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Factors Associated with Patients who Leave Emergency Departments without Being Seen

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Walden University
2020

Abstract

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by

Eva Koci

MS, Palm Beach Atlantic University, 2011

BS, Florida Atlantic University, 2003

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

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Abstract

Patients leaving an emergency department (ED) without being seen by a provider are a significant problem in United States for patient health. Research on leaving without being seen (LWBS) has been conducted; but very few researchers have examined patients with Tricare or military members. This quantitative study explored the association between patients' social demographic characteristics (age, gender, race, ethnicity), triage levels, visit characteristics (hour of arrival, day of the arrival), and LWBS rates. The theoretical framework for this study was the Donabedian theory. Secondary data from Agency for Healthcare Administration located in Florida were examined. The research questions explored whether age, gender, race, ethnicity, triage levels, patients' hour of arrival, and patients' day of the arrival predict the LWBS. The result of the logistic regression analysis showed that there was statistically significant association between patients' age, patients' hour of arrival, patients' day of the arrival, and LWBS rate. Results from the logistic regression analysis revealed that gender and racial/ethnic background did not predict the likelihood of LWBS. The findings of this study could help create positive social change by equipping healthcare facilities and health care providers to understand the impact of patients' demographic, hour of arrival, and day of the arrival in the emergent care setting on the patient experience and the impact on patient health outcomes. Hospital administrators can use the study results to improve their knowledge about managing patient flow and handling hospital overcrowding. This information might be instrumental in creating healthcare policies and the improvement of the delivery of healthcare services across the patient population.

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Dedication

This dissertation is dedicated to my father and grandparents who passed away too soon. I remember all the wonderful things you did for me. Grandma, I think about you all the time and all the advice you gave me. You have always encouraged me and inspired me to pursue my dreams. I know that you are cheering me on and proud of all that I have accomplished. The older I become, I see my self in you. Thank you for being my inspiration. Thank you for setting an example of a strong woman who overcome obstacles through determination. I love and miss you dearly.

Acknowledgments

I would like to use this opportunity to thank everyone who has supported me in this endeavor. My mom, who has encouraged and supported me every step of the way. Thank you for supporting me and making me feel that there is nothing I cannot do. Through it all, you have been my friend and my rock. Thank you for staying here with me. I could not have done this without you. I love you, mom.

My beautiful daughters, Sara and Melina, who challenge me to fulfill my purpose and push beyond my limitations. I am so proud of you and the young women you are becoming. You both are my joy and greatest gifts. My greatest accomplishment is being your mom. I love you both very much. Thank you both for believing in me.

I would like to thank my dissertation committee chair Dr. Bewley who took on the task of taking me through this dissertation process, after many challenges and changes. I am forever grateful for all that you have done in assisting me. Your expertise and kindness gave me the fuel to get to the finish line.

My committee member Dr. Green and the University Research Reviewer (URR) Dr. Clews, thank you for your expertise and discretion. I am extremely grateful for your support and constructive comments during the writing process.

Lastly, there are several people including colleagues, course mates, residency team members, who have touched my life during the course of my study. I herewith acknowledged your contribution. Thank you.

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Chapter 1: Introduction to the Study

Patients LWBS by a provider and crowding in the EDs have long attracted national and international attention (Li, Brennan, Kreshak, Castillo, & Vilke, 2019). Researchers indicated a positive relationship between crowding in the ED and LWBS rate (Carter, Pouch, & Larson, 2014). Researchers have also reported a positive relationship between ED crowding and adverse cardiovascular outcomes (Carter et al., 2014).

Recently, the demand for ED services has increased with approximately 131 million people visiting EDs every year in the United States (Weiss, Wier, Stocks, & Blanchard, 2014). As the number of patients who visit ED increases, so does the number of patients who LWBS by a physician (Ducharme, Alder, Pelletier, Murray, & Tepper, 2009). Patients who leave from ED without being seen by a provider compose 1% to 2.7% of all EDs encounters (Schaefer & Monico, 2013). These numbers appeared to be higher in some large metropolitan cities (Tropea, et al., 2012).

My goal for this study was to identify factors associated with patients who leave ED before completing their visit and compare them with patients who completed their visit and are discharged home. A literature review indicated that patients who LWBS return to ED for care. Yousefi, Yousefi, Fogliatto, Ferreira, and Kim (2018) reported that 70% of patients leaving without being seen return within 24 hours. Similarly, other researchers reported that approximately 25% of patients LWBS return to ED within 14 days and 11% of them required hospitalization a week after their initial visit to ED (Yousefi et al., 2018).

Cross-sectional studies have reported that patients who visit ED multiple times consume a disproportionate portion of ED resources and become an obstacle for other patients to accommodate their needs within an adequate time frame (Meng, Muggli, Baetz, & D'Arcy, 2016). These researchers highlighted the importance of better understanding of factors associated with patients who LWBS for quality improvement strategies to be designed and implemented effectively. This chapter includes an introduction with its basic components and discussions concerning the need for the study, the research purpose and research questions, the methodological and framework approach, the significance of the study, and the assumptions and limitations of the study.

Background

Patients may leave the ED before completing their medical care by a provider. In the United States, approximately 1.7% of all patients visiting ED leave without being seen. (Moe, & Belsky, 2016). Research on this topic has been conducted internationally with studies in Canada, United Kingdom, Ireland, Hong Kong, and Australia with conflicting findings which may be attributed to different study designs, sample sizes, and population (Melton, Mitchell, Crilly, & Cooke, 2014).

Hsia et al. (2011) conducted a study in California to review 9.2 million ED visits to 262 hospitals. Hsia et al. found that percentages of patients LWBS vary among hospitals, ranging from 0% to 20.3%. Findings indicated that hospitals serving a high proportion of low income and poorly insured patients have a higher risk of LWBS by a provider (Hsia et al., 2011). Carron, Yersin, Trueb, Gonin, and Hugli (2014) designed a study to address the rate of adult patients leaving without receiving care and evaluated the

rate and evolution over a 6-year period of adult patients LWBS. Previous researchers have identified that ED waiting times and staffing levels affect the percentage of patients who LWBS (Chan, Killen, Kelly, & Guss, 2015).

Despite limited information, research exists about the specific demographics of veterans, uniformed service members, retirees, and their families (Doran, Raven, & Rosenheck, 2013; Kessler, Bhandarkar, Casey, & Tenner, 2011). Understanding why patients chose to leave ED without receiving care is important because of the potential to identify patients at high risk and intervene earlier to address and prevent health complications, healthcare costs, and LWBS behaviors (Kessler et al., 2011).

Problem Statement

Patients leaving the ED without receiving the full evaluation (without a diagnosis or treatment) are a significant problem in United States for patient health (Li, Brennan, Kreshak, Castillo, & Vilke, 2019). A study conducted in a mid-Atlantic Level II trauma center reported that 56.3% of patients who LWBS returned for medical care within a week (Johnson, Myers, Wineholt, Pollack, & Kusmiesz, 2009). Ding et al. (2019) reported that a small but significant number of patients who LWBS from ED had serious problem that could jeopardize their health. The majority of patients who LWBS had cardiovascular complaints abdominal pain, respiratory, and cellulitis (Jerrard & Chasm, 2009). Patients LWBS can negatively impact hospitals and providers. These patients leave ED without completing their medical evaluation, without treatment, dissatisfied, and may share the negative experience with family and friends.

Several studies conducted at rural and urban healthcare facilities have identified few factors that affect the probability of LWBS. In a recent study, Carter et al. (2014) found that ED crowding is associated with a higher rate of patients LWBS. In another study in California, hospitals that serve lower income and poorly insured patients had high LWBS rates (Cortez et al., 2013). Although few researchers have identified specific hospital characteristic that are related with LWBS rates, it is still unclear what patient characteristics are important (Ding et al. 2019). Additional research on the phenomenon of patients who leave ED without receiving care has been conducted in Canada, United Kingdom, Ireland, Hong Kong, Italy, and Australia (Melton et al., 2014). Major differences in the health care system between these countries and the United States could cause different patient characteristics to be associated with LWBS rates (Ding et al., 2019). The existing literature on EDs located in urban areas or in single tertiary care centers, may not be nationally representative data that address patient characteristics and trends of patients who LWBS from ED.

Purpose

The purpose of this quantitative study was to evaluate the impact of patients' social demographic characteristics, hour of arrival, day of the week, and triage levels on LWBS rates. Having an understanding of the social demographics and visit characteristics of patients who leave ED is a logical step toward improving ED care (Monzon, Friedman, Clarke, & Arenovich, 2005). My intent was to identify patients' social demographic, visit characteristics, and triage levels associated with LWBS rates and compare them with patients who completed their ED visit. The patients' social

demographic characteristics or independent variables were age, gender, race, ethnicity,

level of triage, hour of arrival, day of the week. The dependent variable was the patients

LWBS status.

Research Questions

The following questions guided this quantitative research on factors associated

with patients who leave ED without being seen by a provider at hospitals medical centers.

Patients who LWBS are patients who entered ED, completed administrative paperwork

and initial evaluation form the triage nurse, and left from the ED's waiting room without

seeing a provider (Carron et al., 2014). The sociodemographic characteristics, triage

level, initial complaints, and LWBS status are registered in the ED software, also known

as medical records.

1. Research Question 1 (RQ1): What is the relationship between patients' age
    and LWBS?

Alternative Hypothesis (H_a1): There is statistically significant difference between

age of patient and LWBS.

Null Hypothesis ($H_0$1): There is no statistically significant difference between age

of patient and LWBS

2. RQ2: What is the relationship between patients' gender and LWBS?

H_a2: There is statistically significant difference between gender of patient and

LWBS.

$H_0$2: There is no statistically significant difference between gender of patient and

LWBS

3. RQ3: What is the relationship between patients' race and LWBS?

H_a3: There is statistically significant difference between race of patient and LWBS.

H_03: There is no statistically significant difference between race of patient and LWBS

4. RQ4: What is the relationship between patients' ethnicity and LWBS?

H_a4: There is statistically significant difference between ethnicity of patient and LWBS.

H_04: There is no statistically significant difference between ethnicity of patient and LWBS

5. RQ5: What is the relationship between patients' triage and LWBS?

H_a5: There is statistically significant difference between triage of patient and LWBS.

