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# Care Intervention and Reduction of Emergency Department Utilization in Medicaid Populations

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# Walden University

College of Health Sciences

This is to certify that the doctoral study by

Eno Rouse

has been found to be complete and satisfactory in all respects,  
and that any and all revisions required by  
the review committee have been made.

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Walden University

2019

Abstract

Care Intervention and Reduction of Emergency Department Utilization in Medicaid  
Populations

by

Eno J. Rouse

Doctoral Study Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Doctor of Public Health

Walden University

February 2019

## Abstract

Expansion of Medicaid and private health insurance coverage through passage of the Affordable Care Act of 2010 was expected to increase primary care access and reduce emergency department (ED) use by reducing financial burden and improving affordability of care. The aim of this study was to examine the differences in utilization patterns that exist among the Medicaid population that participated in an optimal level of care (OLC) intervention inclusive of appointments scheduled to primary care providers. Using the integrated behavior model as a theoretical framework, the key research question focused on determining if there was a difference in ED use among Medicaid individuals who scheduled follow-up appointments compared to those that did not schedule follow-up appointments. The sample population consisted of 176 Medicaid enrollees who presented to the ED for treatment of nonurgent conditions and participated in an OLC intervention from June 2016 to July 2017. The results showed that there were no differences in ED utilization between the population that had scheduled appointments compared to the population that did not have scheduled appointments. A bivariate analysis on demographic variables also showed no differences in ED utilization among the variables. The social change implications of this study are that the practice of scheduling appointments with primary care providers does not reduce or affect ED utilization in the Medicaid population. This study contributes to positive social change through the findings that reducing ED utilization requires more than follow-up appointment scheduling with primary care providers. Further studies are warranted to understand the potential barriers and factors that affect ED utilization.

Care Intervention in Reducing Emergency Department Utilization in Medicaid  
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## Dedication

First and foremost, I thank God for giving me the strength and ability to achieve this academic endeavor. I dedicate this doctoral study to my husband Kevin D. Rouse, for his unwavering support, love, and never-ending encouragement. My family and friends for their love, their understanding when I couldn't make the planned events and for encouraging me to continue my studies. Additionally, my late parents who were both academic achievers and instilled in me the desire to always reach for something greater. Both my mother and father achieved their doctorates which encouraged me to pursue mine. I will never forget their constant pursuit of academic excellence and their encouragement to always reach for the highest level of achievement.

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## Section 1: Foundation of the Study and Literature Review

The passage of the Affordable Care Act (ACA) in 2010 was intended to expand health insurance coverage and bring unprecedented access to care for uninsured Americans (Gaffney & McCormick, 2017). By January 2014, expansion of Medicaid eligibility under the ACA went into effect increasing coverage for the uninsured and providing a mechanism for expanding private insurance for people not eligible for Medicaid (Nikpay, Freedman, Levy, & Buchmueller, 2017). Klein et al. (2017) indicated that part of the intent of insurance expansion was expected to decrease emergency department (ED) visits which could be treated in more appropriate settings such as primary care facilities and to reduce ED overcrowding which adversely affects health outcomes for patients. Research on the effect of Medicaid expansion on ED utilization found that individuals who gained Medicaid coverage increased ED utilization by 41% compared with those who did not gain coverage. Other studies found moderate increases in ED utilization particularly in communities where Medicaid enrollment had increased the most (Barakat et al., 2017; Behr & Diaz, 2016; Klein et al., 2017). Understanding ED utilization patterns in Medicaid populations when exposed to an intervention that educates regarding optimal level of care which aims to reduce ED utilization can help inform policy at the local, state, or federal level. The knowledge gained from the study can contribute to public health discipline and used as a guideline to create positive social change through replication in other communities.

The focus of the study was to explore the differences in ED use in the Medicaid population after an optimal level of care (OLC) educational intervention that educated

patients on where to seek the most optimal level of care and provided follow-up appointments scheduled to a primary care provider (PCP). Secondary data were obtained from the medical records of Medicaid patients who presented to the ED for treatment of low-acuity primary care conditions at a tertiary hospital located in Illinois. Two populations of Medicaid patients were compared: those who accepted follow up appointments and those that did not accept follow up appointments. All patients in the study were educated using protocols for seeking the most optimal level of care for their condition. This section consists of the following subsections: (a) the problem statement and issues identified, (b) the purpose of the study, (c) the research question and hypotheses, (d) the theoretical foundation, (e) nature of the study, (f) literature search strategy, (g) literature review, (h) definition of terms, (i) assumptions of the study, (j) the scope of delimitations, and (k) the significance of the study and its contributions to positive social change.

### **Problem Statement**

Healthy People 2020 described access to care as the timely acquisition of health services with entry into the health care system through insurance coverage, accessibility of services based on location, and finding a trusted provider that helps individuals achieve the best health outcomes (HealthyPeople.gov, 2018). Despite the improvement in insurance coverage achieved through the ACA, access to care continues to be a challenging public health concern (Di Somma et al., 2014; Healthypeople.gov, 2018). Woolf and Aron (2013) determined that problems with ensuring Americans' have access to care are a public health problem in the United States among policymakers and the

public for many years. ED utilization for treatment of nonurgent conditions or primary care affects access to care and contributes to ED overutilization. ED overutilization leads to ED overcrowding which is a growing public health concern worldwide (Di Somma et al., 2014). ED overcrowding uses costly resources and limits access to care for higher acuity need individuals. Overcrowding also leads to poor health outcomes caused by problems related to patients waiting for care which contributes to morbidity and mortality (Di Somma et al., 2014). Disparities exist in access to care between different populations and barriers to care are caused by low socioeconomic status, race, and ethnicity, lack of transportation, and low literacy (Patel & Cadet, 2017; HealthyPeople.gov, 2018). Glover, Purim-Shem-Tov, Johnson, and Shah (2016) identified that nonurgent ED use continues to stress health systems and increases unnecessary costs contributing to the public health problem.

ED utilization for primary care treatable conditions or non-urgent care is costly to the US health system (Barakat et al., 2017; Weinick, Burns, & Mehrotra, 2010). There are an estimated 141.4 million ED encounters per year in the US which equate to approximately 45 visits per 100 persons (Behr & Diaz, 2016; Centers for Disease Control and Prevention [CDC], 2017). Gonzalez et al. (2013) indicated that EDs are known as the most expensive care because services for minor injury or illness are charged at higher prices in the ED than in primary care settings. Costs to the U.S. health system are estimated at 4.4 billion U.S. dollars annually from ED visits that could have been diverted to alternative sites of care (Enrad & Ganelin, 2013; Weinick et al., 2010). Sommers and Simon (2017) indicated that expansion of insurance coverage increased ED

utilization by close to 40%. Several factors associated with ED utilization include gender, race, poor mental health, drug abuse, employment, and seriousness of condition (Behr & Diaz, 2016).

Capp et al. (2013) indicated that Medicaid enrollees are the individuals who are the most frequent ED users. Medicaid enrollees also face more barriers to accessing primary care than other insurance types. In 2013 and 2014, adult Medicaid enrollees (18.5%) had the highest prevalence rate of frequent ED use compared to uninsured adults (16.6%) and adults with private insurance (14.3%) (Gindi, Black, & Cohen, 2016). Studies showed that Medicaid enrollees are more likely to use the emergency department for non-urgent conditions than other insurance types (Castner, Yin, Loomis, & Hewner, 2016). Effective interventions that target Medicaid enrollees who use the ED for primary care or non-urgent conditions are needed to reduce ED utilization in Medicaid populations and decrease rising health care costs (Capp et al. 2013; Pukurdpol, Wiler, Hsia, & Ginde, 2014). Interventions studied in reducing ED utilization include cost sharing and expansion of managed care programs, increasing access to primary care, pre-hospital diversion, care coordination, and education and self-management (Flores-Mateo, Violan-Fors, Carillo-Santistevé, & Argimon, 2012; Morgan, Chang, Alquatri, & Pines, 2013; Van den Heede & Van de Voorde, 2016). Researchers identified that interventions adopting strategies to increase primary care access were successful in reducing ED utilization (Flores-Mateo et al., 2012; Morgan et al., 2013; Van den Heede & Van de Voorde, 2016). Few studies involving the use of educational interventions to guide patients to primary care were evaluated; however, the studies showed mixed results



(Flores-Mateo et al., 2012). Morgan et al. (2013) found mixed evidence of studies that explored interventions targeted to reduce ED utilization. The researchers found that two-thirds of the interventions showed promise in reducing ED utilization through the implementation of patient financial incentives and managed care strategies, while reductions were also found with patient education. Studies conducted by Flores-Mateo et al. (2012) showed that interventions targeting increasing primary care accessibility and ED cost sharing were effective strategies to reduce ED utilization. However, studies using patient education to decrease ED utilization were contradictory. Further, researchers conducted several investigations to identify effective strategies in reducing ED use in the Medicaid population, however, evidence about the effectiveness of interventions intended to reduce ED utilization remains insufficient (Van den Heede & Van de Voorde, 2016). Researchers have not explored utilization rates in the Medicaid population following an optimal level of care intervention that uses an educational intervention incorporated with appointment scheduling. The purpose of this study was to evaluate the effectiveness of education by analyzing utilization patterns of the Medicaid population following an optimal level of care intervention; the intervention educated patients regarding the optimal level of care for their condition with follow-up appointments scheduled at the point of care in the ED.

### **Purpose of the Study**

Researchers have identified that nonurgent primary care treatable conditions contribute to a significant portion of avoidable ED admissions (Behr & Diaz, 2016; Pukurdpol et al., 2014; Uscher-Pines, Pines, Kellermann, Gillen, & Mehrortra, 2013).

