THE MOBILE MENTAL HEALTH CLINIC EFFECTS ON DECREASING EMERGENCY ROOM VISITS FOR MENTAL HEALTH PATIENTS

By
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A capstone project proposal submitted to the School of Nursing
The State University of New York
in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice

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DNP Capstone Project Approval Form

This is to certify that Rachel Burns
(Name of Student)
successfully defended his/her Capstone project entitled:
The Mobile Mental Health Clinic Effects on Decreasing Emergency Room Visits for Mental Health Patients
on April 20, 2018
(Date)

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*If applicable
ABSTRACT

**Problem:** Patients’ who have barriers to attend outpatient mental health clinics such as often utilize emergency rooms inappropriately for routine health care.

**Objective:** Evaluate if emergency room visits decrease after being admitted to the Mobile Mental Health Clinic.

**Literature review/theoretical framework:** Limited research on mobile mental health clinic services in patients’ homes. Social Ecological Model will be used to guide development and evaluate health outcomes.

**Methods:** Correlational retrospective design utilizing health care records. Sample of 20-30 patients. Descriptive data to describe the population. Paired T test and Person r will be used for statistical analysis.

**Results:** ER visits decreased 45% after admission to the MMHC. Schizophrenia had the highest mental health diagnoses and substance abuse had a large percentage of closed cases.

**Conclusion:** The MMHC does decrease ER visits in the patients who have barriers to attend traditional mental health clinics. This study shows that it is clinically significant decrease in ER visits to this vulnerable population who have barriers to treatment. Once the barriers have been eliminated, access is available, support is given, health is improved and is cost-effective.
Acknowledgements

I would like to thank Dr. Hewner for her guidance and expertise. I would like to thank Dr. Nesbit for her encouragement. I would also like to thank the University of Buffalo, Graduate School of Nursing for all the knowledge and expanded leadership opportunity.

I would like to thank my granddaughter, Keira, who makes this world a better place by being her caring and loving self. She will also be the light of my life! I would also thank Joe, the one who supported and inspired me.
Mental illness effects many families across the country. According to National Alliance on Mental Illness (NAMI) (2017), one in every five adults is affected with a form of mental illness; while 1 in 25 have a serious mental illness. People who have a mental illness suffer from the stigma of having a mental illness and inequality in health, with increased mortality and mortality rates (World Health Organization [WHO], 2003). They are the vulnerable population who are vastly underserved and include of ethnical and racial minorities, homeless and lower income persons (Hill et al., 2014). Many people have barriers that prevent them from seeking treatment at traditional outpatient mental health clinics. These barriers include substance abuse, poor relations with mental health providers, difficulties related to cost and transportation, and limited insight into their mental illness (Treatment Advocacy Center, 2014; Hill et al., 2014). Medical problems such as morbid obesity, difficult in ambulation, autoimmune diagnoses and recovery from surgery may also limit access to traditional outpatient mental health clinics. These patients are at risk of decompensation, which may lead to utilization of emergency room (ER) visits and inpatient hospitalizations (BestSelf Behavioral Health, n.d; Wilberforce et al., 2016).

However, mobile clinics can deliver mental health care to at-risk patients to improve access, provide support, build trusting relationships, improve outcomes and reduce costs. (Hill et al., 2014; Peritogiannis et al., 2011). The organization, BestSelf Behavioral Health, implemented a new program called, Mobile Mental Health Clinic (MMHC). This is a non-traditional clinic providing mental health services to patients in their home with the goal to achieve and maintain psychiatric stability. The MMHC admits patients who are unable to attend traditional outpatient mental health clinics due to barriers (BestSelf Behavioral Health, n.d.).
Identify Significance of problem / gap in practice

The rate of emergency room (ER) visits for persons with behavioral health diagnoses has increased in the last seven years (Weiss, Barrett, Heslin & Stocks 2016). Diagnoses of depression, anxiety and stress are up 55.5% and 55% for bipolar and psychosis disorders (Weiss, et al., 2016). Medicaid recipients in the U.S. accounted for 38.3% of ER visits in 2013 (Goins & Conroy, 2014). Potential preventable ER visits are markers of the health care needs of a population (Goins & Conroy, 2014). The Department of Health and Human Services and Center for Medicaid and Medicare Services are targeting Medicaid “superusers” of ER and inpatient hospital admissions with the goal of improving care and decreasing costs (Department of Health & Human Services [DHHS], 2013). “There is a growing evidence that some of the high-cost patients are not receiving coordinated care, preventive care or care in the most appropriate setting” (DHHS, 2013, para. 9).

Patients who are seeking mental health treatment services have a 20% no-show rate in mental health clinics and 50 % of patients who miss appointments never return (Mitchell & Selmes, 2007). Patients who disengage from mental health services have severe consequences such as homelessness, relapse, hospitalization, suicide and violence (Kreyenbuhl, Nossel & Dixon, 2009). Therefore, a program such as the MMHC can deliver such services in patients’ home, eliminating the barriers to mental health treatment. The mobile team can reach vulnerable populations, promote improved chronic disease management and help address the needs of this population (Hill et al., 2014). Previous studies have shown benefit to the patients receiving primary care medical services that are delivered in the patient’s home, however, few studies have examined mental health services delivered in the home.
Needs Assessment for MMHC

According to the New York State Department of Health, there are 71,080 Potential Preventable Visits to the ER each year for a rate of 27% in Erie County (New York State Department of Health [NYSDOH], 2016). Erie County Medical Center reports their comprehensive psychiatric emergency program sees approximately 9,000 patients annually in the ER, with 33% of patients diagnosed with schizophrenia, 20% diagnosed with Bipolar, 20% major depression, 10% anxiety, and 17% other. (Erie County Medical Center [ECMC], 2017). ECMC has the highest number of psychiatric ED visits in New York State. (ECMC, 2017). New York State is implementing the Medicaid Redesign Team called Delivery System Reform Incentive Payment (DSRIP) (NYSDOH, 2017). The goal of DSRIP is to decrease hospital use by 25% over 5 years with projects developed on system transformation, population health and clinical improvement (NYSDOH, 2017).