H_05: There is no statistically significant difference between triage of patient and LWBS

6. RQ6: What is the relationship between patients' hour of arrival and LWBS?

H_a6: There is statistically significant difference between triage of patient and LWBS.

H_06: There is no statistically significant difference between triage of patient and LWBS

7. RQ7: What is the relationship between patients' day of the week arrival and LWBS?

H_a7: There is statistically significant difference between day of the week arrival of patient and LWBS.

H_07: There is no statistically significant difference between day of the week arrival of patient and LWBS.

Theoretical Framework

Donabedian's theoretical framework, developed by Donabedian, a professor at the University of Michigan in 1966, is the foundation of this study (Ayanian & Markel, 2016). Donabedian's theory is based on three related concepts: structure, process, and outcome. Donabedian's model is used frequently by researchers and policymakers in healthcare field (Liu, Singer, Sun, & Camargo, 2011). In Donabedian' theory, *structure* can be thought of not only as the organizational structure setting but also as attributes of human resources such as patients' demographic factors (Liu et al., 2011). While *process* covers all aspects of the healthcare services provided and done for the patients, such as evaluation of patients by triage nurse; *Outcome* refers to the end result or the effect of care delivered in terms of recovery, relieving pain, survival, and patient satisfaction (Ameh, Gómez-Olivé, Kahn, Tollman ,& Klipstein-Grobusch, 2017). In this study, the outcome includes the rate of patients who leave ED without receiving a treatment or without being seen by a provider.

Nature of the Study

I conducted quantitative correlational research for this study. This design is often used to explore events, people, situations, and test relationships among variables at one point or over time (Walden, 2010). Correlational designs involve the examination of the

nature of relationships, or associations between variables, rather than direct cause-effect relationships (Sousa, Driessnack, & Mendes, 2007). In general, these designs are used to investigate if changes in one or more variable are related to changes in another variable(s).

Quantitative methodology is more appropriate than others to examine the relationship between variables. The purpose of a qualitative research method is to explore *how* and *why* rather than explain relationships between variables (Walden, 2010). Qualitative or mixed methods did not fit the purpose of this study.

Definitions

Age: A number that can be categorized in groups.

Day of the week: The week is divided according to the 7 days of the week

Ethnicity: Ethnicity refers to shared culture and values among groups of people. People who visit EDs self-report ethnicity information as Hispanic or Latino, and Not Hispanic or Latino.

Gender: Gender is considered a social construct of male or female.

Hour of arrival: Defined as the time that the patient is first recognized at requesting service in the ED/

Patients Who Leave Without Being Seen (LWBS): This refers to patients who leave ED without being treated by a physician. These patients have been registered in the ED software and evaluated by the triage nurse (Carron et al., 2014).

Race: Race or a person's origin is observable. From a sociological perspective, race is based on physical differences, such as skin color, among people. Race is offered

as selection of one or more racial designations: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian, and White (Institute of Medicine [US] Committee, 2006).

Triage Levels: Triage is derived from the French word trier (sort), which was used to describe sorting of agricultural products (Aacharya, Gastmans, & Denier, 2011). Triage is the first point of contact of patients with ED. The triage nurse routinely rates each patient's condition from Level 1, most urgent, to Level 5, least urgent, using the Emergency Severity Index (ESI) tool (Aacharya, Gastmans, & Denier, 2011). Collecting data on gender, race, ethnicity, and age is critical to identifying population specific signals.

Assumptions

Assumptions are considered true statements without being scientifically verified (Grove, Burns, & Gary, 2013). Topical assumption of this study will identify patients' social demographic characteristics, visit characteristics, and triage levels associated with LWBS rates. There is an underlying assumption that LWBS rate will continue to be an important issue in EDs nationwide.

Methodological Assumption

Because the data utilized for this research were secondary data, I assumed that healthcare workers and nurses accurately documented patients' information in the electronic health record software (EHR).

Theoretical Assumption

The Donabedian theoretical framework applies to the study of this topic assumed that three concepts (structure, process, and outcome) were in relationship which means that structure would influence process, and process would influence the health status, the outcome (Ayanian & Markel, 2016).

Limitations

A limitation is defined as a potential weakness that a researcher cannot control and may influence the findings (Marshall & Rossman, 2014). There were limitations to this study. First, data collected from the Agency for Healthcare Administration Florida datasets are self-reported by hospitals. Data sets may not be complete. I could not verify that the data were all present.

This is an American study conducted at EDs in Florida; the findings may not apply to other healthcare systems. The result of this research may not be generalizable to EDs with different patient population and different hospital environment. The last limitation was time. The research was conducted over two quarters in 2019 which represented a snapshot on conditions at EDs during that time.

Scope and Delimitations

The delimitations are those characteristics that address the scope and set the boundaries of the research (Yin, 2014). Scope and delimitations exist in every research study and researchers may benefit from identifying scope and delimitation that could impact the research findings (Bryman, 2016). Researchers may use these aspects of the

research to help design future studies (Bryman, 2016). Providing readers with an outline involving scope and delimitation of the study may help them clarify areas of uncertainty.

This study included one geographical location, Florida. The state of Florida includes many hospitals. The research sample is composed of 100 patients who LWBS and 100 patients who complete their visit at ED. The primary data gathering method used was secondary data retrieved from the Agency of Healthcare Administration repository data sets. Gregor and Klein (2014) noted that an inadequate sample of the population could influence the accuracy of the research findings.

I intended to cover patients (veterans) with Tricare insurance who visited ED departments in Florida. Although patients visit ED department for various reasons, for this research, they had to meet specific criteria. The inclusion criteria recognize the specific characteristics of patient population to confirm alignment with the research question (Sommestad, Hallberg, Lundholm, & Bengtsson, 2014). The inclusion criteria were (a) patient visit ED and LWBS by a provider, and (b) patients visit ED and complete their visit. McElroy and Ladner (2014) defined exclusion criteria as the population whose characteristics do not meet the criteria for the research study. I intended to examine the relationship between the variables: patients' sociodemographic characteristics, visit characteristics, and level of triage, present in research questions and the Agency for Healthcare Administration repository data sets.

The fist delimitation involved patients who visited other departments at hospital center. The second delimitation involved patients' characteristic and visit characteristics that are not included in research questions, such as economic status or education level.

Significance

This research will contribute to the body of knowledge on healthcare. Hospital leaders play a critical role in the design and operation of ED. They need to understand why patients leave without receiving treatment. An implication for social change is the potential for hospital leaders to minimize the rate of patients LWBS, improve patients flow in ED, enhance patients' safety, and satisfaction (Scrofine, & Fitzsimons, 2014). Knowing more about patients who LWBS adds value to the health care and the population as whole (Ding et al., 2019).

Summary

The objective of this study was to identify patient characteristics, visit characteristics, and triage levels associated with patients who leave ED before completing their visit and compare them with patients who completed their visit and are discharged home. The fact that many patients continue to LWBS reinforces the need to continue studying factors associated with LWBS and developing additional interventions to decrease LWBS' rates. To assess the relationship between patients' demographics, visit characteristics, triage levels, and LWBS rates, I used the Donabedian theoretical framework (based on three concepts, structure -process and outcome) as the foundation of this study. I employed a quantitative correlational research design, in which the patients' social demographic characteristics or independent variables included age, gender, race, ethnicity, hour of arrival, day of the week, and level of triage, and the dependent variable was the patients LWBS status.

In Chapter 2, I provide a comprehensive overview of a current literature used in this study. The material presented in Chapter 3 consists of describing the quantitative method approach. Chapter 4 is a report of the results and Chapter 5 is the analysis and recommendations.

Chapter 2: Literature Review

Introduction

Patients leaving the ED without receiving the full evaluation (diagnosis or treatment) are a significant problem in United States for patient health (Li et al., 2019). The purpose of this study was to assess the social demographic, triage levels, and visit characteristics of patients who LWBS by the physician within ED department. Researchers from public and private healthcare systems have reported a variable number of LWBS rates which ranges from <1% to 20% (Saia & Fonzo, 2018). Studies about patients leaving ED without completing the course of treatment date back to the early 1960 (Hosseini, Fathabad, Zohreh, Ara, & Jabbarzadeh, 2018). Various factors are involved in the LWBS rate including ED crowding, lack of insurance, demographic variables, hospital factors, mental health variables, family problems, long stay in hospital, and belief in traditional medicine (Hosseini et al., 2018). Research on LWBS had been conducted; however, very few have been conducted for patients with Tricare or military members and their families. Although it is commonly assumed that patients who LWBS have not urgent healthcare problems, researchers have shown that many of these patients need hospitalization, surgery, or immediate medical attention (Saia & Fonzo, 2018).

In this chapter, I will review the literature that served as the basis of this study. Chapter 2 will include the search strategies and key terms I used to collect the literature. The chapter also will include a comprehensive review of Donabedian theoretical framework followed by how previous researchers have used it and how I used it to guide

the study. I then review the literature associated with the key variables in this study. The

chapter will conclude with a summary and an introduction to Chapter 3.

Search Strategy

To obtain information for this literature review, I conducted a thorough search of

the literature. The following databases were searched: EBSCO, ProQuest, CINHAL,

Cochrane, Google scholar, MedlinePlus, and significant accessible databases. The key

words searched included: *emergency department, emergency room, patients leaving, hour

of the arrival, residency area, triage, patients with Tricare insurance,* and *patents leaving

without been seen*. The search was limited to English language articles from the year

1966 forward, and only studies published from 2012 to 2019 were included. A "cited by"

search via Google scholar was used to find relevant newer articles. The articles that I

included in this study were those that specifically discussed or assessed ED visits and

LWBS phenomenon. I reviewed each abstract to determine the relevance with my study.

I read the entire text of 130 articles. I organized the articles in few categories such as

background articles, research design, data analysis, key findings, and limitations.

Bibliographies of all articles were evaluated for additional articles that match the search

criteria.

Theoretical Foundation

The theoretical framework for this study was the Donabedian theory. The

Donabedian theoretical framework first originated in 1966 and has guided research in

healthcare services to assess the quality of care for over 5 decades (Donabedian, 1966). In

his landmark article, Donabedian (1966) proposed using a formula of structure, process,

and outcome to evaluate the quality of care. This article would become encyclopedic and the most cited one for many years (Ayanian & Howard, 2016).

