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Exploring the Factors Associated with Non-Urgent Emergency Department Utilization by Individuals with Mental Illness in Southwestern Ontario

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**EXPLORING THE FACTORS ASSOCIATED WITH NON-URGENT
EMERGENCY DEPARTMENT UTILIZATION BY INDIVIDUALS WITH
MENTAL ILLNESS IN SOUTHWESTERN ONTARIO**

By

Fabrice Immanuel Mowbray

A Thesis
Submitted to the Faculty of Graduate Studies
through the Faculty of Nursing
in Partial Fulfillment of the Requirements for
the Degree of Master of Science in Nursing
at the University of Windsor

Windsor, Ontario, Canada

2017

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**Exploring the Factors Associated with Non-Urgent Emergency Department
Utilization by Individuals with Mental Illness in Southwestern Ontario**

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DECLARATION OF ORIGINALITY

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ABSTRACT

There has been an increase in Emergency Department (ED) visits for mental health care across North America. Those with mental illness are at an increased risk for frequent ED visitation, often visiting for non-urgent reasons. While a plethora of literature exists examining frequent ED use for mental health care, there is little known about those who use the ED for non-urgent psychiatric complaints. The purpose of this secondary data analysis was to explore the independent predictors of non-urgent ED use for mental health care. A total of 13,114 observations were examined using logistic regression with generalized estimating equations modeling. The findings suggest the following characteristics are predictive of non-urgent ED use for mental health care: age, season, time of day, access to primary health care, mode of arrival, hospital type, patient diagnosis and referral source. Unadjusted analyses also suggest that the wait time, the main provider in the ED, residential status, and the disposition status are associated with non-urgent ED use for mental health care. Future research should aim to incorporate a prospective study design and a qualitative methodology to gain an understanding of the contextual factors that influence those using the ED for non-urgent mental health care.

DEDICATION

I would like to dedicate this thesis to my father William Mowbray. From a young age you encouraged both a questioning nature and critical thinking, and for that I will always be indebted to you. You have always led by example, showing a constant determination for both personal growth and scientific inquiry. I am grateful to have your guidance as not only my father, but as my lifelong friend.

I would also like to dedicate this thesis to my loving and supportive wife Brittany Mowbray. Your constant encouragement and patience throughout the two years has allowed me to achieve this academic goal. You helped keep me grounded and focused, and I am grateful that we were able to grow together throughout this process.

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LIST OF ABBREVIATIONS/SYMBOLS

BMHSU: Behavioural Model of Health Service Use

CAEP: Canadian Association of Emergency Physicians

CI: Confidence Interval

CGI: Clinical Global Impression Scale

CIHR: Canadian Institute of Health Research

CMHA: Canadian Mental Health Association

CTAS: Canadian Triage Acuity Scale

CTRS: Crisis Triage Rating Scale

DSM: Diagnostic and Statistical Manual of Mental Disorders

ED: Emergency Department

GEE: Generalized Estimating Equations

HR: Hazard Ratio

ICD: International Classification of Disease

LHIN: Local Health Integration Network

MHCC: Mental Health Commission of Canada

OR: Odds Ratio

PCP: Primary Care Provider

RCP: Royal College of Physicians

RR: Relative Risk

SAD: Seasonal Affective Disorder

SD = Standard Deviation

SE: Standard Error

SPSS: Statistical Package for the Social Sciences

WHO: World Health Organization

CHAPTER I: INTRODUCTION

Mental illness is an encompassing term used to refer to a wide range of behaviours, thoughts, and emotions that impact one's life in a negative manner; resulting in strain or grief (Mental Health Commission of Canada [MHCC], 2013). Mental illness is a term that covers a wide variety of diagnoses that are as individualistic and diverse as the people who experience them. This is largely due to the fact that the nature, duration, and intensity of symptoms are unique for each person (Canadian Mental Health Association [CMHA], 2016a; MHCC, 2013). Though one's personal experience and culture impact their comprehension and management of mental illness, it is a disability that has the capacity to affect each and every person, regardless of demographic, social, or economic status (CMHA, 2016a; CMHA, 2010).

Mental illness has no single known cause; however, the majority of psychiatric diagnoses can be effectively treated and managed. While the treatment of mental illness does not involve a cure, it helps one achieve a state of remission from some if not all symptoms (MHCC, 2013; World Health Organization [WHO], 2016a). In Canada treatment is made readily available through a variety of community-based resources. Unfortunately, patients are often unaware of these resources, resulting in the use of easily accessible health care services, most frequently the Emergency Department (ED) (Lahey, 2009). This knowledge deficit concerning outpatient resources for mental health care should raise alarm, as the ED is not equipped to manage and follow-up with chronic disease; mental illness is one of the most prevalent chronic illnesses in Canada (Public Health Agency of Canada, 2015).

According to the WHO (2016b), mental illness is the leading cause for disability worldwide, with one in four people suffering from poor mental health. In Canada, one in five Canadians suffers from mental illness (CMHA, 2016b; MHCC, 2013). Despite the high prevalence of mental illness, it is believed that the number of reported cases is an under representation of the true prevalence in Canada. This is not surprising in light of the fact that many of those who suffer from poor mental health choose to avoid treatment due to the potential discrimination and stigma that has been associated with a psychiatric diagnosis (CMHA, 2016b). The high prevalence of mental illness in Canada is concerning to many, due to the more startling statistic which suggests a rapid growth in the number of new cases. It is projected that the incidence rate of those with mental illness is increasing 5% faster than the Canadian population growth rate, and that this trend is anticipated to continue to rise as time progresses (MHCC, 2013).

Unfortunately, the prevalence of mental illness in Ontario and its many municipalities are not readily available. However, numerous indirect indicators of mental health in Ontario may be used to gauge the scope of mental illness in the province. Ontario has fewer inpatient admissions and acute-care days of stay for mental illness when compared against the rest of the nation (Statistics Canada, 2013a). Furthermore, according to Statistics Canada (2013b) the Erie-St. Clair Local Health Integration Network (LHIN) has similar hospitalization rates when compared to the rest of the province. Interestingly however, the number of hospitalization days for psychiatric care in the Erie St. Clair LHIN is higher than the provincial number of hospitalized days (668 versus 547 per 10,000 citizens, respectively). Similar results were found for Windsor-Essex with 646 acute-care days of stay per 10,000 citizens (Statistics Canada, 2013c). In

addition, those with mental illness are more likely to use the ED for health care when compared against the general population; this is especially true for those seeking mental health care in Windsor-Essex for a non-urgent reason (El-Masri et al., 2014).

The literature suggests that those who suffer from mental illness have both higher mortality and morbidity rates when compared against the general population (Royal College of Psychiatrist [RCP], 2010; WHO, 2013). The extent of years lost can be quite extensive for some; this is especially true for those who suffer from severe mental illness as they typically have a 10 to 25 year reduction in their life expectancy (WHO, 2013). Interestingly, the majority of premature deaths in those with a psychiatric diagnosis are precipitated by physical diseases (RCP, 2010; WHO, 2013).

Recent literature has found that those who suffer from both mental illness and a comorbid physical disease tend to have worse physical outcomes than those who suffer from physical diseases alone (RCP, 2010). An example of this phenomenon was demonstrated in a study by Lustman et al. (2000) who found that those who suffer from both diabetes and mental illness concurrently have poor glycemic control when compared against diabetics with good mental well-being. Similarly, those with mental illness and a comorbid cardiovascular disease are found to be at an increased risk for having a heart attack or stroke (Mykletun, Bjerkeset, & Dewey, 2007; RCP, 2010). In addition to worse physical morbidity, individuals with mental illness are more likely to have healthy lifestyle barriers such as: smoking, poor dietary habits, and sedentary pastimes (Lattoo, Mistry, & Dunne, 2013). While those with mental illness are at an increased risk for poor physical health, the majority of barriers reported are modifiable, emphasizing the

importance of early intervention, education, and health promotion to prevent poor habits from developing.

Though the literature suggests that suffering from mental illness has a negative impact on one's health and wellbeing, the problem extends much further than that of the individual. The high prevalence of mental illness in Canada has put a significant burden on the Canadian economy costing the nation over fifty billion dollars every year (CMHA, 2010; MHCC, 2013). The chronic nature of mental illness is proposed as one of the reasons for the economic strain. Chronic diseases involve a complex cascade of elements that negatively impacting health and are rarely cured due to their cyclical nature that involves periods of symptom remission and exacerbation (Ministry of Health and Long-Term Care, 2007). It is the recurring pattern of mental illness that leads to frequent care, monitoring, and health service utilization costing the Canadian government tremendously (Patra et al., 2007). Unfortunately, in addition to the consistent care that chronic diseases require is the fact that they rarely tend to exist in isolation (Maj, 2005). This is especially true for mental illnesses with more new cases of psychiatric comorbidities surfacing now than ever (Maj, 2005).

Both the rapidly growing incidence rate of mental illness and the escalation in patient complexity has led to an increase in the number of cases being seen in Canadian EDs (Canadian Institute for Health Information [CIHR], 2016; Salinsky & Loftis, 2007; Vandyk, Harrison, VanDenKerkhof, Graham, & Ross-White, 2013). The ED is often the first source of interaction many have with their local health care system, and at times is the only known means of treatment by those suffering from mental illness (Emergency Nurses Association, 2011). This increase in patient flow across Canada's EDs, and more

specifically Ontario's EDs, intensifies the strain and burden of an already overwhelmed department (Drummond, 2002; Rowe et al., 2006). The purpose of an ED is to treat the critically ill and to prevent unstable patients from experiencing cardiopulmonary decompensation or death (Ferreria et al., 2008). Overcrowding, in addition to the critical nature of the ED, results in a rushed manner of care that is not conducive to treating those suffering from mental illness (Clark, Dusome, & Hughes, 2007). Those who choose to utilize the ED for mental illnesses often receive inadequate care, resulting in repeat visits and worsening mental health (Baillargeon et al., 2008; Lahey, 2009; Ledoux & Minner, 2006). It is the cyclical nature of visits in the ED that has been found to increase the burden on the health care system, the economy, and most importantly, the patient.

Background and Significance of Problem

There has been an increase in the congestion and overcrowding in EDs across Canada, and with this excess of patients in the ED comes the consequence of substandard care (Rowe et al., 2006). A systematic review conducted by Carter, Pouch, and Larson (2014) has revealed that one of the many ramifications of overcrowding in the ED is an increase in both patient mortality and morbidity. It is proposed that this excess of patient flow causes burnout among ED staff, increasing the risk for medical errors (Canadian Association of Emergency Physicians [CAEP], 2000). Another explanation for poor patient outcomes is the delay in treatment that is associated with overcrowding, increasing the wait time for the care patients need (CAEP, 2000). In addition to the poor patient outcomes, a significant number of ED visitors leave the ED prior to treatment due to fatigue or frustration (Carter et al., 2014). Interestingly, a study by Johnson et al. (2005) found that roughly 6% of those who choose to visit an ED in Ontario leave

without being seen by a clinician. Understanding the causes of ED overcrowding can aid in identifying effective interventions to decrease the congestion found across the nation.

A systematic review conducted by Hoot and Aronsky (2008) reported that both the presence of repeat visitors, and the utilization of the ED for non-urgent reasons, were two key modifiable factors among several that increase the risk for overcrowding in the ED.

With repeat visitation being a significant factor contributing to overcrowding in the ED, the examination of those with mental illness is of tremendous importance, as numerous studies have found that those who suffer from mental illness are at an increased risk for frequent ED utilization (Baillargeon et al., 2008; Buhumaid et al., 2015; Ledoux & Minner, 2006). Similarly, a study by Walsh, Currier, Shah, and Friedman (2015) determined that those who perceive themselves as having good mental health are less likely to utilize the ED in a frequent manner ($OR = 0.55$; $95\% CI = 0.33 - 0.94$). Not only does the presence of a mental illness increase one's risk for frequent ED use, but numerous studies have found a positive correlation between the number of psychiatric diagnoses one has and the number of visits made (Brennan, Chan, Hsia, & Castillo, 2014; Chaput & Lebel, 2007a; Goldstein, Frosh, Davarya, & Leaf, 2007; Hackman et al., 2006; Vandyk, VanDenKerkhof, Graham, & Harrison, 2014). Interestingly, a study by Buhumaid et al. (2015) found that despite not presenting as symptomatic, those with a history of mental illness are also at an increased risk for frequent ED utilization ($RR = 2.19$; $95\% CI = 2.02 - 2.36$). In addition to being at an increased risk for frequent ED utilization, those with mental illness are more likely to present to the ED for a non-urgent reason; this is especially true for Windsor-Essex as those presenting with a psychiatric complaint are roughly 15x more likely to visit for a non-urgent reason when compared to

those visiting for a physical complaint (El-Masri et al., 2014). Unfortunately, little is known about those who chose to use the ED for non-urgent mental health care.

Though the ED is a common place of treatment for those with mental illness, the approach of care provided is not conducive to help with the management of those requiring psychiatric care (Clark et al., 2007). The majority of those with mental illness require a calm, private, and non-stimulating environment to ensure individualized and comprehensive care, as well as to prevent the escalation or exacerbation of symptoms (Austin & Boyd, 2010; Broadbent, Moxam, & Dweyer, 2014). Unfortunately, the confined and hectic nature of the ED often prevents those with mental illness from receiving the specialized care that they need (Broadbent et al., 2014). Despite consistent disappointment with the care provided, many people continue to return to the ED for treatment of mental illness due to a knowledge deficit that exists in Canadian communities regarding community-based psychiatric resources (Lahey, 2009). The education and promotion of these outpatient services is critical, as numerous barriers exist in the ED that hinder the management of mental illness. The following section examines barriers found to inhibit the effective treatment of mental illness in the ED.