Expanded Statement of Purpose

The MMHC provides off-site mental health services to patients who are at high risk for relapse and unable to conform to traditional outpatient mental health clinics (BestSelf Behavioral Health, n.d.). The psychiatric nurse practitioner does an initial psychiatric evaluation, provides medication management and symptom monitoring with follow up every 3 months or sooner if needed (BestSelf Behavioral Health, n.d.). The registered nurses on the MMHC assist patients with medical and psychiatric medication compliance, metabolic monitoring and assist with follow up with medical appointments. The licensed counselors help the patient with counseling, refer patients to any community resources they need such as case managers, homeless programs, and vocational programs. The MMHC provides the patient with mental health services in their
home, improves quality of care, improves chronic disease management and reconnects the patient in their community.

The patients currently in the MMHC have barriers that may include ambulation, morbid-obesity, Multiple Sclerosis, Fibromyalgia, anxiety, and transportation issues. Some of the patients are at risk of being discharged from the traditional mental health clinics due to missing too many appointments related to psychiatric or medical symptoms. The MMHC provides an underserved vulnerable population with access to mental health services with the goal of improved quality of life, improved chronic disease management and decreased ER utilization.

**The Capstone Project Question**

The purpose of this study was to evaluate “Does utilization of MMHC decrease emergency room visits for at-risk patients who have barriers to attend traditional outpatient mental health clinics?”

**Review of the Literature**

There are approximately 1,500-2,000 mobile medical clinics in the United States that provide health services to the underserved with only 29% of them providing mental health services (DHHS, 2013). Mobile mental health clinics can provide community based mental health services to the vulnerable, underserved population who may have barriers to attending outpatient mental health clinic. Many barriers to treatment include lack of transportation, substance abuse, limited insight into their illness, medical problems and trust of the provider (Mitchell & Selmes, 2007). The impact of mobile teams is to increase accesses for vulnerable populations, improve chronic disease management, relapse management and cost control (Hill et al., 2014; Peritogiannis, et al., 2010; Cummings, 2009; Wilberforce et al. 2016).
An observational study design was employed by Wilberforce and colleagues (2016) to compare community mobile health teams working with the older population with various mental health diagnoses and physical limitations. The aim of the study was to evaluate the association between the degree of integration of the community mental health team and costs of service, including rates of admission to inpatient psychiatric hospitals or long-term care. The study included adults aged 65 or older, who were admitted to the community mental health team (Wilberforce et al., 2016) and did not include race, ethnicity or insurance information on the patients. The study compared low and high integration teams and included 877 patients. The community mental teams had nine indicators of service integration for their program. The low integration teams had four or fewer indicators and only employed healthcare practitioners for the patients that they served. In comparison, high integration teams included seven or more indicators of integration and a social worker in addition to the healthcare practitioner. Results of the study showed 5.8% of patients were admitted to a mental health hospital at the seven months follow up (Wilberforce et al., 2016). The admission rates to both hospital and long-term care setting were greater in the high integration team (14%) than the low integration team (1.7%) (Wilberforce et al., 2016). The study concluded that the higher integration team had a 44% higher cost, however, there were no significant differences in admission to long-term care setting or inpatient beds were identified. Limitations of this study included failure to use regression analysis to control for confounding differences in the cases of each team.

A study on a mobile mental health unit in a remote rural section in Greece evaluated the perception of unmet need for rural mental health services (Peritogiannis et al., 2011). The authors completed a quantitative study that used interviews with a two-year follow up. The sample included 143 persons with a mental health diagnosis. Of the 143 patients in this study, 46
had services provided in their home while others received care at primary health care centers (Peritogiannis et al., 2011). No criteria of age, gender, economical status or barriers were noted in this study. However, this study was completed in a remote rural area in a population that lacked socio-economical resources. A primary provider, hospitals or family members referred the patients to the mobile mental health unit, and referred patients had various mental health diagnoses including major depressive disorder, dementia, bipolar, and psychotic disorders (Peritogiannis et al., 2010). The interviews took place at either a primary care clinic or in the patient’s home. “The potential for home assessments contributed greatly to approaching the patients and the number of hospitalizations and the frequency of relapses were reduced remarkably over the two-year period.” (Peritogiannis et al., 2010, pg. 427).