Donabedian theory encompasses three interrelated dimensions, structure, process, and outcome. The first component of Donabedian's theory was structure, which Donabedian viewed not only as the physical setting (external characteristics) in which the health care takes place, but also the relatively stable characteristics of the patient and providers. It includes age, gender, race, ethnicity, hour of arrival, and day of the arrival, and as well as measurable characteristics such as pain assessment, chief complaint, and daily medication (Donabedian, 1966).

The second component of Donabedian's theory is process, which Donabedian defined as the component of care (set of activities) undertaken by health care personnel to maintain or improve patients' health. These activities include screening, diagnosis, treatment, and education (Donabedian, 1966). The last component of Donabedian's theoretical framework was outcome, which Donabedian defined as the effect of health care on an individual patient or population (Donabedian, 1966; 1980). The third component of Donabedian's theoretical framework, outcome, is the change in patients' health status (Donabedian, 1966).

According to this theoretical framework, structure and process influence outcomes (Ely, 2013). This theoretical rationale for linking outcome with structure was the basis for this research. In this study, the patients and visit characteristics (age, gender, race, ethnicity, hour of arrival, and day of the week) represent the structure. Process data reflect the encounter between Triage quality of care provided professionals and patients.

It is an evaluation of health care provided. Process measures are sensitive and directly assess the quality of care provided (Diggs, 2016). The outcome data test the effectiveness of healthcare provided (Donabedian, 1988). These data are easy to interpret and understood by all stakeholders. Outcome in this study includes patients' status of LWBS or completing their visit in ER.

The Donabedian theoretical framework is flexible enough and widely used in many contexts in healthcare. Researchers have used this theoretical framework for research. The Agency for HealthCare Research and Quality (AHRQ) and the World Health Organization (WHO) consistently utilize this theoretical framework (Rainer, 2015). This framework is applicable to the evaluation of quality of care in ED (Rhee, Donabedian, & Burney, 1987). The Donabedian theoretical framework was utilized in a study conducted by Stone (1980) to analyze the relationship between healthcare needs and resources.

Phillips et al. (2003) utilized Donabedian's theory as a practical framework to influence implementation of trauma program at a university affiliated trauma center. Measures at the process level included time in the ED and time in the trauma resuscitation area. Outcome measures referred to overall mortality and length of stay. Researchers compared the results before and after the implementation of the intervention, and found a significant decrease in time spent in ED.

The Donabedian theoretical framework was used by Cabana et al. (2007) to study racial and ethnical disparities in the quality of care of patients with asthma. Cabana et al. noted that disparities that occur at structural level included location of health

professionals, limited hours of availability, and lack of health insurance (Cabana et al., 2007). Process measures included lack of quality assurance within a health care system. Focused on this theory, inequalities in asthma care control may be related to the problems within the structure and process of asthma care. Cabana et al. proposed few interventions at the structural and process level to decrease the racial and ethnical disparities in quality of asthma care.

The Donabedian theoretical framework was utilized in a research study conducted by Chou et al. (2008). The purpose of the study was to find how effective were the strategies implemented by National Foundation for Infection Diseases and Centers for Disease Control and Prevention (NFID-CDC). Chou et al. noted that facilities with flexible culture and better communication are more likely to implement strategies guided by NFID-CDC. Research findings showed organizational flexibility and communication positively affect the adaption and implementation of quality improvement strategies.

Donabedian's theoretical framework was used by Koboyashi, Takemura, and Kanda (2011) to assess patients' perception of nursing care quality during patients' hospitalization. Kobayashi et al. determined that structure level items related to patients' experience during hospitalization included, convenience of care and pleasant surroundings. Regarding process level, items included patient-nurse interaction, appropriate procedure of care and patient participation during care process. Outcome measures looked at changes in physical status, changes in patients' knowledge and patient satisfaction.

Other researchers have used the Donabedian theoretical framework to assess the quality and safety of a framework for nurses to use when delivering health care services (Gardner, Gardner, & O'Connell, 2014). Mori (2014) summarized the research in which Donabedian was the theoretical framework used to evaluate the effectiveness of a nurse driven indwelling urinary catheter removal protocol. The Donabedian theoretical framework was used to evaluate the smoking cessation program that integrated electric cigarettes as an option to other standard interventions (Ely, 2013).

Rainer (2015) used the Donabedian theoretical framework to assess the quality of pain care of older adults admitted in emergency care. Rainer explored relationships between patients and providers in ED, and evaluated the influence of age, gender, and ED crowding on the quality of care. Byrd (2014) used the Donabedian theoretical framework to examine the compliance of the nursing staff with ED standards for assessing and reassessing psychiatric patients boarded in the ED. In 2016, Diggs used Donabedian theoretical framework to construct a reliable model of predictors of pre-hospital endotracheal intubation success.

Literature Review Related to Key Variables

Researchers have completed numerous studies to find the existence of disparities in access to quality of health care in public hospitals in United States of America (Douthit, Kiv, Dwolatzky, & Biswas, 2015). The demand for better access to health care in the United States is clear. Disparities affect all patient groups, irrespective of age, race, gender, ethnicity, or vulnerable population (Douthit et al., 2015). A combination of

factors such as economic factors, cultural and social differences, and educational

shortcomings contribute to disparities in healthcare system (Douthit et al., 2015).

ED utilization in public hospitals has become a problem in the United States. ED

utilization in public hospitals may vary over time due to rapid changes in the health care

system and access to care. In 2014, 137.8 million ED visits were reported in the United

States, an increase of 14.8% from 2006 (Moore et al., 2017). The distribution of ED visits

changed for certain patient demographic groups between 2006 and 2014. The percentage

of all ED visits for patients aged 45–64 years increased to 23.5% in 2014 from 20.7% in

2006 (Moore et al., 2017). The ED visit for female patients increased to 472 visits per

1,000 in 2014 from 430 per 1,000 in 2006 (Moore et al., 2017). Moore et al. (2017)

reported that the most frequent mental health/substance abuse diagnoses for ED visits in

2014 were alcohol related disorders, mood disorders, and anxiety disorders. Moore et al.

indicated that visits in ED between 2006 and 2014 increased with 33.5% for mood

disorders and 76.3% for alcohol related disorders.

Researchers have completed few studies related to equity, efficiency, and quality

of care at VA healthcare system (O'Hanlon et al., 2017). The VA health care system

provides comprehensive health services to U.S. military veterans who are enrolled

(O'Hanlon et. al., 2017). According to the most recent U.S. Census, there are 18.2 million

veterans in the United States and more than 9 million visit each year the Department of

Veterans Affairs (VA; United States Census Bureau, 2017). Health care facilities are

made up of 1,074 outpatient sites and 170 VA Medical Centers (United States Census

Bureau, 2017). VA medical centers have a unique patient population; for example, they

have few female and pediatric patients, and typically do not see many trauma cases (Kessler et al., 2011). As such, veteran-specific studies are required to understand the needs of VA ED care.

While numerous studies have been conducted about patient characteristics and patient flow through the ED, limited information and research exists about the specific demographics of the veterans' ED (Kessler et al., 2011). A retrospective analysis was performed to analyze the demographics of patients served at VA EDs and compare them to the national ED population (Kessler et al., 2011). The analysis indicated that the VA population is different from the general population in many ways. For example, the incidence of psychiatric disease at the VA is more than double that of the general population (10% vs. 4%) and accounts for a significant proportion of admissions (23%). The overall admission percentage at the VA ED was 36% nearly three times that of the ED population nationally 13% (Kessler et al., 2011).

There is a concern about patient quality of care being compromised. Carter, Pouch, and Larson (2013) showed that patients LWBS is a global problem. A small number of patients use excessively the ED resources which often result to ED overcrowding, long wait time, and patients LWBS (Krieg, Hudon, Chouinard, & Dufour, 2016). These frequent patients most likely have low socioeconomic status, chronic illness, substance use disorders, or mental illnesses (Krieg et al., 2016). Studies have reported contradicting results about characteristic of patients who frequently visit ED in public hospitals. One study found that 75 years old or more was a predictive factor of high utilization of ED. Conversely, few other studies indicated that patient age was not an

important factor of frequent ED use (Krieg et al., 2016). Researchers have also stated that gender is not a significant characteristic of patients who visit ED very often (Krieg et al., 2016).

A descriptive analytic cross-sectional study was conducted by Hosseini et al. (2018) to evaluate factors associated with patients who LWBS. The questionnaire used to collect data consisted of 27 questions of three dimensions: patients-related reasons, hospital related reasons, and hospital status reasons. The sample size was 111 patients who left the first quarter of 2017. The data were transferred and analyzed using SPSS20 software t-test and one-way ANOVA test (Hosseiniet al., 2018). Hosseini et al. found that men were more willing to leave ED without completing their visit than women (2018).

Several strategies have been tried to overcome the problem of leaving hospital without completing treatment with various degrees of success. For instance, one hospital in Newport, VA noticed a significant decrease on LWBS rate after the implementation of few strategies. Some of the strategies included a bed site registration, a fast track area, and predischarge area (Clarey & Cooke, 2012; Sayah et al., 2015). After having been evaluated by the triage nurse patients are directed to the fast track area and the predischarge area was designed for patients waiting for laboratory results or radiology testing. Similarly, "Disneyfication" was another strategy utilized to improve the psychological perception of waiting with various distraction such as frequents updates and environmental modifications (Sayah et al., 2015).

Chan et al. (2014) reported on the success achieved by a Seattle Children's Hospital by applying Lean principle. Lean principle was originated from Toyota

Production System and focuses on eliminating waste or elements with nonvalue. Chan et al. found that the application of Lean approach in ED, can effectively improve the patient flow in ED, by reducing the triage waiting time and end waiting consultation time. Improvements in ED area may uncover issues in other areas that need to be addressed or reorganized. This strategy was successfully accomplished because of direct involvement and support of the hospital and medical leadership (Chan et al., 2014).

In order to improve patient throughput and LWBS rate, methods such as forecasting, matching of demand, and capacity were widely used (Zhao et al., 2015). It was suggested that utilization of satellite clinics and closure of the waiting room would improve patient flow through ED (Lin & Paul, 2012). The satellite clinics will treat patients returning for follow visit without using ED resources. With the redesign of the ED layout, closing the waiting room and sending patient directly inside the ED was a possible strategy to reduce the LWBS rate (Lin & Paul, 2012).

