazebnik, R. (2016). Text message reminders increase appointment adherence in a pediatric clinic: A randomized controlled

trial. *International Journal of Pediatrics*, 2016, 8487378.

<http://doi.org/10.1155/2016/8487378>

Loch, A. A. (2014). Discharged from a mental health admission ward: Is it safe to go home? A review on the negative outcomes of psychiatric hospitalization.

Psychology Research and Behavior Management, 7, 137–145.

<http://doi.org/10.2147/PRBM.S35061>

Long, J., Sakauye, K., Chisty, K., & Upton, J. (2016). The empty chair appointment.

Sage Publications, 1, 1-5. <https://doi.org/10.1177/2158244015625094>

Luga, A. O., & McGuire, M. J. (2014). Adherence and health care costs. *Risk*

Management and Healthcare Policy, 7, 35–44.

<http://doi.org/10.2147/RMHP.S19801>

Mantzari, E., Vogt, F., & Marteau, T. (2015). Personal financial incentives for changing habitual health-related behaviors: A systematic review and meta-analysis. *Science*

Direct Preventive Medicine, 75, 75–85.

<https://doi.org/10.1016/j.ypped.2015.03.001>

Marino, L., Wissow, L. S., Davis, M., Abrams, M. T., Dixon, L. B., & Slade, E. P.

(2016). Predictors of outpatient mental health clinic follow-up after

hospitalization among Medicaid-enrolled young adults. *Early Intervention in*

Psychiatry, 10(6), 468–475. <http://doi.org/10.1111/eip.12206>

Mayaud, N., Gerbay, A., Sabry, M. H., & Richard, L. (2013). Long-term clinical outcome and routine angiographic follow-up after successful recanalization of complex coronary true chronic total occlusion with a long stent length: A single-center

- experience. *Journal of Invasive Cardiology*, 25(7), 323–329. Retrieved from <https://www.invasivecardiology.com>
- Mayo Foundation for Medical Education and Research. (2018). Mental illness. Retrieved from <https://www.mayoclinic.org/diseases-conditions/mental-illness/symptoms-causes/syc-20374968>
- Menard, S. (1995). *Applied logistic analysis*: Sage University paper series on quantitative application in the social sciences, series no.106 (2nd ed.). Thousand Oaks, California: SAGE Publications.
- Muijs, D. (2011). *Doing quantitative research in education with SPSS* (2nd ed.). Thousand Oaks, California: SAGE Publications.
- New York State Department of Health Office of Quality and Patient Safety. (2015). Appointment follow up. Retrieved from https://www.health.ny.gov/professionals/patients/patient_safety/
- Norbash, A., Yucel, K., Yuh, W., Doros, G., Ajam, A., Lang, E., . . . Mayr, N. (2016). The effect of non-pharmaceutical sedation on improving MRI study completion rates and no-show rates. *Journal of Magnetic Resonance Imaging: JMRI*, 44(4), 1040–1047. <http://doi.org/10.1002/jmri.25219>
- Nuti, L., Turkcan, A., Lawley, M. A., Zhang, L., Sands, L., & McComb, S. (2015). The impact of interventions on appointment and clinical outcomes for individuals with diabetes: A systematic review. *BMC Health Services Research*, 15, 355. <http://doi.org/10.1186/s12913-015-0938-5>
- Pallant, J. (2016). *A step by step guide to data analysis using IBM SPSS*. [Kindle

version]. Retrieved from <https://www.amazon.com>

- Robotham, D., Satkunanathan, S., Reynolds, J., Stahl, D., & Wykes, T. (2016). Using digital notifications to improve attendance in clinic: Systematic review and meta-analysis. *BMJ Open*, *6*(10), e012116. <http://doi.org/10.1136/bmjopen-2016-012116>
- Sadock, B. J. & Sadock, V. A. (2014). *Kaplan and Sadock's Synopsis of Psychiatry: Behavioral Sciences/Clinical Psychiatry* (10th ed.). Philadelphia, PA, Lippincott, Williams & Wilkins.
- Shi, Y., Ehlers, S., & Warner, D. O. (2014). The theory of planned behavior as applied to preoperative smoking abstinence. *PLoS ONE*, *9*(7), <https://doi.org/10.1371/journal.pone.0103064>
- Smith, D., Lovell, J., Weller, C., Kennedy, B., Winbolt, M., Young, C., & Ibrahim, J. (2017). A systematic review of medication non-adherence in persons with dementia or cognitive impairment. *PLoS ONE*, *12*(2), e0170651. <http://doi.org/10.1371/journal.pone.0170651>
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistic* (6th ed.), California State University-Northridge: Pearson Education.
- Torpie, K (2014). Customer service vs. patient care. *Patient Experience Journal*, *2*, 2-8. Retrieved from <http://pxjournal.org/cgi/viewcontent.cgi?article=1045&context=journal>
- Tengku Ismail, T. A., Wan Muda, W. A. M., & Bakar, M. I. (2016). The extended theory of planned behavior in explaining exclusive breastfeeding intention and behavior

- among women in Kelantan, Malaysia. *Nutrition Research and Practice*, 10(1), 49–55. <http://doi.org/10.4162/nrp.2016.10.1.49>
- Trief, P. M., Izquierdo, R., Eimicke, J. P., Teresi, J. A., Goland, R., Palmas, W., Shea, S., & Weinstock, R. S. (2013). Adherence to diabetes self-care for white, African-American and Hispanic American telemedicine participants: 5-year results from the IDEATel project. *Ethnicity & Health*, 18:1, 83-96. <https://doi.org/10.1080/13557858.2012.700915>
- Vartanian, T.P. (2011). *Secondary data analysis*. New York: Oxford University Press.
- Venville, A., Sawyer, A. M., Long, M., Edwards, N., & Hair, S. (2015). Supporting people with an intellectual disability and mental health problems: A scoping review of what they say about service provision. *Journal of Mental Health Research in Intellectual Disabilities*, 8, 3-4, 186-212. <https://doi.org/10.1080/19315864.2015.1069912>
- Vrijens, B., Antoniou, S., Burnier, M., de la Sierra, A., & Volpe, M. (2017). Current situation of medication adherence in hypertension. *Frontiers in Pharmacology*, 8, 100. <http://doi.org/10.3389/fphar.2017.00100>
- Wu, Y., Su, J., & Fu, L. (2012). Compliance of feticion-based follow-up in patients with chronic kidney disease. *Chinese General Practice*. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed>