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Patient Satisfaction of Physician Assistants and Physicians in the Emergency Department

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PATIENT SATISFACTION OF PHYSICIAN ASSISTANTS AND PHYSICIANS IN THE EMERGENCY DEPARTMENT

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ABSTRACT

Introduction: Emergency medicine has developed rapidly since the 1960s with an increasing need for providers due to the increasing number of presenting patients in the emergency department. Physician assistants have filled that gap; however, patient knowledge and subsequent patient satisfaction of emergency department physician assistants remains to be researched.

Purpose: The purpose of this study is to determine and evaluate patient satisfaction after seeing a physician assistant and a physician in the emergency department. Patient knowledge of the role of a physician assistant in an emergency department setting was assessed, as well as the possible correlation between patient knowledge of an emergency department physician assistant and patient satisfaction with the PA.

Methods: A survey was used for research at Buffalo Covenant Church (BCC). The survey was administered to participants of BCC after the 8:00 a.m., 9:30 a.m., and 11:00 a.m. services for two Sundays. The paper survey was distributed to participants, by the researchers of this study, in the commons area of the church to those that choose to participate. The objective was to obtain 45-50 surveys per provider group (PA vs. physician), for a total of 90-100 participants.

Results: Participants in the study revealed on average a 7.5/10 high satisfaction score towards ED providers including PAs and physicians. Furthermore, there are no attitudinal differences toward PAs or physicians. Wait time analysis suggested that longer wait time decreases patient satisfaction level. Patient knowledge analysis showed more than half of participants have high knowledge about the PA's role in

the ED. Marginal significance between participants' knowledge of the role of an ED PA and their overall satisfaction level was found in this study.

Conclusion: This study shows that patients have high satisfaction levels toward both ED provider types: PAs and physicians. Wait time again is an important factor that influences patients' satisfaction in the ED. The novel and interesting part of this research discovered that patients might be more satisfied when they have a high knowledge level of the role of an ED PA. Limitations of this study including sample size, and data collection location. Further research and larger samples are needed in the future to investigate patient satisfaction in the ED and the possible significant relationships between patients' knowledge and their satisfaction level.

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Chapter One: Introduction

Introduction

Emergency medicine has existed since the 1960s. It has developed very rapidly throughout the past decades due to the rising needs of patients seeking unscheduled and urgent medical care (American Academy of Emergency Medicine (AAEM), 2015). Physicians were without skills and training in emergency medicine and became frustrated with the growing demand of patients wanting care in the emergency department (ED) (AAEM, 2015). In response to patients' needs, many physicians started to allocate more time and attention to practicing emergency medicine. In 1967, the American Medical Association (AMA) started a training program specifically for emergency medicine, allowing for a specific certification of physicians in this field (AAEM, 2015). Along with this new training program and emergency medicine certification, John Wiegenstein and his colleagues formed the American College of Emergency Physicians (AAEM, 2015). From the late 1960s, the number of emergency departments have risen exponentially all across the world (AAEM, 2015). The ED consists of many medical professionals including physicians, nurse practitioners (NPs), and physician assistants (PAs) (American Academy of Physician Assistants (AAPA), 2015).

The PA profession started in the 1960s due to the shortage of physicians in primary care. Now PAs are utilized in all fields of medicine, and they are able to practice and prescribe medications under the supervision of a phys2ician (AAEM, 2015). A shortage of physicians practicing in emergency medicine currently exists (Hooker, Klocko, & Larkin, 2011), and as a result, the role of PAs has greatly expanded in the ED

as a way to collaborate with physicians in light of these increased health demands (Hooker et al., 2011). In addition to PA's generalist training, PAs are also trained in areas specific to the ED such as managing wound care, acute care transfers, response to medical complaints, and procedures (Doan, Sabhaney, Kissoon, Sheps, & Singer, 2011; Hooker et al., 2011). PAs can also perform a wide variety of procedures (Society of Emergency Medicine Physician Assistants (SEMPA), 2015). This chapter will cover the background, patient satisfaction, and the misunderstanding of PAs in the ED. Also addressed will be questions presented in this research experiment, the importance of this study to health care, the limitations that this study presents, and definitions of terms according to the current study.

Background to the Problem

Physician assistants are certified health professionals who work under the supervision of physicians (AAPA, 2015). Physician assistants are trained academically and clinically to take histories, perform physical examinations, order lab tests, perform procedures, and prescribe medicine (AAPA, 2015). Historically, the first PA program was started by Dr. Eugene Stead in 1965 at Duke University in order to fast-track training of four corpsmen in the Navy to serve World War II emergency services (AAPA, 2015). According to an AAPA census report in 2009, all PA programs teach emergency medical care and it is a part of all PA students' clinical rotations (Hooker et al., 2011). In addition, the National Commission on Certification of Physician Assistants (NCCPA) has implemented a specialty certificate for PAs to pursue further qualification in emergency medicine (National Commission on Certification of Physician Assistants, 2015). Overall,

PAs are medical providers who are trained to work with emergency medicine physicians to provide patient care.

In accordance with the definition provided by MedicineNet in 2012, an emergency department specializes in treating patients who seek immediate medical care, including but not limited to procedural, surgical, and referral care (MedicineNet, 2012). Historically, the ED was designed to serve patients in emergency situations, acute illnesses, and even life-threatening injuries; however, according to a report in 2007, among the patients presenting to the ED seeking medical treatment, more than 50% have minor medical problems (Abbott, Schepp, Zierler, & Ward, 2010; Carter & Chochinov, 2007). Patient crowding has become an "ED crisis" due to the increase in patients seeking health care in the ED and the shortages of physicians (Hoot et al., 2009; Abbott et al., 2010).

To relieve the ED crowding crisis, the employment of PAs in EDs has been increasing over the last several decades (Wiler, Rooks, & Ginde, 2012). Physician assistants in emergency medicine work in triage, fast track, and in the main ED, helping to improve patient flow and quality of care (Ducharme, Alder, Pelletier, Murray, & Tepper, 2009).). Similar to PAs working in primary care and other specialties, PAs working in the ED perform physical exams, order tests, review laboratory results and x-rays, make diagnoses and treat patients. Additionally, PAs may perform a wide variety of procedures, such as fracture reductions, stitches, abscess drainage, and wound care (SEMPA, 2015). Advanced procedures that PAs may perform in the ED include endotracheal intubation, central line placement, thoracentesis, and chest tube placement

(Doan et al., 2011). The performance of ED PAs can directly affect the satisfaction of each patient.

Patient satisfaction has been measured by previous studies and has been defined by different factors. For example, patient satisfaction is either implicitly or explicitly defined as an "evaluation based on the fulfillment of expectations" (Williams, Coyle, & Healy, 1998).). In another study, shorter wait times and/or length of stay have been defined as parts of patient satisfaction (Ducharme et al., 2009). In addition, "friendliness" was a factor of satisfaction in Baldwin's study in 1998 (Baldwin et al., 1998). These studies share some similarities on defining patient satisfaction as "fulfillment of expectations" (Williams et al., 1998).

Patient satisfaction by a PA in the ED has received little attention in healthcare (Kaplan, Greenfield, Gandek, Rogers, and Ware, 1996). There have been limited studies of evaluating patient satisfaction of care provided by PAs in all specialties. One study conducted in 1997, patient satisfaction of PAs, NPs, certified nurse midwives, and physicians had been investigated in five departments: internal medicine, family practice, pediatrics, obstetrics and gynecology, and orthopedics (Hooker, Potts, & Ray, 1997). Although this study is pertinent to the PA profession, patient satisfaction of PAs in the ED has not been focused on heavily in the medical literature. Further research of patient satisfaction of a PA in the ED may increase the patient knowledge of the role a PA in the ED.

Problem Statement

According to the reviewed medical literature, there is a small amount of research conducted on patient satisfaction of being seen by a PA in the ED. Also, there is a

substantial gap in knowledge about whether or not patients are satisfied with the care provided by a PA in the ED in Minnesota. A gap also exists of whether or not patients understand the role of a PA in the ED. In addition, no studies about patients' knowledge of the role of a PA in the ED and its correlation to patient satisfaction have been done.

Purpose

The purpose of this study is to determine and compare patient satisfaction after seeing a PA versus a physician in the ED. This study will also assess the patient's knowledge of the role of a PA in an ED setting and any subsequent correlation between patient satisfaction and patient knowledge of the role of a PA in the ED. With this research, a better sense of awareness regarding the PAs in the ED and their value to the medical profession will be provided to the field of medicine.

Research Questions

The following research questions will be addressed in this study:

1. What is the level of satisfaction that patients report after being treated by a PA or a physician in the ED?

2. What is the level of knowledge of the PA role that patients have upon discharge in the ED?

3. What impact, if any, does the level of knowledge of the PA role have on patient satisfaction of a PA?

Significance of the Problem

The prevalence of PAs in the medical field is becoming more pronounced and both patients and providers are recognizing a PA's value. This study will provide a better understanding of the patient's perception of what a PA's role is in the ED. This research

also looks at the patient satisfaction level after being seen by a PA. By determining answers to these issues, the general awareness of the value of PAs in emergency medicine can be evaluated. Furthermore, this study may provide an assessment of the role that PAs currently have in emergency medicine and regarding patient satisfaction.

Limitations of the Study

The following is a list of limitations that the researchers considered in this study:

1. The participant group of patients is not representative of the universal view of patients regarding PAs.
2. General understanding by patients of the questionnaire may be a limitation based on a patient's education background, language, and literacy level.
3. This study does not include fast-track, urgent care or trauma.

Definition of Terms

The following is a list of definitions in terms of this study:

Emergency Department: an emergency department specializes in treating patients who seek or in need of immediate medical care, including but not limited to procedural, surgical, and referral care (MedicineNet, 2012).