Other alternatives suggested to increase resources in ED. The resources increase may be feasible in some EDs and constrained by the space limit and budget in other EDs (Zhao et al., 2015). Expanding and renovating the Whidden ED (medium size community hospital) with additional staff, clinical assistants, additional beds, and treatment space significant operational improvement and patients' satisfaction were observed (Sayah et al., 2015). The statistical data showed that transformation of ED positively impacted the patient care.

Some EDs have introduced physicians in the triage to improve patients flow through ED. This intervention has been reported to reduce waiting time and LWBS rates

(Bergan, 2017; Liu et al., 2017). Nestler et al. (as cited by Bergan, 2017) at a campus of the Mayo Clinic, showed that implementation of physician assistant (PA) in triage reduced significantly the level of LWBS rates from 9.7% to 1.4%. Shea and Hoyt (as cited by Bergan, 2017) reported the implementation of "team triage" composed of a midlevel provider and a nurse, significantly reduce LWBS rates from 4.4% to 1.4%. In some studies, researchers noted that placing midlevel providers in triage (nurse practitioner and physician assistant) was a more cost-effective solution (Bergan, 2017)

The healthcare utilization is a complex system. The LWBS problem in ED is affected by many factors. Although a large amount of research has been conducted worldwide for this problem, researchers have not found a general method available for EDs as patients, staff, and facilities are different in different EDs (Zhao et al., 2015). Although numerous strategies have been implemented with varying degrees of success, the problem of LWBS continues to affect ED at public hospitals across the United States, and worldwide.

The next sections are explanations of study variables. I focused on the following sociodemographic factors and visit characteristics or structure variables: age, gender, race, ethnicity, hour of arrival, day of week, and residency area

Age

Age is an important variable studied for its effect on wait times and patient behavior (Rainer, 2015). Moe and Belsky (2016) conducted a retrospective cross-sectional secondary analysis of ED visits using the database of National Hospital Ambulatory Medical Care Surveys (NHAMCS) from 2009 to 2011. The NHAMCS used

a multistage probability design that generated a nationally representative sample of ED

visit. The purpose of this study was to compare patient and hospital characteristics

associated with patients who leave ED without being seen by a provider and after

completing their medical care (Moe & Belsky, 2016). Researchers found that patient who

LWBS are younger, have low acuity visit, and do not arrive by ambulance (Moe &

Belsky, 2016).

Saia and Fonzo (2017) conducted an observational retrospective case-control

study using the ED database form 52 EDs of public and private hospitals of North East

Italy region between 2011 and 2015. The rate of LWBS reported in this study was 13.4%.

Saia and Fonzo reported that the duration of waiting time was the main reason for LWBS

and the probability of LWBS is higher among young adult (15-24 years old) followed by

the subsequent group of 25-44 years old (2017). These results are similar to results

reported by Moe and Belsky (2016) and Carron (2014) whofound that the rates of LWBS

are the highest among younger adults 20-49 years old patients.

Mataloni, Colais, Galassi, Davoli, and Fusco (2018) investigated the determinants

and short-term outcomes of patients who LWBS or during ED treatment (LDT). The

retrospective cohort study included all ED visits of LWBS, LDT, and discharged patients

in 2015 in the Lazio region of central Italy. The cohort consisted in 86.8% patients visited

and discharged, 8.9% subjects were LWBS patients and 4.3% LDT (Mataloni et al.,

2018). Risk factors of LWBS or LDT were selected from social demographic factors,

citizenship, residence area, triage category, chronic comorbidities, previous uncompleted

ED visits, mode of arrival in ED, time and day of the week, waiting time, and ED

crowding, using a multilevel logistic regression. A multivariate logistic regression was used to test if LWBS or LDT have a greater risk of short-term adverse outcome compared to discharged patients. Multivariate logistic regression models (ORs and 95% CIs) were performed, adjusting for gender, age, ED crowding and triage. Mataloni et al. (2018) described the characteristics of patients who LWBS as young males with lower urgency triage and longer waiting time.

Gender

Gender is an important variable studied for its effect on LWBS. Young men leave EDs without being seen. Weingart, Davis, and Phillips (1998) showed that young men LWBS. Among the variables affecting patients who LWBS, Hosseini et al. (2018) found that men were more willing to leave than women. Carron (2014) found that that the rates of LWBS were slightly higher in male patients. Tropea, Sundararajan, and Gorelik (2012) investigated predictive factors and outcomes related with patients who leave ED without being seen. The retrospective observational study included all patients visits in ED between July 2000 and June 2005. The results obtained from this research confirmed a number of findings in this research area. Like other studies, this research found that patients who LWBS are most likely men (Tropea et al., 2012).

Race and Ethnicity

An extensive body of evidence showed that members of minority racial and ethnic groups experiences more problems to access health care and receive lower quality of care than White Americans (Rainer, 2015). Despite this knowledge, health care systems have

not gathered consistently data to evaluate specific health care concerns among racial and ethnic categories (Rainer, 2015).

Hour of Arrival

Hour of arrival has been often cited and reported in numerous studies conducted in the ED. Tiwari, Goel, and Singh (2014) analyzed the patient flow system in ED of a tertiary level health care Institution in North India, in 2011. Tiwari et al. found that patients' hour of arrival peak was between 9 -12. These findings were similar to another study conducted in a tertiary care, in Barbados, where only 10% of the patients visit ED during the night hours. The results of another study conducted in Saudi Arabia showed that 46% patients visited ED during night (as cited by Tiwari et al., 2014).

Day of the Week

The day of the week significantly affected the number of ED visits. Medical literature showed that certain time period during the week or year produce higher and lower patient volume in the ED (Faryar, 2013). Researchers have investigated which day of the week has the largest ED crowding. While Mataloni et al. (2018) concluded that there were no important differences between distribution of weekday between patients discharged and LWBS, Faryar (2013) saw a pick in ED visits on Mondays, and a small spike in volume on Sundays.

Another research conducted in ED in Sao Paulo, Brazil, from January 2008, to December 2010 showed a weekly distribution, with highest patient volumes on Mondays and lowest patient volumes on weekends (Marcilio, Hajat & Gouveia, 2013). Patients

seek medical care in ED on Sunday or they wait until Monday (Faryar, 2013; Marcilio et al., 2013).

Triage Level

The purpose of ED's triage is to quickly assess patients and sort them according to their priority of care (Liu et al., 2017). Typically, the triage check is performed by a nurse and involves a simple visual assessment, taking patients vital signs, patient's history, and potential threat to life and vital organs before determining the level of priority (Christensen et al., 2016). Patients with highly time-sensitive medical conditions are assigned as high-acuity or Triage Level 1 or 2 and patients that can wait are assigned as low acuity or Triage Level 3,4, or 5 (Bayati et al., 2017).

Bayati et al. (2017) showed that the low acuity patients delay high acuity patients' treatment. The fist delay was observed before triage assessment, before patient being categorized as a high acuity. The second delay was observed when the ED preempts treatment of low acuity patients to treat a high acuity patient. Tropea et al. (2012) in their 5-year comprehensive study found that patients who leave ED without completing their visit had triage categories of lower urgency. Although patients with lower triage level have been associated with LWBS rates, the relationship with other patients' characteristics is unclear and inconsistent (Ding et al., 2019). The conflicting results are due to differences in study designs, settings, and patient population (Ding et al., 2019).

Patients LWBS Rate

Patients who LWBS have been reported as an important measure of emergency room quality care (Combs, 2016). These patients have been identified as "missed

opportunity." Studies about leaving the emergency room without being seen date back to 1960 (Hosseini et al., 2018). According to the study conducted at Scripps Health in California, the rate of LWBS was estimated 4.5%, by implementing ED redesign process, this rate decreased to 0.6% in 1 year (Sharieff et al., 2013).

Carron (2014) conducted a study using data of all patients visiting the ED and LWBS, between 2005 and 2010, in a tertiary university hospital. During this study period, researchers found that 0.4% of patients left without being seen. This rate remained unchanged over the 6-year period (Carron, 2016). The phenomenon of leaving ED without completing the treatment despite being so common it remains inadequately understood. In an effort to learn more about patients who leave ED prematurely Wissberg et al. (as cited by Blake, Dissanayake, Hay, & Brown, 2014) conducted a study in an attempt to understand patients' demographic and social characteristics, why they choose to leave, if patients who left were more ill or less ill then patients who completed their visit, or was mental illness common among these patients.

Summary and Conclusions

This chapter was a presentation of detailed information found in the literature on factors associated with patients who LWBS by a provider in the ED. Specifically, the outcome variable LWBS by a provider was discussed. The independent variables, age, gender, race, ethnicity, and level of triage were discussed. The review of the literature indicated that Donabedian theory was the theoretical framework used to guide this quantitative study. According to this theoretical framework, structure and process

influence outcomes (Ely, 2013). This theoretical rationale for linking outcome with structure was the basis for this research.

The review of the literature revealed that problems in access to healthcare and use of hospital's ED in general persist in public hospitals. Regardless of the reasons patients who LWBS signal that access to health care system are prevalent. Researchers have provided information on patient and hospital determinants at single hospitals. However, there is need to broaden the scope of what is known about patients who leave without being seen.

Chapter 3 is a detailed description of the methodology and research design, sample size requirements, data analysis, relations between the dependent and independent variables, and ethical considerations.

Chapter 3: Research Method

Introduction

Patients LWBS remain a significant problem in the United States (Li et al., 2019). The purpose of this quantitative study was to explore the relationship between patients' social demographic factors, visit characteristics, triage levels, and LWBS rates. The patients' social demographic and visit characteristics or independent variables were age, gender, race, ethnicity, level of triage, hour of arrival, day of the week, residency area, and the dependent variable was the patients LWBS status. This study will help fill the gap in the existing available literature. I investigated the association between patients' social demographic, visit characteristics, triage levels, and LWBS rate for patients with Tricare insurance (military members and their families) visiting EDs in Florida. A logistic regression analysis was used to quantify the association between these variables.

In this chapter, I will present the research questions, discuss the research design along with rationale and explain how it aligns with the existing knowledge. I will discuss the methodological aspects such as data types, and sampling procedures. I will discuss the data analysis methods in detail. Finally, I will address reliability, threats of validity, ethical concerns with the use of secondary data and summarize the chapter.