Time

A lack of time has been found to be a significant barrier to providing comprehensive care in the ED. The critical nature of the ED places constant pressure on staff to treat patients in a prompt manner. Unfortunately, a consequence of this rushed manner of care is that those suffering from mental illness are often shorted the time needed for a tailored recovery (Marynowski-Traczyk & Broadbent, 2011; Plant & White, 2013). Despite the need for in-depth discussion and a detailed history to ensure adequate

assessment, intervention, and follow-up, both patients and staff feel that those with mental illness tend to be rushed through treatment and triage (CMHA, 2016a; Marynowski-Traczyk & Broadbent, 2011). Ironically, while those with mental illness are often rushed through triage and treatment, they tend to have longer wait times before being seen by a clinician adding further to their frustration (Lahey, 2009; Morphet et al., 2012).

Environment

Due to the stigmatization and discrimination associated with mental illness, many prefer to have treatment in a private and secure environment (Austin & Boyd, 2010). Unfortunately, providing privacy is a challenge for ED staff as the area of treatment is often crowded resulting in a lack of space (Broadbent et al., 2014; Plant & White, 2013). In addition to a congested environment is the turbulent noise that follows; this is especially true in the ED triage area where initial preliminary diagnoses are made (Broadbent et al., 2014). The boisterous noise of the ED often prevents many from receiving efficient care, as those suffering from mental illness often require a calm and non-stimulating environment (Austin & Boyd, 2010; Innes, Morphet, O'Brien, & Munro, 2014).

Competence

The management of mental illness often requires specialized staff with a unique skill set to help assist and diagnose those with psychiatric disorders; unfortunately, these expert clinicians are rarely found in the ED. The nurses who staff the ED often feel incompetent in their ability to take care of those with mental illness expressing that they require more education to provide optimal care (Goode et al., 2014; Innes et al., 2014;

Plant & White, 2013). It is hypothesized that it is the lack of expert psychiatric staff that leads to the recurrent nature of visits by those with mental illness, as many patients are discharged from the ED with the same symptoms and dilemmas they were triaged with (Marynowski-Traczyk & Broadbent, 2011). Interestingly, a study by Boyer et al. (2011) found that the more one visited the ED, the less specialized their care became with frequent visitors having roughly four times more diagnostic variability between their visits than infrequent visitors ($OR = 3.95$; $95\% CI = 3.71 - 5.7$). In other words, those who visited in a frequent manner were more likely to receive a variety of diagnoses from clinicians in the ED. The education and preparation of staff working with those suffering from mental illness is imperative, as the consequences of mismanaged mental illness can lead to unnecessary repetitive visitation.

Problem Statement

Overcrowding in the ED results in both poor patient outcomes for many who visit, as well as burnout among the ED staff (CAEP, 2000; Carter et al., 2014). Two key factors that have been found to contribute to ED overcrowding is both non-urgent and redundant frequent ED utilization (Hoot & Aronsky, 2008). Those with mental illness are at an increased risk for both frequent and non-urgent use of the ED for mental health care (El-Masri et al., 2014; Vandyk et al., 2013). Unfortunately, the rushed and chaotic nature of the ED prevents those with mental illness from receiving the individualized and comprehensive care needed resulting in recurrent follow-up (Broadbent et al., 2014; Clark et al., 2007). While an abundance of studies have examined the predictors of frequent ED visitation by those with mental illness, only one study by Adeosun et al. (2014) examined non-urgent visitors seeking mental health care. Furthermore, no studies

have examined non-urgent ED use by those with mental illness in Canada, depicting a wide gap in the current body of literature.

Significance of the Study

Understanding the characteristics of those who utilize the ED for mental illness is of the utmost importance, as the approach of care provided in the ED is not conducive to the individualistic needs of those who suffer from mental illness (Broadbent et al., 2014; Clark et al., 2007). More specifically, understanding the characteristics of those who utilize the ED for non-urgent mental illness is essential, as unnecessary utilization of the ED has been linked to ED overcrowding, poor patient outcomes, and an increase in patient mortality (Carter et al., 2014; Hoot & Aronsky, 2008). El-Masri et al. (2014) found that of the 13, 114 patients who visited an ED in the Windsor-Essex area for mental illness, 29% were treated for non-urgent complaints. Furthermore, those with mental illness in both the Erie St. Clair LHIN ($OR = 16.5$; $95\% CI = 13.46 - 20.24$), and more specifically Windsor-Essex ($OR = 15.4$; $95\% CI = 11.11 - 20.38$) are at an increased risk for non-urgent ED utilization for mental health care (El-Masri et al., 2014).

These alarming statistics further validate the need for a comprehensive understanding of non-urgent ED utilization by those with mental illness, and more specifically, in the Windsor-Essex area. Identifying these characteristics allows for clinicians and policy makers to direct future resources toward those in urgent need, and guide non-urgent users away from the ED. These actions can assist in decreasing unnecessary repeat visitation and the subsequent strain on the Canadian health care system and economy (CMHA, 2010). While a plethora of studies have examined the independent predictors of frequent ED utilization by those with mental illness, this

secondary data analysis will be the first Canadian study to examine the predictors of non-urgent ED utilization by those with mental illness.

Purpose of the Study

Taking into consideration the previously identified gaps in the literature, the primary objective of this study was to explore ED utilization by patients suffering from mental illness in a Southwestern Ontario medium sized city. The specific purposes of this secondary data analysis were to: (a) explore the independent predictors of ED utilization for non-urgent mental illness, and (b) to compare and contrast the diagnostic, demographic, and visitation characteristics between individuals who utilize the ED for urgent versus non-urgent mental health care.

Research Questions

This study will provide answers to the following research questions:

1. What are the characteristics of the individuals and visits made by those who choose to utilize the ED for mental health care?
2. What are the independent predictors of non-urgent ED utilization for mental health care?

Theoretical Framework

There are distinctive characteristics of both individuals and communities that impact one's decision on both the necessity and type of health service utilized.

Understanding these characteristics is the focus of the Behavioural Model of Health Service Use (BMHSU) which was developed by Ronald Andersen in 1968 (Babitsch, Gohl, & von Lengerke, 2012). Andersen's model was analyzed, described, and utilized to guide the methodology of this study examining non-urgent ED utilization by those

with mental illness. The BMHSU has been subjected to numerous revisions and adaptations since its development several decades ago; a process that resulted in a multi-level and encompassing model (Andersen, 1995). The model has been utilized and validated in the literature by an abundance of health service utilization studies, providing theoretical guidance and consistency for both quantitative and qualitative methodologies examining non-urgent ED use (Beache & Guell, 2016; Uscher-Pines, Pines, Kellermann, Gillen, & Mehrotra, 2013).

The model was developed in the late 1960's with the intent to discover characteristics and conditions that either facilitate or hinder health service utilization (Andersen, 1995; Andersen & Newmen, 2005). When the model was initially developed, the focus was on the family unit (Andersen, 1995; Babitsch et al., 2012). Difficulty developing policies and measures for the family unit led to a shift in focus toward the individual as the subject of interest (Andersen, 1995). In the late 1990s, the final adaptation was completed, producing a cyclical and comprehensive model (Figure 1). The model provides well-defined and concise descriptions of the concepts, displaying semantic clarity. The current version of the model is made up of four main concepts: environment, population characteristics, health behaviour, and outcomes. Furthermore, Andersen depicts a clear image of how the concepts are related and the nature of their relationships through a descriptive text and his detailed model.

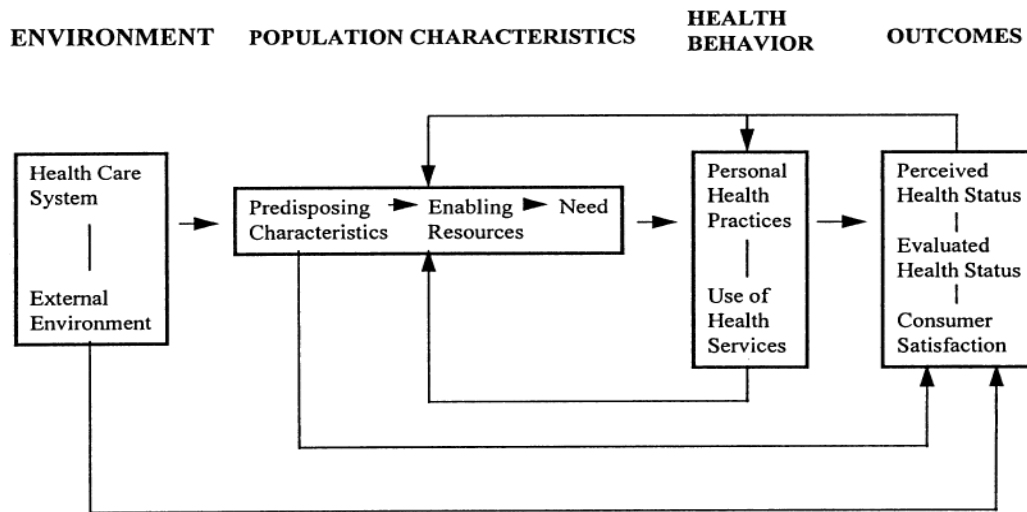


Figure 1. The final adaptation of the Behavioural Model of Health Care Use by Andersen (1995).

Key Concepts

Environment. The environment, according to Andersen (1995) is composed of the external environment and the health care system. Andersen (1995) proposes that the external environment takes into consideration numerous aspects such as: the physical environment, political policies, and economic components of an individual's surroundings. Furthermore, he argues that the external environment impacts aspects of diet, exercise and the self-care of an individual. The second component of the environment is the health care system, which encompasses the national health policies, the resources an organization has to offer, as well as the purpose, type, and location of the organization (Andersen, 1995).

Population Characteristics. The model divides the population characteristics into three main components: predisposing factors, enabling resources, and need factors. Predisposing factors are the individual characteristics that increase the likelihood that one will utilize health services (Andersen & Newman, 2005). Enabling resources

encompasses both the resources provided from the individual and resources found to be available in the community that facilitate health care utilization. Although some individuals are predisposed to health service utilization, the appropriate resources must be available to ensure interaction with a health care provider (Andersen, 1995; Andersen & Newman, 2005). Andersen (1995) also emphasizes the importance of both the type of facilities and availability of health care providers in the area as community-based enabling factors. The final component to the triad is the need for service, whether that be the perceived need of the individual, or the evaluated need of the health care provider. The perceived illness of an individual is viewed as the subjective measurement of how ill an individual feels, whereas the evaluated need is the objective measurement of the clinician such as physicals, laboratory results, and vital signs (Newman & Andersen, 2005).

Health Behaviour. According to Andersen (1995) health behaviour is divided into two components: personal health practice, and the use of health service. Personal health practices are the choices an individual makes regarding their health such as their diet, exercise, and the self-care practices. The second component is the actual use of health services, which Andersen (1995) believes is indirectly influenced by one's external environment. The use of health services analyzes the utilization of service type, site, purpose, and time interval between service utilization, whereas the external environment analyzes the existence and location of these services.

Outcomes. Outcomes of the BMHSU model is composed of three sub-concepts that all influence health service utilization in a synchronous manner: the perceived health status of the patient, the evaluated health status of the health care professional, and

finally, the satisfaction of the patient regarding the care they received. Andersen (1995) believes that when the perceived and evaluated health status of the patient is good, and the satisfaction of the individual is acceptable, there is a decreased chance of future service utilization. Furthermore, Andersen (1995) proposes that patient satisfaction is a product of the convenience and availability of care, the financial status of the patient, the provider's personal characteristics, and the quality of the care provided.

Modified Model

In this study, the BMHSU model (Andersen, 1995) was modified to allow for appropriate description and guidance of the study's purposes and protocol (Figure 2). Specifically, due to the nature of a secondary data analysis, population characteristics was the only major concept applicable to the study. This is because the database used in the study did not include information pertaining to the other three components of the BHMSU model. Thus, the adapted model depicts the components of the population characteristics and illustrates the relationships of interest between the variables available in the initial dataset and anticipated future ED utilization by those with mental illness. Specifically, the predisposing, enabling, and need factors portrayed below were examined to gain an understanding of predictors of non-urgent ED utilization by those with mental illness in a medium-sized Southwestern Ontario city. A fourth category was created labeled *non-predictive factors* to show the relationship between non-urgent ED use for mental health care and factors that transpire after a CTAS score is provided, therefore excluding them from being predictive in nature.

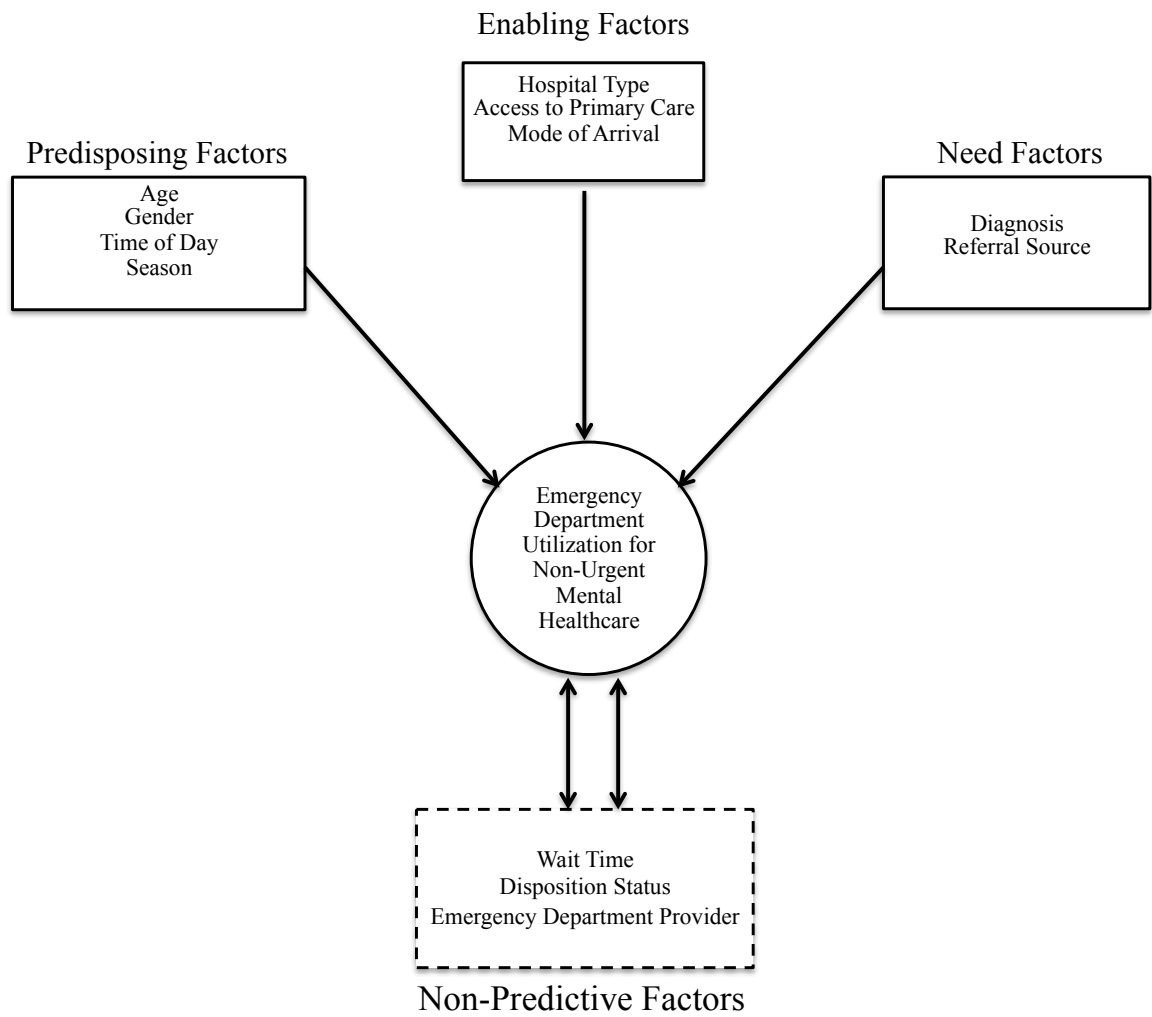


Figure 2. Modified model of the population characteristics from Andersen's (1995) Behavioural Model of Health Service Use.

CHAPTER II: REVIEW OF THE LITERATURE

The high prevalence of mental illness in Canada has led to a strain on both the national economy and health care system (CMHA, 2015; MHCC, 2013b). EDs across Canada are the first line of health care for many, and are experiencing difficulty providing timely and professional care due to overcrowding (Pouch & Larson, 2014; Rowe et al., 2006; Vandyk et al., 2014). A large proportion of the cases being seen in Ontario's EDs are related to mental illness (El-Masri et al., 2014). Furthermore, individuals with poor mental health are at an increased risk for both frequent and non-urgent visitation, consuming an immense amount of resources from emergency services (Baillargeon et al., 2008; Bhumaid, Riley, Sattarian, Bregman, & Blanchard, 2015; El-Masri et al., 2014; Ledoux & Minner, 2006). Fortunately, a plethora of studies have discovered common characteristics among those with mental illness that are predictive of their ED utilization (Vandyk et al., 2013). The objective of this chapter is to highlight these characteristics to provide a thorough understanding of this phenomenon. A secondary objective of this chapter is to identify the gaps and limitations in the current body of literature to help guide the methodology of this study.

While an abundance of studies have examined the characteristics of those who utilize the ED for mental illness, the literature is heavily weighted on the frequency ($n = 27$) of ED utilization rather than urgency ($n = 1$). A frequent ED user for mental health care was commonly defined throughout the literature as a patient who utilized the ED more than once a year (Boyer et al., 2011), while a non-urgent ED user for mental health care has been commonly defined as a patient who utilizes the ED for non-essential care

that could be treated in a primary care setting (El-Masri et al., 2014; Usher-Pines et al., 2013). According to Hoot and Aronsky (2008), both frequent and non-urgent ED have been determined to be two key contributing factors to ED overcrowding. Both forms of unnecessary ED utilization have been found to increase poor patient outcomes, health care spending, stress on staff, and wait times (Durand et al., 2012; New England Health Care Institute, 2010; Uscher-Pines et al., 2013). Due to the scarce amount of data focusing on non-urgent ED utilization for mental health concerns, the predictors of frequency will also be reported, as the consequences for both visitors are analogous (Hoot & Aronsky, 2008). As a result, frequent ED use for mental illness was utilized as a surrogate marker to help guide this study in the exploration for non-urgent predictors.

Andersen's (1995) BMHSU was utilized to guide and organize this literature review. The predictors found in the literature have been divided into three main sections based on the framework: predisposing factors, enabling resources, and need factors. Though a multitude of predictors have been reviewed in this chapter, not all were eligible for utilization in this secondary data analysis, as the variables in the database were predetermined by the data collected by the Erie St. Clair LHIN. Despite this limitation, all variables found to significantly predict either frequent or non-urgent ED utilization by those with mental illness are reported.

Search Strategy

A number of common electronic databases were reviewed and explored to ensure the most encompassing literature review achievable. The following databases were reviewed: Cumulative Index of Nursing and Allied Health Literature (CINAHL), Proquest Nursing and Health Alliance, PubMed, and the Cochrane Database of

Systematic Reviews. The following inclusion criteria were applied to the search: articles published in 2005 and beyond, English language, peer-reviewed, and articles that reviewed the predictors, factors, characteristics, or patterns of ED utilization by those with mental illness. The search terms utilized throughout the review of the literature were used in a variety of combinations and consisted of: mental, health, illness, psych, emergency, room, department, predictor, character, factor, visits, urgent, frequent, use, and utilization. In addition to the initial search, the process of ancestry was utilized to ensure no seminal articles were overlooked during the review of the literature. Though an abundance of studies were appraised, only twenty-eight articles met the inclusion criteria and were reviewed for the purpose of this study.

Of the twenty-eight studies reviewed, only one systematic review conducted by Vandyk et al. (2013) was discovered and analyzed. The purpose of this systematic review was to compare and describe the current research available on those who frequently utilize the ED for mental illness. The predominance of articles reviewed were retrospective in nature, with either a retrospective chart review or a secondary data analysis as the methodological design. Four studies incorporated a prospective component with semi-structured interviews in addition to chart reviews (Adegbohun, 2014; Bruffaerts et al., 2006; Mehl – Madrona, 2008; Young et al., 2005).

Potential Predictors of Non-Urgent ED Utilization for Mental Health Care

A cross-sectional survey study by Adeosun et al. (2014) was the only study found to examine the characteristics of those who utilize the ED for non-urgent mental health care. The study took place at a single-site federal psychiatric hospital in Lagos, Nigeria. The study utilized two psychiatric triage scales to assess the urgency of the visit: The

Crisis Triage Rating Scale (CTRS) and the Clinical Global Impression Scale (CGI). Both arriving to the ED with mechanical restraints and employment status were predisposing factors found to be predictive of non-urgent ED use. Those arriving to the department with mechanical restraints were more likely to present for an urgent issue ($OR = 11.2$; $95\% CI = 5.01 - 7.86$), whereas those who were employed at the time of triage were less likely to use the ED for urgent reasons ($OR = .62$; $95\% CI = .39 - .69$). No enabling resources were found to be predictive of non-urgent ED utilization. The following need factors were found to be predictive of non-urgent ED utilization: suicidal ideation, substance use, the need for medication refills, and defaulting. Both those with a diagnosis of suicidal ideation ($OR = 5.42$; $95\% CI = 1.86 - 3.52$) and substance abuse ($OR = 3.16$; $95\% CI = 1.74 - 2.94$) were more likely to present for an urgent reason, whereas those who had a need for medication refill were less likely to present for an urgent reason ($OR = .06$; $95\% CI = .07 - .09$). Defaulting was defined as any person who had dropped out of outpatient services, and was found to increase the risk of a patient presenting to the ED for an urgent visit ($OR = 2.59$; $95\% CI = 1.64 - 3.96$). The following variables were found to have no association with non-urgent ED utilization for mental illness: gender, marital status, arrival by police/ambulance, and previous number of visits.

Potential Predictors of Frequent ED Utilization for Mental Health Care

Predisposing Factors

Age. A plethora of studies examined the relationship between age and frequent ED utilization by individuals seeking mental health care; the conclusions reported in the following text both indecisive and contradictory. The majority of articles reviewed found

an association; however, the age of risk was diverse throughout the studies. An inverse relationship was determined by the majority of studies focusing on the adult population, with those of a younger age having an increased risk for frequent ED utilization (Bruffaerts et al., 2006; Brunero et al., 2007; Hackman et al., 2006; Ledoux & Minner, 2006). To the contrary, a retrospective chart review by Baillargeon et al. (2008) found a positive relationship between age and ED utilization with those over the age of fifty being the cohort most at risk for frequent ED visitation ($OR = 1.4$; $95\% CI = 1.2 - 1.6$). Furthermore, a retrospective chart review conducted by Brennan, Chan, Hsai, and Castillo (2014) determined that individuals between the ages of 25 – 44 are at the most risk ($OR = 1.53$; $95\% CI = 1.33 - 1.77$) with similar results determined by Smith, Stock, and Santora (2015). Interestingly, all studies focusing on individuals under the age of eighteen determined that those in their teenage years are at the most risk for frequent ED utilization (Newton et al., 2012; Newton et al., 2010; Pittsenbarger & Mannix, 2014). Despite the abundance of studies that found an association between age and frequent ED utilization, a significant number of studies found no association (Boyer et al., 2011; Buhumaid et al., 2015; Goldstein, Frosch, Davarya, & Leaf, 2007; Pasic, Russo, & Roy-Byrne, 2005; Vandyk et al., 2014; Walsh, Currier, Shah, & Friedman, 2005; Young et al., 2005).

Gender. An abundance of studies reviewed the relationship between gender and frequent ED utilization by those suffering from mental illness. The vast majority of studies found a significant association, though the gender at risk varied throughout the literature. In addition to a systematic review conducted by Vandyk et al. (2013), a significant number of studies determined that males are at an increased risk for frequent

ED visitation (Baillargeon et al., 2008; Brennan et al., 2014; Ledoux & Minner, 2006; Mehl-Madrona, 2008; Park et al., 2009; Pasic et al., 2005; Vandyk et al., 2014; Young et al., 2005). Interestingly, a study by Young et al. (2005) found that males are also at an increased risk for having higher costs associated with their visits.

To the contrary of the majority consensus, Walsh et al. (2015) found that females are more likely to have repeat ED utilization ($OR = 1.56$; $95\% CI = 1.04 - 2.36$). Similar results were concluded by two pediatric studies with Newton et al. (2010) determining boys are less likely to return to the ED ($OR = .78$; $99\% CI = 0.68 - 0.89$), and in a follow-up study, Newton et al. (2012) found this to be especially true after a time of crisis ($OR = .72$; $95\% CI = .61 - .86$). Though the majority of studies found that a relationship exists between gender and frequent ED utilization, a significant number of studies found no association (Beck et al., 2015; Boyer et al., 2011; Bruffaerts et al., 2006; Brunero et al., 2007; Buhumaid et al., 2015; Chaput & Lebel, 2007a; Goldstein et al., 2007; Pittsenbarger & Mannix, 2014).

Race. The race of an individual was found to be associated with the frequency of ED utilization among those suffering from mental illness in all studies that examined the relationship. The majority of studies determined that those who are non-Hispanic white are at an increased risk for frequent ED utilization (Baillargeon et al., 2008; Brennan et al., 2014; Claassen, Emond, Pelletier, & Camargo, 2005; Pittsenbarger & Mannix, 2014; Smith et al., 2015). To the contrary, a retrospective chart review conducted by Buhumaid et al. (2015) concluded that those who are of the black racial category are at an increased risk for frequent ED utilization ($RR = 1.19$; $95\% CI = 1.01 - 1.17$), with similar results found by Goldstein et al. (2007).

Employment Status. One's employment status has been found to have an association with the frequency of ED utilization by those with mental illness. In addition to a systematic review by Vandyk et al. (2013), the majority of studies determined that being unemployed increases one's risk for frequent ED visitation (Bruffaerts et al., 2006; Chaput & Lebel, 2007a; Pasic et al., 2005, Vandyk et al., 2014). Additionally, Ledoux and Minner (2006) found that those on sick leave are also at an increased risk ($OR = 1.66$; 95% $CI = 1.12 - 2.05$).

Housing Arrangements. The majority of studies that examined the relationship between an individual's living arrangement and frequent ED utilization by those seeking mental health care found an association. In addition to a systematic review by Vandyk et al. (2013), three retrospective chart reviews determined that those who self-identify as homeless are at an increased risk for frequent ED visitation (Boyer et al., 2011; Pasic et al., 2005; Vandyk et al., 2014). Interestingly, in addition to increased frequency of ED utilization, a case-control study by Park et al. (2009) determined that those who self-identify as homeless are at an increased risk for having a length of stay greater than 24 hours ($OR = 1.98$; $p = <. 01$). These increased lengths of stay may explain why homeless individuals produce substantially higher costs for the ED (Young et al., 2005).