A second five-year study of mobile mental health unit used a retrospective design for patients receiving mental health services in Greece. The study examined the rates for disengagement from mental health services and medication compliance (Peritogiannis et al., 2013). Inclusion criteria were patients with a diagnosis of schizophrenia and related psychosis. Patients’ characteristics were average age 51, 29% males and average illness duration of 23 years (Peritogiannis et al., 2013). Half of the 74 patients received in-home treatment. The results of the study showed improved patient engagement with 67% adhering to the medication regimen. “Due to access difficulties and economical adversities, many psychotic patients would never have been examined by our unit or have discontinued treatment had it been only office-based.” (Peritogiannis et al., 2013, pg. 4). This study identifies limitations of a retrospect, non-controlled study design and that confounders may not have been assessed adequately (Peritogiannis et al. 2013).
A longitudinal retrospective study on mobile mental health clinics evaluated clinical impact and potential cost savings from decreasing patient high blood pressure. (Song et al., 2013). The mobile health van visited six areas in Massachusetts that were underserved communities, that had poor health and high emergency room visits. The mobile health clinic conducted health screening, monitoring, recommendation and referrals. However, they did not diagnose and treat patients (Song et al., 2013). The sample included 5,823 patients, with a mean age was 56.8, 59% male and 4% homeless (Song et al., 2013). African Americans accounted for 68.3%. Medicaid was the main insurance for patients (68.3%) compared to Medicare (13.3%), privately insured (27.2%), and uninsured (10.3%). Nineteen percent (19%) of patients returned for follow-up appointments at the mobile medical unit (n = 1,134). A relative-risk reduction analysis was used to calculate ED savings by asking the patient if they had not been seen by the mobile health clinic, would they have gone to the emergency room. The results of this study showed that there was a cost reduction from avoided ER visits (Song et al., 2013).

A prospective randomized control study was completed in a suburb of London to evaluate treatment patterns and cost between in-home treatment and standard of care (Burns, Raftery, Beadsmoore, McGuigan & Dickson, 1993). The sample size was 172 cases divided into three catchment areas with paired teams; one control team with standard care (n=78), one experimental multidisciplinary in-home treatment (n=94). The inclusion criteria for patients were not mentioned, however it is noted in the study that there were more psychotic patients in the control group. The results of the study showed the experimental group utilized less in-patient care than the control group.

The literature review has established that there is a need for mobile mental health clinics to help vulnerable patients who have barriers to seeking traditional outpatient mental health
clinics. Two studies indicated that there are cost savings associated with decreased ER visits. Other studies showed that there is an unmet need for this service in the community. Currently there are no studies where services provide 100% mental health treatment in the patients’ home. This study will provide mental health services in the patient’s home, eliminating any barriers for treatment. The proposed study expects that the MMHC will decrease ER visits for patients who have been admitted to the program.

**Conceptual Framework**

The conceptual framework that was used for this capstone project is the Social Ecological Model (SEM). The SEM utilizes the concept that the individual is surrounded in a larger social system and describes the interactive characteristics of individuals and environments that motivate health outcomes (Stokols, 1992). Social Ecological Model is an interdisciplinary collaborative effort which implies that this is not only about the individual, but the whole social system for health promotion (Golden & Earp, 2012; Stokols, 1992). The SEM is an inherently interdisciplinary methodology to health research and the growth of health promotion programs (Stokols, 1992). According to Golden & Earp (2012), when most of the factors are targeted simultaneously, health improvements are more significant. The SEM model includes five levels of influence: intrapersonal, interpersonal, institutional, community and policy.

The first level of the SEM is intrapersonal. This includes the individual’s characteristics that influence change consisting of the individual’s knowledge, attitude and behaviors (Golden & Earp, 2012). This also includes the mental health patient who may have barriers to obtain treatment in outpatient clinics (National Health Care for the Homeless Council [NHCHC], 2016). These patients may also lack knowledge of how to access an outpatient mental health clinic or lack financial resources that prevent treatment.
The second level is interpersonal, which includes the patients' social support, lack of social support or lack of social networking in order to have their needs met (NHCHC, 2016). Interpersonal includes the attitudes of social networks that can assist a patients’ recovery by providing a health promoting environment (Stokols, 1992). Social stigma of having a mental health diagnosis plays a role in people who do not seek the treatment they need. Patients of the MMHC need the support of family and friends to assist in health promotion.

Third level of SEM is institutional. This level is about institutional culture, capacity and environment (Golden & Earp, 2012). BestSelf Behavioral Health is in this level, they help people by enhancing services to the community they live in. BestSelf Behavioral Health provides the access to care for patients that are referred to the MMHC by providing mental health services in their home. This effectively removes barriers the patient has for outpatient mental health services. The MMHC also has an impact on the patients’ health promotion by eliminating the barriers to treatment. BestSelf Behavioral Health also works together with other organizations to provide the patient with other resources that are available to them.

Community in the fourth level of SEM. Community is an important step for the individual because it involves the organizations, community leaders, businesses and transportation (NHCHC, 2016). Community also plays a part in the patients’ environment, such as safety, access to health care and recreational activities. Community includes Organizations, businesses and community leaders that play an important part in the community’s physical environment and delivery of community services. The MMHC takes out the barrier of transportation by going to the patients’ home. Another aspect organizations, businesses and community leaders can provide is public education to the community about mental illness to decrease the stigma.
The last level of the SEM is policy. This can be various federal, state and local policy makers who can provide legislative incentives to the community and organizations. The NYSDOH has provided grants for organizations to help make their goal to increase health promotion and decrease Medicaid spending by 25% in five years (NYSDOH, 2017). This grant is being used by the MMHC which will impact a patients’ behavior and improve health promotion. Preventative health programs such as risk screening, education and counseling are all aspects of federal, state and local policy.