Patient's Level of Knowledge of the PA's role in the ED: Patient's knowledge is based on the understanding that a PA is a distinct type of provider (e.g. distinct from an NP, physician, nurse), PAs have a specific scope of practice, and that PAs are not independent providers.

Patient Satisfaction: In accordance with Williams et al. (1998), patient satisfaction is defined as the fulfillment of expectations by the patient regarding the care he or she

received by a PA or physician in the ED. In terms of this study, some factors that play a role in determining patient satisfaction include: wait time, respectfulness of caregiver, friendliness of caregiver, how concerned the caregiver is about the patient's concerns, how well the caregiver is at addressing the patient's concerns in a timely manner, and how up to date the patient was throughout their visit.

Chapter Two: Literature Review

Introduction

Patient satisfaction is the core of quality patient healthcare in today's society. Midlevel providers, such as PAs and NPs, are being more recognized in the healthcare field and the recognition of the different providers is crucial that patient satisfaction is strengthened between patients and both physicians and midlevel providers. In order to evaluate patient satisfaction of PAs in the ED, this study will take into account the components of the ED, the role of a PA in the ED, patient satisfaction after being cared for by a PA, and patient's knowledge of the role of a PA in the ED. The background that we obtained from searching the medical literature has allowed for a focused summary of what research has already been done and what is known, why research in this area is important, and what the gaps are currently presented in the medical literature.

Emergency Department

The ED, also referred to as the emergency department, is the area of the healthcare system specialized in treating patients seeking immediate medical care with acute illnesses and life-threatening injuries (MedicineNet, 2012). Although the ED is the department treating emergency medical problems, more than half of the patients presenting to the ED have minor medical problems (Abbott et al., 2010; Carter & Chochinov, 2007). These patients with minor medical problems go down the fast track system. The fast track system is a part of the ED that treats patients with non-emergent concerns so they can be examined and managed more efficiently. An increase in patients who have non-emergent concerns are being admitted to the ED, which has contributed to ED crowding in the United States (U.S.), over the past two decades (Andrulis,

Kellermann, Hintz, Hackman, & Weslowski, 1991). In 2000, the annual number of ED visits in the U.S. had increased to 108 million (Schafermeyer & Asplin, 2003). The most recent number of ED visits reported by the Center for Disease Control (CDC) in April of 2015 was 136.3 million (CDC, 2015). The expected number of ED visits is predicted to double by 2025 and physicians are starting to realize the importance of PAs and their role in the ED (Hooker et al., 2011). A lack of physicians in the ED further exacerbates ED crowding (Derlet & Richards, 2000). One proposed solution to the shortage of ED physicians and ED crowding has been to incorporate additional healthcare professionals, including PAs into the ED (Wiler et al., 2012).

Physician Assistant Role and Value in the Emergency Department

The ED consists of many medical professionals including physicians, NPs, and PAs (American Academy of Physician Assistants, 2015). Physician assistants are certified healthcare professionals who work under the supervision of physicians. During the 1960's, the PA role was developed to help relieve a physician shortage in the US and to increase patient access to healthcare (Mittman, Cawley, & Fenn, 2002). Physician assistants are trained to take histories, perform physical examinations, order lab tests, perform procedures, and prescribe medicine in both an academic and clinical setting (American Academy of Physician Assistants, 2015). All PAs practice an interdependence role, which is described as "negotiated performance autonomy" in which they must be associated with a physician (Mittman et al., 2012, p.485).

One systematic review by Doan and colleagues (2011) looked at the general role and acceptance of a PA in the ED. The researchers carried out this study by doing extensive research in the medical literature and included reports of surveys, retrospective

and prospective studies, guidelines, and reviews (Doan, et al., 2011). Sixty-six of the 712 studies were included as the others were limited by methodological quality (Doan et al., 2011). From the 66 studies, Doan and colleagues defined the role of a PA in the ED to include: "Taking a history and performing a physical examination, evaluating laboratory data, instituting treatment, performing procedures, screening ED patients with 'routine' problems, admitting certain patients, and communicating with consultant services" (Doan et al., 2011, p. 9). This study was conducted in 2011 and showed that 13-18% of U.S. EDs had PAs, whereas academic medical centers reported that PA usage was 65-68% (Doan et al., 2011). Doan and colleagues were also able to see that "PAs are competent medical professionals, very reliable in assessing medical situations, and well accepted by both the ED staff and patients" (Doan et al., 2011). A study of ED physicians in the U.S. by Elliott and colleagues revealed that PAs were well accepted by physicians in the ED (Elliott, Erdman, Waters, & Holcomb, 2007). Through the survey, 91% of physicians who had previously worked with a PA were confident with a PA's ability, with patient education and history and physical exam being the highest rated (Elliott et al., 2007). Overall, PAs have become important team players in the healthcare system in that they perform similar tasks to their partnering physician and are well accepted by the medical community (Doan et al., 2011 & Mittman et al., 2002).

Another study conducted by Sturmann, Ehrenberg, and Salzberg (1990), reviewed how PAs are providing care and excellence in the emergency services department of the Bethel Israel Medical Center in New York. This research was completely qualitative in that the researchers were evaluating the role of a PA (Sturmann et al., 1990). Factors, such as the demand for PAs in the ED, patient perceptions of PAs, cost savings, and

quality of care, were all summarized (Sturmann et al., 1990). The general consensus of this review was that PAs are vital players in the healthcare system. Physician assistants provide consistent care in the ED, decrease the amount of moonlighting physicians, and are extremely cost effective in relation to their productivity (Sturmann et al., 1990). This review also noted the importance that malpractice concerns, regarding PAs, are extremely minimal (Sturmann et al., 1990). Sturmann and colleagues discovered that "there have been no malpractice suits against ED PAs in eight years of using full-time PAs" (Sturmann et al., 1990, p. 306). This review shows a good understanding of how a PA can reduce healthcare cost in an ED setting with minimal malpractice rate.

More recently, Hooker and colleagues (2011) examined the impact of the role of PAs in emergency medicine based on two factors. The first factor being an increased demand for acute care and the second factor being the decrease in the number of emergency physicians entering emergency medicine (Hooker et al., 2011). The researchers of this study conducted a literature review and concluded that PAs are very effective in the ED. They found that PAs have a positive impact on patient care by increasing patient flow, offering the same satisfaction as a physician provides, offloading resident work hours, and augmenting staffing patterns (Hooker et al., 2011). Physician assistants were also shown to improve clinical and financial outcomes by decreasing healthcare costs along with increasing the quality of care (Hooker et al., 2011). Overall, the role of a PA in the ED is in agreement with the role of a physician.

PAs also perform very thorough exams and have training that is similar to physicians, which might be valued in the ED. In one study done by Arnopolin and Smithline (2000), although a PA performs similar tasks as a physician, the training that

PAs received in their education lengthened their visit times in asthma and gastrointestinal (GI) ED cases (Arnopolin & Smithline, 2000). The results showed that PAs had longer patient visits due to conducting a more thorough physical exam. Specifically, a 30-minute extension to each asthma and GI case by PAs was seen in comparison to physicians (Arnopolin & Smithline, 2000). This extended visit time was due to the fact that PAs are trained to conduct their own asthma education prolonging the visit whereas physicians have their nursing staff complete patient education for them (Arnopolin & Smithline, 2000). In addition, PAs were more likely to perform a pelvic exam on a female patient presenting with a GI complaint due to their education and training versus a physician (Arnopolin & Smithline, 2000).

Overall, the roles of PAs in the ED are important in decreasing the workload among physicians, as a PA's scope of practice is very similar to that of a physician without exceeding that of their supervising physician by law. Physician assistants are well accepted by physicians in the ED with a high performance rating in patient education and history and physical exam (Elliott et al., 2007). Physician assistants in the ED also increase quality of care and cost effectiveness, decrease the amount of moonlighting physicians, and carry minimal malpractice concerns (Sturmann et al., 1990). Lastly, PAs also perform thorough exams and give their own patient education due to their training (Arnopolin & Smithline, 2000)

Patient Satisfaction

Evaluation of patient satisfaction with care provided by PAs has received limited attention since the 1990s (Kaplan et al, 1996). In one study in 1997, the patient satisfaction of PAs, physicians, certified nursing midwives (CNMs), and NPs had been

investigated in five departments: internal medicine, family practice, pediatrics, obstetrics and gynecology, and orthopedics (Hooker, et al. 1997). The results showed a high patient satisfaction response of 89%-96% towards PAs, physicians, CNMs, and NPs. Satisfaction was based on "courtesy, understanding of the problem, ability to explain, use of understandable words, listening, time spent, and confidence in provider" (Hooker et al., 1997, p. 39). In 2005, a national cross-sectional satisfaction study comparing a physician, PA, and a NP in primary care was performed within the population of Medicare beneficiaries (Hooker, Cipher, & Sekscenski, 2005). Similar results suggested that PAs were rated as favorably as physicians, with there being no difference in satisfaction between each of the different providers. Based on these studies, PAs are accepted in primary care and their medical services are well accepted by patients.

Similar to primary care, patient satisfaction with PAs in emergency medicine has not been studied often in the last two decades. Sturmann, et al.'s, (1990) case study examined PAs' care and excellence in the emergency services department of the Bethel Israel Medical Center in New York. The perceptions by patients were also evaluated, through personal testimonials, and yielded positive results such as a tenfold PA favorability over unfavorability (Sturmann et al., 1990). Sturmann and colleagues noted that PAs are providing the same quality of care as physicians at a lower cost (Sturmann et al., 1990). This in turn can decrease healthcare costs for the patients, ultimately increasing patient satisfaction. A limited number of studies on patient satisfaction of PAs exist; however, what has been researched has resulted in positive findings.