Studies suggest that a significant portion of primary care treatable ED visits can be treated in alternative settings such as primary medical homes, outpatient clinics, or immediate care centers (Morgan, Chang, Alqatari, & Pines, 2013; Pukurdpol et al., 2014; Weinick et al., 2010). Also, policymakers are focusing attention on reducing avoidable ED admissions as a method to reduce health spending in the acute care setting (Cheung et al., 2012; Friedman, Saloner, & Hsia, 2015; Taubman, Allen, Wright, Baicker, & Finkelstein, 2014). Previous studies identified that high utilizers often face barriers to care and have complex medical conditions in which care coordination is necessary (Capp et al., 2013; Flores-Mateo et al., 2012).

In this quantitative study, I explored the differences in utilization rates that exist between the Medicaid population that accepted scheduled appointments compared to the Medicaid population that did not accept scheduled appointments. As each patient was provided education regarding the optimal level of care, the individual was offered appointments with a primary care provider. The appointments scheduled served as a starting point in educating the patient where they should go for primary care, induced practice in behavior for using the most optimal level care for their condition, and connected the individual with a provider in which the individual can develop a trusted relationship (Barbee, 2010; Glanz et al., 2015). For this study, the independent variable *scheduled appointments* and the dependent variable *ED visits* were used to explore the differences between groups. Other covariates explored included demographic variables such as race/ethnicity, age, gender, level of acuity, and geographical location.

In this study I explored the effect of educational interventions with appointment scheduling in reducing ED visits among the Medicaid population. The results of the study can contribute to positive social change by providing knowledge on an effective intervention that health systems can adapt to improve the quality of services delivered in the emergency room. The study contributes to expanding knowledge that guide policy development for Medicaid beneficiaries which reduce emergency department utilization, improves access to care, and reduces costs due to avoidable emergency department visits. The results of the study provide additional insight into strategies which reduce ED utilization and improve access to primary care.

### **Research Questions and Hypotheses**

Research Question 1: Are there differences in ED utilization among Medicaid enrollees who are provided optimal level of care education with follow-up appointments to a primary care provider compared to a group of Medicaid enrollees that are provided optimal level of care education without follow-up appointments?

$H_0$ 1: There are no significant differences in ED utilization between Medicaid enrollees who are provided optimal level of care education and follow-up appointments and those that are provided optimal level of care education and no follow-up appointments.

$H_a$ 1: There are significant differences in ED utilization between Medicaid enrollees who are provided optimal level of care education and follow-up appointments and those that are provided optimal level of care education and no follow-up appointments.

Research Question 2: Do demographic variables such as race/ethnicity, age, gender, level of acuity, and geographical location influence ED utilization among Medicaid enrollees who are provided optimal level of care education with follow-up appointments compared to a group of Medicaid enrollees that are provided optimal level of care education without follow-up appointments?

*H<sub>0</sub>2*: Demographic variables such as race/ethnicity, age, gender, level of acuity, and geographic location do not significantly influence ED utilization between Medicaid enrollees who are provided optimal level of care education with follow-up appointments compared to a group Medicaid enrollees who are provided optimal level of care education without follow-up appointments.

*H<sub>a</sub>2*: Demographic variables such as race/ethnicity, age, gender, level of acuity, and geographic location significantly influence ED utilization between Medicaid enrollees who are provided optimal level of care education with follow-up appointments compared to a group of Medicaid enrollees who are provided optimal level of care education without follow-up appointments.

### **Theoretical Foundation for the Study**

The theoretical framework used in this study was the integrated behavior model (IBM) which includes concepts from the theory of reasoned action and the theory of planned behavior (Braun et al., 2014; Glanz, Rimer, & Viswanath, 2015). The three global constructs of IBM include attitude or motivation, perceived norm, and personal agency. IBM posits that intention to perform a behavior is the most important determinant of behavior (Braun et al., 2014). Other factors that determine behavior is

motivation and attitude, knowledge and skills to perform the behavior, elimination of environmental constraints (barriers) that affect the behavior, and habit (Barbee, 2010). Studies which use IBM as the theoretical framework were not found in the review of literature in exploring health behavior in the utilization of ED services. Barbee (2010) indicated that IBM is an emerging theory in health promotion and health education in which more studies are needed to test the model in public health practice. Early studies in IBM conducted in the early 1990s explored health behavior in AIDS prevention for use in public health (Branscum & Bhochhibhoya, 2016).

I utilized the IBM to understand predictive factors that enhance health-seeking behavior which lead individuals to make choices in accessing the most optimal level of care for their conditions and to inform health education interventions that promote health (Branscum & Bhochhibhoya, 2016). Application of IBM to the optimal level of care intervention supports the premise that an individual who uses the ED as a primary care resource would change their behavior in accessing primary care and use an alternative optimal site of care if the intent to perform the behavior is strong, they develop skills and knowledge to make informed decisions in obtaining the optimal level of care, as well as overcome environmental constraints that affect behavior (Barbee, 2010; Branscum & Bhochhibhoya, 2016).

A closer look at the constructs of IBM explains the dynamics of the patient's choice to use the ED for primary care or non-urgent conditions after receiving the optimal level of care intervention (OLCI). An individual is likely to perform a behavior if the individual has a strong intention to do so, does not encounter serious environmental

constraints, the behavior is important, and the person has performed the behavior previously (Glanz et al., 2015). Another important factor is that individuals also need to develop the knowledge and skill to perform the intended behavior. The intervention demonstrates the model by establishing patient interactions that teach patients the knowledge and skills needed to determine the most optimal place to receive care, provide a follow-up appointment scheduled with a PCP, and educate regarding the importance of keeping the scheduled appointment. The intervention also provides education and support to assist in reducing barriers to obtaining care in primary care settings. The theory also explains reasons for utilization patterns among Medicaid enrollees and how the intervention affects the behavior of ED utilizers. The model was used to predict the variance or difference in intention of Medicaid ED utilizers who were provided the educational intervention and scheduled appointment compared to Medicaid ED utilizers who were provided the educational intervention with no scheduled appointment.

### **Nature of the Study**

The nature of the study focused on quantitative research using a retrospective cohort study to identify differences in ED utilization patterns that exist in a population. A quantitative retrospective cohort study design was selected to examine the population because exposure and outcomes had already occurred before the start of the research study (Aschengrau & Seage, 2014). Data were retrieved from the electronic medical records of Medicaid enrollees and analyzed by performing descriptive and inferential statistical procedures. I examined differences in utilization patterns in a specific patient population encountered in the ED setting using data from 2016 through 2017. I

examined ED utilization patterns of Medicaid enrollees. The outcome variable that was analyzed was ED visits (dependent) and the independent variable was the presence of appointments following an educational intervention. Confounding variables was age, race/ethnicity, gender, level of acuity, and geographic location.

### **Literature Search Strategy**

The databases used to find scholarly journal articles included ProQuest Nursing and Allied Health Source, ProQuest Health and Medical Collection, and PubMed. Online eBooks were retrieved from the Walden Library, ProQuest Ebook Central. Other online resources including Google and Google Scholar were used to locate additional content from scholarly journal articles. The literature search was conducted using search terms for articles published within five years between 2012 to 2017. Six journal articles which covered a period between 2002 to 2010 was used to describe the history of the research problem and statistical procedures. The search was developed by using key words such as *ED utilization, primary sensitive conditions, emergency department use, access to primary care, Medicaid ED use, and emergency department costs*. I also explored references taken from scholarly journal articles by entering article titles in the Walden Library search page to find exact articles.

### **Literature Review**

This subsection contains an examination of the literature on the evolving role of emergency departments in the delivery of care, defines the appropriate use of the emergency department and primary care settings, and reviews health policy that affect how patient populations access the emergency department for care. Also, various

interventions targeting reduction of ED use for primary care were identified, and the effectiveness of the interventions were explored. Medicaid enrollees and their utilization patterns for accessing primary and emergency care were examined to determine barriers to primary care. Lastly, gaps were identified relating to the effectiveness of interventions in reducing ED use.

### **Role of Emergency Departments in Care Delivery**

Hospital EDs provide a view into the community's health and the availability of resources for meeting the health needs of the community (Davies et al., 2017). In the United States, the emergency room evolved from providing care for complex and high acuity patients to serving as the safety net for care among vulnerable populations and those unable to obtain care from other sources (Gonzalez et al., 2013; Pukurdpol et al., 2014). Local EDs serve as a gateway to services for urgent health care as well as treatment of primary care conditions. The demand for ED services rose significantly during the past several years contributing to an increase in total health care spending. Leporatti, Ameri, Trincherro, Orcamo, and Montefiori (2016) indicated that the rise in demand for ED services is a result of patients seeking treatment for primary health conditions rather than services for treatment of urgent conditions. Uscher-Pines, Pines, Kellermann, Gillen, and Mehrotra (2013) found that at least 30 percent of all ED visits in the United States are nonurgent in which other sites of care could be used instead of the ED. Davies et al. (2017) determined that the rate of non-urgent preventable ED visits rose by 11 percent between 2005 and 2012 and that increases in ED utilization for non-urgent preventable ED visits are frequently seen as a reflection of inadequate community



health resources. Agarwal, Bias, and Sambamoorthi (2017) also indicated that the rising trend in ED visits is contributed by both the older adult and younger populations. Overall ED visits among Medicaid enrollees increased by 37 percent between 1997 and 2007 and showed that Medicaid patients have higher ED visits as compared to Medicare, private insurance and the uninsured (Agarwal et al., 2017).