Research Design and Rationale

A quantitative method was used to determine if there is an association between triage levels, patients' social demographic characteristics, visit characteristics, and LWBS rates. In this quantitative study, I employed the correlational nonexperimental research design. All patients' interactions and documentation, including sign-in, triage, room

placement, and ED disposition are automatically time stamped in ED electronic records. The dependent variable in this study is patients LWBS by a provider. The independent variables included triage levels, age, gender, sex, ethnicity, hour of arrival, and day of the week arrival.

This quantitative research method was used to determine the association between the independent variables and dependent variable. According to Bryman (2012), the quantitative method offers statistical and logistical explanation of a sample from a population. A quantitative study relies on numerical data; therefore, the results are clear and hard to misinterpret. According to Eyisi (2016), the quantitative approach enables researchers to make generalization and replicability possible.

As the researcher, I was not in direct contact with the participants, my objectivity was not compromised (Eyisi, 2016). This quantitative research design is appropriate because it allowed me to determine the independent variables (age, race, gender, ethnicity, triage levels, hour of arrival, and day of the week) predicted the likelihood of the dependent variable (LWBS). In this quantitative research, the demographic characteristics of the patients, triage levels, visit characteristics, and LWBS rate were numeric.

The nonexperimental correlational design was used in this study. The nonexperimental design was focused on a statistical relationship between two variables but did not include the manipulation of an independent variable (Price, Jhangiani, & Chiang, 2015). However, the nonexperimental research design can suggest that there is a relationship between two variables but does not have the ability to find a cause-and-effect

relationship (Creswell, 2013). The nonexperimental correlational design was suitable for this study because I used secondary data to test the null hypothesis for this study.

The nonexperimental correlational design allowed me to use secondary data to test my hypothesis. The social demographic information and visit in ED collected by Agency for Healthcare Administration are part of the patient's medical record. This information helps the healthcare care team to communicate effectively with patients, as well as understand a patient's culture, which may affect their health. I did not invest any time or effort to collect the data. The data from the Agency for Healthcare administration dataset are already in an electronic format.

Several studies that addressed the characteristics of patients who leave the ED without seeing a physician have been done using nonexperimental correlational design to study relationships between the variables of interest. For example, Moe and Belsky (2016) used a retrospective cross-sectional secondary analysis of ED comparing all patients (from 2009 to 2011) who left the ED before completing their visit. Similarly, a retrospective database analysis was conducted for all adult patients who were admitted to the ED, between 2005 to 2010 and left before being seen, in a tertiary university hospital (Carron et al., 2014).

Methodology

Population

The target population size should be large enough to represent the characteristics and behaviors of the population from which it comes (Martínez-Mesa, González-Chica, Bastos, Bonamigo, & Duquia, 2014). The target population was limited to military

members and patients with Tricare insurance located in Florida. The target population for

this study included all patients, male and female, who visited EDs in Florida between

October 2018 and March 2019.

Sampling and Sampling Procedures

For this study, a convenience sampling, a type of nonprobability sampling, was

used. A convenience sample is a design that allows a researcher to collect information

from participants who are easily accessible (Etikan, Musa, & Alkassim, 2016). In

convenience sampling, the members of the target population are homogeneous and there

would be no difference in the research results obtained from a random sample (Etikan et

al., 2016). The rules to gather elements for this sample are less complicated in

comparison with other methods. Unlike the other sampling methods, the convenience

sampling is inexpensive. This sampling method will allow a researcher to collect data

with less or no investment and in a brief period of time (Etikan et al., 2016).

The data were transferred to an Excel spreadsheet and prepared for analysis. The

patients' age, gender, race, ethnicity, triage levels, hour of the arrival, day of the week,

and LWBS status were the data collected and labeled on a spreadsheet. I identified the

first 100 patients who LWBS starting by October 2018 moving backwards and matching

this group with 100 patients who stayed and completed their visit in the ED.

Patients in this study were sampled according the inclusion and exclusion criteria.

The inclusion criteria for qualifying patients from which data were collected included all

patients with Tricare insurance, women and men, who LWBS or complete it their visit at

ED. The exclusion criteria included all patients with other than Tricare insurance, women

and men, who visited EDs in Florida. The quantitative research data were pulled from October 2018 to March 2019.

Hallahan and Rosenthal (1996) posited that the effect size expected from a study can be obtained from previous research, pilot study, or Cohen's advice. I followed Cohen (1988) who suggested the following effect sizes for regression studies: small = R2 less than 0.13, medium = R2 between 0.13 and 0.26, large = R2 greater than 0.26. The R2 represents the strength of the relationship between two variables.

Cohen (1988) specified the probability of a Type I error or alpha (α) as .05 and the power or the probability of the Type II error (1-β) as .80. The theoretical risk of committing a Type I error or Type 2 error is related to the choice of the alpha and beta level respectively. The risk of having Type I error depend on the alpha level selected by researchers, while committing Type II error is related to several factors and the sample size is one of them (Warner, 2013). I could have limited the risk of having Type I error by selecting the alpha level before looking at data. Aguinis et al. (2010) noted that Type I error is inversely related to Type II which means that by reducing the limit to have Type I error I am increasing the possibility of making Type II error (will not reject the null hypothesis, when in fact I should). Therefore, Alpha at .05 is the balance point between two errors. It is important to note that alpha is the level of probability at which null hypothesis is rejected. Alpha .05 means that if null hypothesis is true, I have 5% risk of rejecting it.

There are many methods utilized to calculate sample size. According to Simon (2010), the sample size must represent the characteristics of the larger population. The

G*Power 3.1.7 software program (Faul, Erdfelder, Lang, & Buchner, 2013) computed the total sample size using a given α (.05), power (.80), and medium effect size ($f^2 = 0.15$). Based on the assumptions, the desired sample size is 92 participants. The sample size will increase to 200 for oversampling, 100 patients for each group.

Procedures for Recruitment Participation and Data Collection

The data for this study were collected from existing archived data at the Agency for Healthcare Administration after receiving the Institutional Review Board (IRB) approval from Walden University. The archived data located at Agency for Healthcare administration in Florida contains patients' social demographic information, levels of triage, visit characteristics, and LWBS status. I received the data in SPSS format by mail. After receiving the approval from the Walden University IRB, a date and time were scheduled to collect and mail the data.

Operationalization Constructs

The study variables were selected based on the literature review and data available in the secondary dataset. These variables were first introduced in Chapter 1 and discussed in Chapter 2. Here I will specify the operational definition and how each variable is measured or calculated.

Patient's age: The age of patients at the time of their visit in ER. Age is treated as a continuous variable. Age at ED arrival a) <18 years old, b) 18–30 years old, c) 31–64 years old, d) 65–79 years old, and e) >80years old.

Patients' Gender: The gender is the distinction between male and female as reported by patients. Gender is categorized as males or females

Patients' Race: patients self-report of race is the most useful and consistent measure Race is categorized in five categories: (a) American Indian or Alaska native, patients having origins form North and South America (including central America); (b)Asian, patients having origins from the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam; (c) Black or African American, patients having origins from any Black racial groups of Africa; (d) Native Hawaiian or Other Pacific Islander, patients having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands; and (e) White, patients having origins in any of the original peoples of Europe, the Middle East, or North Africa.

Patients' Ethnicity: Collecting data on patients' race and ethnicity it is an important step in reducing healthcare disparities (Chin, 2015). These data are useful for analyzing clinical performance to identify disparities in healthcare settings. Patients self-report of ethnicity as Hispanic or Latino and not Hispanic or Latino.

Hour of Arrival: Defined as the time that the patient is first recognized at requesting service in the ED

Day of the Week: The week is divided according to the 7 days of the week

Patients' Level of triage: The ESI triage system assigns patients in five clinically distinct levels. (a) ESI Level 1 are assigned the most acute ill patients; (b) ESI Level 2 or emergent: These patients have high risk of deterioration, or signs of a time-critical problem; (c) ESI Level 3 or urgent: Patient is stable with multiple types of resources needed to investigate or treat (such as lab tests plus X-ray imaging), (d) ESI Level 4 or

less urgent: Patient is stable with only one type of resource anticipated (such as only an

X-ray, or only sutures); and (e) ESI Level 5 or nonurgent: Patient is stable with no

resources anticipated except oral or topical medications, or prescriptions

LWBS: Represents patients who complete triage assessment and leave before

physician evaluations. Nurses should accurately document the departure process

Data Analysis Plan

Data used for this study were analyzed using the Statistical Package for Social

Sciences (SPSS) software. The process of cleaning and screening the raw data included

checking and identifying any errors in the data, correcting or deleting them to make sure

that data are correct and conform to specifications and operationalization construct.

The following research questions were used to explore relationships between

criteria and predictor variables:

1. RQ1: What is the relationship between patients' age and LWBS?

H_a1: There is statistically significant difference between age of patient and

LWBS.

H_01: There is no statistically significant difference between age of patient and

LWBS

2. RQ2: What is the relationship between patients' gender and LWBS?

H_a2: There is statistically significant difference between gender of patient and

LWBS.

H_02: There is no statistically significant difference between gender of patient and

LWBS

3. RQ3: What is the relationship between patients' race and LWBS?

H_a3: There is statistically significant difference between race of patient and LWBS.

H_03: There is no statistically significant difference between race of patient and LWBS

4. RQ4: What is the relationship between patients' ethnicity and LWBS?

H_a4: There is statistically significant difference between ethnicity of patient and LWBS.

H_04: There is no statistically significant difference between ethnicity of patient and LWBS

5. RQ5: What is the relationship between patients' triage and LWBS?

H_a5: There is statistically significant difference between triage of patient and LWBS.

H_05: There is no statistically significant difference between triage of patient and LWBS

6. RQ6: What is the relationship between patients' hour of arrival and LWBS?

H_a6: There is statistically significant difference between triage of patient and LWBS.

H_06: There is no statistically significant difference between triage of patient and LWBS

7. RQ7: What is the relationship between patients' day of the week arrival and LWBS?

H_a7: There is statistically significant difference between day of the week arrival of patient and LWBS.

H_07: There is no statistically significant difference between day of the week arrival of patient and LWBS.