Although trauma and fast track will not be included in the definition of ED in this study, the following studies are pertinent to the background of this research. Since 2000,

four more studies have been conducted to investigate the topic of patient satisfaction in two specific areas of the ED: fast track and trauma. One study performed a survey in an ED fast track, which demonstrated high patient satisfaction with the care rendered by PAs (Counselman, Graffeo, & Hill, 2000). Based on a scale of 100, with 100 being most satisfied, the mean patient satisfaction score was 93% among 111 surveys collected. In a paper by Jeanmonod and colleagues, a comparison of patient satisfaction to residents and mid-level providers (including PAs) in the ED fast track was examined (Jeanmonod, DelCollo, Jeanmonod, Dombchewsky, & Reiter, 2013). In this study, of the 201 completed surveys, 126 patients were seen by PAs and nurse practitioners (NPs) and residents saw 75 patients. Descriptive analysis suggested that patients overall were highly satisfied with their ED visit. The mean value was rated a 7/10 for PAs, which was the same for the resident providers. Patients were satisfied with all the medical providers and the level of satisfaction did not differ among the different provider types (Jeanmonod et al., 2013). Thus, these two fast track studies have provided evidence that patients are satisfied with PAs in the fast track area of the ED and suggested no attitudinal difference between PAs and physicians/residents.

Patient acceptance and satisfaction with PAs in trauma centers have also been researched recently. In a study by Nyberg and colleagues (2010), instead of surveying patients, directors of major trauma centers in the U.S. were surveyed in order to gather information regarding PAs/NPs' responsibilities in trauma and the resulting patient satisfaction (Nyberg, Keuter, Berg, Helton, and Johnston, 2010). Results demonstrated that trauma patients are generally satisfied with the care provided by PAs/NPs, from the director's perspective. Furthermore, another study tested patient satisfaction by using

telephone surveys to trauma patients within 4 weeks of hospital discharge (Berg, Crowe, Nyberg, & Burdsal, 2012). This study analyzed 251 completed surveys and found that patient satisfaction was based on specific factors, including interpersonal care and technical care. Interpersonal care consists of PAs being "considerate, courteous, friendly, kind, likeable, pleasant, sensitive, and sympathetic" (Berg et al., 2012, p. 43); whereas; technical care reflects PAs being "skillful, experienced, efficient, accurate, competent, educated, and thorough" (Berg et al., 2012, p. 43). Interpersonal care was most valued in regards to patient satisfaction (Berg et al., 2012).

In short, PAs receive high degree of patient satisfaction in primary care and can provide comparable medical services as physicians. Furthermore, several investigations of patient satisfaction in two specific areas of the ED, fast track and trauma, demonstrated that a majority of patients are satisfied with PAs in those settings. Physician assistants in the ED provide high quality of interpersonal care as well as technical care. However, all the results are based on previous studies and no studies have been conducted in the Minnesota area.

Patient's Knowledge of the Role of a PA

Based on the literature review, no studies have been conducted assessing patient's knowledge of the role of a PA in the ED. Only two surveys have evaluated how well patients are in identifying the scope of practice of their mid-level providers. The American Medical Association (AMA) surveyed patients in 2008 and 2010 and assessed their knowledge of the general qualification of the patients' medical providers: 26% of the patients identified nurse practitioners as medical doctors and 35% thought a doctor of nursing practice (DNP) was a medical doctor (AMA, 2011). In a different survey done

by the American Academy of Family Physicians in 2012, 72% of American patients indicated that they prefer physicians to conduct their medical care because they saw the physician as having more knowledge and experience then other medical providers (AMA, 2011). A significant lack of understanding in the role of medical professionals often prevents patients from obtaining the best medical care possible (Moran, 2014).

Based on these background surveys, more research on patient's knowledge of the role of a PA and level of patient satisfaction of seeing a PA in the ED is needed. Further research will not only educate patients about the care provided by a PA, but also improve the flow and efficiency of the health care system within the ED.

Conclusion

From this literature review, there has been research conducted on the role of the PA in the ED in conjunction with the role of the physician in the ED. Physician assistants have been found to be important team players in the healthcare system in that they perform similar tasks to their partnering physician and are well accepted by the medical community (Doan et al., 2011 & Mittman et al., 2002). Physician assistants also have been found to increase the quality of care and cost effectiveness in an ED setting, decrease the workload among physicians and the amount of moonlighting physicians, and carry minimal malpractice concerns (Sturmann et al., 1990). Lastly, PAs are well accepted by physicians in the ED with a high performance rating in patient education and history and physical exam (Elliott et al., 2007).

Physician assistants receive high degree patient satisfaction in primary care and can provide comparable medical services as physicians (Hooker et al, 2005; Hooker, et al, 1997). Furthermore, several investigations of patient satisfaction in two specific areas of

the ED, fast track and trauma, demonstrated that a majority of patients are satisfied with PAs in the ED (Berg et al., 2012; Counselman, et al., Jeanmonod, et al., 2013; Nyberg et al., 2010). Physician assistants in the ED provide high quality of interpersonal care as well as technical care.

There is a substantial gap in knowledge whether or not patients are satisfied with the care provided by a PA in the ED in Minnesota. Currently a gap in knowledge exists of whether or not patients understand the role of a PA in the ED. In addition, no studies about patients' knowledge of the role of a PA in the ED and its correlation to patient satisfaction have been done. By carrying out this study, a better understanding of patient satisfaction and patient knowledge of the role of a PA in EDs in Minnesota will be obtained. Furthermore, this study will investigate the level of patient satisfaction and if satisfaction is directly related to patient's understanding of the role of a PA in the ED.

Chapter Three: Methodology

Introduction

The purpose of this study was to determine and compare patient satisfaction after seeing a PA versus a physician in the ED. This study also assessed the patient's knowledge of the role of a PA in an ED setting. With this research, a better sense of awareness regarding the PAs in the ED and their value to the medical profession were provided to the field of medicine.

This study achieved its purposes by addressing the following research questions:

1. What is the level of satisfaction that patients report after being treated by a PA or a physician in the ED?

2. What is the level of knowledge of the PA role that patients have upon discharge in the ED?

3. What impact, if any, does the level of knowledge of the PA role have on patient satisfaction with a PA?

This chapter includes the following: study design, participants, methods of data collection, specific procedures, statistical methods, validity/reliability, and limitations.

Study Design

This is a prospective, descriptive survey study that was distributed to participants of Buffalo Covenant Church (BCC), located in Buffalo, MN. Due to the researchers not receiving enough surveys at BCC, an addendum included distribution to the researches friends/families, as well, in order to obtain statistical power (Appendix A). Based on previous studies, a survey is an ideal instrument to evaluate patient satisfaction of the participants' most recent ED visit (Al-Abri, R., & Al-Balushi, 2014).

Participants

The participants of this study included BCC members and friends/families, both men and women who were 18 years of age and older, those who were literate in English, and those without impaired cognitive abilities. Patients of vulnerable populations, including minors were not considered eligible for this study.

The goal of the sample size was to obtain at least 45-50 surveys in each provider group (PA vs. physician) in order to achieve statistical power, according to the statistical software MEDCALC Version 16.2.

Survey

This study utilized a modified survey with adaptions from a study of patient satisfaction of PAs in the ED conducted by Counselman et al. in 2000, with permission from Dr. Francis L. Counselman (Counselman, et al, 2000) (See Appendix B for original Counselman survey, Appendix C for approval to use Counselman survey and Appendix D for modified survey). Modifications to the original survey include:

1. Question 1: Designed to filter the participants who have been into the ED in the past five years, to better represent the population that will be surveyed.
2. Questions 8 and 9: Regarding the friendliness and respectfulness of the ED provider, respectively, to be congruent with this study's definition of patient satisfaction.
3. Question 11: A multiple-choice question to evaluate patient's knowledge of the role of an ED PA, to fulfill research question number 3: "What impact, if any, does the level of knowledge of the PA role have on patient satisfaction with a PA?"

4. Questions 2-7 and question 10 were adapted from Counselman's original survey (See Appendix B).

This survey consists of Likert scale (scale of 0 through 10, with 0 indicating not at all satisfied or unsatisfied, 5 indicating sometimes or somewhat satisfied, 10 indicating always or completely satisfied.) questions, one multiple choice question, one short answer question, and one select all that apply question (See Appendix D).

A paper survey without patient's identifiable information was utilized in order to collect the following:

1. Data of the most recent ED visit in order to filter the participants who have been into the ED in the past five years.
2. Data regarding the wait time before being seen by the ED caregiver.
3. Likert scale evaluation of satisfaction factors including how the patient was updated throughout their ED visit, how timely their questions and concerns were answered, the genuine concern of the ED caregiver in the health care of the patient, and the level of satisfaction, friendliness, and respect with the care the patient received from their ED provider.
4. Demographic information including age and sex with modifications to Counselman's original survey (see Appendix B).
5. Data conveying how knowledgeable the patient is in the role of an ED PA.

Methods of Data Collection

This study was reviewed and approved by the Institutional Review Board (IRB) at Bethel University (see Appendix E). As well, permission was granted by the elders of

BCC at the weekly staff meeting (see Appendix F). These reviews and approvals upheld the standards of the IRB.