Furthermore, a study by Beck et al. (2015) determined that those living alone are at an increased risk for rapid re-attendance ($HR = 1.11$; 95% $CI = 1.02 - 1.21$), in addition to frequent ED utilization ($HR = 4.01$; 95% $CI = 1.05 - 1.16$). However, a secondary data analysis conducted by Walsh et al. (2015) found that it was a combination of being both a widow and living alone that put one at risk for frequent utilization ($OR = 1.68$; 95% $CI = 1.05 - 2.07$). To the contrary, Ledoux and Minner (2006) found no

association between living alone and frequent ED utilization, however they were able to determine that those living in a non-psychiatric institution are at an increased risk ($OR = 2.13$; 95% $CI = 1.17 - 3.88$).

Relationship Status. An individual's relationship status has been found to have an association with the frequency of ED visits for mental illness. In addition to a systematic review by Vandyk et al. (2013), the majority of studies found that being single increased one's risk for frequent ED utilization (Beck et al., 2015; Boyer et al., 2011; Vandyk et al., 2014; Vandyk et al., 2013; Walsh et al., 2015). Additionally, a retrospective chart review by Beck et al. (2015) found that being single not only increased one's risk of being a frequent visitor ($HR = 1.09$; 95% $CI = 1.04 - 1.13$), but also increased their risk of rapid re-attendance ($HR = 1.16$; 95% $CI = 1.08 - 1.25$). To the contrary, Young et al. (2005) found no association between relationship status and frequent ED utilization.

Enabling Factors

Social Support. Two studies assessed the relationship between social support and frequent ED utilization with both Pasic et al. (2015) ($OR = 1.26$; 95% $CI = 1.1 - 1.44$) and Vandyk et al. (2014) determining that those with a lack of or limited social support are at an increased risk for frequent ED utilization ($OR = 3.5$; 95% $CI = 1.3 - 9$).

Income. Two studies examined the relationship between income and frequent ED utilization by those with for mental illness. Ledoux and Minner (2006) found that those with a lack of income are less likely to be frequent repeaters of the ED ($OR = .65$; 95% $CI = .44 - .95$). To the contrary, Young et al. (2005) found no relationship between income and frequent ED utilization.

Social Assistance. Receiving social assistance has been found to increase an individual's risk of frequent ED utilization for mental illness (Chaput & Lebel, 2007a; Newton et al., 2012; Newton et al., 2010). In addition to receiving social assistance, a retrospective chart review by Ledoux and Minner (2006) found that those receiving the highest amount of social assistance are the most likely to return to the ED in a frequent manner ($OR = 1.51$; $95\% CI = 1.12 - 2.05$). On the other hand, Vandyk et al. (2014) found no relationship between social assistance and frequent ED utilization.

Insurance Status. The majority of studies that examined the relationship between insurance status and frequent ED utilization for mental illness determined that those with Medicare or Medicaid were at an increased risk for frequent ED utilization (Brennan et al., 2014; Buhumaid et al., 2015; Misek, DeBarba, & Brill, 2015; Mehl-Madrona., 2008; Smith et al., 2015). One study by Pittsenbarger and Mannix (2014) took a more holistic look at insurance status and found that those with any source of public insurance were at an increased risk for frequent ED visitation ($OR = 1.47$; $95\% CI = 1.25 - 1.72$). Interestingly, while those with public insurance are at increased risk for frequent ED visitation, it is those who are uninsured that are at the greatest risk for experiencing an extended length of stay (Misek et al., 2015; Park et al., 2009). Unfortunately, all studies examining insurance status were conducted in the United States, decreasing the external validity of the results found.

Geography. An association has been found between the geographical location of housing and the frequency of ED utilization for mental illness. Both studies that assessed the level of urbanization among communities determined that those living in rural areas were less likely to utilize the ED for mental illness than those living in urban cities

(Larkin et al., 2015; Pittsenberger & Mannix, 2015). Additionally, a study by Goldstein et al. (2007) found those who lived in the same city as their local hospital were at increased risk for frequent visitation ($x^2 = 9.6$; $df = 1$; $p = < .01$). To the contrary, a retrospective chart review by Newton et al. (2010) found no association between geographical location of housing and frequent ED utilization.

Referral Source. In addition to a systematic review by Vandyk et al. (2013), the majority of studies determined that those who presented to the ED as a self-referral were at an increased risk for frequent ED utilization for mental illness (Bruffaerts et al., 2006; Ledoux & Minner, 2006; Pasic et al., 2005). Likewise, a study by Bruffaerts et al. (2006) found that those referred by their primary care provider (PCP) were more likely to have a single visit in the ED ($OR = 1.72$; $95\% CI = 1.43 - 2.08$). Nevertheless, Brunero et al. (2007) found no association between mode of arrival and frequent ED utilization, though the study utilized bivariate analyses producing unadjusted results, calling into question the validity of the findings.

Need Factors

Diagnosis. A plethora of studies examined the relationship between various psychiatric diagnoses and frequent ED utilization. Numerous factors were found to influence one's decision to utilize the ED. A main characteristic found to influence an individual's decision to utilize the ED is the type of psychiatric diagnosis present (Merrick, Perloff, & Tompkids, 2010). In addition to the type of diagnosis, studies have found a positive correlation between the number of psychiatric co-morbidities and the number of visits made to the ED (Chaput & Lebel, 2007a; Hackman et al., 2006). Interestingly, not only does the presence of mental illness increase one's risk for frequent

ED visitation, but a study by Buhumaid et al. (2015) determined that the existence of a previous diagnosis increases one's risk as well ($RR = 2.19$; 95% $CI = 2.02 - 2.36$). In light of the fact that an abundance of diagnoses were examined throughout the literature, only the most rigorously studied diagnoses are reported.

Substance Abuse. The majority of studies found that the use of illegal substances increased one's risk for recurrent ED utilization by those suffering from mental illness (Baillargeon et al., 2008; Beck et al., 2015; Boyer et al., 2011; Bruffaerts et al., 2006; Ledoux & Minner, 2006; Merrick et al., 2010; Pasic et al., 2005; Vandyk et al., 2013; Vandyk et al., 2014). Interestingly, a systematic review by Vandyk et al. (2013) found that the correlation persisted whether the diagnosis was a primary or comorbid finding. In addition to frequent ED utilization, a retrospective chart review by Beck et al. (2015) determined that it also increases one's risk of rapid re-attendance ($HR = 1.41$; 95% $CI = 1.23 - 1.61$). Furthermore, those who have a diagnosis of substance abuse are at an increased risk of having a length of stay in the ED greater than 24 hours ($OR = 1.66$; $p = .02$). Despite the significant number of studies finding a relationship between substance abuse and frequent ED utilization, four studies found no association (Buhumaid et al., 2015; Newton et al., 2010; Nossel et al., 2010; Young et al., 2005).

Alcohol Abuse. A relationship between alcohol abuse and frequent ED utilization for mental illness was found by the majority of studies (Buhumaid et al., 2015; Mehl-Madrona, 2008; Smith et al., 2015; Vandyk et al., 2014). To the contrary, Young et al. (2005) found no association, though the small sample size of the study ($n = 173$) decreases the external validity of the findings and increases the risk for type-two error.

Schizophrenia. A diagnosis of schizophrenia has been found to increase one's risk for frequent ED utilization (Brennan et al., 2014; Chaput & Lebel, 2007a; Newton et al., 2010; Pasic et al., 2005; Smith et al., 2015). Interestingly, a study by Chaput and Lebel (2007a) found that patients with a psychiatric comorbidity in addition to their diagnosis of schizophrenia were at an increased risk for having eleven or more visits in a year ($OR = 5.9$; $p = < .001$). One study found no relationship between a diagnosis of schizophrenia and frequent ED visitation (Buhumaid et al., 2015).

Psychosis. A diagnosis of psychosis has been found to increase one's risk for frequent ED utilization (Baillargeon et al., 2008; Beck et al., 2009; Ledoux & Minner, 2006; Pasic et al., 2005; Vandyk et al., 2014; Walsh et al., 2015). In addition to their systematic review (2013), Vandyk et al. (2014) found that those prescribed anti-psychotic medication are also at an increased risk ($OR = 3.2$; $95\% CI = 1.3 - 7.9$).

Mood Disorders. A relationship between the diagnosis of a mood disorder and frequent ED utilization was found in all studies that examined the variables (Beck et al., 2015; Brunero et al., 2014; Newton et al., 2010). Interestingly, in addition to the high number of cases seen in the ED, a study by Larkin et al. (2005) found an increase in the overall prevalence of mood disorders in the United States.

Personality Disorders. In addition to a systematic review by Vandyk et al. (2013), the majority of studies found that those diagnosed with a personality disorder are at an increased risk for frequent ED utilization (Beck et al., 2015; Boyer et al., 2011; Vandyk et al., 2014). Similarly, a study by Bruffaerts et al. (2006) determined that those who were one-time users of the ED were less likely to have a personality disorder ($OR =$

.4; 95% *CI* = .34 – .48). On the other hand, a study by Smith et al. (2015) determined no relationship exists.

Anxiety. A diagnosis of anxiety has been found to increase one's risk of frequent ED utilization by the majority of studies (Baillargeon et al., 2008; Brunero et al., 2007; Nossel et al., 2010; Walsh et al., 2015). Interestingly, although more likely to come back, a retrospective chart review by Baillargeon et al. (2008) found that those with anxiety were more likely to return for reasons other than mental illness (*OR* = 8.6; 95% *CI* = 6.6 – 11). Additionally, a case-control study by Park et al. (2009) found that those with anxiety were less likely to have a length of stay greater than 24 hours (*OR* = 0.52; *p* = .02). In contrast to the general consensus, Smith et al. (2015) found no relationship between a diagnosis of anxiety and frequent ED utilization.

Depression. Though a significant number of studies assessed the relationship between a diagnosis of depression and frequent ED utilization, the results varied from study to study. Both Ledoux and Minner (2006), and Pasic et al. (2005) found that depression decreases one's risk for frequent ED visitation. To the contrary, Mehl-Madrona (2008) determined that having a diagnosis of depression increased one's risk for frequent ED utilization ($\chi^2 = 27.7$; *p* = < .001), though the use of bivariate analyses increases the risk of a spurious relationship. One last study by Walsh et al. (2015) determined that no association exists between the diagnosis and frequent ED utilization.

Bipolar. While a retrospective chart review by Baillargeon et al. (2008) determined that those diagnosed with a bipolar disorder are at an increased risk for frequent ED utilization (*OR* = 8.1; 95% *CI* = 5.5 – 12.6), a study by Pasic et al. (2005) found no relationship exists.

Suicidal Ideation. Although a study by Goldstein et al. (2007) determined that the presence of suicidal ideation was found to increase one's risk of frequent ED utilization ($OR = 2.04$; $95\% CI = 1.06 - 3.92$), a study by Buhmaid et al. (2015) found no association among the variables. Interestingly, a case-control study by Park et al. (2009) found that the presence of suicidal ideation increased one's risk for having a length of stay in the ED greater than 24 hours ($OR = 2.5$; $95\% CI = 1.48 - 3.98$).

Health Care Utilization. Outpatient service utilization has been found to increase one's risk of frequent ED utilization for mental illness (Brufaerts et al., 2006; Goldstein et al., 2007; Nossel et al., 2010). More specifically, a study by Goldstein et al. (2007) determined that those who were in outpatient mental health treatment were at an increased risk for frequent ED utilization ($OR = 2.6$; $95\% CI = 1.29 - 5.35$).

In addition to a systematic review by Vandyk et al. (2013), all studies determined that those with a history of admission for inpatient mental health care were at an increased risk for frequent ED utilization for mental illness (Goldstein et al., 2007; Pasic et al., 2005; Smith et al., 2015). Furthermore, a case-control study by Park et al. (2009) determined that a history of inpatient care increased one's risk of an extended length of stay ($OR = 1.66$; $p = .02$). Interestingly, Ledoux and Minner (2006) specified that an admission from the ED increases one's risk further ($OR = 2.95$; $95\% CI = 1.58 - 5.51$).

Triage Category. Although a retrospective chart review by Newton et al. (2010) concentrating on the pediatric population determined that those visiting for non-urgent mental health care were the least likely to return ($OR = .62$; $99\% CI = .45 - .98$), the majority of studies found there was no association between symptom severity and ED

utilization for psychiatric complaints (Brunero et al., 2007; Goldstein et al., 2007; Young et al., 2005).

Summary of the Literature

A review of the literature regarding the patterns of ED utilization by those suffering from mental illness revealed an abundance of studies. While a multitude of predictors have been discovered regarding frequent ED utilization, scarce data has been found concerning non-urgent ED utilization for mental health care. Understanding of the predictors of both phenomena is essential as it gives insight to the causes of ED overcrowding; both factors have been found to increase unnecessary ED utilization. Furthermore, understanding these predictors allows for both clinicians and those in policy development to allocate resources to those in need by guiding non-urgent and frequent users away from the ED. Unfortunately, while a plethora of predictors exist, a great number of inconsistencies and contradictions were discovered throughout the body of literature; this is especially true for studies concentrating on frequency of ED use for mental health care. Despite the discrepancies found, a significant number of factors were determined to be associated with frequent ED utilization by those suffering from mental illness. Only one study was found that examined urgency of ED use by those with mental illness, with a limited number of variables examined as potential predictors. For a comprehensive review of the characteristics associated with both frequent and non-urgent ED utilization for mental health care, please refer to Table 1.