The SEM provided the framework for the MMHC that was used in this study. Knowledge from this conceptual theory assisted in understanding multiple variables that can affect a patient from receiving mental health treatment. The study of MMHC did not only look at the patient individually, but the whole social ecological system that assisted in a patients’ recovery. The information will aid in understanding barriers that mental health patients currently experience, as well as any necessary changes that are needed in order to better serve this vulnerable population.

Methods

This correlational retrospective design utilized Medicaid patients’ records in Anasazi, the Psychiatric Services and Clinical Knowledge Enhancement System (PSYCKES) and HEALTHeLINK™. Anasazi is an electronic medical record used by the MMHC, in which patient’s descriptive statistics, admission dates, cases that were closed, medication management, MMHC staff visits and ER visits were obtained after admission. PSYCKES is a New York State database from Medicaid claims (New York State Department of Mental Health, n.d.). Information from PSYCKES is generated by providers who bill Medicaid claims. Some of the
information obtained includes diagnosis, medications picked up by the patient, hospital visits and summarized treatment histories. The ER visits were extracted from PSYCKES for the patients before and after admission, to ensure accuracy. HEALTHeLINK™ is an electric health record that shares information between health care providers in Western New York. (HEALTHeLINK™, n.d.) Patient’s records of ER visits from HEALTHeLINK™ were collected to check for accuracy and consistency. The ER data was collected from these electronic health records six months prior to being admitted to the MMHC and six months after. In Anasazi, staff visits were collected and analyzed to see if the number of home visits correlated with the number of ER visits for patients. Anasazi also was used to obtain data to analyze if medication management and counseling verses counseling only correlates with ER visits. This helped to recognize improvements needed by the MMHC to improve quality of care by decreasing ER visits to this vulnerable population.

**Setting**

The organization involved in this study was a non-for-profit BestSelf Behavioral Health outpatient clinic located in Erie County, in New York State. The MMHC is the only program in Western New York to provide outpatient mental health services in the patient’s home. The MMHC provides mental health treatment including counseling and medication management directly in the patient’s home. There is one psychiatric nurse practitioner who performed initial psychiatric assessments along with medication management. Two registered nurses write up medical reviews, contact patients’ primary medical provider as needed, and administer injections. There are four counselors for individual counseling sessions. When necessary, the patients were linked to other community services that were available.
Sample

The sample in this study included patients who are 18 years of age or older, who are admitted to the MMHC and who have a mental health diagnosis. Only people with Medicaid insurance are admitted to this service. This is a new program that was implemented in late spring of 2017. The patients that were included in the study were admitted from June 1st, 2017 through August 31st 2017. The only patients who are excluded were those that are admitted “pro bono”. All the patients who met criteria were included in this study to ensure the sample would be representative of the population and to maximize statistical power.

Methodology

Consent for this study was obtained through the IRB at the University of Buffalo. The patients who were admitted to the MMHC prior to September 1st 2017 were reviewed via Anasazi electronic health records. HEALTHeLINK™ was also used to further extract ER visit data for patients. The primary investigator de-identified data by assigning a unique numeric code for each patient.

Patients were admitted to the program at different times during the study. The demographic data collected included, age, race, gender, employment, mental health diagnosis, housing, current substance abuse, barriers and status of case. The study examined the association between sociodemographic variables with contingency tables or crosstabulation. This examined associations between the identified variables. For each active patient, ER utilization was examined 6 months before and after admission to the MMHC. Due to the different admission dates, each 6-month period was based on the date when the patient was admitted to the program.
Patient diagnoses were collected for those who met the criteria for this study. Analyzing behavioral health diagnoses will determine the prevalence of specific mental health diagnosis. This study used crosstabulation between active and closed cases to see if there were significant differences between groups.

The study compared number of staff visits for those with and without medication management to determine if MMHC staff visits on active cases had an impact ER visits. The number of face to face staff visits, excluding phone calls to patient or collaterals, were counted. The patients were seen at a minimum of once every three months or as much as weekly by staff, depending on the needs of the individual. All staff visits including those from the psychiatric nurse practitioner, nurses, and counselors were collected and analyzed for correlation with ER visits.

A second analysis examined the relationship medication management and counseling verses counseling-only and post-admission ER visits. Patients could receive both counseling and medication management or counseling without medication management. Differences were compared for these subsets of the population.

Data Analysis

The descriptive statistics that were utilized in this study were the following sociodemographic variables: age, gender, race, housing, residence location, mental health diagnoses, substance use, employment, medication management and barriers that have prevented patients from going to traditional outpatient mental health clinics. The cases that were closed also included the reason why they were discharged from the program. These variables helped
describe and summarize data in a more meaningful way and helped identify emerging patterns among certain conditions. This also simplified the interpretation of the data. Pearson correlation was used to see if there was correlation between the number of clinical visits in relation to ER visits after admission to the MMHC. The paired t-test was conducted to see if there was a difference in ER utilization before and after.

**Ethical Issues and Protection of Human Subjects**

The study was a correlational retrospective design that utilized patient’s existing health records. The University of Buffalo IRB reviewed the study protocol and it was determined that it met criteria for exempt review, therefore, no consent was required.