This research survey was administered to participants of BCC after the 8:00 a.m., 9:30 a.m., and 11:00 a.m. services for two Sundays. Paper surveys were also distributed to researchers' family members and friends. A written announcement was added into the bulletin on each Sunday of data collection. The bulletin was distributed prior to the start of the service informing the congregation of the purpose of this research. The bulletin was read before the service. The congregation also had a chance to read the bulletin announcement before the start of each service (see Appendix G for Bulletin Insert and Appendix H for BCC Approval to Use Bulletin Insert). The pastor of BCC also gave a verbal announcement during the service. In order to collect the surveys for data analysis, the researchers set up a table next to the coffee bar in the commons at BCC. At this location, the researchers of this study distributed the consent form and survey to each participant that volunteers. Each participant completed his/her survey along the coffee bar. The completed surveys were placed into a secure folder by the researchers of this study to uphold confidentiality. Each survey included a statement of informed consent in order to fully explain the purpose of this study to the participants (see Appendix I). Participation in this study was voluntary. Each participant was notified that completion of the survey indicated that they agreed and gave informed consent to participate in this study. Participants could stop completion of the survey at any time.

For the data collection, the survey responses were filtered by the researchers to remove any surveys that did not meet the participant selection criteria based on question 1 and 10 of the modified survey (see Appendix D). Surveys that were discarded are due

to the following exclusion criteria: minors (under 18 years of age), and most recent ED visit greater than 5 years prior. Surveys were discarded if participants missed question 2: "In your most recent visit, were you taken care of primarily by" and/or missed more than 30% of questions.

For the security of the participants, no survey questions addressed personal or identifiable patient information leading back to the identity of the participant. After survey analysis, all paper surveys were shredded in a confidential shredder and the data was saved on a jump drive at Bethel University PA program's secure storage space. Access to data will only be available to the researches, research chair, and the research committee. All members will uphold confidentiality.

Statistical Methods

The Likert scale evaluation of patient satisfaction factors was established (0-10, with 0 indicating not at all or unsatisfied, 5 indicating sometimes or somewhat satisfied, 10 indicating always or completely satisfied). Each Likert scale question was averaged across all subjects who meet the inclusion criteria by using analytic statistical software, SPSS. The demographic information was used in order to analyze any possible differences in patient satisfaction amongst the different age groups and different genders. Descriptive statistical analysis, including mean and standard deviation, were performed. These averages allowed for simple analysis of data regarding overall satisfaction as well as reporting mean and mode of each patient satisfaction factor.

Question 9: "patient's knowledge of an ED PA's role" is a novel question developed by the researchers' of this study. This question was reviewed in order to determine the level of knowledge the patient has. The scoring criterion was scored based

on the amount of correct and incorrect answers that patients checked regarding the scope of practice of the PA. Each correct answer will score one point and incorrect answer will score zero points. Correct answers included correctly checked true statements and correctly unchecked false statements. Since there are eight questions, participants' scores were range from 0/8 (0%) to 8/8 (100%). Knowledge level was determined based on the percentage of correct questions answered. Due to this being a novel question, the knowledge levels constructed by the researchers are listed below:

High knowledge: >74%

Medium knowledge: 50%-74%

Low knowledge: <50%

Finally a correlation analysis was performed between question 7 (overall satisfaction score) and question 11 (knowledge score) to determine if patient satisfaction is related to the level of patient knowledge of an ED PA.

Validity/Reliability

Reliability was determined by getting the modified survey reviewed and approved by an expert panel consisting of elders of BCC. The expert panel was comprised of men and women over the age of 18 years old. The members of this panel were chosen to represent the populations that will be studied in this research. Reliability and validity of questions 2-7 and 10 was measured by utilizing a previously designed patient satisfaction survey from a published peer reviewed journal (Counselman, Graffeo, & Hill, 2000). Validity and reliability were also upheld in that every participant at BCC was given the same survey in the same manner.

Limitations

In this research, the participant group was not representative of the universal view of patients regarding PAs. General understanding by participants of the questionnaire may be a limitation based on a patient's education background, language, and literacy level. According to Counselman's study (2000), the control of these limitation factors was not indicated. This study did not include urgent care or fast track in the definition of the ED. Full participation in the survey was not expected and did not capture the entire patient base of EDs in the Minnesota area. Lastly, memory may be skewed because we are asking patients to recall an ED visit that may be as long as 5 years ago.

Conclusion

In conclusion, the current survey-based study attempted to gain knowledge of how different factors affect patient satisfaction, patient knowledge of the role of an ED PA, and the correlation between the two. Although there are limitations to this research, the survey is valid and reliable in accordance to the research questions. In the following, chapter four will analyze the data collected.

Chapter Four: Results

Introduction

The intent of this study was to determine and evaluate patient satisfaction after being seen by a PA and a physician in the ED. Also, patient knowledge of the role of a PA in the ED was assessed, as well as the possible correlation between patient knowledge of an ED PA and patient satisfaction with the PA. A total of 102 copies of the survey were collected from BCC and the researchers' friends/family. Among all the surveys, 91 copies, which met the data selection criteria, were utilized for data analysis. Eleven copies were discarded due to the following reasons: patient was seen in urgent care (1 copy), patient was not seen in the last five years (1 copy), unclear provider (3 copies), and parents filled the form for children/minors (6 copies). The analytic statistical software, SPSS, was used for data analysis. Each question on the paper survey was examined individually and discussed in the following chapter. Tables along with figures are used to display the data.

Analysis of Patient Demographics

The demographic information of 91 surveys from BCC and from the researchers' friends/family in the Minnesota area were analyzed by SPSS. Of these patients, 44 were female and 47 were male (Table 1). In this sample, 8 females and 14 males were seen by PAs, and 36 females and 33 males were seen by physicians (Table 1). The average age of participants seen by PAs was 46.68 years old (SD=20.36) with the range from 19-87 years old whereas the average age of participants seen by physicians was 51.89 years old (SD=18.22) with the range from 22-88 years old (Table 1). Overall, the average age was 50.59 years old (SD=18.80) with the range from 19-88 years old (Table 1). Three

participants did not report their age. All these surveys were used for analysis since they met the criteria of useful data (see method section).

Table 1. Demographics of the 91participants surveyed.

	PA	Physician	Overall
Female	8	36	44
Male	14	33	47
Average Age	46.68	51.89	50.59
Standard Deviation	20.36	18.22	18.80
Range	19-87	22-88	19-88

Descriptive Analysis of Patient Satisfaction Questions

The average patient satisfaction level and standard deviation, in regards to PAs and physicians, of questions four through nine were analyzed for this study. The average patient satisfaction level of question four (updated throughout visit) was 7.79/10 (SD=1.94), question five (concerns addressed in timely manner) was 7.77/10 (SD=1.87), question six (how genuinely concerned ED caregiver was) was 8.12/10 (SD=1.74), question seven (overall satisfaction) was 8.00/10 (SD=1.81), question 8 (friendliness of ED caregiver) was 8.34/10 (SD=1.53), and question nine (respectfulness of caregiver) was 8.42/10 (SD=1.63) (Table 2 and Figure 1). As these results indicated, patients are overall satisfied with their ED visits with PAs and physicians regarding the factors above.

Table 2. Analysis of average satisfaction score and standard deviation overall, in regards to PAs and physicians, for survey questions 4-9.

	Q4	Q5	Q6	Q7	Q8	Q9
Mean	7.69	7.77	8.12	8.00	8.34	8.42

Standard Deviation	1.94	1.87	1.74	1.81	1.53	1.63

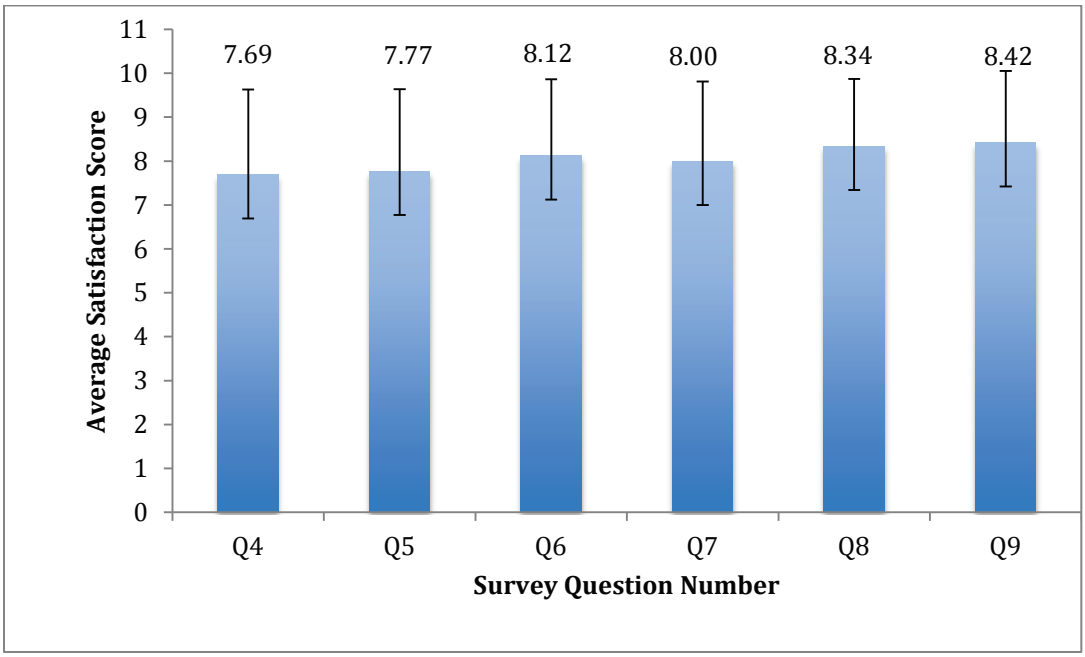

Figure 1. Responses from survey questions 4-9 overall, in regards to PAs and physicians, with average satisfaction score and standard deviation.