The data were summarized using standard descriptive statistics which included frequency, percentage, and measures of central tendency. As a preliminary analysis step, a bivariate regression analysis was utilized for each independent variable to determine if there was a statistically significant relationship between the independent and dependent variable. The chi-squared tests were used to assess differences in categorical variables between patients who left before and after evaluation by a healthcare provider in ER. The use of bivariate logistic regressions generated unadjusted odds ratios OR for patients LWBS and patients completing their visit by a medical provider (Moe & Belski, 2016). A multivariate logistic regression model will generate adjusted OR (Moe & Belski, 2016). The relationship between patients' social demographic, triage levels, and LWBS was summarized by the OR and the respective p-values and 95% CIs for each covariate. Based on the binary statistics, those covariates determined to be cofounders were included in the regression model to analyze the relationship between the independent and dependent variable, after controlling for their influence. A 2-sided $P<.05$ was considered statistically significant for all comparison. No correction was made to adjust for multiple comparisons.

To test the research hypothesis, a logistic regression was utilized. The logistic regression that expresses the null hypothesis for the five research questions can be

presented as: LWBS= age + gender + race + ethnicity + triage level + hour of arrival

+day of the week arrival. A logistic regression analysis was used in this study as

appropriate in terms of application in the analysis of a sample data, when the dependent

variable is measured on a binary scale (e.g. yes=1 and No=0) and the independent

variable is measured in either binary, nominal, categorical or continuous scale (Warner,

2013). Logistic regression is sufficient for this analysis because there are five

independent variables treated as nominal, continuous or a combination and one

independent variable with two possible outcomes. Logistic regression was utilized to

expand on the relationship between dependent and independent variables (Warner, 2013).

The logistic regression allowed the evaluation of the odds of patients LWBS

Threats to Validity

It is important to conduct a quality research study. The quality of the quantitative

research study is accomplished through validity (Heale & Twycross, 2015). Validity

refers to the research measures of what it is intended to measure (Nachmias-Frankfort,

Nachmias, & Dewaard, 2015). The use of quantitative correlational research design leads

to threats to external validity (Garcia-Perez, 2012). The external validity of the research

design was concerned with generalizability of the findings to other settings, time periods,

and populations (Zohrabi, 2013). Gathering the right sample is fundamental in order to

determine the accuracy of the population who LWBS at EDs in Florida. To enhance

external validity in this research study, it is important to use inclusion and exclusion

criteria to clearly define the population and collect a sample that will reflect the

population. However, in order to draw conclusions about other hospitals and populations,

precautions should be used in comparing the demographics between patients with Tricare insurance in Florida and other patient population in EDs.

Internal validity was concerned with the quality and structure of the study design. Nonexperimental (correlational) research is lowest in internal validity because this research design does not manipulate the independent variable. Statistical regression will be a possible threat to internal validity because the scores on the dependent variable may be skewed due to measurements errors (Weisstein, 2013). Patients may provide inaccurate data due to reasons such as distractions or feeling rushed to see the provider.

Statistical conclusion validity refers to reliability of the data and validity of the findings (Creswell, 2009). The main threats to statistical conclusion validity will be related to data archived at Agency for Healthcare Administration in Florida. If there are inaccuracies or missing data, this will impact the preciseness of the results retrieved from the data analysis. However, the data collected from the patients at the time they enter ED and the record keeping procedures posed minimal threat to statistical conclusion validity of this research study.

Ethical Procedures

The Agency for Healthcare Administration in Florida provided a letter granting access to the archival data 02/13/2020. The database contained a large amount of data with multiple variables including, but not limited to patients' demographics, visit characteristics, triage levels, and LWBS status. The data did not include patients' names. All identifiers were already removed from the database. Walden University requirements were met. There was no risk to the patients/populations. No data analysis was performed

or collected without the IRB approval. Dissemination of study outcome would occur through dissertation, professional conference presentations, scientific publications and books. Digital data were stored as anonymous in personal computer and flash drive, encrypted and protected with password for access for 5 years. After this period, digital data would be destroyed and deleted from the computer. This proposal was submitted to the Walden IRB for formal institutional ethical approval of the methodology in the research design. The IRB approval number for this study is 06-11-20-0443145.

Summary

Chapter 3 described information relating to the research design, methodology, population size, and data collection. The design consisted of a quantitative approach to assess a relationship between IV and DV. The chapter also included information regarding threats to external validity, ethical concerns, and data integrity. Another important area of this chapter relates to requirements and permission when working with archived data, and IRB approval for data analysis. The final results from data collection and analysis will be reported in Chapter 4

Chapter 4: Results

Introduction

The purpose of this quantitative study was to explore the relationship between patients' social demographic factors, visit characteristics, triage levels, and LWBS rates. This study will help fill the gap in the existing available literature and investigate the association between patients' social demographic, visit characteristics, triage levels, and LWBS rate for patients with Tricare insurance (military members and their families) visiting EDs in Florida. Archival data for 34,371 patients were used for this study. There were seven independent variables included in this study. Triage levels was not examined because there were no data available in the archived data. All data were analyzed with a logistic regression using the SPSS software package Version 24. A logistic regression was used to test the null hypothesis. The research questions that guided this study are presented below, along with the associated hypotheses:

1. RQ1: What is the relationship between patients' age and LWBS?

H_a1: There is statistically significant difference between age of patient and LWBS.

H_01: There is no statistically significant difference between age of patient and LWBS

2. RQ2: What is the relationship between patients' gender and LWBS?

H_a2: There is statistically significant difference between gender of patient and LWBS.

H_02: There is no statistically significant difference between gender of patient and LWBS

3. RQ3: What is the relationship between patients' race and LWBS?

H_a3: There is statistically significant difference between race of patient and LWBS.

H_03: There is no statistically significant difference between race of patient and LWBS

4. RQ4: What is the relationship between patients' ethnicity and LWBS?

H_a4: There is statistically significant difference between ethnicity of patient and LWBS.

H_04: There is no statistically significant difference between ethnicity of patient and LWBS

5. RQ5: What is the relationship between patients' triage and LWBS?

H_a5: There is statistically significant difference between triage of patient and LWBS.

H_05: There is no statistically significant difference between triage of patient and LWBS

6. RQ6: What is the relationship between patients' hour of arrival and LWBS?

H_a6: There is statistically significant difference between triage of patient and LWBS.

H_06: There is no statistically significant difference between triage of patient and LWBS

7. RQ7: What is the relationship between patients' day of the week arrival and LWBS?

H_a7: There is statistically significant difference between day of the week arrival of patient and LWBS.

H_07: There is no statistically significant difference between day of the week arrival of patient and LWBS.

In this chapter, the results of the statistical analysis are used to answer the research questions are described in tabular and graphical formats. Secondary archival data were collected and statistically analyzed to explain relationship between each of the predictor variable and the outcome variable. The results are organized and presented as per research questions and hypothesis. Table 1 displays the frequency counts for the variables in the study. Table 2 displays the chi-square tests comparing each of the individual predictor variables with LWBS. Table 3 displays the logistic regression model predicting LWBS based on relevant variables.

Data Collection

The archived data located at Agency for Healthcare administration in Florida contained patients' social demographic information, visit characteristics, and LWBS status. I received the data on CD in SPSS format. Walden University's IRB gave the approval for secondary data research. The sampling design was previously described in Chapter 3. The target population was limited to military members, patients with Tricare insurance located in Florida. The target population for this study included all patients, male and female, who visited EDs in Florida between January and March 2019 (First

quarter 2019). After missing and improbable values were deleted, the sample available for analysis was 34,371

Table 1 displays the frequency counts for the primary study variables. Only 1.7% of the sample LWBS. The largest age category was between 18 and 64 years (65.8%). There were somewhat more females in the sample (57.4%) than males (42.6%). Sixty-four percent of the sample were White with fewer Blacks (17.9%), Hispanics (12.4%), and patients from other racial/ethnic groups (6.0%). About 70% of the sample was seen between 9 AM and 8 PM and 71.3% went to receive care during the week.

Table 1

Frequency Counts for the Primary Study Variables

Variable	Category	*n*	%
Left Without Being Seen (LWBS)			
	No	33,781	98.3
	Yes	590	1.7
Age Category			
	0-17 years	9,694	28.2
	18-64 years	22,612	65.8
	65 and over years	2,065	6.0
Gender			
	Female	19,715	57.4
	Male	14,656	42.6
Race / Ethnicity			
	Black	6,151	17.9
	White	21,893	63.7
	Hispanic	4,255	12.4
	Other	2,072	6.0
Time of day			
	9pm to 2am	5,875	17.1
	3am to 8am	4,393	12.8
	9am to 2pm	11,612	33.8
	3pm to 8pm	12,491	36.3
Weekend			
	No	24,521	71.3
	Yes	9,850	28.7

Note. *N*=34, 372

As a preliminary set of analyses, Table 2 displays the chi-square crosstabulations for each of the five predictor variables with LWBS. Cramer's *V* tests (Pearson correlation between two categorical variables) were also included as a measure of the strength of each relationship. As stated previously, 1.7% of the patient's left without being seen which is the base rate for the sample. The age of the patient was significantly related to LWBS ($p = .001$, Cramer's $V = .05$). Specifically, patients 0 to 17 years old were less likely to leave (0.6%). The sex of the patient is not related to leaving without being seen ($p = .29$, Cramer's $V = .01$). The racial/ethnic background of the patient was not related to leaving without being seen ($p = .46$, Cramer's $V = .01$). The time of day was significantly related to leaving without being seen ($p = .001$, Cramer's $V = .03$). Specifically, patients arriving between 9 PM and 2 AM (2.3%) and those patients arriving between 3 AM and 8 AM (0.8%) had different LWBS rates then others in the sample. The day of the week was related to leaving without being seen ($p = .001$, Cramer's $V = .02$). Specifically, those that arrived on the weekend (1.3%) were less likely to leave than those who arrived on a weekday (1.9%).

Table 2

Crosstabulations for Predictor Variables With LWBS

Variable	Category	No		Yes	
		n	%	*n*	%
Age Category [a]					
	0-17 years	9,635	99.4	59	0.6
	18-64 years	22,128	97.9	484	2.1
	65 and over years	2,018	97.7	47	2.3
Sex [b]					
	Female	19,364	98.2	351	1.8
	Male	14,417	98.4	239	1.6
Race / Ethnicity [c]					
	Black	6,044	98.3	107	1.7
	White	21,513	98.3	380	1.7
	Hispanic	4,193	98.5	62	1.5
	Other	2,031	98.0	41	2.0
Time of day [d]					
	9pm to 2am	5,739	97.7	136	2.3
	3am to 8am	4,357	99.2	36	0.8
	9am to 2pm	11,420	98.3	192	1.7
	3pm to 8pm	12,265	98.2	226	1.8
Weekend [e]					
	No	24,056	98.1	465	1.9
	Yes	9,725	98.7	125	1.3

Note. $N = 34,371$

[a] $\chi^2 (2, N = 34,371) = 98.45, p = .001$. Cramer's $V = .05$.