### **Appropriate Use of the Emergency Department**

This subsection describes the terms used to define nonurgent ED visits and the appropriate use of the emergency department for urgent conditions. Literature encompasses the use of several terms which are often used interchangeably to define conditions of patients presenting to the emergency department for care. The definition of a nonurgent ED visit is defined as visits for conditions where delays of several hours would not increase the likelihood of an adverse outcome (Uscher-Pines et al., 2013). Nonurgent ED visits are also defined as avoidable, preventable, unnecessary or inappropriate primary care-treatable emergency department visits which are conditions that can be treated in alternative settings (Flores-Mateo et al., 2012; Pukurdpol et al., 2014). The Emergency Severity Index (ESI) is also used to determine seriousness or urgency of treatment needs. The ESI is a triage process used by nurses in the emergency room to classify patients based on the severity of their condition. Medical conditions are classified as high acuity or level one requiring emergent care to low acuity or level four and five which are considered as non-urgent conditions (Burns, 2017).

## **Health Policies Affecting Emergency Department Use**

Health policy changes over the last several years have targeted reduction of inappropriate ED use (Gingold, Pierre-Mathieu, Cole, Miller, & Khaldun, 2017). Policymakers debated the effect of insurance coverage on health care utilization, hospital readmission rates, and quality of care (Barakat et al., 2017). Specifically, implementation of the Patient Protection and Affordable Care Act (ACA) caused considerable controversy among policymakers regarding how expanded coverage affects ED use (Sommers & Simon, 2017). The ACA was signed into law in March 2010 and later Medicaid expansion and subsidized privatized insurance exchanges were enacted in January 2014 with the intention to increase primary care access and decrease ED use (Gingold et al., 2017).

The laws of supply and demand suggest that expansion of access and affordability for health insurance coverage could increase or decrease ED use (Cheung, Wiler, Lowe, & Ginde, 2012). Researchers speculate that increased coverage and reduced financial burden of going to the ED could lead to increased frequency of ED use (Taubman, Allen, Wright, Baicker, & Finkelstein, 2014). Still, other researchers suggest that use of the ED by the uninsured for outpatient care could shift if insurance coverage is gained causing utilization of health services in the appropriate office setting and thereby reduce ED use (Cheung et al., 2012; Friedman, Saloner, & Hsia, 2015). Barakat et al. (2017) indicated that the expansion of coverage to over 20 million uninsured individuals resulted in a 21 percent increase in Medicaid enrollment due to expansion in Medicaid eligibility to adults under age 65 years who were living at 138% of the federal poverty level. Barakat et al.

(2017) examined how Medicaid expansion affected ED utilization by the Medicaid population in California. The researchers found that there was not a significant change in the overall rate of ED visits although there was a significant shift in payer source. Studies conducted by Cheung et al. (2012) examined the association between different insurance and ED utilization among adults with Medicaid versus private insurance. The researchers found that Medicaid enrollees had a higher ED utilization compared with those who had private insurance. Understanding health policies which impact the Medicaid population is an important component of this research study due to its implications for ED utilization.

### **Medicaid Enrollees Utilization Patterns**

The study of ED utilization patterns among the Medicaid population provides insights into the needs and opportunities to improve primary care and prevention efforts which are an integral part of public health (Castner, Yin, Loomis, & Hewner, 2016). Research conducted by Mortensen (2014) indicated that Medicaid enrollees are significantly more likely to use the ED than those that are privately insured or the uninsured. The researcher identified that access to a primary care physician is associated with ED use. Also, increased use of the ED by Medicaid enrollees was attributed to a higher burden of illness, chronic conditions, and severe disability among the Medicaid population.

Capp et al. (2013) showed that Medicaid enrollees are disproportionately represented as high utilizers of the ED. Capp et al. examined ED utilization patterns among frequent ED users from the Medicaid population. The researchers found similar

characteristics demonstrated in the Mortensen (2014) study in which the Medicaid population was described as users who faced complex social needs, chronic conditions, and reported a higher utilization of health care overall. Capp et al. indicated that Medicaid enrollees who were frequent ED users also encounter barriers to timely primary care which was associated with lack of alternative sites of care for treatment of primary care conditions.

Taubman et al. (2014) and Cheung et al. (2012) explored the effect of demographic factors on ED use in the Medicaid population. Taubman et al. found that an increase in ED use was larger in males than in females. There were no significant differences found in other subpopulations such as race and age. However, there was an increase in ED use associated with conditions that were classified as primary care treatable and nonemergent conditions. Raven, Lowe, Maselli, and Hsia (2013) supported findings of increased ED use associated with conditions classified as nonurgent. However, the study was not specific to the Medicaid population. Cheung et al. (2012) showed that geography was associated with the inability to access primary care due to lack of transportation. The inability to access primary care served as a barrier which was associated with higher ED utilization. Also, Davis et al. (2017) examined and validated rates of potentially preventable ED visits showed a wide variation in ED use in a geographic area by county which was associated with county level poverty.

### **Optimal Level of Care Intervention**

There are multiple interventions that researchers describe as effective in reducing ED utilization among vulnerable populations. However, the interventions have shown

mixed evidence as to their effectiveness. Van den Heede and Van de Voorde (2016) identified six types of interventions which incorporated cost-sharing, strengthening primary care, prehospital diversion with telephone triage, care coordination, education and self-management support, and barriers to accessing emergency departments. Morgan, Chang, Alqatari, and Pines (2013) suggested that effective interventions to reduce ED use included patient education, increase access to non-ED capacity, managed care, and patient financial incentives. Enard and Ganelin (2013) conducted a study using patient navigation provided by community health workers (CHWs) to reduce ED utilization in Medicaid, self-pay/uninsured, and managed Medicaid populations. The intervention was proven to be successful in reducing ED utilization among Medicaid enrollees with demonstrated cost savings.

The OLC consisted of several key processes that use CHWs to educate patients regarding the most optimal place to access care based on their condition. CHWs also connected patients with their PCP through appointments scheduling and addressed social factors that affect health. Social factors included lack of transportation, unavailability of social support, lack of access to foods, and lack of housing (Garg, Jack, & Zuckerman, 2013; Woolf & Aron, 2013).

The initial process began with patients who are admitted into the ER, triaged on arrival and classified according to level of acuity. Acuity levels ranged from level one to five with level one and two reflecting patients needing the most immediate medical attention for severe conditions to a level four or five acuity reflecting patients with conditions that were non-urgent (Reinhardt, 2017). Once patients were triaged and

treated by the attending ED medical personnel, the CHW engaged the patient before discharge and scheduled a primary care follow-up appointment with a PCP.

### **Public Health Implications**

Implementation of effective public health interventions that reduce ED utilization can decrease health disparities among vulnerable populations and improve access to care Elliot, Klein, Basu, & Sabbatini, 2016. New policies call for hospitals and public health practitioners to work collaboratively to improve access to care and implement evidence-based interventions. Interventions should change the behavior of individuals to access the most optimal level of care and save valuable resources for patients who exhibit the highest level of need for services (Gaffney & McCormick, 2017; Heiman & Artiga, 2015; Marmot & Allen, 2014). The study of Medicaid populations in attitudes and changes in behavior to adopt the practice of finding the most optimal level of care for primary care conditions can help to inform policy makers and health practitioners of what interventions work to improve access to care and ultimately decrease health disparities (Burns, 2017; Enard & Ganlin, 2014; Garg et al., 2013; Trin-Shervin et al., 2015).

### **Literature Review Summary**

The literature review revealed that there are mixed results on the effectiveness of interventions targeting the reduction of ED use. The OLC intervention utilized components of interventions in patient education, follow-up care coordination, and appointment scheduling to improve access to primary care for patients. There are no identified studies that describe how appointment scheduling with a PCP can reduce ED

use in the Medicaid population. This study can affect Medicaid policies specifically needed to improve access to care for Medicaid enrollees and reduce ED utilization.

### **Definitions**

*Nonurgent primary care-treatable ED visits:* dependent variable that indicates whether an individual visited the emergency department for a condition that can be treated at alternative sites of primary care as defined by Pukurdpol et al. (2014).

*Follow-up appointments:* independent variable that indicates the presence of appointments scheduled with a PCP following an educational intervention.

*Optimal level of care education:* an educational intervention that is provided to all Medicaid enrollees in the study which includes identification of PCP, the location of primary care site and distance to site, and review of primary care conditions identifying appropriate sites for care (Enard & Ganelin, 2013).

*Emergency Severity Index (ESI):* a five-level triage method used to identify the severity of a patient's illness. Patients with a level four or five classification exhibit the lowest level of acuity with recommended treatment options at a primary care site (Burns, 2017).

### **Assumptions**

The assumptions presented in this section are necessary in the context of the study because each assumption could affect utilization of the ED by the population. A key assumption of the study was that all patients in the study population were educated regarding the most optimal place to obtain care for their primary care condition. If an individual did not participate in education, they were not exposed to the intervention.

Another assumption was that patients with scheduled follow-up appointments would complete their follow up primary care visits and achieve a connection with a PCP. Patients who do not attend the follow-up appointments lack connection with their primary care support system which can contribute to their return to the ED for a non-urgent condition (Agarwal et al., 2017; Cheung et al., 2012). Another key issue was that patients who did not agree to complete their connection with a primary care provider may connect with them on their own. Data was analyzed to investigate how patient choices between scheduled appointments and non-scheduled appointments affect utilization of the ED for nonurgent care.