Table 1. *Summary of Factors Examined Throughout the Literature*

Population Characteristics	Factors Associated with Frequent ED utilization	Factors Associated with Non-Urgent ED utilization
Predisposing Factors	Age Gender Race Employment Status Living Arrangements Marital Status	Mechanical Restraints Employment Status
Enabling Resources	Income Social Support Social Assistance Insurance Status Geography Mode of Arrival	No Findings
Need Factors	Diagnosis Previous Health Service Use	Diagnosis Need for Medication Refill Defaulting

Limitations of the Current Body of Research

Though a plethora of studies have examined the characteristics of those who utilize the ED for the treatment of mental illness, a significant number of limitations were found to exist in the current body of literature. The first major limitation found in the literature was the scarcity of articles examining the characteristics and patterns of those utilizing the ED for non-urgent mental health care. This is a significant limitation as non-urgent visitation is one of the key factors contributing to overcrowding in Canadian EDs (Hoot & Aronsky, 2008). One study by Adeosun et al. (2014) examined predictors of non-urgent ED utilization, however the study was conducted in Lagos, Nigeria. Nigeria's health care system is significantly different with a distinct set of challenges not experienced in Canada such as: lack of medication and supplies, decaying infrastructure,

and severe inequity regarding the distribution of health care (Welcome, 2011). Another limitation to the study is that it examined cases at a psychiatric hospital, where many Nigerian's choose to access emergent mental health care; Canadians and more specifically, residents of Windsor-Essex receive treatment for emergent cases of mental illness in EDs that do not specialize in psychiatric care. The difference in sources of access for emergent health care decreases the applicability of the study to Canadian population. Additionally, the fact that the cases were examined at a single site decreases the external validity of the study further. The lack of studies in Canada regarding non-urgent ED utilization for mental illness shows a large gap in the current body of literature.

The retrospective nature of the body of literature examined was another factor found to be a significant limitation. While retrospective studies are effective at finding preliminary associations, especially when funding is limited, retrospective designs have their limitations (El-Masri, 2014). All observational research is at an increased risk for selection bias, though El-Masri (2014) argues that the risk is much higher in retrospective studies as researchers have access to both the independent and outcome variable at the time of data collection. An additional drawback of retrospective studies is that one can only control and adjust for known confounders (El-Masri, 2013). Understanding confounders is of extreme importance as a confounding variable can lead to a muddled relationship and invalid conclusions (El-Masri, 2013).

Another limitation found among the literature was the variance among the inclusion criteria of the studies. Many of the studies implemented a strict inclusion criteria concentrating on specific patient populations. A number of studies narrowed

their inclusion criteria to a specific age group (Goldstein et al., 2007; Newton et al., 2010; Newton et al., 2012; Pittsenbarger & Mannix, 2014; Walsh et al., 2015), whereas others chose to focus on specific diagnoses such as psychosis (Nossel et al., 2010) or schizophrenia and mood disorders (Hackman et al., 2006). While implementing a strict inclusion criterion increases the specificity of who can utilize the findings, a major consequence of doing so is that it decreases the external validity of a study resulting in fewer academics and researchers being able to utilize the findings (Groves, Burns, & Gray, 2013).

The lack of a consistent operational definition was determined for the term frequent or repeat user; this was found to be a limiting factor. The operational definition indicates how a variable will be measured (Groves et al., 2013). The definition of frequent user varied greatly among the studies with some studies defining frequent visitation as more than one visit a year (Boyer et al., 2011), while others defined it as five or more visits in a year (Vandyk et al., 2014). The lack of a consistent operational definition makes a direct comparison of the findings particularly difficult.

Inconsistency was also found in the diagnostic tools utilized by different institutions and studies. Numerous diagnostic tools have been developed to assist and guide the diagnosis and billing of those with mental illness such as the International Classification of Disease (ICD) created by the WHO, and the Diagnostic and Statistical Manual of Mental Disorders (DSM), created by the American Psychiatric Association (APA) (APA, 2016; WHO, 2016c). Variance was also found in the editions of diagnostic tools utilized by the different studies, as authors utilized the most current edition at the time of their study. The utilization of different criteria can distort the collective

conclusions found among the literature. To solve this problem, the APA is creating the newest DSM edition to include direct linkages between diagnoses provided in the DSM, and those provided in both the ninth and tenth editions of the ICD (APA, 2016b).

CHAPTER III: METHODOLOGY

Research Design

A secondary data analysis was conducted to examine the independent predictors of non-urgent ED visits by individuals with mental illness in Southwestern Ontario. The initial study conducted by El-Masri et al. (2014) was a two-phase mixed methods study with the purpose of exploring factors associated with general non-urgent ED visits in seven community-based hospitals in the Erie-St. Clair LHIN. The data for this study were acquired from the larger database used in the first quantitative arm of the primary study, which consisted of a retrospective chart review of all visits to EDs across the seven hospitals between January 1, 2007 and December 31, 2011 (El-Masri et al., 2014).

Sample and Setting

The initial study conducted by El-Masri et al. (2014) started with a preliminary sample size of 639, 279 participants and 143 variables collected for the first phase. Data were collected between the years of 2011 and 2012 from three different regions: Chatham-Kent, Sarnia-Lambton, and Windsor-Essex. After the removal of irrelevant variables, non-triaged patients, and those seen outside of the Erie St. Clair LHIN, a final sample of 253, 621 participants contributed 597, 373 ED visits to one of the seven community hospitals (El-Masri et al., 2014). For the purpose of this study, a sub-cohort of patients was extracted from the final dataset to include only those who visited one of the three EDs in the Windsor-Essex region for mental health concerns: Windsor Regional Hospital – Metropolitan Campus, Windsor Regional Hospital – Ouellette Campus (formerly known as Hotel-Dieu Grace Hospital – St. Joseph) and Leamington District Memorial Hospital.

Both of the Windsor Regional Hospital campuses are located in an urban city center, as opposed to Leamington District Memorial Hospital, which is located in a rural surrounding community. Together both campuses of Windsor Regional Hospital have a combined capacity of approximately 480 inpatient beds, and are known as one of the largest community-based non-academic hospitals in Ontario seeing roughly 120, 000 ED visits a year (Windsor Regional Hospital, 2016). Leamington District Memorial Hospital is smaller than the two urban hospitals with an inpatient bed capacity of 58 inpatient beds and has roughly 29, 000 ED visits a year. Due to the limited number of resources available to this rural hospital, those who suffer from broken bones, psychiatric illnesses, or life threatening trauma are often transferred to Windsor Regional Hospital to ensure appropriate resources and expertise are available for these patients.

Sample Size. G*Power 3.1.9.2 was used to determine the statistical power of this study. A minimum sample of 5, 600 patients was required to reject the null hypothesis based on a conservative odds ratio (OR) of 1.2, assuming 80% power and a two-tailed alpha of 0.05 (Faul, Erdfelder, Buchner, & Lang, 2009). The database used in this analysis has 13, 114 observations from 7, 479 patients; yielding it more than sufficient to conduct the study without the concern of potentially committing type II error.

Inclusion and Exclusion Criteria. A case was included in the study if: (a) the visit took place at one of the three hospital EDs located in the Windsor-Essex region, and (b) the primary purpose of the visit was for mental health care. A case was excluded from the study if it did not meet both of the previously mentioned conditions.

Variable Definitions

A comprehensive and clear understanding of both the conceptual and operational definitions of a variable is important for an in-depth understanding of the relationships being studied (Groves et al., 2013). In light of this fact, the purpose of this section is to provide both the conceptual and operational definitions of the variables studied. The variables examined in this study were predetermined, as the data were collected by the Erie St. Clair LHIN and provided to El-Masri et al. (2014) for analysis.

Predisposing Factors

Age in years was measured as a continuous variable and was collected at the time of triage. *Gender* was measured as a dichotomous variable with participants labeled as either male or female based on the biological sex registered during triage. *Time of day* was defined as time the patient was triaged at the hospital site and was measured categorically as the shift the patient presented: days (07:00 – 14:59), evenings, (15:00 – 22:59), or nights (23:00 – 06:59). *Season* was collected at the time of triage and was measured as a categorical variable consisting of: (a) spring, (b) summer, (c) winter, or (d) fall. *Residential status* was defined as the presence of permanent housing, and was measured as a dichotomous variable with either the presence or absence of a permanent residence.

Enabling Resources

Hospital type was measured as either an urban or rural facility; with both of the Windsor Regional Hospital sites classified as urban due to their location within the city of Windsor, and Leamington Memorial Hospital classified as rural. *Access to primary health care* was defined as one having the option to receive treatment from a PCP.

Access was measured as the patient having: (a) a family physician, (b) another PCP (i.e. nurse practitioner, doctor of osteopathy, etc.), or (c) no access to a PCP. *Ambulatory type* was defined as the method upon which a patient arrived to the ED. This variable was measured as a dichotomous categorical variable with the patient either: (a) arriving by ambulance, or (b) not arriving by ambulance. The *main ED provider* was defined as the primary clinician that cared for and discharged the patient from the ED, and was measured as a categorical variable with one of the following clinicians treating the patient: (a) family physician, (b) emergency physician, or (c) a nurse/nurse practitioner.

Need Factors

Diagnosis was extracted as documented in the database based on the WHO's ICD-10 criteria, and was measured as a categorical variable. More specifically, the subsection known as the Mental and Behavioural Disorders (F00 – F99) was utilized by clinicians in the ED at hospitals in Windsor-Essex County for both diagnostic and billing purposes. Due to a plethora of diagnoses being assigned (>100), the top four diagnoses, which contributed 55% of all visits, were compared against the rest of those seeking care for mental illness. The *referral source* was defined as the person that initiated the process of care seeking; this was measured as a dichotomous categorical variable with either: (a) a health care provider referring the patient to the ED, or (b) the referral came from one's self, family, or care taker. *Disposition Status* was defined as the manner of departure of a patient after triage or treatment in the ED. The categorical variable was measured as: (a) discharged home, (b) left after triage, prior to treatment, (c) admitted as an inpatient, (d) transferred to another facility, (e) transferred to another department or facility within the organization (i.e. day surgery, clinic), or (f) death upon arrival. *Wait time* was defined as

the number of hours a patient had to wait prior to receiving treatment, and was measured and categorized as follows: (a) 0 – 4 hours, (b) 4.1 – 6 hours, (c) 6.1 – 8 hours, or (d) longer than 8 hours.

Dependent Variable.

Non-urgent use of the ED for mental health care was measured using the Canadian Triage and Acuity Scale (CTAS) score given to the patient at the time of triage. A CTAS score is given to all patients visiting an ED in Canada and is used to prioritize the urgency and need of patients being seen, as well as to guide them toward the most appropriate treatment area (CAEP, 2016). The CTAS is utilized in an ordinal manner, with a CTAS score of one regarded as the most urgent and a CTAS score of five being considered the least urgent. For the purpose of this study, the CTAS score was measured as a dichotomous variable, with non-urgent visits defined as any CTAS score of 4 or 5, and an urgent visit being defined as a CTAS score of 3 or less. See appendix A to view the CTAS criteria set forth by the Canadian Association of Emergency Physicians.

Protection of Human Subjects

Prior to data extraction and analysis, ethics approval was obtained from the Research Ethics Board (REB) at the University of Windsor. Due to the retrospective nature of the study and the lack of patient contact, a waiver of consent was acquired from the REB. Data was received with all cases de-identified and all participants given a randomized code to ensure anonymity. The database was kept in a password-protected computer in a locked room at the University of Windsor, and was only accessed by the principle investigator, the thesis supervisor, and a post-doctoral fellow assisting with data analysis.

Data Analysis

Data were analyzed using Statistical Package for the Social Sciences (SPSS) version 23. A two-tailed alpha of 0.05 and/or a 95% confidence interval was used as the criterion to establish statistical significance. The dataset was screened for the presence, severity, and pattern of missing data; no missing data were found. All continuous variables were examined for the presence of a normal distribution. Fisher's Skewness and Kurtosis coefficients were examined with a value of ± 1.96 as the absolute value. In addition to examining the normality of distribution, the presence of univariate outliers was explored for using a Z-score of ± 3.29 as the cut-off. The examination of outliers is important due to the fact that statistically significant outliers can skew the results of the data analysis (Polit, 2010). The presence of multivariate outliers was searched for through examination of Mahalanobis distance.

Research Question 1. *What are the characteristics of the individuals and visits made by those who choose to utilize the ED for mental health care?*

Both Pearson's chi-square and student's t-test were performed to determine diagnostic, demographic, and visitation differences between urgent and non-urgent visits for mental health care. The results from these analyses were used to provide descriptive statistics, and as a preliminary measure to determine which variables should be added to the multivariate analysis. The variables found to have a p-value ≤ 0.25 were included in the multivariate model as recommended by Hosmer and Lemeshow (2000).

Research Question 2. *What are the independent predictors of non-urgent ED utilization for mental health care?*

Binary logistic regression with generalized estimating equations (GEE) modeling was utilized to determine the independent predictors of non-urgent ED utilization for mental health care. Logistic regression was utilized due to the dichotomous nature of the dependent variable; this statistical analysis is used to yield a predictive model for binary level dependent variables (Polit, 2010). GEE modeling was used to account for the fact that a significant number of patients contributed more than one visit.

CHAPTER IV: RESULTS

The purpose of this chapter is to provide and describe the results of the statistical analyses conducted to answer the proposed research questions. Data screening and preparation will be described, followed by the presentation of the descriptive statistics, unadjusted univariate analyses (chi-square, student's t-test), and the adjusted multivariate logistic regression findings.

Data Screening and Preparation

Descriptive statistics were conducted to examine the presence of any missing data; no missing data were found. The variable *age* was examined for normal distribution and univariate outliers, as it was the only continuous variable utilized in the analyses. The variable was normally distributed with a skewness value of .578 and a kurtosis value of -.304; both are under the absolute value of ± 1.96 as recommended by Tabachnick and Fidell (2007). *Age* was also examined for univariate outliers utilizing a z-score of ± 3.29 as the cut-off point (Tabachnick & Fidell, 2007). No values were found to exist outside of this critical range. Similarly, the presence of multivariate outliers was examined through the inspection of Mahalanobis distance, which suggested the absence of any outlier cases.