Furthermore, the average patient satisfaction level and standard deviation in regards to the same questions were analyzed separately by provider types (i.e. PAs and physicians). For patients seen by PAs, the average satisfaction level of question four (updated throughout visit) was 7.95/10 (SD=1.46), question five (concerns addressed in timely manner) was 8.00/10 (SD=1.45), question six (How genuinely concerned ED caregiver was) was 8.59/10 (SD=1.62), question seven (overall satisfaction) was 8.27/10 (SD=1.86), question 8 (friendliness of ED caregiver) was 8.82/10 (SD=1.01), and question nine (respectfulness of caregiver) was 8.91/10 (SD=1.07) (Table 3 and Figure 2). As these data suggested, patients were satisfied with their ED visits with PAs.

Table 3. Analysis of average satisfaction score and standard deviation in regards to ED **PAs** for survey questions 4-9.

	Q4	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**
Mean	7.95	8.00	8.59	8.27	8.82	8.91
Standard Deviation	1.46	1.45	1.62	1.86	1.01	1.07

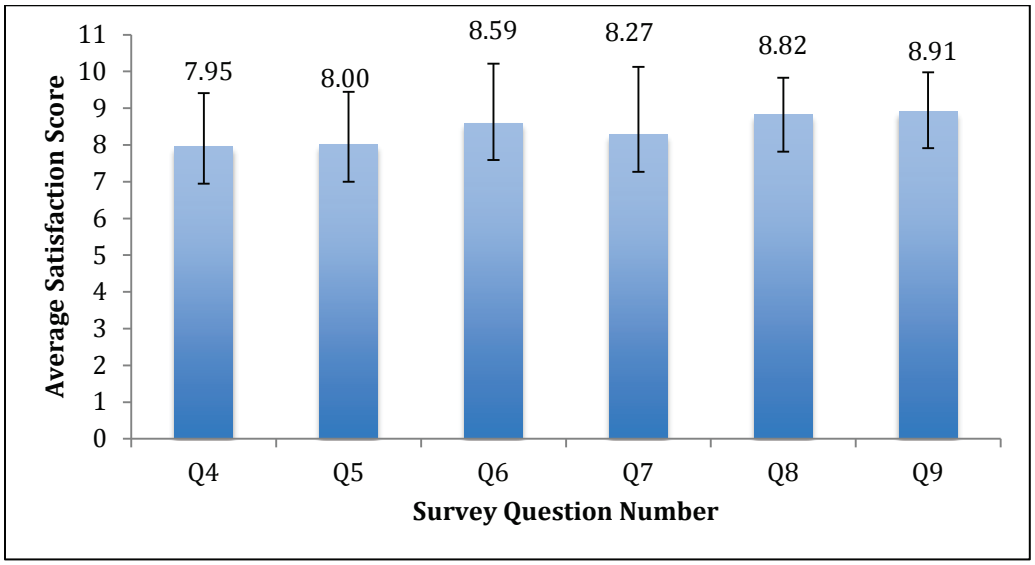

Figure 2. Responses from survey questions 4-9 in regards to ED **PAs** with average satisfaction score and standard deviation.

For patients seen by physicians, the average satisfaction level and standard deviation demonstrated similar satisfaction levels. The average patient satisfaction score of question four (updated throughout visit) was 7.95/10 (SD=1.46), question five (concerns addressed in timely manner) was 8.00/10 (SD=1.45), question six (how genuinely concerned ED caregiver) was 8.59/10 (SD=1.62), question seven (overall satisfaction) was 8.27/10 (SD=1.86), question 8 (friendliness of ED caregiver) was

8.82/10 (SD=1.01), and question nine (respectfulness of caregiver) was 8.91/10 (SD=1.07) (Table 4 and Figure 3).

Table 4. Analysis of average satisfaction score and standard deviation in regards to ED **physicians** for survey questions 4-9.

	Q4	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**
Mean	7.61	7.70	7.97	7.91	8.19	8.26
Standard Deviation	2.07	1.99	1.77	1.81	1.64	1.75

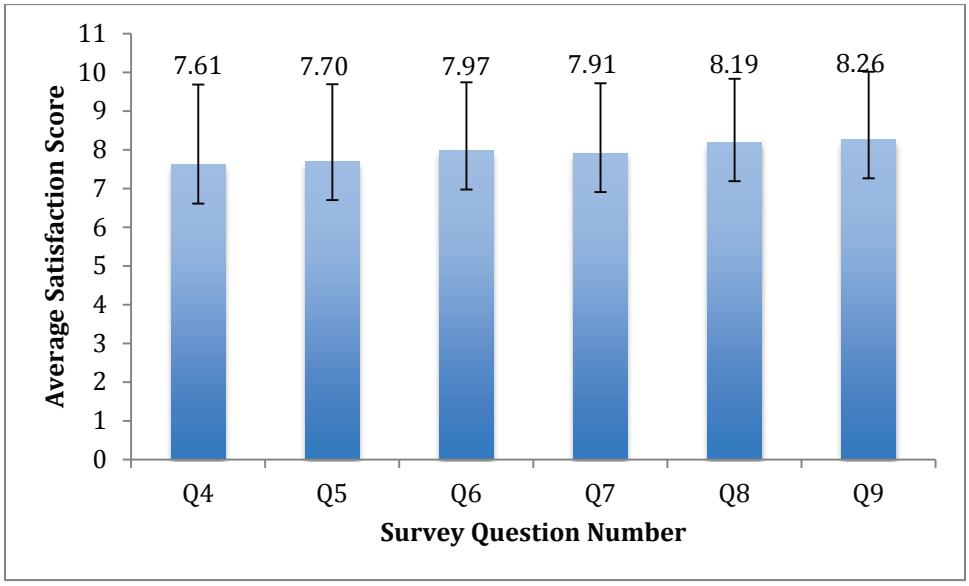

Figure 3. Responses from survey questions 4-9 in regards to ED **physicians** with average satisfaction score and standard deviation.

Comparison of Overall Satisfaction Towards Physicians and PAs

An independent t-test was used in order to compare the overall satisfaction level towards ED physicians and PAs. The results showed that the participants did not have a significant preference in regards to overall satisfaction level (question 7) between the two types of providers. The p value was greater than 0.05 ($p=0.48$).

Frequency Analysis of Wait Time

Patients' wait time in the ED for both provider types were summarized in the pie chart below. In this study, more than half of the surveyed population (64.80%) waited less than thirty minutes. Less than twenty percent of patients (18.8%) waited 31-60 minutes. Two smaller populations waited more than one hour (11.6%) and more than two hours (5.8%) (Figure 4).

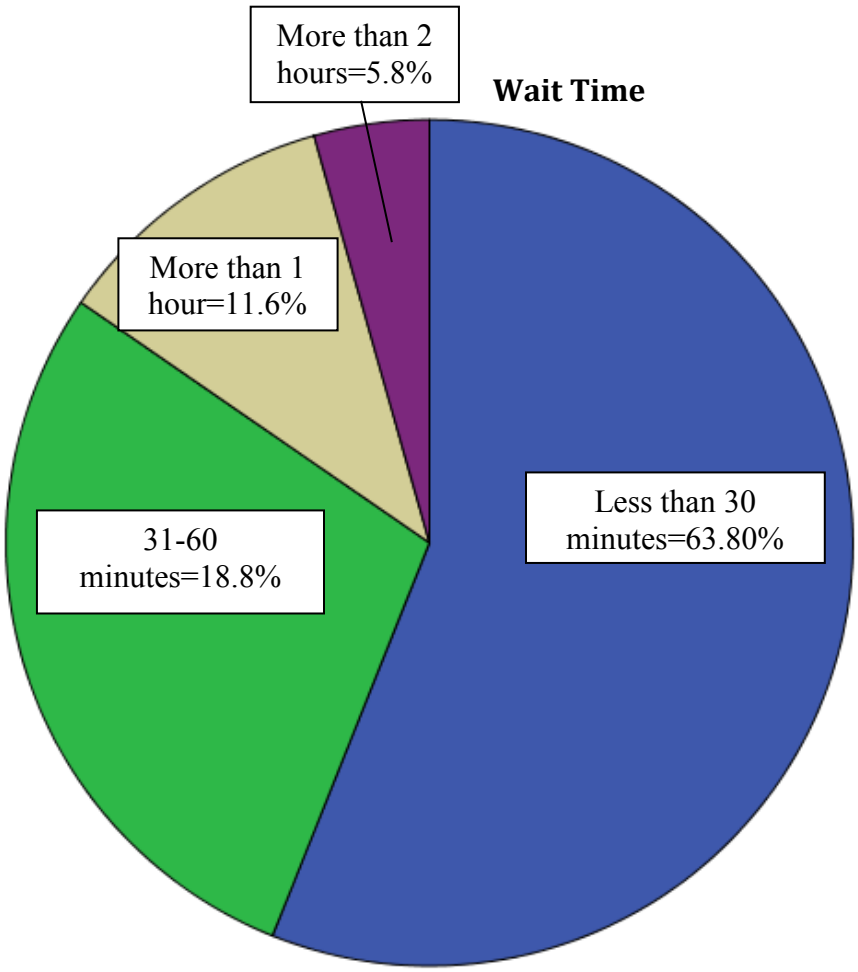

Figure 4. Pie chart of patients' wait time in ED for both types of providers.

Correlation Analysis Between Wait time and Overall Satisfaction

A correlation analysis between wait time (question 3) and overall satisfaction (question 7) was conducted in order to evaluate if wait time affects overall satisfaction. Since the data was not normally distributed, the Spearman's rho nonparametric correlation analysis was used. There is a significant negative relationship between wait time and satisfaction level (r_s= -0.50, $p < 0.01$).