### **Scope and Delimitations**

The scope of the study was to analyze differences in utilization patterns for the Medicaid population and evaluated if increasing access to primary care through appointment scheduling affected ED use. A delimitation was to include individuals who resided in the primary service of a large tertiary hospital. The primary service area consisted of 27 zip codes which made up the geographic service area. The zip codes and corresponding community areas are presented in Table 1. Other delimitations were that the population consisted of only Medicaid enrollees who received services in the ED during the study period, were classified with a level four or five acuity during the visit and participated in OLC intervention services. Individuals excluded from the study included those that lived outside the primary service area, had an acuity level of three or less, and were enrolled in insurance options other than Medicaid. Other exclusions included individuals who had chronic conditions or a higher burden of illness. The



reason for choosing the exclusions was supported in the literature review in Section 2 which described that evidence linked increased ED use in the Medicaid population with a higher burden of disease, chronic conditions, and severe disability (Mortensen, 2014).

Table 1

*Primary Service Area Zip Codes and Corresponding Community Areas*

| Community Area  | Zip Code | Community Area | Zip Code |
|-----------------|----------|----------------|----------|
| Oak Lawn        | 60453    | West Englewood | 60636    |
| Auburn Gresham  | 60620    | Tinley Park    | 60477    |
| Chicago Lawn    | 60629    | Palos Hills    | 60465    |
| Ashburn         | 60652    | Brighton Park  | 60632    |
| Burbank         | 60459    | Oak Forest     | 60452    |
| Morgan Park     | 60643    | Hickory Hills  | 60457    |
| Chicago Ridge   | 60415    | Palos Heights  | 60463    |
| Bridgeview      | 60455    | Worth          | 60482    |
| Mount Greenwood | 60655    | Justice        | 60458    |
| Alsip           | 60803    | Hometown       | 60456    |
| Clearing        | 60638    | Tinley Park    | 60487    |
| Evergreen Park  | 60805    | Orland Hills   | 60467    |
| Orland Park     | 60462    | Palos Park     | 60464    |
| Midlothian      | 60445    |                |          |

Note: Adapted from Advocate Health Care Strategic Planning Department, 2016

**Study Boundaries**

The study population resided within twenty-seven zip codes within the hospital's primary service area, and data from the study population was retrieved following patient visits to the hospital's emergency room. Although the data consisted of visits from one major tertiary hospital emergency room, data was retrieved from two other nearby hospitals belonging to the same health system. Obtaining data from the other two hospitals helped identify patients who visited a hospital emergency room even if they did not re-visit the ED under study but chose to visit an alternate emergency room for non-urgent care.

**Generalizability and Scope**

The generalizability and scope were limited to the Medicaid population within hospitals that provide similar emergency department services and interventions that link patients to primary care. Findings of the study may support the need for interventions that target health policy for specific populations to improve access to primary care. The scope of the study was on ED utilization rates within the Medicaid population and possible strategies or interventions that can contribute to a reduction in ED use among this population. The study can be generalized to other populations with similar characteristics as the Medicaid population.

**Significance of Study**

This study is the first to study how appointment scheduling combined with an educational intervention can contribute to the reduction of ED use. Policymakers, public health officials, and health care systems continue to scramble to find methods to reduce

health care spending (Barakat et al., 2017). Interventions that target high ED users such as the Medicaid population will be instrumental in controlling health care costs, improving primary care access, and improving disparities in health among vulnerable populations (Capp et al., 2013). This study contributes to positive social change by providing insight into strategies that can be implemented to improve community and population health.

### **Significance to Practice**

The reduction of ED use for non-urgent conditions has become a public health priority due to rising health care costs and an alarming increase in ED utilization due to recent policy changes in health coverage (Agarwal et al., 2017; Burns, 2017). Davies et al. (2017) believed that hospital emergency departments serve as a window into the availability of local community health resources which are needed to meet community health needs. The study addresses gaps in knowledge identified in the literature review where studies are needed to communicate methods that increase access to primary care and reduce ED use. The specific gap this study addressed was to discover if appointment scheduling during an intervention can decrease ED utilization. The intervention also provides insight into strategies that address ED use among the Medicaid population.

### **Significance to Social Change**

In the past, efforts to improve health have focused on the health care system to improve health outcomes. Changes in health insurance coverage bring new opportunities to improve health by increasing access to care and improving how people access primary care. While the expansion of health insurance is important, achieving improvement in

public health will require broader approaches and collaboration between health care and public health practices which are above and beyond the activities of the health care delivery system (Heiman & Artiga, 2015; Ingram, Scutchfield, & Costich, 2015). This study supports positive social change by identifying effective public health practice that increases our knowledge of health behavior and how practitioners can create models of care that address the social determinants of health of a given population. The study contributes to our understanding of the drivers of health utilization whether lack of primary care, lack of community resources, the effect of social factors that create barriers to care, or failure of systems available in our health care and public health infrastructure. Study results also serve as a roadmap for other institutions and community to provide the integration of prevention programs that support the new public health agenda in achieving health equity for all communities (Heiman & Artiga, 2015; Garg et al., 2013; Rigg, Cook, & Murphy, 2014).

### **Summary**

This section provided a review of literature which identified the role of the ED in the delivery of care and defined the appropriate use of the emergency department. A review of health policies was provided on how recently enacted health insurance coverage affected the Medicaid population regarding ED use. This section also explored utilization patterns of the Medicaid population regarding the use of the ED for non-urgent primary care treatment. In the next section the research design, data collection, and methodology used in the study will be presented.

## Section 2: Research Design and Data Collection

### **Introduction**

In the previous section, I provided a literature review discussing current literature on appropriate ED use and policies affecting the Medicaid population regarding access to care. A gap in the literature was identified which called for further studies to examine how utilization of the ED could be affected through interventions that increase access to primary care (Agarwal et al., 2017; Cheung et al., 2012). This section contains a description of the research design and rationale, data collection techniques, and methodology. In the methodology section, the study population, the sample and sampling process, data collection methods, instrumentation and operationalization of variables are delineated. A data analysis plan and discussion of the threats to validity and ethical considerations are also presented.

### **Research Design and Rationale**

The purpose of the retrospective cohort study was to examine ED utilization patterns in the Medicaid population following an optimal level of care intervention and appointment scheduling. I sought to determine if appointments scheduled contributed to differences in utilization for non-urgent or unnecessary ED visits in Medicaid enrollees. The variables examined were appointments (independent variable) and how it affected ED utilization (dependent variable). A cohort design was used for this study because the sample population had common characteristics and two groups were used to test the differences between groups as identified in the research hypothesis. Also, in cohort studies, the population is defined by their exposure levels and followed over time

(Achengrau & Seage, 2014). A retrospective design was used for the study because data were retrieved after the intervention was instituted and the outcomes of the intervention occurred before the study (Aschengrau & Seage, 2014). Also, there were no opportunities for the researcher to interfere or manipulate the study population during the study period. The research design chosen was consistent with research exploring exposure and outcomes based on public health interventions targeted toward the reduction of ED utilization (Barakat et al., 2017; Samuels-Kalow, Bryan, & Shaw, 2017; Thakarakar, Morgan, Gaeta, Hohl, & Drainoni, 2015).

## **Methodology**

### **Study Population**

The study population consisted of 176 Medicaid enrollees who visited the ED for primary care conditions identified by an ESI of level 4 or 5 in 2016 and 2017. The ESI is a five-level triage method used in the ED to identify the severity of a patient's illness. The levels range from a level one high acuity and highest severity to low acuity exhibiting the least severe conditions represented by a level four or five classification. Patients who were classified as low acuity are recommended to use treatment options at primary care sites (Burns, 2017). The population was from a large metropolitan Midwest community, and the data was collected from the ED of a large tertiary hospital from June 2016 through July 2017.

### **Sampling and Sampling Procedures**

The sample consisted of two groups: (a) those that had scheduled appointments and (b) those that did not have scheduled appointments. The population included

individuals who visited the ED within the 12-month study period and participated in the OLC intervention. Other inclusion criteria were the individual's level of acuity ED visit with a designation of ESI Level four or five and enrolled in Medicaid. Data collected included demographic information, race/ethnicity, age, gender, geographic location, and level of acuity. Exclusion criteria included individuals with a high acuity of 1, 2, or 3 ESI. Individuals that were not Medicaid enrollees were not selected for inclusion in the study.

### **Data Collection and Management**

Data were collected per established hospital policies and procedures for patients who visit the ED and participate in the intervention. Informed consent was obtained during patient registration for the use of de-identified data for program evaluation and outcomes monitoring purposes. Data were secured per hospital data integrity policies for collecting and accessing data.

### **Data Accessibility and Permissions**

Data were collected during the ED visit and stored in an electronic medical record (EMR). The data were accessible through a data use agreement coordinated by the institutional review board (IRB) of Walden University and the hospital system's IRB. Consent for hospital services and treatment was obtained during each hospital or physician office encounter. Data were routinely collected as a part of each patient encounter for health services.