Prior to conducting the multivariate regression analysis, all categorical variables that were not binary in nature were dummy coded to allow for their meaningful inclusion in the analysis. The variable *main diagnosis* was created utilizing the top four diagnoses accounting for 55.3% of all diagnoses. This was done to account for the fact that over 100 psychiatric diagnoses were assigned to patients who visited the EDs of Windsor-Essex County. Similarly, the variable *within subjects* was created to examine the number

of times a patient visited the ED during the study period so that clustered GEE could be conducted. The variable *proximity* was not utilized; it was a categorical variable describing the township of residence. Unfortunately, the geographical boundaries of the townships are not an accurate measure of proximity to the hospital as many of the municipalities overlap and stretch into the cities of Windsor and Leamington.

Research Question Results

Research Question 1. *What are the characteristics of the individuals and visits made by those who choose to utilize the ED for mental health care?*

Measures of frequency and central tendency were used to describe the sample characteristics. Chi-square and student t-tests were conducted to compare these characteristics between the study groups. First, the sample characteristics were obtained through the analysis of the primary cases only ($n = 7, 479$). This was done to prevent the misrepresentation of the sample characteristics, since many patients contributed more than one visit. A total of 13, 114 visits were observed during the study period.

Sample Characteristics. Table 2 provides an overview of the sample characteristics and a comparison of these characteristics based on urgency of ED visits for mental health care. The mean age of the study cohort was 37.8 years ($SD \pm 18.85$; range = 0 - 97). Furthermore, there was an equal proportion of males (50.9%; $n = 3, 810$) and females (49.1%; $n = 3, 669$) in the sample. The vast majority of patients resided in a permanent home (99.7%; $n = 7, 460$), while only 0.3% ($n = 18$) of the sample identified as being homeless. The predominance of patients had access to primary health care (87.8%; $n = 6, 568$), with only 12.2% ($n = 911$) having no primary health care provider. Despite the abundance of psychiatric diagnoses assigned to patients in the ED, four

common diagnoses were found to contribute a significant number of visits.

Mood/Affective disorders were the most common diagnoses with 28.3% ($n = 1,782$) of the sample assigned to this group, followed by alcohol-induced mental disorders (13%; $n = 970$), mental disorder related to psychoactive substance abuse (9.6%; $n = 719$), and schizophrenia or delusional disorders (8.9%; $n = 666$). The rest of the diagnoses were combined into a final category labeled as *other mental and behavioural disorders* (44.7%; $n = 3,342$).

Visit Characteristics. When examining the visit characteristics (see Table 3), all observations were included in the analysis ($n = 13,114$). The majority of visits observed were urgent in nature as evidenced by their CTAS scores ($n = 9,318$; 71%). The proportion of visits remained consistent regardless of the season: winter (25.7%), spring (24.8%), summer (24.7%), and fall (24.8%). The data suggests that 94.5% of visits occurred at one of the urban hospitals ($n = 12,387$), and that the majority of patients arrived to their hospital of choice without an ambulance ($n = 7,175$; 54.7%). Additionally, 83.7% ($n = 10,979$) of visits were initiated by a self-referral or the referral of a family member/caretaker, as opposed to a referral from a PCP ($n = 2,135$; 16.3%). Finally, the data suggests that the predominance of visits occurred during the day ($n = 5,914$; 45.1%). Interestingly, while the night shift only saw 20.8% ($n = 2,724$) of visits, it was this shift that had the highest proportion of non-urgent visits (32.4%)

The *main ED provider*, *wait time*, and *disposition status* were examined to determine if they were associated with non-urgent ED use for mental health care, however they were not included in the regression model. These variables transpired after the patient was assigned a triage score, and therefore cannot be examined as a predictor

of non-urgent ED use. Interestingly, while the majority of patients were seen by either a family physician or an emergency medicine physician (42.4% versus 45.1%, respectively), it was those seen by a family physician that were the most likely to be seen for an urgent reason ($\chi^2 = 478.54$; $p = < .001$). Another noteworthy fact is that while majority of patients had a wait time of less than four hours (50.5%; $n = 6,626$), it was the cohort that waited longer than eight hours that had the highest proportion of urgent visits ($\chi^2 = 455.91$; $p = < .001$). The majority of patients were sent home from the ED ($n = 9,251$; 70.5%); though it was those who were admitted to inpatient units ($n = 2,055$), and those transferred to another department or facility within the organization ($n = 12$) that were the most likely to have visited for an urgent reason ($\chi^2 = 231.89$; $p = < .001$). Finally, the decision was made to exclude the variable *residential status* from the regression model, as there was a pronounced disproportion between the number patients who lived in a permanent home versus those who self-identified as homeless (99.7% versus 0.3%, respectively).

Table 2. Comparison of Sample Characteristics (Urgent vs. Non-Urgent)

Variable	Groups		Total (N = 7, 479)	t/χ^2	p
	Urgent (n = 5462)	Non-Urgent (n = 2017)			
Age					
Years [M ± SD]	37.46 ± 19.21	38.69 ± 17.8	37.79 ± 18.85	-2.59 ^t	.01
Gender [n (%)]					
Male	2838 (74.5%)	972 (25.5%)	3810 (50.9%)	8.37 ^x	.004
Female	2624 (71.5%)	1045 (28.5%)	3669 (49.1%)		
Residential Status [n (%)]				2.27 ^x	0.14
Permanent Home	5451 (73.1%)	2009 (26.9%)	7460 (99.7%)		
Homeless	11 (57.9%)	8 (42.1%)	18 (0.3%)		
Access to Primary Care [n (%)]				15.89 ^x	< .001
Family Physician	4774 (73.5)	1724 (26.5)	6498 (86.9)		
Other	61 (87.1)	9 (12.9)	70 (0.9)		
None	627 (68.8)	284 (31.2)	911 (12.2)		
Diagnosis [n (%)]				69.16 ^x	< .001
Alcohol Induced Mental/ Behavioural Disorders	808 (83.3)	162 (16.7)	970 (13.0)		
Psychoactive Substance Induced Mental/Behavioural Disorder	512 (71.2)	207 (28.8)	719 (9.6)		
Schizophrenia/Delusional Disorders	508 (76.3)	158 (23.7)	666 (8.9)		
Mood and Affective Disorders	1278 (71.7)	504 (28.3)	1782 (23.8)		
Other Mental and Behavioural Disorders	2356 (70.5)	986 (29.5)	3342 (44.7)		

t = student's t-test; χ = chi-square

Table 3. Comparison of Visit Characteristics (Urgent vs. Non-Urgent)

Variable	Groups		Total (N = 13,114)	χ^2	p
	Urgent (n = 9, 318)	Non-Urgent (n = 3, 796)			
Season [n (%)]				6.25	.10
Winter	2389 (70.9)	979 (29.1)	3368 (25.7)		
Spring	2292 (70.5)	957 (29.5)	3249 (24.8)		
Summer	2271 (70.0)	971 (30.0)	3242 (24.7)		
Fall	2366 (72.7)	889 (27.3)	3255 (24.8)		
Hospital Type [n (%)]				27.71	< .001
Urban	8864 (71.6)	3523 (28.4)	12387 (94.5)		
Rural	454 (62.4)	273 (37.6)	727 (5.5)		
Ambulatory Type [n (%)]				210.0	< .001
Arrived by Ambulance	4595 (77.4)	1344 (22.6)	5939 (45.3)		
No Ambulance	4723 (65.8)	2452 (34.2)	7175 (54.7)		
Referral Source [n (%)]				3.32	.07
Self/Family/Caretaker	7836 (71.4)	3143 (28.6)	10979 (83.7)		
Other Health Care Provider	1482 (69.4)	653 (30.6)	2135 (16.3)		
Main ED Provider [n (%)]				478.54	< .001
Family Practitioner	4356 (78.4)	1203 (21.6)	5559 (42.4)		
Emergency Physician	4123 (69.7)	1793 (30.3)	5916 (45.1)		
Nurse (RN or NP)	381 (56.3)	296 (43.7)	667 (5.2)		
Other	458 (47.6)	504 (52.4)	962 (7.3)		
Time of Day [n (%)]				27.44	< .001
Day	4194 (70.9)	1720 (29.1)	5914 (45.1)		
Evening	3283 (73.3)	1193 (26.7)	4476 (34.1)		
Night	1841 (67.6)	883 (32.4)	2724 (20.8)		
Wait Time [n (%)]				455.91	< .001
0 – 4 Hours	4180 (63.1)	2446 (36.9)	6626 (50.5)		
4.1 – 6 Hours	1867 (74.9)	625 (25.1)	2492 (19.0)		
6.1 – 8 Hours	1004 (79.2)	264 (20.8)	1268 (9.7)		
> 8 Hours	2267 (83.1)	461 (16.9)	2728 (20.8)		

Table 3. Continued

Disposition Status [<i>n</i> (%)]				231.89	< .001
Discharged Home	6405 (69.2)	2846 (30.8)	9251 (70.5)		
Patient Left before Treatment	548 (59.2)	378 (40.8)	926 (7.1)		
Inpatient Admission	1707 (83.1)	348 (16.9)	2055 (15.7)		
Transferred to Other Facility	344 (77.3)	101 (22.7)	445 (3.4)		
Intra-Facility Transfer	10 (83.3)	2 (16.7)	12 (0.1)		
Discharged to Institution	304 (71.5)	121 (28.5)	425 (3.2)		

Research Question 2. *What are the independent predictors of non-urgent ED utilization by those with mental illness?*

Binary logistic regression with GEE was utilized due to the dichotomous nature of the dependent variable and the clustered nature of the observations; the results are summarized in Table 4. Eight variables were found to be independent predictors of non-urgent ED use for mental health care. *Age* was found to be predictive, whereby every additional year of age increased one’s risk of non-urgent ED use by one percent ($OR = 1.01$; 95% $CI = 1.005 - 1.01$). One’s access to primary health care was another factor found to be predictive, with those lacking a PCP being 1.2 times more likely to utilize the ED for non-urgent reasons than those with a family physician ($OR = 1.2$; 95% $CI = 1.08 - 1.37$). The final sample characteristic found to be predictive was the patient’s *diagnosis*, with those with an alcohol induced mental disorder being 33% less likely to utilize the ED for non-urgent mental health care when compared against individuals with other psychiatric diagnoses ($OR = .67$; 95% $CI = .56 - .79$). Similarly, those with a diagnosis of schizophrenia or other delusional disorders were also found to be at a decreased risk for non-urgent use, with those assigned the diagnosis being 24% less likely to use the ED in a non-urgent manner ($OR = .76$; 95% $CI = .66 - .87$).

The *hospital type* was a significant predictor of non-urgent ED use for mental health care, with those visiting an urban hospital being 27% less likely to visit for a non-urgent reason than those visiting a rural hospital ($OR = .73$; 95% $CI = .62 - .86$). The *mode of arrival* was also found to be predictive, with those arriving without an ambulance being 1.77 times more likely to visit for a non-urgent reason than those arriving by ambulance ($OR = 1.77$; 95% $CI = 1.61 - 1.93$). The *referral source* was found to be predictive, whereby those referred by a PCP were 1.14 times more likely to visit for non-urgent psychiatric complaint than those who were self-referrals or referred by a family member/caretaker. Another visit characteristic found to be significant was the *time of day* that the patient chose to utilize ED, with those visiting the ED at night (2300 – 0659) being 1.3 times more likely to utilize the ED for a non-urgent reason than those visiting during the day ($OR = 1.33$; 95% $CI = 1.19 - 1.47$). Finally, the *season* was found to be predictive of non-urgent ED use for mental health care, with those visiting in the fall being 13% less likely to visit for a non-urgent reason when compared with those visiting in the summer ($OR = .87$; 95% $CI = .78 - .98$). *Gender* was the only variable found not to be significant.

Table 4. *Logistic Regression using Generalized Estimating Equations*

Variable	β	SE	P	OR	95% CI
Age	.008	.001	< .001	1.01	1.005 – 1.01
Gender					
Female	.000	.0448	.99	1.003	.92 – 1.09
Male (reference group)					
Access to Primary Care	-.234	.243	.336	.79	.49 – 1.27
Other	.199	.062	.002	1.2	1.08 – 1.37
None					
Family Physician (reference group)					

Table 4. Continued

Diagnosis					
Alcohol Induced Mental/ Behavioural Disorders	- .406	.091	< .001	.67	.56 – .79
Psychoactive Substance Induced Mental/Behavioural Disorder	- .012	.076	.87	.99	.85 – 1.15
Schizophrenia/Delusional Disorder	- .273	.070	< .001	.76	.66 – .87
Mood/Affective Disorders Other (reference group)	- .064	.051	.21	.94	.85 – 1.04
Hospital Type					
Urban	- .316	.084	< .001	.73	.62 – .86
Rural (reference group)					
Referral Source					
Health Care Provider Self/Family/Caretaker (reference group)	.131	.051	.01	1.14	1.03 – 1.26
Mode of Arrival					
No Ambulance	.570	.461	< .001	1.77	1.61 – 1.93
Arrived by Ambulance (reference group)					
Time of Day					
Evening	- .017	.047	.721	.98	.89 – 1.08
Night	.283	.052	< .001	1.33	1.19 – 1.47
Day (reference group)					
Season					
Winter	- .048	.058	.403	.95	.85 – 1.07
Spring	- .043	.057	.448	.96	.86 – 1.07
Fall	- .137	.059	.022	.87	.78 – .98
Summer (reference group)					

β = unstandardized coefficient; SE = standard error; p = probability of accepting the null hypothesis at an alpha of 0.05; OR = odds ratio; CI = confidence interval

CHAPTER V: DISCUSSION

The purpose of this chapter is to report and discuss the findings of this study within the context of existing literature to provide a comprehensive understanding of ED utilization by those with mental illness. More specifically, this chapter will discuss the independent predictors of non-urgent ED utilization for mental health care. Furthermore, the predictors of frequent ED utilization will be discussed, as both phenomena have been found to produce the same consequence: ED overcrowding. The predictors will be organized according to Andersen's (1995) population characteristics: predisposing factors, enabling resources, and need factors. Another objective of this chapter is to make recommendations based on the study findings for nursing education, practice, theory, and research, in addition to discussing the limitations of the study.