Linear Regression Analysis Between Wait time (Question 3) and Overall Satisfaction (Question 7)

Since there was a strong negative relationship between wait time and satisfaction level, a linear regression analysis was conducted in order to further investigate if satisfaction level decreases as wait time increases. The results showed R^2= 0.33, indicating 33% of the satisfaction score is explained by the change in wait time (Figure 5). The p-value for the slope of the regression line is also significant ($p <0.01$) with the equation of y= -1.23x+10.01, indicating the linear relationship between wait time and satisfaction level. In other words, satisfaction level goes down when wait time increases (Figure 4). Figure 5 shows the strong negative linear relationship between satisfaction levels and wait time by individual participants.

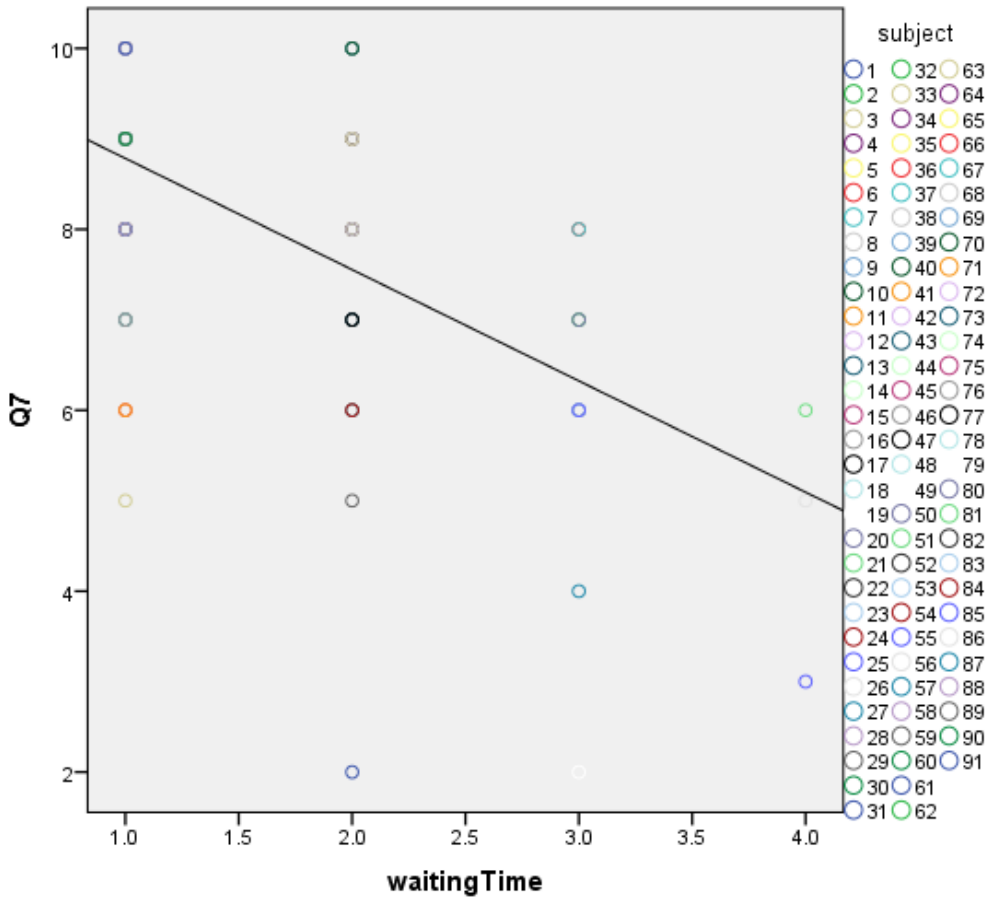

Figure 5. The linear regression analysis between overall satisfaction (Q7) and wait time (Q3) by individual participants: y= -1.23x+10.01. The colored dots may represent more than one subject.

Frequency Analysis of Survey Question 11 (Patient's Knowledge of the role of an ED PA)

In order to assess the participant's knowledge level of the role of an ED PA, a frequency analysis was performed for question 11. According to chapter 3, the knowledge levels constructed by the researchers are listed below:

High knowledge: >74%

Medium knowledge: 50%-74%

Low knowledge: <50%

Based on the grading criteria above, 49 out of the 91 participants scored >74%, suggesting a high knowledge level (Table 5). Twenty-one out of the 91 scored between 50%-74% and two out of the 91 participants surveyed scored <50%, showing medium and low knowledge level, respectively. However, there were 19 out of the 91 participants replied "I don't know" on this question, suggesting the absence of knowledge regarding the role of ED PAs (Table 5).

Table 5. Frequency analysis and percentage of the participants knowledge score of the role of an ED PA.

	Frequency	**Percent**
High Knowledge (>74%)	49	60.00%
Medium Knowledge (50%-74%)	21	20.00%
Low Knowledge (<50%)	2	1.90%
I Don't Know	19	18.10%
Total:	91	100%

Correlation Analysis Between Overall Satisfaction (Question 7) and The Participant Knowledge Level of the Role of an ED PA (Question 11)

In order to answer research question number three that states, "what impact, if any, does the level of knowledge of the PA role have on patient satisfaction of a PA?" a correlation analysis was used to assess the relationship between overall satisfaction level (Question 7) and knowledge level of ED PA (Question 11) within participants seen by PAs (N=22). Since the data was not normally distributed, the Spearman's rho nonparametric correlation analysis was used. The results showed that there is marginal significance between participants' knowledge of the role of an ED PA (Question 11) and their overall satisfaction level (Question 7) ($p = 0.06$).

Analysis of Gender Differences

To investigate the gender differences and overall satisfaction level (Question 7) of being seen by a physician and PA, a descriptive analysis was performed. Overall, females had an average score of 8.22/10 (SD=1.46) and 8.13/10 (SD=1.55) towards physicians and PAs, respectively, whereas males had an average score of 7.58/10 (SD=2.09) and 8.36/10 (SD=2.06) towards physicians and PAs, respectively (Table 6). Again, these data demonstrated that both females and males have high satisfaction levels for PAs and physicians in the ED.

Table 6. Analysis of gender difference towards PA, physicians, and overall participants surveyed. With average overall satisfaction level and standard deviation in parentheses.

	PA	Physician	Overall
Female	8.13 (1.55)	8.22 (1.46)	8.20 (1.46)
Male	8.36 (2.06)	7.58 (2.09)	7.81 (2.09)

Within the participants seen by **PAs** in the ED, an independent t-test suggested that females and males are overall equally satisfied during their visits (p= 0.77). Interestingly, within the participants seen by **physicians** in the ED, an independent t-test demonstrated that females were overall significantly more satisfied than males (p= 0.04). The average overall satisfaction score for females and males were 8.22/10 (SD=1.46) and 7.58/10 (SD= 2.09), respectively.

Analysis of Age Differences of Overall Satisfaction Level (Question 7)

In addition to gender analysis, a frequency analysis was also performed between age differences and the overall satisfaction level (Question 7) reported after being seen by

both types of providers. The age groups were defined by the researchers of this study are as followed (Table 7):

Group 1 (19-29 years old, 14.29% of all participants, same as below)

Group 2 (30-39 years old, 17.58%)

Group 3 (40-49 years old, 20.88%)

Group 4 (50-59 years old, 14.29%)

Group 5 (60-69 years old, 12.09%)

Group 6 (70-79 years old, 7.69%)

Group 7 (80-89 years old, 9.89%)

Group 8 (No age reported, 3.30%)

In order to discover if there are differences in satisfaction levels between the eight age groups, with the data being normally distributed, a one-way ANOVA was performed. Results proposed that there are no significant attitudinal differences between the defined age groups ($p= 0.10$). According to figure 6, the overall satisfaction level was above a 6/10 for all age groups.

Table 7. Frequency between the different age groups of all the participants surveyed.

Group Number	Age Range	Frequency	Percentage
1	19-29 years old	13	14.29%
2	30-39 years old	16	17.58%
3	40-49 years old	19	20.88%
4	50-59 years old	13	14.29%
5	60-69 years old	11	12.09%
6	70-79 years old	7	7.69%
7	80-89 years old	9	9.89%
8	No age reported	3	3.30%
Total Participants	19-88 years old	91	100%