## Power Analysis

Essential steps before data collection are to determine the appropriate sample size, effect size, alpha level, and power for the investigation (Charan & Biswas, 2013; Oyeyemi, Adewara, Adebola, & Salau, 2010). Determining an adequate sample size reduces random error and ensures the reliability and validity of study results (Aschengrau & Seage, 2014; Frankfort-Nachmias & Leo-Guerrero, 2015; Heale & Twycross, 2015). Oyeyemi et al. (2010) surmised that when effect size, alpha, and power are known or pre-determined, the fourth value (sample size) can be calculated. The medium effect size (0.3) established by Cohen and accepted in the scientific community was used for this study (Abbott, 2016; Bausell & Li, 2002; Martin & Bridgmon, 2012). The alpha or statistical significance level of the test was an alpha of .05 or 95% confidence level. The level of significance of the test denotes the probability of rejecting a true null hypothesis which is also known as a Type I error (Gerstman, 2015). Alternatively, the probability of accepting a false null hypothesis is known as a Type II error. Gerstman (2015) defined the power test as  $1-\beta$  where  $\beta$  is the size of the Type II error. A power test allows researchers to determine how likely the data will result in statistical significance and provides a projected test of statistical significance (Bausell & Li, 2002; Oyeyemi et al. 2010). Oyeyemi et al., (2010) indicated that a minimum accepted and most commonly used power level in social research is 0.80 which was the power level I used to determine an acceptable sample size for the study. I used the G\*power calculator to calculate the sample size for cohort study designs using the Chi-square test for independent samples as shown in Table 2 (Charan & Biswas, 2013). The minimum sample size required for the



study was 88 and assuming an equal sample size for each group the total sample size acceptable for this study was 176.

Table 2

*G\*Power Analysis for  $X^2$  Test for Independent Samples*

| Analysis:      | A priori: Compute required sample size |   |           |
|----------------|--|---|-----------|
| <b>Input:</b>  | Effect size                            | = | 0.3       |
|                | $\alpha$ err prob                      | = | 0.05      |
|                | Power (1- $\beta$ err prob)            | = | 0.80      |
|                | Df                                     | = | 1         |
| <b>Output:</b> | Noncentrality parameter $\lambda$      | = | 7.9200000 |
|                | Critical $\chi^2$                      | = | 3.8414588 |
|                | Total sample size                      | = | 88        |
|                | Actual power                           | = | 0.8035275 |

### **Instrumentation and Operationalization of Constructs**

The instrumentation for data collection was the EMR of individuals who received services in the ED. Data were captured in the EMR at the point of service. Each ED visit and optimal level of care interaction was consistently captured into the EMR during registration and provision of services. Appointments attended post ED discharge were also captured in EMR during each patient encounter.

### **Operationalization of Variables**

The variables explored in the study were binominal categorical variables. The independent variable was appointments scheduled while the dependent variable was the presence of ED visits post OLC intervention. Both the independent and dependent variable's level of measurement were nominal, and each variable contained two distinct

dichotomous groups. Table 3 shows the variables and indicates each variable's definition, measurement level, and attributes. The table also identifies the confounding variables which can have an undesired influence on the results of the study (Aschengrau & Seage, 2014).

Table 3

*Operational Definitions of Variables*

| Name  | Definition   | Type of Measurement | Attribute  |
|---|--|---------------------|--|
| Scheduled Appointments (Independent Variable) | Appointments scheduled during ED visit post-OLC intervention | Nominal             | 0=No<br>1=Yes  |
| ED Visits (Dependent Variable)                | ED Visits present following OLC intervention                 | Nominal             | 0=No<br>1=Yes  |
| Race/Ethnicity                                | Reported race and ethnicity                                  | Nominal             | 1=Caucasian<br>2=African American<br>3=Hispanic<br>4=Asian/Filipino<br>5=Native American<br>6=Unknown/Declined |
| Age   | Age recorded at time of service                              | Nominal             | 1=25 and younger<br>2=26-35 years<br>3=36-45 years<br>4=46 and older   |
| Gender  | Gender of patient at birth                                   | Nominal             | 0=Male<br>1=Female   |
| Location                                      | Zip code where patient lives                                 | Nominal             | 1=Urban<br>2=Suburban  |
| ESI Acuity Level                              | Emergency severity index (ESI)                               | Ordinal             | 1=ESI 4 Less urgent<br>2=ESI 5 non-urgent  |

### **Data Analysis Plan**

The statistical software used to run both descriptive and inferential statistics was IBM Statistical Package for Social Sciences (SPSS) Version 23. Data were collected from EMRs by exporting the data into a Microsoft Excel workbook. Data were reviewed and cleaned for data entry errors such as outliers, miscellaneous and missing values, duplicate cases, and any cases that meet the exclusion criteria. Before analysis, data were coded to align with the appropriate measurement level.

### **Research Question and Hypotheses**

Research Question 1: Are there differences in ED utilization among Medicaid enrollees who are provided optimal level of care education with follow-up appointments to a primary care provider compared to a group of Medicaid enrollees that are provided optimal level of care education without follow-up appointments?

$H_0$ 1: There are no significant differences in ED utilization between Medicaid enrollees who are provided optimal level of care education and follow-up appointments and those that are provided optimal level of care education and no follow-up appointments.

$H_a$ 1: There are significant differences in ED utilization between Medicaid enrollees who are provided optimal level of care education and follow-up appointments and those that are provided optimal level of care education and no follow-up appointments.

Research Question 2: Do demographic variables such as race, age, gender, level of acuity, and geographical location influence ED utilization among Medicaid enrollees who are provided optimal level of care education with follow-up appointments compared to a group of Medicaid enrollees that are provided optimal level of care education without follow-up appointments?

$H_02$ : Demographic variables such as race, age, gender, level of acuity, and geographic location do not significantly influence ED utilization between Medicaid enrollees who are provided optimal level of care education with follow-up appointments compared to Medicaid enrollees who are provided optimal level of care education without follow-up appointments.

$H_a2$ : Demographic variables such as race, age, gender, level of acuity, and geographic location significantly influence ED utilization between Medicaid enrollees who are provided optimal level of care education with follow-up appointments compared to a group of Medicaid enrollees who are provided optimal level of care education without follow-up appointments.

### **Data Analysis Techniques**

Descriptive statistics was performed to determine frequency counts by percentages and tables were used to provide a representation of the characteristics of study variables. Other statistical tests included Pearson's chi-square test for independent samples for categorical variables which included an analysis to assess the effect of confounders such as race/ethnicity, age, gender, geographical location, and ESI acuity levels. Pearson's chi-square test was conducted to compare the difference in proportions

between two independent samples and test whether there was an association between the two variables. Study results were interpreted by examining the strength of the association indicated by a  $p$ -value with a statistical significance of .05.

### **Threats to Validity**

In this section, I provide a discussion on potential limitations that can affect the validity of study results. Gregory and Radovinsky (2012) indicated that the patient medical record could serve as a reliable data collection method that contributes to the validity of the research. I used the EMR to identify demographic factors and nonclinical data variables for this study. Limitations of using EMR data in a retrospective review include missing or incomplete data, verification of documented information, and variability in the quality of documentation between providers (Gregory & Radovinsky, 2012; Langbein, 2006). The methods to address the limitations were to conduct data cleaning techniques by reviewing the data and verifying the information was appropriately documented.

### **External Validity**

External validity is defined as research that is generalizable to the general population indicating that the results apply to larger populations and other times and places (Langbein, 2006). A threat to external validity includes selection bias which can occur due to selection methods used to select the sample population. A limitation was that the data were collected retrospectively for a study period spanning one year which does not allow for follow up with the population. The dataset only contained enrollees in the Medicaid population meaning that the study was generalizable to the Medicaid

population. Also, the use of bivariate analysis techniques allowed the study results to be generalized to other populations with similar characteristics to the Medicaid population.

### **Internal Validity**

Internal validity refers to the accuracy of claims of research which determine causality of an outcome or disease (Langbein, 2006). Threats to internal validity can include attrition, history, instrumentation, maturation, regression, selection, statistical conclusion, and testing (Harris, 2016). I used secondary data collected retrospectively which eliminated factors related to attrition. The instrumentation used provided reliable and valid data collection in the EMR. There were no known maturation changes or historical events that affect the intervention. Testing did not affect study participants as the data were retrospectively collected.

### **Ethical Procedures**

Walden University IRB supervised the research protocols as designated by established IRB procedures. Walden University IRB worked closely with the IRB of the institution where the intervention occurred to guide data collection and ensure that ethical processes were followed by the student investigator. The IRB of the health system manages research involving human subjects which takes place within the sites of care involving affiliated researchers, employees, or associates. Harris (2016) indicated that ethical standards are required by researchers when evaluating and reporting results of interventions.

**Ethical Considerations**

An ethical concern was researching vulnerable populations such as the Medicaid population used in the study (Thakarar et al., 2015). I used systematic processes for collecting, analyzing, and reporting data and used ethical principles governed by the institutional review boards of both oversight organizations. Data were held confidential as per health system procedures for accessing, storage, and dissemination practices.

**Permissions**

The IRB confirmed that parameters for the study met Walden University's ethical standards and the IRB approval number for the study was 08-27-18-0587769. The IRB approval number for the health system oversight of the study was AHC-6953- E5000305. The IRB of the health system placed a limit on the number of records accessed for the study and limited data collection to the amount of records indicated by the G\*Power analysis. The G\*Power analysis indicated that total sample size acceptable for testing the research hypothesis was 176 records, therefore 176 records were used to conduct the study.

**Summary**

Section 2 provided the research methodology for the secondary data analysis, a description of the population, and characteristics of the sample. A description was also provided of the research design, data collection protocols, data analysis plan, and the techniques used to analyze the data. Ethical concerns were discussed, and measures to adhere to research protocol as required by the IRB were discussed. The next section presents the results of the findings of the study.

### Section 3: Presentation of the Results and Findings

#### **Introduction**

The purpose of the study was to explore the differences that exist in ED utilization between Medicaid populations after participation in an optimal level of care intervention inclusive of appointments scheduled to primary care providers. The research question was “are there difference in utilization among two populations, those that have scheduled follow up appointments compared to those that do not have scheduled follow up appointments following an ED visit”. The null hypothesis was there are no differences in ED use between the two populations and the alternative hypothesis was that there are differences in ED use between the two populations.