**Timeline for completion of the project**

The timeline for the completion of this study was approximately 9 months. The project development was completed in three months: September, October, November of 2017. The proposal was defended in November and December of 2017 and the IRB materials were submitted in December 2017. Once IRB approval was obtained, the data was collected and entered into Excel and SPSS which started in February and March of 2018. The data analysis was concluded in March and April of 2018. The capstone completion, which included the poster presentation was in April 2018. This process was completed in May 2018.
Results

Forty-three patients were admitted to the MMHC between June 1, 2017 to August 31, 2017, and of those patients, 19 patients were active. Cross tabulation was used to examine associations between identified variables. Descriptive statistics were utilized with every patient who was admitted (n=43) to provide an overview in this study. However only 19 cases were active (44.2%), while the remainder were closed.

Descriptive statistics for all patients that were admitted to the MMHC were also analyzed. The variables included age, gender, race, housing, residence location, mental health diagnoses, substance use disorder, employment, medication management and barriers that have prevented patients from going to traditional outpatient mental health clinics. The closed cases used descriptive statistic for reason for discharge.

Demographic Variables

The mean age of all patients who were admitted to the MMHC identified is 49. There were more women (53.5%) than men referred to the program (See Table 1). The largest racial group was Caucasian (55.8%) followed by African American (30.2%). Hispanics accounted for 9.3% and other at 4.7%. In the population, 20.9% were homeless and 58.1 % of the sample resided in the City of Buffalo. Only 4.7% of the sample was employed.
Table 1

Descriptive Frequencies of Population Admitted Between June, 2017 through August 31, 2017 (n=43)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td>Caucasian</td>
<td>24 (55.8%)</td>
</tr>
<tr>
<td></td>
<td>African American</td>
<td>13 (30.2%)</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>4 (9.3%)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>2 (4.7%)</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>20 (46.5%)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>23 (53.5%)</td>
</tr>
<tr>
<td>Employed</td>
<td>Yes</td>
<td>2 (4.7%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>41 (95.3%)</td>
</tr>
<tr>
<td>Housing</td>
<td>Yes</td>
<td>34 (79.1%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>9 (20.9%)</td>
</tr>
<tr>
<td>Residence</td>
<td>City of Buffalo</td>
<td>25 (58.1%)</td>
</tr>
<tr>
<td></td>
<td>Outer limits</td>
<td>18 (41.9%)</td>
</tr>
</tbody>
</table>

Mental Health Diagnosis

Over 70% of patients who were admitted had schizophrenia, bipolar disorder or depression. The most frequent mental health diagnosis in this sample (See Figure 1) was schizophrenia (27.9%), followed by depression and bipolar each with 20.9% and other (9.4%).
Patients who had a diagnosis of schizoaffective and anxiety were both represented by 7% of the sample.

![Mental Health Diagnosis of Admitted Patients](image)

*Figure 1. Mental Health Diagnosis of Admitted Patients*

**Substance Abuse**

Twenty-five percent (25.6%) of the patients referred to the MMHC (n=43) had an active substance abuse disorder (those not having a substance abuse disorder at 60.5%, with unknown at 14%).

**Barriers Necessitating MMHC Follow-Ups**

The largest barrier preventing this population from attending a traditional outpatient mental health clinic were psychiatric barriers (51.2%), followed by transportation (9.3%) and autoimmune diseases (9.3%). Barriers of obesity, unknown and other represented 7% each, along with substance abuse and surgery both at 4.7%, respectively (see Figure 2). It is interesting to note that
medical reasons prevented patients from going to a traditional outpatient mental health clinic in 21% of the admitted cases. Also, of the active cases, 84.2% of patients had medication monitoring and counseling, whereas 15.8% of patients had counseling only.

**Comparison of Active and Closed Cases**

The study compared results that examined associations between active and closed case variables (See Table 2). Caucasian patients had similar results between active (54.2%) and
closed cases (45.8%). Significantly, African Americans active cases were accounted for only 23.1%, while the closed cases accounted for 76.9%.

Table 2

Comparison of Demographic Characteristics of Active and Closed Cases

<table>
<thead>
<tr>
<th>Categories</th>
<th>Frequency(n=)</th>
<th>Active</th>
<th>Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>44.2%</td>
<td>55.8%</td>
</tr>
<tr>
<td>Caucasian</td>
<td>24</td>
<td>54.2%</td>
<td>45.8%</td>
</tr>
<tr>
<td>African American</td>
<td>13</td>
<td>23.1%</td>
<td>76.9%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Male</td>
<td>20</td>
<td>30%</td>
<td>70%</td>
</tr>
<tr>
<td>Female</td>
<td>23</td>
<td>56.5%</td>
<td>43.5%</td>
</tr>
</tbody>
</table>

In addition, males had significantly more closed cases (n=70%) (See Table 3), when compared to active cases (n=30%). compared to closed cases (n=70%). Of the mental health diagnoses, schizophrenia had significantly higher percentage of closed cases (n=66.6%) when compared to active (n=33.3%) It is noted that active cases of anxiety were considerably higher (n=66.6%) the closed (n=33.3%).
Table 3

Comparing Mental Health Diagnosis in Open and Closed Cases ($N = 43$)