Predisposing Factors Associated with Non-Urgent ED Mental Health Care Use

In this study, *age* was found to be an independent predictor of non-urgent ED use for mental health care, whereby every additional year of age increased one's risk non-urgent use. This finding is contradictory to what is found in literature examining general non-urgent ED use (Usher-Pines et al., 2013). A likely reason for this finding is that as individuals age, they become more aware of the subtle signs and symptoms of their psychiatric illness. This awareness results in these patients seeking care prior to the development of any serious sequela. Unfortunately, Adeosun et al. (2014) did not examine age as a potential predictor, though it is worthwhile to note that that the mean age of participants within this study and Adeosun's were similar (37.5 years versus 36.8, respectively). With regards to frequent ED utilization, there was a great deal of confusion as to whether *age* could be utilized as a predictor.

While there was a difference in non-urgent ED use among males and females in the univariate analysis, *gender* was not found to be predictive when examined in the regression model. Similarly, Adeosun et al. (2014) also determined that gender was not predictive of non-urgent ED use for mental health care. It is worthwhile to note that there was an almost even split among males and females in the sample of this study (50.9% versus 49.1%, respectively). While gender was not found to be predictive of non-urgent ED utilization, the majority of literature regarding frequent ED use found that males are at an increased risk for recidivism (Brennan et al., 2014; Vandyk et al., 2014).

Both the *time of day* and the *season* were found to be predictive of non-urgent ED use for mental health care. Individuals visiting during the night (2300 – 0659) were 1.33 times more likely to visit for a non-urgent reason than those visiting during the day. This finding came as a surprise, as the majority of literature examining general non-urgent ED use report high levels of non-urgent use during the day (0700 – 1459) and evening (1500 – 2259) (Afilalo et al., 2004; Carret et al., 2009; El-Masri et al., 2014). Visits taking place during the fall were 13% less likely to be for a non-urgent reason when compared against the summer as the reference group; similar results have been found for general non-urgent ED use in Windsor-Essex (El-Masri et al., 2014). A likely reason for this is that cold weather often acts as a deterrent for health service use; this is especially true for non-urgent health care seekers (Diehl, Morris, & Mannis, 1981; Tai, Lee, Shih, & Chen, 2007). This finding is also noteworthy because fall is the season in which those suffering from Seasonal Affective Disorder (SAD) begin to become symptomatic; the presence of SAD has been found to exacerbate other psychiatric diagnoses (CMHA, 2017). This study was the first to examine the *time of day* and the *season* in which non-urgent ED

visits for mental health care took place; similarly, no studies examined their impact on the frequency of ED use for mental health care.

Enabling Resources Associated with Non-Urgent ED Mental Health Care Use

This study was the first to examine *primary health care access* and the *type of hospital* in relation to the urgency of ED visits for psychiatric care. *Access to primary health care* was found to be predictive of non-urgent ED utilization for mental health care; those without access to primary health care were 1.2 times more likely to use the ED for non-urgent care when compared to those with a family physician. Only 0.9% of the population had a PCP other than a physician (i.e., nurse practitioner, doctor of osteopathy, etc.), and they too were less likely to use the ED for non-urgent mental health care than those without access. This should come as no surprise, as a plethora of studies have found that those without a PCP tend to use the ED as a convenient alternative for timely primary care (El-Masri et al., 2014; Usher-Pines et al., 2013). The *hospital type* was also found to be a significant predictor, with those visiting an urban hospital being 27% less likely to visit for a non-urgent reason than those visiting a rural hospital. This is to be expected, as the rural hospital in the study does not have psychiatric services and transfers all patients experiencing a psychiatric crisis to Windsor Regional Hospital for evaluation (Erie Shores Health Care, 2017). A final enabling resource examined in this study was the *mode of arrival*, and it was determined that those who arrived without an ambulance were 1.76 times more likely to visit for a non-urgent reason when compared against those who arrived with an ambulance. To the contrary, Adeosun et al. (2014) found that arrival by the ambulance was not significantly associated with non-urgent ED

use for mental health care, though this study grouped arrival by police and ambulance into the same variable; if examined separately results may have differed.

Need Factors Associated with Non-Urgent ED Mental Health Care Use

Diagnosis was found to be predictive of non-urgent ED use for mental health care. This study found that those with a diagnosis of an alcohol induced mental or behavioural disorder, or a diagnosis of schizophrenia or delusional disorder were found to be at a decreased risk for non-urgent ED use when compared with those with other psychiatric diagnoses ($OR = 0.66$ and $OR = 0.76$, respectively). Those who present with excessive alcohol consumption are often unable to maintain their airway, resulting in a necessity for acute intervention. Furthermore, they often require intravenous fluid and electrolyte replacement, as well as close monitoring of electrolytes through laboratory testing and telemetry monitoring (Mayo Clinic, 2017). Similarly, a sense of urgency is apparent with those presenting to the ED with schizophrenia or delusional disorders, as they often present in a state of psychosis displaying visible signs of hallucinations, delusions, and paranoia (Centre for Addictions and Mental Health, 2012).

Adeosun et al. (2014) found that it was a diagnosis of suicidal ideation or a substance induced behavioural diagnosis that decreased one's risk for non-urgent ED use for mental health care. While Adeosun et al. (2014) determined that those visiting the ED for a substance induced psychiatric diagnosis were more likely to visit for an urgent reason, this study found no significant results. Furthermore, a review of the literature revealed that alcohol and psychoactive substance induced visits, as well as schizophrenia were all found to increase one's risk for frequent ED utilization for mental health care (Beck et al., 2015; Buhumaid et al., 2015; Vandyk et al., 2014). Interestingly, a study by

Vandyk et al. (2014) found that even if not visiting for schizophrenia or a delusional disorder, the existing prescription of an anti-psychotic medication increased one's risk for frequent ED visitation.

The *referral source* was a significant independent predictor. To our surprise, those who were referred by a health care provider were 1.14 times more likely to visit the ED for a non-urgent reason when compared against those who were a self-referral, or referred by a family member or caretaker. There are two possible explanations for this outcome: (a) PCPs often allot a fixed amount of time per patient visit, as insurance reimbursement is standardized regardless of the reason for the general assessment (Institute for Clinical and Evaluative Sciences, 2012); the in-depth discussion necessary for the treatment of mental illness may result in a referral of care to avoid excessive wait times for remaining patients, or (b) PCPs are uncomfortable dealing with mental health, and therefore send patients to the ED for psychiatric evaluation. Interestingly, while a referral from a health care provider increases one's risk for non-urgent ED use, it has been found to decrease the frequency of ED use by those with mental illness (Bruffaerts et al., 2006; Ledoux & Minner, 2006; Pasic et al., 2005).

The *main ED provider*, *wait time*, and *disposition status* were not included in the multivariate analysis due to the fact that these variables transpire after a CTAS score is assigned, and therefore cannot be examined as a predictor of non-urgent ED utilization. *Residential status* was another variable not included in the regression model, as there was a pronounced disproportion between the number patients who lived in a permanent home versus those who self-identified as homeless (99.7% versus 0.3%, respectively). Nevertheless, their associations with non-urgent ED use were examined in the descriptive

statistics. Those seen by a family physician were the most likely to be visiting for an urgent reason, when compared with those being seen by an emergency physician, a nurse practitioner, or a registered nurse. This could be explained by the fact that family physicians treat mental illness in clinics, and their increased comfort with this cohort of patients may result in them being assigned patients visiting the ED for a psychiatric crisis. To no surprise, those who were admitted, and those who were transferred to another department or facility within the organization were the most likely to receive an urgent CTAS score. A likely reason for intra-organizational transfers is because the Metropolitan Campus of Windsor Regional Hospital does not have psychiatric inpatient resources, and those who require inpatient services are transferred to the Ouellette Campus where these services are offered.

Those with mental illness have been found to have longer ED wait times when compared against those visiting for medical reasons, though to our surprise, it was the cohort that waited eight hours or longer that was most likely to visit for an urgent reason. Three possible explanations for this include: (a) those seeking help for mental health care often do not show objective measures of illness or cardiopulmonary compromise (decreased blood pressure, thready pulses, pallor, etc.) and therefore are not treated as a priority despite their low CTAS score, (b) those visiting for an urgent reason are more likely to wait for care, whereas those visiting for a non-urgent reason are more prone to leave prior to treatment or discharge, and (c) those who present for an urgent mental health complaint often require a psychiatric consult and inpatient treatment, both of which are often delayed. This is due to a lack of psychiatric specialist in Ontario, and a shortage of inpatient beds; Ontario has the lowest number of inpatient beds per capita

(CAEP, 2017; Kurdyak, Zaheer, Cheng, Rudoler, & Mulsant, 2017; Ontario Health Coalition, 2017). Finally, the unadjusted analysis determined that those who self-identified as being homeless contributed a higher proportion of non-urgent ED visits than those who resided in a permanent home (42.1% versus 29.6%, respectively). A few possible explanations may provide insight to this phenomena: (a) those who self-identify as homeless have less access to primary care (Gill, Mainous, & Nsereko, 2000), (b) the majority of homeless tend to live inner-city placing them in close proximity of local EDs (Parsell, 2010), and (c) homeless individuals often have a lack of transportation resulting in the use of conveniently located health care centers (National Coalition for the Homeless, 2009).

Implications and Recommendations for Nursing

Education and Practice

As described above, there are certain characteristics of both patients and their visits that are predictive of non-urgent ED utilization for mental health care. Clinicians, students, and key stakeholders should be educated on these characteristics to avoid the consequences associated with non-urgent ED use. Education would provide clinicians the skill set to identify patients that are at an increased risk and direct them towards the appropriate community-based mental health resources. Clinicians should also be educated on the outpatient resources available for mental health care; this is especially true of ED clinicians, as the ED is often the first source of interaction patients have with the health care system. ED clinicians should take advantage of this situation, and take the time to educate non-urgent visitors about community-based resources in order to guide their future health service use away from the department. While patient education is

expected to decrease non-urgent ED use, it is recognized that education and knowledge does not always lead to behaviour change; this is particularly true for chronic illnesses including mental health concerns (Kelly & Barker, 2016). Unfortunately, it is predicted that there is likely to be a small cohort of patients who will continue to use the ED, as people often choose to use resources that they perceive to be most advantageous (Fishburn, 2013). A common conception found among the general population is that it is more convenient to visit the ED. Patients often state that they receive better care, have more access to services, and are seen quicker when compared against their PCP or other outpatient resources (Uscher-Pines et al., 2013).

While educating ED staff about community-based mental health resources may assist in decreasing congestion in the ED, education and collaboration should take place with local PCPs. Patients often develop long-term relationships with their PCPs, and have the opportunity to develop a strong rapport. Unfortunately, this study found that non-urgent visits to the ED for mental health care are often the result of an inappropriate transfer of care from a PCP. Education should take place with ED staff, PCPs, and community-based mental health resource leaders to ensure consistency of knowledge translation, and to encourage collaborative brainstorming. Inter-professional education has been found to: increase health care provider confidence, promote mutual understanding, facilitate communication between health care providers, and decrease the costs of education for organizations (Barr et al., 2000; Illingworth & Chelvanayagam, 2007).

As previously mentioned, it is recommended that both health care institutions and legislative agencies work together to educate the public about local community-based

mental health care services. One way to ensure the comprehension and recollection of this knowledge is through the creation and distribution of a hard copy resource.

Appendix B displays a reference sheet manufactured by the CMHA to inform patients of outpatient mental health care services in Windsor-Essex County; this can be used as a template to assist in the organization of both services offered and institutions available.

The distribution of this resource would be particularly beneficial upon discharge from the ED or inpatient mental health services, as it has been found to help reduce the high levels of reported confusion regarding discharge instructions (Engel et al., 2009; Zavala & Shaffer, 2011). Furthermore, a hard copy resource provides a structured and standardized form of knowledge translation; this has been found to increase patient satisfaction and follow-up with the necessary resources (Ben-Morderchai, Herman, Kerzman, & Irony, 2010). The resource should also be distributed to patients seeking health care at PCP offices and made available at other community-based mental health facilities such as: CMHA, Mental Health Connections, and the Community Crisis Center, to name a few. One recommendation for future resource development is the inclusion of photographs of the institutions, as visual images have been found to increase patient comprehension and recall (Choi, 2015).

Policy Development

This study sheds light on a variety of factors that are associated with non-urgent ED use for mental illness. To our surprise, those suffering from mental illness in Windsor-Essex County are the most likely to visit the ED for a non-urgent reason (El-Masri et al., 2014). The consequences of non-urgent ED use validate the need for the identification of patients at an increased risk, which was the purpose of this study. It is

recommended that a healthy public policy and, more specifically, a screening tool be developed and implemented in EDs, PCP offices, and community-based mental health care centers to assist in identifying those at an increased risk for non-urgent ED use. It is suggested that the screening tool be developed using the results of this study, as it is the only study in North America to examine this phenomenon. Furthermore, the screening tool can be utilized to assist in determining who is an appropriate candidate for community-based services, and who may benefit from receiving one of the previously mentioned CMHA resource lists.