Section 3 describes data collection of the secondary data set, the time frame and response rates, and discrepancies in the data set. The section also describes the demographics and bivariate characteristics of the sample. Finally, the section provides the statistical results for each research question.

#### **Data Collection of Secondary Data Set**

##### **Time Frame and Response Rates**

Secondary data were retrieved from the electronic medical records of patients receiving ED care covering a one-year time frame. The dates that data were retrieved began June 1, 2016 and ended July 31, 2017. A total of 189 records met the search criteria. However, nine records had a diagnosis of chronic disease such as diabetes, asthma, and hypertension while three records showed insurance plans other than Medicaid and one record exhibited the patient had a higher level of acuity other than an



ESI level four or five. After removal of the thirteen records, a total of 176 records were used for the analysis.

## **Discrepancies in the Data Set**

### **Geographic Location**

A discrepancy in the secondary data set which deviated from the plan presented in Section 2 involved identification of the geographic location. The geographic location described in the data analysis plan was to identify location by metropolitan statistical area. Data collected showed that metropolitan statistical area was too broad because the entire population was from the same metropolitan statistical area. Zip code level data was available to define geographic location which identified and compared urban versus suburban communities.

### **Older Age Groups**

The data analysis plan was to include data from individuals of age 65 and older. The Medicaid population only consisted of individuals under the age of 64. The sample data age range was found to be from age 18 to 60.

There were no additional discrepancies identified in the data set and there were no missing data. The sample size of 176 records in the data set was adequate for investigating the research hypothesis as depicted by the G\*Power analysis in Section 2. The G\*Power calculated showed that the minimum total sample size for the study was 176 which was determined using a Power of 0.80, effect size of 0.3 and an alpha of .05 (Table 2).

### Descriptive Demographics of the Sample

The sample population of 176 consisted of 72 males (40.9%) and 104 females (59.1%) ranging in age from 18 to 60 years of age. Among the sample, 89 individuals (50.6%) had scheduled appointments and 87 individuals (49%) had no scheduled appointments following the initial ED visit. Visits observed post the initial ED visit and intervention demonstrated that 117 individuals (66.5%) of the population had no ED visits after participating in the intervention while 59 individuals (33.5%) had ED visits after the intervention. Table 4 shows the demographic characteristics of the sample.

Table 4

#### *Demographic Characteristics (N - 176)*

| Variable                    | Category         | <i>n</i> | %     |
|-----------------------------|------------------|----------|-------|
| Scheduled Appointments      | No               | 87       | 49.4% |
|                             | Yes              | 89       | 50.6% |
| ED Visits Post Intervention | No               | 117      | 66.5% |
|                             | Yes              | 59       | 33.5% |
| Race/Ethnicity              | White            | 47       | 26.7% |
|                             | African American | 81       | 46.0% |
|                             | Hispanic         | 39       | 22.2% |
|                             | Asian/Filipino   | 3        | 1.7%  |
|                             | Native American  | 3        | 1.7%  |
|                             | Unknown/Declined | 3        | 1.7%  |
| Age Groups                  | 25 and Younger   | 48       | 27.3% |
|                             | 26-35            | 49       | 27.8% |
|                             | 36-45            | 47       | 26.7% |
|                             | 46 and Older     | 32       | 18.2% |
| Gender                      | Male             | 72       | 40.9% |
|                             | Female           | 104      | 59.1% |

*(table continues)*

| Variable         | Category          | <i>n</i> | %     |
|------------------|-------------------|----------|-------|
| Location         | Urban             | 109      | 61.9% |
|                  | Suburban          | 67       | 38.1% |
| ESI Acuity Level | ESI 4 Less Urgent | 170      | 96.6% |
|                  | ESI 5 Non-Urgent  | 6        | 3.4%  |

### **Representativeness of the Sample**

The sample may not be representative of the larger U.S. population due to sampling methods used to only target the Medicaid population. The sample identified the African American population as the largest population followed by the White and Hispanic populations. In 2017, the US Census Bureau indicated that the US population consisted of a majority white population followed by a large proportion of the minority population being Hispanic. Also, the population sampled consisted of a population in which the acuity level was mostly representative of the less urgent population of an ESI Level four (96.6%) indicating that the population did not adequately represent the non-urgent population ESI Level five (3.3%). In this study I explored the Medicaid population. The age of the sample population did not extend beyond the age of 60 years. The Medicaid insurance program provides insurance coverage for adults age 18 to 64 years and children who are eligible family members (Illinois Department of Healthcare and Family Services, 2017). Records of participants who did not have Medicaid insurance were excluded from the study.

### Bivariate Characteristics of the Sample

Table 5 shows results of the bivariate descriptive analysis. There were 176 records included in the sample which exhibited those with scheduled appointments and those without scheduled appointments following patient encounters with the OLC intervention and ED visit returns post OLC intervention. Other variables included gender, age group, race/ethnicity, location, and level of acuity. Data limitations were identified in the category of ESI acuity levels. There were 170 cases that were classified as an ESI level four which represented less urgent cases compared to six cases that represented non-urgent cases classified as an ESI level five.

Table 5

#### *Characteristics of ED Visits*

| Characteristic         |              | No ED Visit |       | ED Visit |       | $\chi^2$ | <i>p</i> |
|------------------------|--------------|-------------|-------|----------|-------|----------|----------|
|                        |              | <i>N</i>    | %     | <i>n</i> | %     |          |          |
| Scheduled Appointments | No           | 58          | 49.6% | 29       | 49.2% | 0.003    | 0.958    |
|                        | Yes          | 59          | 50.4% | 30       | 50.8% |          |          |
| Gender                 | Male         | 48          | 41.0% | 24       | 40.7% | 0.002    | 0.965    |
|                        | Female       | 69          | 59.0% | 35       | 59.3% |          |          |
| Age Groups             | 25 & Younger | 30          | 25.6% | 18       | 30.5% | 3.214    | 0.360    |
|                        | 26-35        | 37          | 31.6% | 12       | 20.3% |          |          |
|                        | 36-45        | 28          | 23.9% | 19       | 32.2% |          |          |
|                        | 46 & Older   | 22          | 18.8% | 10       | 16.9% |          |          |

*(table continues)*

| Characteristic   |                      | No ED Visit |       | ED Visit |       | $\chi^2$ | <i>p</i> |
|------------------|----------------------|-------------|-------|----------|-------|----------|----------|
|                  |                      | <i>N</i>    | %     | <i>n</i> | %     |          |          |
| Race/Ethnicity   | Caucasian            | 29          | 24.8% | 18       | 30.5% | 4.190    | 0.522    |
|                  | African American     | 52          | 44.4% | 29       | 49.2% |          |          |
|                  | Hispanic             | 28          | 23.9% | 11       | 18.6% |          |          |
|                  | Asian/<br>Filipino   | 3           | 2.6%  | 0        | 0.0%  |          |          |
|                  | Native American      | 2           | 1.7%  | 1        | 1.7%  |          |          |
|                  | Unknown/<br>Declined | 3           | 2.6%  | 0        | 0.0%  |          |          |
|                  |                      |             |       |          |       |          |          |
| Location         | Urban                | 76          | 65.0% | 33       | 55.9% | 1.355    | 0.244    |
|                  | Suburban             | 41          | 35.0% | 26       | 44.1% |          |          |
| ESI Acuity Level | Less Urgent 4        | 114         | 97.4% | 56       | 94.9% | 0.757    | 0.384    |
|                  | Non Urgent 5         | 3           | 2.6%  | 3        | 5.1%  |          |          |

## Study Results

### Research Question 1

Are there differences in ED utilization among Medicaid enrollees who are provided optimal level of care education with follow-up appointments to a primary care provider compared to a group of Medicaid enrollees that are provided optimal level of care education without follow-up appointments?

$H_0$ 1: There are no significant differences in ED utilization between Medicaid enrollees who are provided optimal level of care education and follow-up appointments

and those that are provided optimal level of care education and no follow-up appointments.

$H_a1$ : There are significant differences in ED utilization between Medicaid enrollees who are provided optimal level of care education and follow-up appointments and those that are provided optimal level of care education and no follow-up appointments.

### **Statistical Assumptions and Findings**

A Chi-square test uses categorical data to test the null hypothesis that the variables are independent (Frankfort-Nachmias & Leon-Guerrero, 2015). I conducted a Pearson's Chi-Square test to examine if the observed distribution was due to chance and to measure how well the observed distribution of data fit within the expected distribution when the variables are independent. The crosstabs and chi-square tests indicated that there was not a significant probability value ( $p>0.05$ ) which showed that there was not a significant relationship between scheduled appointments and return ED visits (Table 5). Therefore, the null hypothesis that there were no differences in ED utilization between the two populations was accepted and no further statistical tests were warranted.

### **Research Question 2**

Do demographic variables such as race, age, gender, level of acuity, and geographical location influence ED utilization among Medicaid enrollees who are provided optimal level of care education with follow-up appointments compared to a group of Medicaid enrollees that are provided optimal level of care education without follow-up appointments?

$H_02$ : Demographic variables such as race, age, gender, level of acuity, and geographic location do not significantly influence ED utilization between Medicaid enrollees who are provided optimal level of care education with follow-up appointments compared to Medicaid enrollees who are provided optimal level of care education without follow-up appointments.

$H_a2$ : Demographic variables such as race, age, gender, level of acuity, and geographic location significantly influence ED utilization between Medicaid enrollees who are provided optimal level of care education with follow-up appointments compared to a group of Medicaid enrollees who are provided optimal level of care education without follow-up appointments.