<table>
<thead>
<tr>
<th>Variable Categories</th>
<th>Frequency</th>
<th>Active</th>
<th>Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health Diagnosis</td>
<td>19 (54.2%)</td>
<td>24 (45.8%)</td>
<td></td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>12</td>
<td>4 (33.3%)</td>
<td>8 (66.7%)</td>
</tr>
<tr>
<td>Schizoaffective</td>
<td>3</td>
<td>3 (100%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Depression</td>
<td>9</td>
<td>4 (44.4%)</td>
<td>5 (55.6%)</td>
</tr>
<tr>
<td>Bipolar</td>
<td>9</td>
<td>4 (44.4%)</td>
<td>4 (55.6%)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>3</td>
<td>2 (66.7%)</td>
<td>1 (33.3%)</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>2 (50%)</td>
<td>2 (50%)</td>
</tr>
<tr>
<td>Not available</td>
<td>3</td>
<td>0 (0%)</td>
<td>3 (100%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>6</td>
<td>0 (0%)</td>
<td>6 (100%)</td>
</tr>
</tbody>
</table>

Next the study compared people who were homeless versus not homeless. All referrals where the person was homeless were closed. Of the patients who lived in the City of Buffalo 36% had active cases when compared to closed at 64%. In the suburban areas, patients whose cases were active 55.6%, while the remainder were closed.

The barriers that prevented patients from going to the traditional outpatient mental health clinics are detailed in Table 4. Transportation was a barrier in 25% of active cases, while in closed cases it was 75%. Substance use was a barrier in 72.7% of closed cases. In addition, several medical barriers prohibited patients from seeking mental health treatment. Active cases
were more likely to have medical barriers. This is particularly true of obesity which had 66.7 % active compared to 33.3% closed. Most (75%) of autoimmune cases were open.

Table 4

*Comparison of Active and Closed Cases Barriers to Treatment*

<table>
<thead>
<tr>
<th></th>
<th>Active</th>
<th>Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>25%</td>
<td>75%</td>
</tr>
<tr>
<td>Substance Abuse</td>
<td>27.3%</td>
<td>72.7%</td>
</tr>
<tr>
<td>Psychiatric</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Obesity</td>
<td>66.7%</td>
<td>33.3%</td>
</tr>
<tr>
<td>Surgery</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Autoimmune</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td>Other</td>
<td>33.3%</td>
<td>66.7%</td>
</tr>
<tr>
<td>No Shows</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Reasons for Discharge**

The study examined closed cases (55.8%) to have a better understanding of why patients were discharged (See Table 5). Two major reasons for discharge were due to lack of interest in MMHC services (23.3%) and the inability of MMHC staff was unable to contact or engage patient in treatment (18.7%). Other reasons included, death (4.7%), referred elsewhere (4.5%), left Erie county or became incarcerated both (2.3%) respectively. In the active cases, 4.7 % were patients who were readmitted to the MMHC during the dates June 1, and August 31, 2017.
Table 5

*Reasons for Discharge (n=24)*

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Interested</td>
<td>23.3%</td>
</tr>
<tr>
<td>Unable to Contact</td>
<td>14.0%</td>
</tr>
<tr>
<td>Unable to Engage</td>
<td>4.7%</td>
</tr>
<tr>
<td>Death</td>
<td>4.7%</td>
</tr>
<tr>
<td>Referred Elsewhere</td>
<td>4.5%</td>
</tr>
<tr>
<td>Left Erie County</td>
<td>2.3%</td>
</tr>
<tr>
<td>Incarcerated</td>
<td>2.3%</td>
</tr>
</tbody>
</table>

Summary of Comparison of Active and Closed Cases

Of the patients who had a diagnosis of schizophrenia, more than 1/3 of those cases had closed (66.7%). Even though African Americans counted for only 30.2% (n=13) of the cases, 76.9% of those cases were closed (n=10). Seventy percent (70%) of male population had closed cases in comparison to females with only 43.5% closed. The two major reasons that people were discharged from the program were because they were not interested (23.3%) and the MMHC staff was unable to contact or engage the patient in treatment (18.7%). Many with medical barriers were active cases, while obesity had 66.7% active compared to 33.3% closed cases. Along with autoimmune cases were 75% of those cases were active when compared to closed cases of 25%.
Emergency Room Utilization

The rates of ER visits and their association between medication management and counseling and counseling-only were examined. There was no correlation between medication management with counseling or counseling alone. Of the two patients that only received counseling with no medication management, one patient’s ER visits decreased by 50% (n=1) whereas the other patient’s ER visits decreased by 14% (n=6). Of the patients who had medication management and counseling (n=10), two patients ER visits increased. Of the remaining patients’ (n=8), all had their ER visits decreased by one, except one who had a significant decrease of 6 ER visits after admission within study’s time frame.

Discussion and Recommendations

The study shows that the increase in support of the MMHC may have impacted the decrease in ER visits. The low number of active cases (23.3%) in the MMHC may be related to the program being new only have been started in June 2017.

The reason why many people were discharged could be correlated to the new program which was initiated in late spring. This may have led to expectations and/or criteria for admission to have been misunderstood by MMHC staff or other community service providers who were making the referrals for this program. Currently the program manager is screening referrals for their appropriateness for the MMHC program. Some patients may have agreed to being admitted to the MMHC, to ensure they would be released from inpatient hospitalization. Also, the MMHC
staff who were doing the admissions, may have admitted the patient prior to ensuring the patient was agreeable to being in the program.

It is interesting to note of the patients with active substance abuse, 72.7% of these patients had closed cases. The chemically dependent (CD) population happens to be a population that is hard to engage and may not be an appropriate referral to the MMHC. There may be other options for substance abuse patients, such as a CD mobile team or other outpatient CD clinics for appropriate treatment.