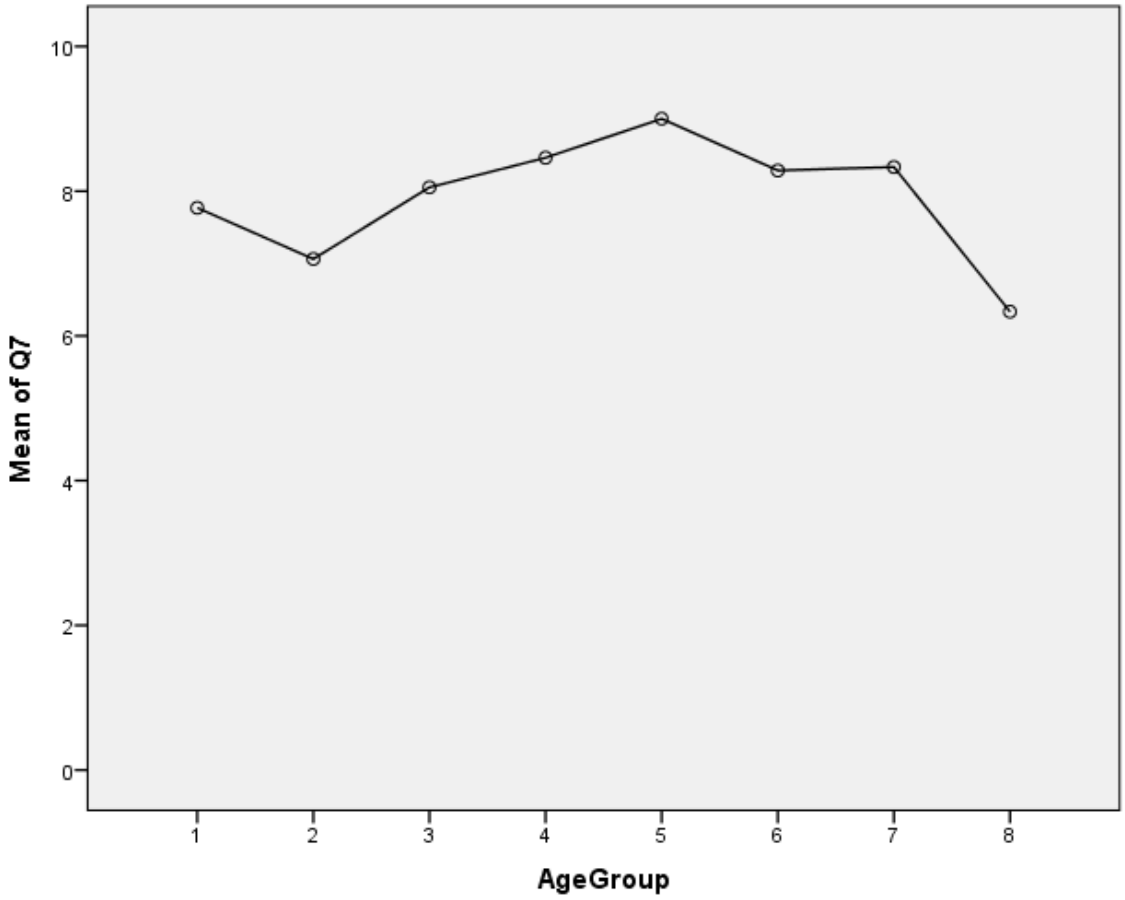

Figure 6. Overall satisfaction level between the different age groups of all the participants surveyed.

Conclusion

According to the analysis of 91 copies of the survey, patients showed high satisfaction levels to both ED PAs and physicians. There are no significant attitudinal differences between two types of providers. Results also suggested a significant negative relationship between wait time and satisfaction. In other words, patients who waited longer in the ED reported lower satisfaction level overall. In addition, there is marginal significance between participants' knowledge of the role of an ED PA and their overall satisfaction level. Age and gender differences were also analyzed in this study.

Chapter Five: Discussion/Conclusion

Introduction

The major goal of the current study was designed to analyze patient satisfaction between ED physicians and PAs. Furthermore, correlations were studied between wait time and patient satisfaction level. Patient's knowledge of the role of an ED PA and possible influence on the level of patient satisfaction were also analyzed. In addition, gender and age differences were performed in order to obtain a better understanding on if these demographic factors could alternate patient satisfaction levels. This chapter contains a summary and discussion regarding the data analysis found in chapter 4, limitations of this study, and recommendations for future research.

Factors Defining Patient Satisfaction and Corresponding Patient Satisfaction

Survey questions four through nine relate to the factors defining patient satisfaction that were analyzed in this study. The following factors defining patient satisfaction include being updated throughout the ED visit, having concerns addressed in a timely manner, how genuinely concerned the ED provider was, overall patient satisfaction, the friendliness of the ED provider, and the respectfulness of the provider. Results showed that patients have high satisfaction levels toward both ED PAs and physicians overall, with average scores higher than 7.5/10 for each factor. Further analysis suggested no significant difference favoring either PAs or physicians in the ED. This data is consistent with the researchers' prediction and shows that patients are satisfied after being treated by a PA or a physician in the ED. These results are also consistent with previous literature, suggesting that PAs are well accepted in the ED and

receive a high degree of patient satisfaction (Hooker et al., 1997; Hooker, Cipher, & Sekscenski, 2005; Counselman, Graffeo, & Hill, 2000; Jeanmonod et al., 2013).

Wait Time and Patient Satisfaction

Previous research shows that shorter wait times are congruent with a higher level of patient satisfaction (Ducharme et al., 2009). Not surprisingly, the data analysis of this research supports this prior study, and the correlation between shorter wait times and increased patient satisfaction.

The Spearman's rho nonparametric correlation revealed an r_s-value of -0.50, which would be parallel to a P-value of < 0.01. This significant negative relationship prompted further analysis and thus a linear regression was done to evaluate if shorter wait times signified higher patient satisfaction. The linear regression yielded $R^2 = 0.33$, demonstrating that patient satisfaction scores are influenced by wait time by 33%. This linear regression showed that as wait times became shorter, the satisfaction levels increased. Again, reducing wait time and thus increasing patient satisfaction levels might reflect the significance of having PAs working in the ED. Further research is needed to evaluate if adding PAs in the ED would reduce the average workload of each provider and subsequently reduce patients' wait time.

Patient's Knowledge of the Role of an ED PA

Patient's knowledge of the role of an ED PA was a novel part to this survey and thus specific terms and values were established by the researchers (High knowledge; >74%; Medium knowledge: 50%-74%; Low knowledge: <50%). According to the survey responses by participants and data analysis, over 50% of the surveyed population was highly knowledgeable regarding the role of an ED PA and less than 2% displayed

low knowledge. These statistics support the evolution of the PA profession and the more profound presence of PAs in the ED. It is important to also note that 18% of participants answered, "I don't know" what the role of an ED PA is. The patient knowledge of ED PAs is clearly still an area of improvement in the medical field and is an opportunity for patient education by PAs.

Correlation Between Patient's Knowledge of the Role of an ED PA and Patient Satisfaction

The Spearman's rho nonparametric correlation analysis was used in this section of the study to determine any relationship between the overall satisfaction level and the patient knowledge level of an ED PA. The P-value was 0.06, indicating a marginal significance between the patient level of knowledge of the ED PA role and patient satisfaction with a PA. In order to achieve statistical significance, a larger ED PA patient population would need to be surveyed. Researchers in this current study hypothesized that patients who have a better understanding of the general role of an ED PA might demonstrate a higher degree of satisfaction. The interpretation here is that if patients lack the knowledge or assume ED PAs have other roles, their expectations might be violated and may not even follow the instructions of the PAs and thus lead to lower satisfaction levels. There is no previous literature assessing the relationship between patients' knowledge and satisfaction level, as this is a novel part of this study. Further studies are warranted in finding possible significant influence between knowledge of ED PAs and patient satisfaction level. Patient education can be performed to expand their knowledge toward PAs in the ED.

Other Analysis

The demographic information in the survey was used to validate that participants qualified to participate in the survey. In data analysis, the demographics were used to determine if there was any correlation between patient satisfaction and different age groups and genders. This statistical analysis was carried out to fulfill research standards.

Among the 91 participants, 44 were female and 47 were male. When analyzing the populations that were cared for by an ED physician versus a PA, gender did not play a significant role in the level of patient satisfaction between the two providers. An independent t-test on the participants seen by an ED PA produced a P-value of 0.77, suggesting an equal level of satisfaction between males and females. Interestingly, the same independent t-test produced a P-value of 0.04 in analysis of the participants seen by an ED physician. This result yielded females as overall significantly more satisfied with ED physicians than males.

The other participant demographic that was analyzed was the different age group of participants. The average age of participant in this study was 50.59. For statistical analysis, the participants were divided into 8 different age groups, with the eighth being no age reported. The one-way ANOVA test revealed a P-value of 0.10, denoting no significance in age as a factor determining patient satisfaction. An intriguing finding showed that the three participants that did not report an age had the lowest average level of patient satisfaction amongst all of the age groups. Overall, demographic factors such as gender and age do not seem to play important roles in determining satisfaction level, as the researchers expected.

Limitations

In order to obtain a large enough participant population, the researchers extended the survey timeframe to any person who had visited an ED in the last five years. One limitation to this study is recall bias. Due to the limitations of research time and resources, responses of each participant's ED visit were recalled from as far as five years prior. In order to reduce the recall bias, research questions were defined carefully and modified based on Counselman's previous study (Counselman et al., 2000). The validity of the responses was taken at face value and could have been compromised in the data analysis, through human error of the researchers during imputation of the data.

Another limitation to this research was the definition that was placed on the ED. In this study, the ED did not include fast track or urgent care. It is possible that participants completed the survey assuming that they visited an ED, when in reality it was a fast track or urgent care setting.

The results of this research cannot be applied to the universal population due to the sample size taken. As well, because most of the surveys were collected from members of BCC, the demographics are specific to one type of population that lacked diversity in race, age, and beliefs. In order to achieve statistical power, at least 45-50 surveys would need to be collected per provider. Ideally upwards of 100 participants per provider type would have been surveyed to more accurately represent a larger population. A larger demographic, including a multitude of different population types would also have improved accuracy of this research.

Recommendations for Further Research

There are recommendations that can be made if this research is ever to be repeated. The population size should be increased to account for statistical power. The participants should be from varied groups, without one overweighing another, in order to better represent the universal population.

Furthermore, if this study were to be duplicated the research setting should ideally be in a hospital. This would more accurately represent satisfaction levels of patients immediately after being seen by an ED physician or PA. This would aid in eliminating the memory limitation of participants. As well, this change would eliminate any confusion between an ED, fast track, and urgent care. This stricter control would lead to more accurate survey responses and statistical analysis.

Conclusion

Based on the collected data in this study, there is no significant difference in the level of patient satisfaction reported between ED physicians and PAs. Participants revealed on average a 7.5/10 on all of the following factors determining patient satisfaction in this study: being updated throughout the ED visit, having concerns addressed in a timely manner, how genuinely concerned the ED provider was, overall patient satisfaction, the friendliness of the ED provider, and the respectfulness of the provider. These high levels of patient satisfaction were reported equally amongst ED physicians and PAs, revealing that patients are pleased with their level of care with both ED physicians and PAs. The correlation between wait time and patient satisfaction was significant in this research and supported past research that shorter patient wait times

resulted in high levels of patient satisfaction. Patient satisfaction scores were influenced by wait times by 33% in this research.