[b] $\chi^2 (1, N = 34,371) = 1.12, p = .29$. Cramer's $V = .01$.

[c] $\chi^2 (3, N = 34,371) = 2.61, p = .46$. Cramer's $V = .01$.

[d] $\chi^2 (3, N = 34,371) = 34.33, p = .001$. Cramer's $V = .03$.

[e] $\chi^2 (1, N = 34,371) = 16.39, p = .001$. Cramer's $V = .02$.

Results

According to Warner (2013), a binary logistic regression model has seven statistical assumptions that need to be met:

1. The dependent variable is dichotomous. This assumption was satisfied based on the design of the study.

2. There are two or more independent variables. This assumption was satisfied given that there are five independent/predictor variables for the study (age, gender, race/ethnicity, hour of arrival, and day of week).

3. The observations are all independent (no repeated measurements) and the categories of the dependent variables are mutually exclusive and exhaustive. This assumption was satisfied based on the design of the study.

4. There are at least 15 observations and ideally 50 observations for every predictor variable. The total sample size for the model that had five predictor variables was $N = 34{,}371$ which provided sufficient power for the study and therefore satisfied this assumption.

5. There is a linear relationship between each of the continuous independent variables and the dependent variable. This assumption did not apply to the study since all five of the predictor variables were categorical.

6. No multicollinearity was present among the predictor variables. According to Warner (2013), multicollinearity is present when one or more pair of predictors have a correlation of at least $r = .70$. Cramer's V tests (Pearson

correlation between two categorical variables) were used to examine the

correlations between each of the five predictors. For the resulting 10 pairs

of the variables, the Cramer's *V* coefficients ranged in size from *V* = .02 to

V = .18 with the median sized coefficient being *Mdn* = .03. Therefore, this

assumption was satisfied.

7.   There will be no significant outliers, high leverage points or highly

influential points. Using the approach recommended by Warner (2013),

the SPSS case wise diagnostics procedure was used within the logistic

regression model. All 590 patients (1.7% of the sample) who left without

being seen were identified by SPSS as having a standardized residual

greater than four standard deviations. Warner (2013) typically

recommends removing those patients with large, standardized residuals.

However, since this would remove all the patients that left without being

seen from the study, this logistic regression assumption was ignored.

Testing the Hypotheses

To address the hypotheses, a binary logistic regression model was created (Table

3). The full model was significant, χ^2 (10, *N* = 34,371) = 181.93, *p* = .001 and the final

correct classification rate was 98.3% which was identical to the base classification rate

(Table 1). The Nagelkerke *R* Square statistic found this model accounted for 3.3% of the

variance in whether the patient left without being seen.

$H_0$1 was: There is no statistically significant difference between age of patient and

LWBS. For this hypothesis, the three age groups were dummy coded using 0 to 17 years

as the reference category. As shown in Table 2, the LWBS rate for 0-17 years was 0.6%

compared to 2.1% for patients 18–64 years and 2.3% for patients 65 years and older.

Inspection of Table 3 found patients in the ages of 18 to 64 ($OR = 3.66$, $p = .001$) and

patients age 65 years and over ($OR = 3.85$, $p = .001$) were more likely to leave without

being seen when compared to the 0-17 year old group. This combination of findings

provided support to reject the null hypothesis.

$H_0 2$ was: There is no statistically significant difference between gender of patient

and LWBS. Inspection of Table 3 found no difference based on gender ($OR = 0.99$, $p =$

.91). This finding provided support to retain the null hypothesis.

Table 3

Logistic Regression Model Predicting LWBS

Variable	B	SE	p	OR	95% CI Lower	Upper
Age 18 to 64 [a]	1.30	0.14	.001	3.66	2.78	4.81
Age 65 and over [a]	1.35	0.20	.001	3.85	2.61	5.67
Gender	-0.01	0.09	.91	0.99	0.84	1.17
Black [b]	0.01	0.11	.90	1.01	0.82	1.26
Hispanic [b]	-0.14	0.14	.31	0.87	0.66	1.14
Other Racial / Ethnic [b]	0.21	0.17	.20	1.24	0.89	1.72
Time 9pm to 2am [c]	0.38	0.11	.001	1.46	1.17	1.83
Time 3am to 8am [c]	-0.73	0.18	.001	0.48	0.34	0.69
Time 3pm to 8pm [c]	0.14	0.10	.15	1.15	0.95	1.40
Weekend	-0.40	0.10	.001	0.67	0.55	0.82
Constant	-5.07	0.16	.001	0.01		

Note. N = 34,371

Note. Full Model: χ^2 (10, N = 34,371) = 181.93, p = .001.
Note. Final correct classification rate = 98.3%.
Note. Nagelkerke *R* Square = .033.
[a] Reference group was 0-17 years.
[b] Reference group was White.
[c] Reference group was 9am to 2pm.

H_03 and H_04 were: There is no statistically significant difference between racial/ethnic background of patient and LWBS. Inspection of Table 3 found no difference based on racial/ethnic for black patients (*OR* = 1.01, *p* = .90), Hispanic patients (*OR* = 0.87, *p* = .31), or patients from other racial/ethnic backgrounds (*OR* = 1.24, *p* = .20). This combination of findings provided support to retain the null hypothesis.

$H_0 5$ was: There is no statistically significant difference between triage of patient and LWBS. This hypothesis was not tested because triage data were not available in the archival data set.

$H_0 6$ was: There is no statistically significant difference between hour of arrival of patient and LWBS. Inspection of Table 3 found significant difference based on time of arrival for patients arriving between 9 PM and 2 AM ($OR = 1.46$, $p = .001$), and patients arriving between 3 AM to 8 AM ($OR = 0.48$, $p = .001$). This combination of findings provided support to reject the null hypothesis.

$H_0 7$: There is no statistically significant difference between day of the week arrival of patient and LWBS. Inspection of Table 3 found patients arriving on the weekend were less likely to leave without being seen ($OR = 0.67$, $p = .001$). This finding provided support to reject the null hypothesis.

Summary

I used archival data for 34,371 patients to evaluate the impact of patients' social demographic characteristics, hour of arrival, day of the week, and triage levels on LWBS rates. Hypothesis 1 (age and LWBS) was supported (Table 3). Hypothesis 2 (gender and LWBS) was not supported (Table 3). Hypotheses 3 and 4 (racial/ethnic background and LWBS) was not supported (Table 3). Hypothesis 5 (triage and LWBS) was not tested due to a lack of available data. Hypothesis 6 (time of day and LWBS) was supported (Table 3). Hypothesis 7 (day of week and LWBS) was supported (Table 3). In the final chapter, these findings will be compared to the literature, conclusions and implications will be drawn, and a series of recommendations will be suggested.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this quantitative study was to explore the relationship between patients' social demographic factors, visit characteristics, triage levels, and LWBS rates. The main findings of the study, presented in Chapter 4, are summarized based on the research questions. Results from the logistic regression analysis revealed that age, time of the day, and day of the week predicted the likelihood of LWBS. The logistic regression analysis indicated that gender and racial and ethnic background did not predict the likelihood of LWBS. This chapter is a summary of the relevance of these findings, their contribution to literature, their limitations, and the recommendations based on them. The research question for this study addressed whether age, gender, race, ethnicity, hour of arrival, and day of the week predict the likelihood of patients leaving ER without being seen by the provider.

Interpretation of the Findings

Findings Related to Age

Finding from this study were not consistent with the research. Past researchers have indicated that patients who LWBS are young adults. The probability of LWBS is higher among young adult between 15–24 years old followed by the subsequent group of 25–44 years old (Saia & Fonzo, 2017). These results are consistent with results reported by Moe and Belsky (2016) and Carron (2014) who found that the rated of LWBS are higher among adults 20–49 years old patients.

Data from this study revealed that the LWBS rate for 0–17 years was 0.6% compared to 2.1% for patients 18–64 years and 2.3% for patients 65 years and older. Patients in the ages of 18 to 64 and patients age 65 years and over were more likely to leave without being seen when compared to the 0–17 years old group. Results from the logistic regression further reveled that age predicted the likelihood of leaving WBS.

Findings Related to Gender

Past researchers revealed that men are more willing to LWBS than women. Weingart, Davis, and Phillips (1998) showed that young men LWBS. Among the variables affecting patients who LWBS, Hosseini et al. (2018) found that men were more willing to leave than women. Carron (2014) found that that the rates of LWBS were slightly higher in male patients. The results obtained from the retrospective observational study confirmed that patients who LWBS are most likely men (Tropea, Sundararajan, & Gorelik, 2012

Findings from this study revealed that there were somewhat more females in the sample (57.4%) than males (42.6%). The gender of the patient is not related to leaving without being seen ($p = .29$, Cramer's $V = .01$). In comparison, the findings of this study indicated that 1.6 % of males and 1.8% of females LWBS. This is relatively not consistent to what was presented in research that indicated that the rates of LWBS were higher in male patients. Although the findings revealed that there were 1.8% of females LWBS, the results from the logistic regression analysis revealed that gender was not statistically significant predictor of the likelihood of LWBS.

Findings Related to Race/Ethnicity

The results of the study indicated that there was not a significant association

between racial/ethnic background and LWBS rate. Sixty-four percent of the sample were

White with fewer Blacks (17.9%), Hispanics (12.4%), and patients from other

racial/ethnic groups (6.0%). The overall model showed no difference based on

racial/ethnic for black patients ($OR = 1.01$, $p = .90$), Hispanic patients ($OR = 0.87$, $p =$

.31), or patients from other racial/ethnic backgrounds ($OR = 1.24$, $p = .20$). Members of

minority racial and ethnic groups experience more problems to access health care

(Rainer, 2015). Despite this knowledge, there has been no previous data to evaluate

specific health care concerns among racial and ethnic categories (Rainer, 2015).

Findings Related to Triage Levels

There was no recorded information on the triage levels. The agency for health

care organizations archival data included patients' reason for ER visit, not the triage

level. Because I was unable to retrieve data in reference to triage levels, this variable

could not be entered in the data analysis. Consequently, research findings regarding the

relationship between triage levels and likelihood of leaving without being seen could not

be assessed.