It is also noted of the patients who had a diagnosis of Schizophrenia, more than 1/3 of those were closed cases (66.7%). Due to their chronic mental illness, perhaps more effort to engage these patients.

The results of 50% active and closed cases for people with surgery could be correlated to the patient’s recovery and being able to reengage to their traditional outpatient mental health clinic. Medical barriers account for more than 1/3 of patents active in the program. This may indicate the need more communication with primary medical providers that feel their patients may benefit from mobile mental health services. This is to ensure that patients with long term chronic medical conditions, who are unable to attend traditional outpatient mental health clinics can be properly referred to the MMHC services. Due to their debilitating medical issues, these patients may need long term care by the MMHC services due to their debilitating medical issues.
**Strengths and Limitations**

The limitations of this study were its sample size. Due to the small sample size, the paired t test was unable to be performed and the statistical power was unable to be tested, possibly increasing the margin of error. Additionally, there was no control over previous data accuracy. Due to the program being in the infancy stages, there may have been bias in who was referred to the program. Because of the newness of the program, this may not be a representative of the population at large in other areas of the country. This study may not a representative of the population at large, due to its limited demographic area.

The strength of this study is that it does show promise of decreasing ER visits for this at-risk population, this could also lead to decreased overall Medicaid spending costs. The retrospective studies review information is available to be generated in a timely manner and cost effective. This study may not a representative of the population at large, due to its limited demographic area.

**Implications for Education, Practice and Research**

Due to the fact that the MMHC is a newly developed program, further studies are needed to see if this program has a greater impact on at risk patients who have barriers to mental health treatment. Though the ER visits decreased by 45%, this study with a small sample size, further research is need to understand the impact of admission to the MMHC in relation to the ER visits. A qualitative study would help advanced nurse practitioners obtain a better understanding of the needs of this at-risk population to help improve MMHC services.
Role of the Advanced Nurse Practitioner

Advanced nursing practitioners need to acknowledge patients’ barriers to help the patient engage in treatment. Doctoral prepared nurses can play a major role in mobile mental health clinics. They can also take leadership roles in mobile mental health clinics to ensure that patients are receiving evidenced-based practice of care to this vulnerable population.

Conclusion

Many people struggle with mental health illness that goes untreated for many reasons. The mobile medical primary clinics have been successful in treating patients who have barriers to treatment. Only a small percentage of mobile mental health clinics go to the patients’ home and are stationed at a primary clinic. This study shows that mobile mental health clinics can remove barriers and treat this at-risk population by removing barriers. This study also showed the possibility of decreased Medicaid spending. Providers need to engage in other options for treating the mental health population. This could be the future for providing services, improving care, and decrease unnecessary spending.
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January 11, 2018

Dear Rachel Burns:

On 1/11/2018, the IRB reviewed the following submission:

<table>
<thead>
<tr>
<th>Type of Review:</th>
<th>Initial Study</th>
</tr>
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<tbody>
<tr>
<td>Title of Study:</td>
<td>The Mobile Mental Health Clinic Effects on Decreasing Emergency Room Visits for Mental Health Patients who are unable to Attend Traditional Outpatient Clinics due to Barriers,</td>
</tr>
<tr>
<td>Investigator:</td>
<td>Rachel Burns</td>
</tr>
<tr>
<td>IRB ID:</td>
<td>STUDY00002096</td>
</tr>
<tr>
<td>Funding:</td>
<td>None</td>
</tr>
<tr>
<td>Grant ID:</td>
<td>None</td>
</tr>
<tr>
<td>IND, IDE, or HDE:</td>
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</tbody>
</table>
| Documents Reviewed: | • Burns, Rachel HRP-612 Form, Category: Other;  
                      • Burns, Rachel Code book for Excel Spreadsheet, Category: Other;  
                      • Burns, Rachel Excel Spreadsheet, Category: Other;  
                      • Burns, Rachel, Category: IRB Protocol; |

The IRB approved the study from 1/1/2018 to 1/10/2019 inclusive. Before 1/10/2019 or within 30 days of study closure, whichever is earlier, you are to submit a continuing review with required explanations.

If continuing review approval is not granted before the expiration date of 1/10/2019, approval of this study expires on that date. The Initial Study materials for the project referenced above were reviewed and approved by the SUNY University at Buffalo IRB (UBIRB) by expedited review. Before 1/10/2019 or within 30 days of study closure, whichever is earlier, you are to submit a continuing review with required explanations. You can submit a continuing review by navigating to the active study and clicking Create Modification / CR.

Studies cannot be conducted beyond the expiration date without re-approval by the UBIRB.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within the IRB system.
Based on the information you have provided in the “University at Buffalo Human Research Protections Program Request for Full Waiver of Individual Authorization for Use of Individually Identifiable Health Information” form (waiver request), the UBIRB has determined a full waiver of the individual authorization required by 45 CFR §164.508 for use or disclosure of protected health information is warranted based on the following criteria as specified in 45 CFR 164.512(i) (2). Accordingly:

A) The use or disclosure of protected health information involves no more than a minimal risk to the privacy of individuals, based on, at least, the presence of the following elements:

1) An adequate plan to protect the identifiers from improper use and disclosure;

2) An adequate plan to destroy the identifiers at the earliest opportunity consistent with conduct of the research, unless there is a health or research justification for retaining the identifiers or such retention is otherwise required by law; and

3) Adequate written assurances that the protected health information will not be reused or disclosed to any other person or entity, except as required by law, for authorized oversight of the research study, or for other research for which the use or disclosure of protected health information would be permitted by this subpart;

B) The research could not practicably be conducted without the waiver or alteration; and

C) The research could not practicably be conducted without access to and use of the protected health information.