For the second research question, I used crosstabs and Pearson's chi-square to examine if differences existed between the two groups in terms of the identified demographic variables. The p-values for each of the demographic variables did not show any statistical significance ( $p > 0.05$ ) (Table 5). Therefore, the null hypothesis was accepted that there were no differences that existed in ED utilization between the groups in relation to age, gender, race/ethnicity, geographical location, and ESI acuity level. No further statistical tests are warranted due to the results of the bivariate analysis.

### **Summary**

This section presented the results and findings of the research study. The section includes a review of the study purpose and data collection description. Results were presented of the descriptive and nonparametric statistical tests of the hypothesis and research questions.

In examining the first research question, there were no statistically significant associations between scheduled appointments and ED visits among the two populations. The second research question also indicated that no differences existed among groups between scheduled appointments and ED visits when examined for age, gender, race/ethnicity, geographic location, and ESI level of acuity. There were no further tests conducted due to the lack of statistical significance and the acceptance of the null hypothesis that no difference existed between the groups.

Section 4 presents the interpretation of findings and how it relates to scientific literature and the theoretical framework. In this section, the limitations of the study and recommendations for further research are also discussed. The section concludes with a review of the implications of the study to professional practice and positive social change.



## Section 4: Application to Professional Practice and Implications for Social Change

### **Introduction**

The purpose of the study was to investigate differences in ED utilization among the adult Medicaid population. The nature of the study involved quantitative research using a retrospective cohort design to investigate if differences existed in ED utilization between the two populations following an educational intervention incorporating appointment scheduling to a primary care provider. The study was conducted to add to research which identifies the effectiveness of interventions that affect the Medicaid population in accessing primary care and reducing ED utilization.

Section 4 provides interpretation of findings including findings to literature and the IBM theoretical framework. The section also includes the limitations of the study, recommendations for further study, and implications for professional practice and positive social change.

### **Interpretation of the Findings**

Key research findings indicated that there were no differences in ED utilization among the Medicaid population regarding participation in the OLC intervention and appointment scheduling as opposed to those who did not have scheduled appointments within the same population. Pearson's chi-square test showed no significant results ( $p>0.05$ ) meaning the null hypothesis was accepted that there were no differences and the alternative hypothesis rejected that there were differences. Research findings also included an analysis to determine if variables such as age, race/ethnicity, gender, level of acuity, and geographical location affected ED utilization. There were no significant

findings for any of the variables indicating that the null hypothesis should be accepted. Results indicated that appointment scheduling alone to a primary care provider does not reduce ED utilization among the population in the OLC intervention. The results also indicated that appointment scheduling alone did not affect the use of the ED between demographic variables including age, race/ethnicity, gender, level of acuity, and geographical location. These results indicate that further research is needed to determine interrelated factors or barriers that affect the Medicaid population in relation to access to primary care and ED utilization.

### **Findings to Literature**

The literature review showed mixed evidence as to the effectiveness of strategies that provided education, increased access to primary care, and removed barriers to care to reduce emergency department visits (Morgan et al., 2013). Increasing access to primary care was described as a promising method to reduce ED use for non-urgent conditions because the strategy identified additional resources for treatment and provided treatment at a lower cost than ED care (Huyer, Chreim, Michalowski, & Farion, 2018; Morgan et al., 2013, Pukurdpol et al., 2014; Weinick et al., 2010). Additionally, the implementation of the Affordable Care Act which expanded health coverage to privately insured and Medicaid populations was intended to increase access to care (Honigman, Wiler, Rooks, & Ginde, 2013; Mortensen, 2013; Ohle, Ohle, & Perry, 2017;). The OLC intervention used education and navigation to primary care resources through appointment scheduling as a method to increase access to care and reduce ED utilization. My study results showed that appointment scheduling alone did not contribute to a reduction in ED use.

My study confirmed previous literature findings from similar studies in the Medicaid population as well as other insurance types. Studies showed there were no significant differences in ED utilization following an educational intervention and appointment scheduling for a follow up primary care visit in comparison to a population that did not receive scheduled follow up appointments (Birmingham, Cochran, Frey, Stiffler, & Wilber, 2017; Doran et al., 2013; Farion et al., 2015). Researchers indicated that appointment scheduling to specific alternative primary care resources increased primary care access, however, there was no evidence that the strategy reduced ED utilization (Birmingham et al., 2017; Capp et al., 2017; Huyer et al., 2018). A study conducted by Doran et al. (2013) showed that scheduled appointments with a primary care provider increased utilization of primary care sites but showed no differences in subsequent ED utilization between the group that received scheduled follow up appointments and the group that did not receive follow up appointments. Farion et al. (2015) conducted a study to investigate the differences between patients with and without a primary care provider. The researchers found that many patients sought emergency department care for low-acuity problems despite having a primary care provider. The researchers indicated that increasing access to primary care sites had several factors that affect whether the patient uses and continues to use the primary care setting and that continued ED use may be independent of primary care access. In the next section factors that affect access to primary care are discussed and how the factors fit in the context of this study.

### **Factors and Barriers Affecting Access to Care**

My research study indicated that appointment scheduling did not make a significant difference in reducing ED use between the target populations. An explanation may be that there are mitigating factors that can affect an individual's decision to continue to access the ED for non-urgent care after establishing a relationship with a primary care provider following appointment attendance. Factors include the quality of the primary care appointment which includes mistrust or dissatisfaction of the primary source of care, inaccessibility of the primary care provider including the inability to obtain timely appointments and lack of after hours, evening or weekend care options, and the perceived quality of ED care (Farion et al., 2015; Honigman et al., 2013).

**Quality of primary care appointment.** Negative personal experiences with primary care visits may lead to mistrust or dissatisfaction of the primary source of care leading to patients electing to seek primary care in the ED (Capp et al., 2016; Ohle et al., 2017, & Pearson et al., 2018). Butun and Hemingway (2018) and Capp et al. (2016) indicated that patients who are not satisfied with their PCP or with the treatment provided are less likely to revisit the PCP for services and that dissatisfaction with PCP services is a reason provided by patients for using the ED for primary care. Dissatisfaction can encompass staff attitudes, communication problems, and provision of unclear information leading to mistrust (Capp et al., 2016).

One goal of the OLC intervention was to assist patients in establishing a relationship with a PCP and encourage utilization of the PCP site as a usual source of care. A factor that may have affected the results of the study is that there was no indication that appointments scheduled were actually attended. Capp et al. (2016)

indicated that socioeconomic factors which affect the Medicaid population could play a role in a patient's ability to attend appointments. Patients who experience socioeconomic barriers such as lack of food, low income, and homelessness struggle with remembering appointments. Other socioeconomic barriers include lack of transportation to attend scheduled appointments (Capp et al., 2016). According to Torres et al. (2015), missed appointments reduce the continuity of care, decreases patient satisfaction, and harm quality of care.

**Inaccessibility of the primary care provider.** One reason the ED is attractive to patients for primary care is the accessibility of care any time of the day without a required appointment (Ohle et al., 2017). PCP's are often inaccessible requiring scheduled appointments during business hours and the majority of primary care sites are not open during evening or weekend hours (Pearson et al., 2018). Honigman et al. (2013) examined factors that predisposed individuals to use the ED for nonurgent care. The researchers identified that patients presented to the ED for nonurgent conditions because the ED provides easier accessibility and provides the option to have unscheduled care in the ED.

**Perceived quality of ED care.** The ED is often viewed as an advantage of quality care in comparison to primary care sites (Butun & Hemingway, 2018). Researchers cite the advantages perceived by patients include the availability of qualified staff, ability to obtain high quality diagnostics that are not available or accessible at the primary care site, timely and immediate care, and clinical practice differences between the ED and the primary care office (Capp et al., 2016; Honigman et al., 2013; Butun &

Hemingway, 2018). Researchers suggested that additional strategies to improve access to primary care through community-based primary care coordination and navigation programs were needed to effectively reduce ED Use (Capp et al., 2017; Doran et al., 2013).

### **Demographic Characteristics**

My study showed that appointment scheduling following an OLC intervention did not reduce ED use due to demographic variables including age, gender, race/ethnicity, level of acuity, and geography. The results mirrored previous literature findings in that demographic variables of age, gender, and race/ethnicity showed no significant differences in ED use among the target population (Hayes, Riley, Radley, & McCarty, 2015; Mortensen, 2014). The level of acuity between non-urgent and less urgent visits could not be adequately analyzed and presented a limitation to the study. The analysis was inadequate because only 3.3% the sample population consisted of the non-urgent classification compared to the less urgent classification of 96.7%. The geographical data was problematic because the classification resulted in a comparison of suburban and urban and was contained in the same metropolitan statistical area which may have contributed to the results of no differences in between geographical populations because the community areas were in close proximity to each other.

### **Findings to IBM Theoretical Framework**

I used the Integrated Behavior Model (IBM) framework to understand the dynamics in an individual's choice to access emergency department services for treatment of non-urgent primary care conditions. The theory posits that individuals will

change their behavior based on their attitude and motivation, the perceived norm, and personal agency (Capp et al., 2016; Glanz et al., 2015). The theory has four additional factors that directly affect behavior which are knowledge and skill to perform the behavior, few environmental constraints that make performing the behavior impossible or difficult, importance or salience to the individual, and experience in performing the behavior so that the behavior becomes a habit (Glanz et al., 2015). Each factor is discussed in the context of the study.