Findings Related to Day of the Week Arrival

Past researchers have indicated that the day of the week significantly affected the

number of ED visits. Numerous studies have investigated which day of the week has the

largest ED crowding. Faryar (2013) saw a pick in ED visits on Mondays, and a small

spike in volume on Sundays. Other research conducted in ED in Sao Paulo, Brazil, from

January 2008, to December 2010 showed a weekly distribution, with highest patient volumes on Mondays and lowest patient volumes on weekends (Marcilio et al., 2013). These studies have reported that patients seek medical care in ED on Sunday or they wait until Monday (Faryar, 2013; Marcilio et al., 2013). On the other hand, Mataloni et al. (2018) concluded that there were no important differences between distribution of weekday between patients discharged and LWBS.

Finding from this study were consistent with the research. Day of the week had a significant statistical association with LWBS rate. The day of the week was related to leaving without being seen ($p = .001$, Cramer's $V = .02$). Specifically, those that arrived on the weekend (1.3%) were less likely to leave than those who arrived on a weekday (1.9%). About 71.3% went to receive care during the week (Table 1). I found that patients arriving on the weekend were less likely to leave without being seen ($OR = 0.67$, $p = .001$).

Findings Related to Hour of Arrival

There have been numerous studies conducted in the ED. Tiwari et al. (2014) analyzed the patient flow system in ED of a Tertiary level health care Institution, in 2011 and reported that patients' hour of arrival peak were between 9 -12. Similar findings have been reported in a tertiary care, in Barbados, were 10% of the patients visit ED during the night hours. The results of another study conducted in Saudi Arabia showed that 46% patients visited ED during night (as cited by Tiwari et al., 2014).

Findings from this study were consistent with the research. The results of the study indicated that there was a significant association between hour of arrival and

LWBS rate. About 70% of the sample was seen between 9 AM and 8 PM. The time of day was significantly related to leaving without being seen ($p = .001$, Cramer's $V = .03$). I found significant difference based on time of arrival for patients arriving between 9 PM and 2 AM ($OR = 1.46$, $p = .001$), and patients arriving between 3 AM to 8 AM ($OR = 0.48$, $p = .001$; Table 3). Specifically, patients arriving between 9 PM and 2 AM (2.3%) and those patients arriving between 3 AM and 8 AM (0.8%) had different LWBS rates then others in the sample

Connections of Research to Theoretical Orientation

The theoretical orientation upon which this study was based was the Donabedian theory. This theoretical framework has been used frequently since 1966 in health care service research to determine the elements relevant to patients' care quality (Ayanian & Markel, 2016). Donabedian's theoretical framework is based on three related concepts: structure, process, and outcome. The structure comprises all factors that affect the context of the organizational care settings and attributes of human resources such as patients' demographic factors, hours of arrival and day of the week arrivals (Abiodun, 2018). Process covers all aspects of the healthcare services provided and done for the patients, such as evaluation of patients by triage nurse. The third element, the outcome, refers to the effects of health care delivered on the status of patients or populations (Ameh et al., 2017).

The model has been used to determine the characteristics of patients (i.e., age, gender, race, ethnicity) that are related to patients' LWBS. The Donabedian model was appropriate for this study because it can be used to explain how structure such as the

characteristics of patients (age, gender, race, ethnicity) in ED and process can determine

the LWBS outcome. The findings contributed to the advancement of the Donabedian

theory because the model continues to help guide policy makers and healthcare

institutions to improve healthcare outcomes (Abiodun, 2018). I applied the Donabedian

theory to the research topic and examined the impact of patients' characteristics on the

LWBS outcome.

Limitations of the Study

One of the main limitations of the study was that I utilized secondary data. I had

no influence over the procedures utilized in collecting the data. If any of the data in the

archive were inaccurate, it could have affected the accuracy of data used in the data

analysis. There was no way to assess the accuracy of data collected, reported, and

archived in the Agency for Health Care Organization in Florida.

Another limitation of the study was that the archived data were retrieved from

EDs located in a specific geographic area, in state of Florida. As result, the findings may

not apply to other healthcare systems. The result of this research may not be

generalizable to EDs with different patient population and different hospital environment.

The last limitation was time. The research was conducted over one quarter interval time

2019 which represent a snapshot on conditions at EDs during that time.

Recommendations

In this research study, factors associated with patients who LWBS were analyzed.

The goal was to explore the relationship between patients' social demographic factors,

visit characteristics, triage levels, and LWBS rates. Data were available from the Agency

for Healthcare Administration, in Florida. Although data were available for research, a greater sampling and review of literature would be recommended to further close the knowledge gap.

The results and limitations of the study make it necessary to highlight possible recommendations for future research within health systems. One recommendation is to replicate this study using a more diverse population sample, including health systems with rural hospitals and ED's. About 46 million Americans or 15% of the U.S. population live in rural areas (CDC, 2019). Researchers have found that rural hospitals face many challenges in recruiting health care providers and nurses. Also, rural residents often receive poorer healthcare services than urban residents (CDC, 2019).

A second recommendation would be to identify additional variables as possible predictors. A suggestion would be to collect data on hospital type, hospital location, staffing levels, ED occupancy, proximity of residence to ED, mode of arrival, insurance status, social economic status, and frequency of ED utilization. These variables would help to explore the impact of hospital characteristics on patients who LWBS.

A third recommendation would be to conduct a qualitative or mixed method approach with the use of primary data for further exploration of the risk and reasons for LWBS. Quantitative research method was used in this study because of the availability of secondary data. Quantitative data collection was utilized reviewing patients' social demographic characteristics, arrival time, and arrival day entered within the health system's emergency medical record. A qualitative study or mixed method approach could add to the other quantitative studies about reasons for LWBS. It is not known why

patients LWBS and if they sought alternative medical care. The accuracy of the time waited in ED for patients who LWBS is uncertain. The information available represent the time between patient's arrival and the time they were called in by ED staff or the time staff realized patient had left the waiting room. Primary data researchers would be able to hear from patients directly, eliminate biases, and validate the data used in the study.

The final recommendation of further study would be to emulate a similar study in another geographic region with similar patients' demographics, with health systems that utilize the same collection process for LWBS to confirm or disprove the results of this study.

Implications to Social Change

Implications for positive social change include the potential for improvement in efficiency and utilization of ED resources. Reduced LWBS rate in ED could contribute to a positive social change by refining efficiency of patient treatments and patient satisfaction. Identifying tools and effective practices to reduce LWBS rate within the ED setting presents implications for both professional practice and social change. For professional practice, the findings of this study might help health systems look outside of traditional capacity management practices. An additional insight that may be added to the professional practice is the promotion of a different approach within a health system. The use of another approach may assist in the patient care through the health system. Creating a better access to the correct level of care in a times fashion, may better assist physicians and health systems in delivering effective and efficient care with the best possible outcomes.

There are multiple implications for positive social change resulting from this study. This research has individual, community, and global social implications. At the individual level, I will share the results of this study on social media (LinkedIn) and a peer-reviewed journal, in order to advocate for policies and interventions. With this effort, a new knowledge is developed and when enhanced, will contribute to the global healthcare community on understanding why patients leave ED without completing their visit.

At the community level, understanding factors associated with patients LWBS will eventually lead to design system-level interventions to improve access to emergency care. Hospital administrators can use the study results to improve their knowledge about managing patient flow and handling hospital overcrowding. Health care institutions and emergency physicians must take actions to reduce LWBS rate, because ED alone cannot solve the problem. Improved patient treatment and patient satisfaction would improve patient lives and lead to better community relations due to potentially healthier community members. Future work needs to provide real action and resources to systematically evaluate interventions and guide evidence-based policy. Improving deficiencies in the ED not only improve care provided but can also restore trust in the community served in a competitive healthcare market.

The global effort to reduce the number of patients who leave ED without being seen is under threat if new strategies and interventions are not adequately implemented in developing countries. Improving health care quality, increasing patient satisfaction, and

reducing LWBS rate is important to all stakeholders, patients, families, health care

providers, healthcare institutions, and the country.

Understanding why patient LWBS within health systems is critical. Having that

understanding is crucial for a health to ensure that the population that the health system

serves obtains the right care at the right time. Addressing these barriers is important to

assist in better outcomes for patients, as well as quicker and more effective health care

delivery.

Conclusion

The objective of this study was to study the relationship between patients' social

demographic factors, visit characteristics, triage levels, and LWBS rates. The variables

analyzed were patients' age, gender, race, ethnicity, triage levels, hour of the arrival, day

of the week, and LWBS status. LWBS is an important factor for health care quality

improvement that affects the patient's quality of life and services received in healthcare

facilities. The target population for this study included all patients, male and female, who

visited EDs in Florida between January and March 2019 (1st quarter 2019). After missing

and improbable values were deleted, the sample available for analysis was 34,371. A

power analysis determined that the sample size for the populations analyzed were

sufficient to progress to a logistic regression analysis with a Cramer's V test analysis.

The result of this study showed that there was statistically significant association

between patients age, hour of arrival of patient, day of the arrival and LWBS rate. These

findings fit in with previous literature in that age, hour of arrival, and day of the arrival

significantly affected LWBS rate. Results from the logistic regression analysis revealed

that gender and racial/ethnic background did not predict the likelihood of LWBS. The results of the study confirm and extend knowledge in the healthcare administration discipline. The outcomes of the statistical analyses align the study with the contextual framework of the study and the use of Donabedian theoretical framework within the health care setting. Further research and advancement of knowledge in the use of Donabedian theoretical framework would be beneficial to the field of health care. The findings of this study could help create positive social change by equipping healthcare facilities and health care providers to understand the impact of patients' demographic, hour of arrival and day of the arrival in the emergent care setting on the patient experience and the impact on patient health outcomes. This information might be instrumental in creating healthcare policies and the improvement of the delivery of healthcare services across the patient population. This study may influence positive social change by acting as a guide in formulating policies to reduce the rate of LWBS. This study may help health care practitioners and policymakers plan for projects to decrease the incidence of LWBS.

The findings in this study were found in one geographic location (Florida), and as such the results would not be generalized (Creswell, 2009). The findings would, however, be used when carrying out further studies, which would investigate other factors associated with patients LWBS. I recommend that further researchers gather data from hospitals in other geographic areas and examine the data to replicate this study finding. The findings of this study may help cultivate greater access to care for patients and greater population health outcomes.

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