A brief description of the Protected Health Information for which this alteration or waiver has been granted is provided on the “Request for Waiver of the Authorization for Use of Individually Identifiable Health Information” or “Request for Limited Waiver of the Authorization for Use of Individually Identifiable Health Information for Study Recruitment” which is part of this approval. If HIV information is requested, this waiver is only valid for disclosures consistent with New York Code Public Health Article 27-F.

This full waiver has been reviewed and approved for the above referenced study by the UBIRB to permit you to receive personal health information as specified in section (1) of the waiver request.

UB IRB approval is given with the understanding that the most recently approved procedures will be followed and the most recently approved consenting documents will be used. If modifications are needed, those changes may not be initiated until such modifications have been submitted to the UBIRB for review and have been granted approval.
Prior to the expiration of this approval, you will receive notification that it is time for the UBIRB to conduct its periodic review of your study. Studies cannot be conducted beyond expiration date without re-approval by the UBIRB.

As principal investigator for this study involving human participants, you have responsibilities to the SUNY University at Buffalo IRB (UBIRB) as follows:

1. Ensuring that no subjects are enrolled prior to the IRB approval date.

2. Ensuring that the study is not conducted beyond the expiration date without re-approval by the UBIRB.

3. Ensuring that the UBIRB is notified of:
   - All Reportable Information in accordance with the Reportable New Information Form Smart Form.
   - Project closure/completion by the Continuing Review/Modification/ Study Closure smart form.

4. Ensuring that the protocol is followed as approved by UBIRB unless a protocol amendment is prospectively approved.

5. Ensuring that changes in research procedures, recruitment or consent processes are not initiated without prior UBIRB review and approval, except where necessary to eliminate apparent immediate hazards to subjects.

6. Ensuring that the study is conducted in compliance with all UBIRB decisions, conditions, and requirements.

7. Bearing responsibility for all actions of the staff and sub-investigators with regard to the protocol.

8. Bearing responsibility for securing any other required approvals before research begins.

If you have any questions, please contact the UBIRB at 716-888-4888 or ub-irb@buffalo.edu.
Introduction
Preexisting mental health patients who have barriers to attend traditional outpatient mental health clinics were admitted to the Mobile Mental Health Clinic (MMHC). Patients who are at risk of decompensation, which may lead to utilization of emergency room (ER) visits and inpatient hospitalizations. Mobile clinics can deliver mental health care to at-risk patients who have barriers to improve access to care, provide support, improve outcomes and reduce cost.

Methods
- The organization that was involved in this study is a non-for-profit organization outpatient mental health called BestSelf Behavioral Health. The new outpatient clinic is called the Mobile Mental Health Clinic (MMHC).
- The sample included all patients that were admitted to the MMHC from May 1st 2017 though August 31st 2017.
- Utilization and demographics were extracted from 6 months before admission and 6 months after by regional health information exchange.
- We did a correlational retrospective design using health care records.

Data Analysis
- Descriptive statistics included, age, gender, race, housing, demographics, mental health diagnoses, substance use, medication management and barriers.
- Descriptive statistics were compared with active and closed cases.
- Utilization of ER visits were compared with active cases only, before and after admission to the MMHC.
- Over 50% of barriers were psychiatric.
- Medical barriers included obesity, recent surgery and autoimmune disease were 21%

Results: Population Description
- Bipolar, depression, and schizophrenia account for over 60% of mental health diagnoses.
- African American have 76.9% of closed cases compared to 45.8% Caucasian.

Results: Comparison of Active vs. Closed
- There is no correlation between medication and counseling verses counseling only and ER visits.
- Majority of active cases had decreased ER visits.
- 45% decrease in ER visits when compared to before admission to the MMHC in active cases.

Results: Emergency Room Utilization
- Only active cases included (n=19).
- ED visits before admission to MMHC = 22 (rate = 115%).
- ED visits after admission to MMHC = 12 (rate = 63%).
- There was a 45% reduction in ED utilization rate.
- Some cases continued with high utilization.
- Majority of ER visits were for medical issues.

Conclusion
- Bipolar, depression, and schizophrenia account for 60% of mental health diagnoses.
- There was no difference in number of visits from the team when comparing ER visits.
- Majority of active cases did have decreased ER visits.
- 45% decrease in ER visits when compared to before admission to the MMHC in active cases.
- Increase in support of the MMHC may have impacted the decrease in ER visits.

Implication for Practice
- This MMHC is a newly developed program.
- Further research is needed in this newly developed mobile mental health clinic to assist patients who have barriers to attend traditional outpatient mental health clinics.
- Further qualitative studies are need to help Advanced Nurse Practitioners to understand the needs of this at-risk population.
- Advanced Nurse Practitioners need to acknowledge patients barriers to engage the patient in treatment.

Acknowledgements
I would also like to thank BestSelf Behavioral Health for the opportunity to evaluate the MMHC. Sharon Hewner, PhD, RN served as the capstone advisor on this project.