**Knowledge and skill to perform the behavior.** The intervention studied in the context of IBM incorporated education regarding the most optimal and appropriate site to obtain care for non-urgent conditions. Education was also provided to arm the individual with knowledge to make the most appropriate choice if urgent care was needed as well. My findings suggest that developing the knowledge and skill set of the individual to choose the most appropriate setting for care may be affected by other factors such as perception of severity of illness (Huyer et al., 2017). Farion et al. (2015) indicated that visits to the ED for low-acuity health conditions were common due to an individual's over-estimated seriousness of the condition coupled with the desire to seek immediate and convenient care.

**Few environmental constraints.** An individual may have the intention of performing a behavior but makes the choice not to perform the behavior due to environmental constraints. IBM posits that reducing environmental barriers are needed to support the performance of the behavior (Glanz et al., 2015). The intervention sought to remove barriers to access to primary care by scheduling appointments to primary care

providers. My findings suggest that there may be additional factors to accessing primary care that may were not addressed in the study which would require further research. Birmingham et al. (2017) identified that transportation was a barrier to attending medical appointments and the ability to take time from work was also identified as a barrier to appointment attendance. Capp et al. (2017) discussed that innovative models of care involving a multidisciplinary team and community-based care coordination could reduce use of the ED among high utilizers by eliminating environmental constraints such as lack of transportation to primary care visits and understanding how to navigate the health system.

**Salience to the individual.** The intervention directly employed a method to reinforce the importance of seeking care for non-urgent conditions in primary care settings instead of the ED. However, individuals that were educated and provided an appointment may not have accepted that using an alternative primary care setting for their condition as important enough to change behavior in accessing the ED for low-acuity conditions (Glanz et al., 2015).

**Experience in performing the behavior.** The intervention did not have a mechanism to provide repeat practice of the behavior to access care in the most appropriate setting. Individuals were seen only during the one encounter of the initial ED visit and then scheduled an appointment for follow up. Capp et al. (2017) surmised that a long-term intervention with repeat outreach to individuals could assist in changing behavior. The findings of the study that there were no differences in ED utilization among the two populations indicates further research to include exploring methods to



extend interventions that interact with individuals over an extended timeframe and incorporating strategies that support experience to develop habits to support behavior.

### **Limitations of the Study**

There were several limitations identified for the study. One limitation was that the study population consisted of only the Medicaid population which limited the generalizability of the research findings. Generalizability for the study can be applied to populations with similar characteristics of the Medicaid population. Another limitation of the study was that the study population's ED visits could not be tracked outside the health care system where the intervention occurred. The inability to track ED visits to other health entities contributes to the inability to document ED visits that were not present or reflected in the study data for both populations (Gregory & Radovinsky, 2012; Langbein, 2006). There was also a limitation in measuring the levels of acuity between less urgent and non-urgent visits since there were few samples that represented the non-urgent visits. Geographical area was represented as zip code level data instead of metropolitan statistical area as previously proposed. Finally, the retrospective nature of the study served as another limitation. This retrospective study did not allow for follow up of the population where additional data could be retrieved concerning barriers to care and other social factors that affect behavior.

### **Recommendations**

The recommendations are based on the findings of the research and literature review. This study was a retrospective cohort study used to evaluate the response to ED utilization following an educational intervention and explored the differences that existed

among the group that had scheduled follow up appointments and the group that refused scheduled follow up appointments to primary care providers. Further research needs to encompass a prospective study design where program participants can further clarify their reasons for post ED utilization for non-urgent care. Prospective research to discover barriers to care and the social factors surrounding them could lead to discovery of solutions for reducing ED utilization.

Another recommendation is to extend the research to examine ED utilization patterns of populations represented by other insurance carriers other than Medicaid thereby improving the generalizability of the study. The literature review highlighted the importance of the ED as usual source of primary care for some populations including the Medicaid population (Castner et al., 2016; Capp et al., 2013). The Medicaid population is known as high utilizers of the ED above and beyond other insurance types (Mortensen, 2014). Research that includes various insurance types could provide insight into utilization for the entire population.

One limitation identified in the study was the possibility of ED visits that was not captured if the individual visited an ED outside the health system of the study location. A recommendation is to test the research hypothesis by using nationally available utilization data that would allow the identification of hospital and primary care site utilization from multiple hospitals and other hospital systems. Nationwide Emergency Department Sample data are utilization data that is available from the Agency for Healthcare Research and Quality (Healthcare Cost and Utilization Project, 2018).

### **Implications for Professional Practice and Social Change**

Public health practice calls for practitioners to identify methods and strategies to reduce overutilization of the ED for treatment of non-urgent conditions, improve access to primary care, and reduce unnecessary costs to the health care industry. Doran et al. (2013) indicated that the ED may be the best place for interventions that improve access to primary care given that many populations use the ED as a usual source of care. The researchers also discussed that previous ED-based interventions have had various levels of success in encouraging primary care follow up in the most appropriate locations other than the ED. This subsection describes the recommendations for professional practice in seeking strategies that can be administered using the theoretical framework.

#### **Professional Practice**

The theoretical framework of Integrated Behavior Model integrates the theory of Reasoned Action, the theory of Planned Behavior, and other behavioral theory models. I recommend changes to intervention strategies to improve individual behavior by lengthening the relationship between the individual and the community health worker. The increase in length of the relationship would allow the individual to learn, practice, and develop a habit of using alternate sites of care for their non-urgent conditions. The strategy would provide support to individuals in deciding before accessing the ED. A study using care coordination with an extended strategy of engagement was conducted by Capp et al. (2017). The researchers found that providing continuous care coordination in which the community health workers and other practitioners managed care for the

individual for an extended period was promising in decreasing ED visits and increasing primary care access.

Another recommendation for professional practice is to implement an intervention with a robust method to limit barriers to care for primary care appointments such as appointment quality, dissatisfaction with the PCP, inaccessibility of PCP, and perceived quality of ED that support the attendance primary care visits. The intervention should include the ability to receive input for individuals regarding the services they need to achieve an optimal level of health that would decrease their ED use. Birmingham et al. (2017) recommended that practitioners engage individuals in understanding the unique needs of repeat ED utilizers. Engaging individuals by asking and identifying their unique needs can also be incorporated into the intervention. Hospitals and health systems can work with primary care sites to partner in improving services through quality measures and design a care coordination program in collaboration with patients and clinicians (Capp et al., 2016). Access to care can be increased by modifying accessible hours of primary care sites through extension of hours to evening hours and increasing accessibility to weekend hours (Ohle et al., 2017).

Another recommendation for professional practice is the co-location of primary and emergency care services in the ED. Doran et al. (2013) suggested that health systems and hospitals take the integrated approach by providing primary care services in close proximity to emergency and urgent care. This strategy was also recommended by van der Linden et al. (2014) who suggested that policy and decision makers should organize and provide the delivery of primary and emergency care in ED settings. Locating

primary and emergency services together would support the use of primary care services as result of patients arriving to accessing primary care services in the ED where they can be assisted in the most optimal setting, decrease over utilization of the ED to treat non-urgent conditions, and establish a usual source of care for patients.

### **Positive Social Change**

The research can inform public health practitioners which has the potential create positive social change to the health care and public health fields in several capacities including the individual, organizational, and policy level. Findings indicate the need for additional research in interventions that improve access to care and decrease ED use. This subsection discusses the positive social change implications at the individual, organizational, and policy levels.

**Individual level.** The research can be used to develop more robust intervention programs that extend over a period which can provide a mechanism to obtain individual input into the barriers that prevent individuals in accessing primary care sites for non-urgent conditions. Programs such as the OLC intervention need to have the participation of the target population to develop and design a program that works best to support strategies at the individual level (Elliot et al., 2016). Using a prospective study that encourages the input of the individual can assist practitioners in designing a program that uses the theoretical framework of the IBM which addresses all constructs of the theory (Barbee, 2010).

**Organizational level.** The research provides information regarding strategies that organizations can use to improve the provision of ED services to the community by

adopting interventions that support individuals in accessing appropriate services in the most optimal location. Continued refinement of interventions that use case management and community health worker services to provide education and follow up appointments for follow up care continue to be a strategy increasingly used by various health care organizations (Anderson et al., 2017; Capp et al., 2017; and Cheung et al., 2012). The research contributes to the growing body of research that helps to provide content to the literature.

**Policy level.** Policy makers continue to search for methods that improve healthcare access, remove barriers to care, and decrease health care costs. The research contributes to a review of the barriers and current policies affecting the Medicaid population. Research findings suggests that continued research is warranted to understand the dynamics of individual behavior regarding access to care and models of care interaction that can change behavior.

### **Conclusion**

The increase in insurance coverage through the introduction of the Affordable Care Act of 2010 brought the promise of unprecedented access to primary care. Yet, access to care continues to be a major problem as unnecessary utilization of the emergency department has grown and spurred overcrowded EDs and increased costs to the health system.

My research study provided a review of the problem of access to care and identified current strategies and interventions that organizations and public health practitioners have used to reduce unnecessary ED use. I investigated whether there were

differences in ED utilization between groups following an educational intervention which incorporated appointment scheduling in the Medicaid population. Study results showed that appointment scheduling alone did not reduce ED use among the Medicaid population even when demographic variables were controlled.

The findings of the research contribute to a growing body of research that can be used to improve public health practice for improvement of access to care and interventions that target reduction of ED use. The investigation of barriers and strategies were not included in this study. Further investigations are needed to understand the barriers and strategies which contribute to an individual's use of the ED for treatment of non-urgent conditions. Factors that warrant further study are the quality of primary care appointments scheduled post OLC intervention and attendance, inaccessibility of primary care providers, and perceived quality of the ED in comparison to primary care services. Strategies that should be investigated include implementation or expansion of primary care hours to include after hours or weekend hours, strategies to improve the primary care experience, and co-location of primary care services within proximity of the ED.

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