In addition to the use of a screening tool, it is also recommended that institutional policies encourage the employment of on-site psychiatric resources and staff. Many who choose to use the ED for mental health care do not receive the individualized care that they require (Clarke et al., 2007). Unfortunately, there is often a lack of expert psychiatric staff found available in the ED (Marynowski-Traczyk & Broadbent, 2011). An Australian study by Wand (2004) found that the presence of trained mental health nurses in the ED reduced both the wait times and treatment times of patients presenting with a psychiatric complaint. Furthermore, their presence increased patient follow-up with community-based resources and increased the ED staff's confidence in caring for this cohort of patients. Similarly, the presence of mental health nurse practitioners (MHNPs) has been found to significantly decrease patient distress, and increase patient satisfaction with the care provided in the ED and during follow-up care (Wand, White, Patching, Dixon, & Green, 2012). Local hospitals should explore the integration of these roles into their EDs to see if similar outcomes are found in a Canadian population.

Theory and Research

Andersen's Behavioural Model of Health Service Use (BMHSU) was a useful model and aided in: (a) organizing the literature review, (b) guiding the methodology, (c) determining the predisposing factors, enabling resources, and need factors necessary for examination, and (d) organizing the results and discussion of this study. The structural and semantic clarity of the model allowed for easy transferability to the topic of non-urgent ED utilization for mental health care. Unfortunately, not all variables could be studied due to the limitations of this secondary data analysis, though this did not hinder the use of the model in providing a theoretical lens for the examination of this phenomenon. It is recommended that future studies examining the same topic utilize the BMHSU, as theories and models enable researchers to connect a single study to a base of knowledge (Neuman, 1997). The application of the same theory across different studies ensures that patterns and relationships are examined in a similar manner, further validating our understanding and use of the BMHSU and the phenomenon of interest (Sunday, 2016).

While this study provided a preliminary understanding and insight regarding non-urgent ED use for mental illness, future research should aim to examine the phenomenon with a prospective study design. A major advantage of a prospective study design is that it allows researchers to obtain and understand a temporal relationship, ensuring that the exposure (mental illness) takes place prior to the outcome (non-urgent ED utilization) (El-Masri, 2014). Secondly, prospective study designs should aim to examine the population characteristics of the BMHSU that this study was unable to assess (i.e.,

income, educational status, etc.), in addition to other major concepts, including: environment, health behaviour, and outcomes.

A final recommendation for future research is to conduct a qualitative or mixed-methods study to gain an understanding of the contextual factors that influence those using the ED use for non-urgent mental health care. A qualitative lens would add richness and more depth to the body of knowledge, providing a comprehensive and real-world understanding of the phenomenon (LoBiondo-Wood & Haber, 2013). Qualitative research is useful in examining complex and new areas of research (Clarke & Jack, 1998); both of which apply to the examination of ED use for non-urgent mental health care. Therefore, a mixed-methods approach would be beneficial when examining this complex phenomenon as more insight is gained from a combination of both quantitative and qualitative philosophies, than from their methodology used separately.

Limitations

Due to the secondary nature of this study, a major limitation was that the variables available for examination were pre-determined by the initial data collected by the Erie-St. Clair LHIN and analyzed by El-Masri et al. (2014). This fact limited the study from utilizing Andersen's (1995) BMHSU to its full scope, leaving many variables recommended by the model unexamined (i.e., perceived patient need, health beliefs, etc.). The study was also limited by the data collection allowed by hospital systems; many basic determinants of health are not recorded to prevent discrimination, as they are not necessary for the care being provided (i.e., race, income, education, etc.). The examination of these missing variables would have provided a more comprehensive understanding of the phenomenon of interest. Finally, a variable called *proximity* was

present in the database, though it was not examined due to the fact that it was categorized based on the municipality of residence. Unfortunately, the borders of the municipalities of Windsor-Essex County stretch across one another, and into the cities of Windsor and Leamington making the variable an inaccurate measurement of proximity to the hospital visited.

This study analyzed data from three non-academic health care facilities in Southwestern Ontario. Unfortunately, this decreases the external validity of the findings and is noted as a limitation of this study. The final set of limitations described are those expected of a retrospective study design. While all observational research increases the risk of selection bias, this is particularly true of retrospective studies (El-Masri, 2014). Furthermore, as with all retrospective studies, one cannot ascertain causality; this is because both the independent and dependent variables are collected at the same time preventing the understanding of a temporal relationship. Despite this fact, a strong theoretical understanding of health service utilization can assist the researcher in determining predictors as a number of variables come prior to service utilization, and the assignment of a triage score (i.e., one's age, gender, residential status, etc.). Finally, due to the secondary nature of this study, accuracy of the initial data collection and entry into the statistical software program cannot be assured. Despite these limitations, this design was appropriate due to the exploratory nature of this study. Retrospective studies are effective in providing preliminary associations to help guide future research.

Conclusion

To our knowledge, this is the first Canadian study examining the independent predictors of non-urgent ED use for mental health care. Eight variables were found to be

predictive, and were organized based on Andersen's (1995) BMHSU: predisposing factors, enabling resources, and need factors. The following predisposing factors were found to be significant: age, season, and time of day. The following enabling resources were found to be significant: access to primary health care, mode of arrival, and hospital type. The following need factors were found to be significant: patient diagnosis and referral source. Though not included within the multivariate analysis, the following variables were found to be associated with non-urgent ED use for mental health care in the unadjusted analysis: residential status, wait time, main provider in the ED, and the disposition status. Understanding the factors associated with non-urgent ED use for mental health care gives clinicians, educators, and policy makers the information to identify patients at an increased risk, as well as patients who qualify for community-based mental health care. Recommendations for nursing education, practice, theory, and policy have been presented and discussed. Future research should aim to incorporate both a prospective study design and a qualitative methodology.

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APPENDIX A

THE CANADIAN TRIAGE AND ACUITY SCALE

Level of Triage	Time Guidelines	Description
I Resuscitation	Immediate	Conditions that are threats to life or limb (or imminent risk of deterioration) requiring immediate aggressive interventions.
II Emergent	15 minutes	Conditions that are a potential threat to life limb or function, requiring rapid medical intervention or delegated acts
III Urgent	30 minutes	Conditions that could potentially progress to a serious problem requiring emergency intervention. May be associated with significant discomfort or affecting ability to function at work or activities of daily living
IV Less Urgent	60 minutes	Conditions that are related to patient age, distress, or potential for deterioration or complications would benefit from intervention or reassurance within 1-2 hours
V Non Urgent	120 minutes	Conditions that may be acute but non-urgent as well as conditions which may be part of a chronic problem with or without evidence of deterioration

Adapted from the Canadian Association of Emergency Physicians Implementation Guidelines (2016).

APPENDIX B

CMHA COMMUNITY RESOURCE LIST – 2017



2017 COMMUNITY RESOURCES

CRISIS INTERVENTION

Windsor Regional Children's Centre 3901 Connaught Avenue	519.257.5215 Crisis Services
Distress Centre of Windsor-Essex 12:00 noon – 12:00 Midnight Crisis	519.256.5000
Drouillard Place 1102 Drouillard Road	519.253.1073, 519.253.4446 Mon-Fri 8:30am-4:30pm *Must live within agency boundaries
Community Crisis Centre Hotel Dieu Grace Healthcare 1030 Ouellette Ave, Jeanne Mance Building, 1 st Floor	519.973.4435 24 Hour Crisis Line

ASSAULT / VIOLENCE

Sexual Assault Crisis Centre 1770 Langlois Avenue	519.253.3100 24 Hour Crisis: 519.253.9667
Hiatus House Emergency shelter and Crisis intervention for women and their children experiencing domestic violence.	519.252.7781 Toll Free 1.800.265.5142 TDD: 519.252.2768
SOS Femmes Crisis Line Francophone women eligible Toronto, ON	1.877.336.2433 24 Hour Crisis

EMERGENCY SHELTERS

Downtown Mission 664 Victoria Avenue	519.973.5573
Salvation Army (men only) 355 Church Street	519.253.7473
Welcome Centre (<i>women only</i>) 263 Bridge Avenue	519.971.7595

HOSPITALS WITH PSYCHIATRIC SERVICES

Windsor Regional Hospital 1030 Ouellette Avenue	519.973.4444
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MENTAL HEALTH SERVICES

Treatment, Support, Education

CMHA-WECB 1400 Windsor Avenue	519.255.7440
Transitional Stability Centre 736-744 Ouellette Ave.	519-257-5224

Mood/Anxiety Treatment Program Hotel Dieu Grace Healthcare, 1453 Prince Road	519.257.5125
Mental Health Services Info Ontario	1.866.531.2600
Wellness Program for Extended Psychosis Hotel Dieu Grace Healthcare, 1453 Prince Road	519.257.5111
MHRU County Team (Crisis/OPP) (Mental Health Response Unit)	519.723.4600
COAST – Windsor Team	519.973.4409

COUNSELLING

Family Service Windsor 1770 Langlois Avenue (walk-in clinics available – call for days/times/locations) or https://fswe.ca	519.966.5010
Teen Health Centre (up to age 24)	519.253.8481
Windsor Essex Comm. Health Centre	519.258.6002
Counselling for Dep/Anxiety – CMHA	519-255-7440

SOCIAL & SELF-SUPPORT

Mental Health Connections 370 Erie Street East	519.256.4854
Mood Disorders Self-Support Group	TBA
Can-Am Friendship Centre 2929 Howard Avenue	519.253.3243
Recovery Inc.	519.326.3635 Cindy 519.727.5916 Rose 519.324.0429 Carolyn

FAMILY EDUCATION & SUPPORT

NAMI Family to Family Education Program

WINDSOR Mental Health Connections, 370 Erie Street East Contact: Jean Laforge	519.256.4854
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SUICIDE PREVENTION AND MENTAL HEALTH EDUCATION

Canadian Mental Health Association, WE 1400 Windsor Ave. www.windsor-essex.cmha.ca	519.255.7440
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GENERAL INFORMATION

Community Information and Referral	211
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ADDICTIONS

Alcoholics Anonymous	519.256.9975
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(ADDICTIONS Cont'd)

Brentwood Recovery	519.253.2441
Cocaine Anonymous	519.788.3889
Concurrent Disorders Treatment Hotel Dieu Grace Healthcare, 1453 Prince Road	519.257.5125
Windsor Addiction Assessment & Referral	519.257.5220
DART	1.800.565.8603
House of Sophrosyne (<i>women only</i>)	519.252.2711
Narcotics Anonymous	519.977.8063
Salvation Army	519.253.7473
S.T.A.G.E.S. Group, CMHA Concurrent Disorders Support Group, 1400 Windsor Ave	519.255.7440
Withdrawal Management Centre	519.257.5225
Women for Sobriety	519.256.1497

MEDICAL

City Centre Health Care, CMHA-WECB, 1400 Windsor Avenue	519.971.0116
Windsor Essex Community Health Centre 3320 College Avenue	519.258.6002
OHIP 400 City Hall Square, Suite 205	519.973.1385
Essex County Medical Society	519.256.4611

LEGAL RESOURCES

Community Legal Aid	519.253.7150
Legal Assistance of Windsor	519.256.7831
Windsor-Essex Bilingual Legal Clinic	519.253.3526

YOUTH

Bulimia Anorexia Nervosa Association 1500 Ouellette Avenue, Suite 100	519.969.2112
Maryvale Adolescent/Family Services 3640 Wells Street *Ages 11-17	519.258.0484
Teen Health Centre, WECHC	519.253.8481

LGBTIQ FRIENDLY SERVICES

50+ Proud: Gay and Gray 440 Pelissier Street	519.973.4656
Out on Campus University of Windsor	519.253.3000 ext. 4093 http://uwindsor.ca/ooc

(LGBTIQ Cont'd)

Metropolitan Community Church 1680 Dougall Avenue	519.977.6897
Mike Cardinal Counselling 3277 Sandwich Street (Group / individual counselling for Gay / Bisexual men)	519.258.1069
Windsor Pride Community 440 Pelissier Street	519.973.4656
SAFE: A Gay-Straight Alliance. Professionals Advocating for the Needs of LBTTIQ2S Children, Youth and Families in Windsor-Essex	519.253.8481 ext. 248
Young and Proud 511 Pelissier Street	519.973.0222 Toll Free: 1.800.265.4858

OLDER ADULTS

Alzheimer Society of Windsor-Essex 2135 Richmond Street	519.974.2220
Geriatric Mental Health Outreach Team Hotel Dieu Grace Healthcare, 1453 Prince Road	519.257.5105
Geriatric Assessment Program Hotel Dieu Grace Healthcare, 1453 Prince Road	519.257.5112
Life After Fifty (LAF) 2 locations	519.254.1108

FINANCIAL

Ontario Works 400 City Hall Square – Windsor 215 Talbot Street – Leamington	519.255.5600 519.255.5200 519.946.9988
Ontario Disability Support Program 270 Erie Street East - Windsor	519.254.1651
Service Canada 400 City Hall Square - Windsor	1.800.277.9914
Financial Fitness	519.258.2030

HOUSING

Central Housing Registry 2470 Dougall Avenue, Unit 6 – Windsor 15C Talbot Street North – Essex	519.254.6994 519.776.4631
Housing Information Services 3450 Ypres, Suite 200 - Windsor	519.254.4824
Windsor-Essex Comm. Housing Corp	519.254.1681
Windsor Residence for Young Men 1505 Langlois - *Ages 16-20 Men Only	226.221.8464
Windsor-Essex Housing Connections Family Services Windsor-Essex	519.256.5258

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