The level of patient's knowledge of the role of an ED PA and possible influence on the level of patient satisfaction was novel research in this study and the results could not concretely support the authors' hypothesis. There was marginal significance between patient's knowledge of ED PAs and the subsequent level of patient satisfaction due to the small participant population. Although the researcher's hypothesis that a higher level of patient knowledge of ED PAs would yield higher levels of patient satisfaction, it was shown through another part of the survey that over 50% of participants are highly knowledgeable regarding the role of ED PAs. This is promising in the current growth and utilization of PAs in the ED field.

Furthermore, demographical information was analyzed in this study to determine any significance between age or gender and patient satisfaction of ED physicians and PAs. The results of this study yielded no reportable correlations between age and the level of patient satisfaction or gender and the level of patient satisfaction between ED physicians and PAs. It was noted that females were more highly satisfied with their level of care by physicians over males. Again, the sample size of this study would need to be greatly increased in order to obtain more significant results.

The population of the participants in this study was gathered from a single location, severely limiting the results in terms of representing the universal population. As well, the sample size was small, putting restrictions on the results and their statistical significance. In order to obtain enough participation for analytical power, the time period of each ED visit was extended out to any ED visit within five years. This limitation

prevented participants from accurately recalling pertinent information regarding their ED visit. In this research, the authors' defined the ED not included fast track or urgent care; it is possible that participants completed the survey as an ED visit when in reality it was either fast track or urgent care.

Because a significant portion of this study included a novel instrument regarding patient level of knowledge of an ED PA and correlating patient satisfaction levels, there was no supporting or previous research done. There was no relevant information from the literature review to compare this study to in terms of the level of patient knowledge of an ED PA and corresponding levels of patient satisfaction. Previous literature review done regarding patient knowledge of an ED PA has not been conducted, however, general knowledge of medical professionals and their role, including mid-level providers, has been briefly studied (AMA, 2011). Thus, there is also no supporting evidence that can be deduced between the level of knowledge of an ED PA found in this study versus previous research.

Literature review regarding overall patient satisfaction did parallel the results of the research on overall patient satisfaction in this study. Similar results in 2005 suggested that PAs were rated as favorable as physicians, with they're being no difference in satisfaction between each of the different providers (Hooker, Cipher, & Sekscenski, 2005). This research concluded that participants had no preference in provider type when being cared for in the ED in terms of being updated throughout the ED visit, having concerns addressed in a timely manner, how genuinely concerned the ED provider was, overall patient satisfaction, the friendliness of the ED provider, and the respectfulness of the provider.

The researchers have validated that patients are satisfied with their level of patient care between ED physicians and PAs. It has also been shown through this research that participants are highly knowledgeable in the role of an ED PA. In further studies, the knowledge level of patients on the role of an ED PA and their corresponding level of patient satisfaction needs to be researched, as this was not able to be correlated in this current study due to sample size and subsequent marginal significance. Further studies should ideally be performed in a hospital ED setting in order to more accurately capture the goals of this research: to determine and compare patient satisfaction after seeing a PA versus a physician in the ED, patient knowledge of the role of a PA in an ED setting, and the impact that the level of knowledge of the role of an ED PA has on patient satisfaction.

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APPENDIX A

IRB Addendum

Researchers: Brittany Geditz, Yu Guan, Lauren Lahr
Research Addendum

Patient Satisfaction of Physician Assistants and Physicians in the Emergency Department

ADDENDUM: The above researchers will be making a change to their subject population in the current research project called: "Patient Satisfaction of Physician Assistants and Physicians in the Emergency Department". The researchers collected seventy surveys in the first attempt of data collection at Buffalo Covenant Church at Buffalo, MN (see methodology in Chapter 3). In order to make their research statistically significant, the researchers will be extending the paper survey to their friends and family. The extended data collection anticipates thirty additional subjects. Each family member or friend will be contacted by a phone call or text message and will be meeting in person to obtain the consent form and take the paper survey. Original methodology will be used in order to maintain anonymity of this research. The researchers will collect data for a total of 7 consecutive days.

APPENDIX B

Original Counselman Survey

Thank you for taking a moment to complete this patient satisfaction survey. We appreciate your opinion as we continually try to improve our service.

1. Today, I was taken care of primarily by a:
   a. Physician (MD)
   b. Physician Assistant (PA)
   c. Both
   d. Not sure

2. I was here between:
   a. 11am-2pm
   b. 2pm-5pm
   c. 5pm-8pm
   d. 8pm-11pm

3. How long was your Emergency Department visit overall ?

   a. Less than 30 minutes
   b. 31-60 minutes
   c. 1-2 hours
   d. 2-3 hours
   e. More than 3 hours

4. How do you feel you were kept up to date on the status of your evaluation (ie, tests, x-rays, consultants, delays, etc.)?

   0_____10
   not at all always
   (Indicate response by placing an x along the scale)

5. Were your questions and concerns addressed in a timely manner?

   0_____10
   not at all always
   (Indicate response by placing an x along the scale)

6. Do you feel the fast track staff was genuinely concerned about your care and welfare?
   0_____10
   unsatisfactory completely satisfiec
   (Indicate response by placing an X along the scale)

7. How would you rate your satisfaction with the care you received by your primary care giver (ie, MD or PA)?
   0_____10
   unsatisfactory completely satisfied
   (Indicate response by placing an X along the scale)

8. Would you be willing to wait longer in the ER to be seen primarily by a Physician, rather than a Physician Assistant (PA)?
   Yes____ No____

9. If you answered yes to the above question, how much longer would you have been willing to wait to be seen primarily by a Physician?
   a. 30 minutes
   b. 60 minutes
   c. 90 minutes
   d. 120 minutes
   e. over 120 minutes

Please fill out the following information:

Age:_____ Sex: _____ Type of Health Insurance : HMO (ie, Optima) _____
Military (ie, Champus) _____ Medicaid _____ Medicare _____
Private (ie, BC/BS/ Travelers) _____ None _____

FIGURE 1. Fast track patient survey.

APPENDIX C

Approval To Use Francis Counselman Survey

Survey (2)

Counselman, Francis L. <CounseFL@EVMS.EDU> Jan 7 at 12:12 PM

To 'LLAHR11@yahoo.com'

Lauren
You have my permission to use the survey employed in my study evaluating patient satisfaction with PAs in the ED.
Good luck to you
Frank

Francis L Counselman MD, CPE, FACEP
EVMS Distinguished Professor of Emergency Medicine
Chairman
Department of Emergency Medicine
Eastern Virginia Medical School

Reply, **Reply All** or **Forward** | **More**

APPENDIX D

Modified Survey

1. **Have you been to the emergency department (excluding urgent care) in the <u>last "five (5) years"?</u>**
   a. Yes
   b. No. Thank you very much for completing this survey, please hand it in.

2. **In your most recent visit, were you taken care of primarily by a:**
   a. Physician (MD)
   b. Physician Assistant (PA)
   c. Not sure. Thank you very much for completing this survey, please hand it in.

3. **In your most recent emergency department visit, how long did you wait in the waiting room before being seen by your emergency department caregiver?**
   a. Less than 30 minutes
   b. 31 minutes- 60 minutes
   c. More than 1 hour
   d. More than 2 hours

<u>Please evaluate your visit by circling a number from 0-10 (with 0 being not at all and 10 being always) on the scales below:</u>

4. **Do you feel you were updated with how everything was going throughout your emergency department visit? (i.e., tests, x-rays, specialists, delays, etc.?)**

   0 1 2 3 4 5 6 7 8 9 10
   not at all sometimes always

5. **Were your questions and concerns addressed in a timely manner?**

   0 1 2 3 4 5 6 7 8 9 10
   not at all sometimes always

6. **Do you feel your emergency department caregiver (i.e., MD or PA-C) was genuinely concerned about your health concerns?**

   0 1 2 3 4 5 6 7 8 9 10
   not at all sometimes always

Please evaluate your visit by circling a number from 0-10 (with 0 being unsatisfied and 10 being completely satisfied) on the scales below:

7. **How would you rate your overall satisfaction with the care you received by your emergency department caregiver (i.e., MD or PA-C)?**

   0 1 2 3 4 5 6 7 8 9 10
   unsatisfied somewhat satisfied completely satisfied

8. **How would you rate the friendliness of your emergency department caregiver (i.e, MD or PA-C)?**

   0 1 2 3 4 5 6 7 8 9 10
   unsatisfied somewhat satisfied completely satisfied

9. **How respectful was your emergency department caregiver (i.e, MD or PA-C) overall during your visit?**

   0 1 2 3 4 5 6 7 8 9 10
   unsatisfied somewhat satisfied completely satisfied

10. **Please fill out the following information:**
    a. Age:_____
    b. Sex: Male _____ Female _____

11. **An emergency department physician assistant can _____ (Check all that apply)**
    - ☐ Prescribe medications
    - ☐ Diagnose illness
    - ☐ Practice independently
    - ☐ Evaluate test/lab results (e.g. x-rays, bloodwork)
    - ☐ Place stitches without supervision
    - ☐ Be considered the same as a nurse
    - ☐ Be considered the same as a doctor
    - ☐ Perform a general examination
    - ☐ I don't know

APPENDIX E

Bethel University IRB Approval

Wallace Boeve <w-boeve@bethel.edu> 7/27/16

to Yu, Brittany, Lisa, me

Lauren, Guan, and Brittany;

This email will serve as approval for your requested addendum to your study as noted and approved as Bethel University's IRB, Level 3. The PA program research coordinator, Prof. Lisa Naser, will keep this email and the attached in your research file.

Sincerely;

Addendum2.docx

APPENDIX F

Buffalo Covenant Church Permission Letter

Survey

barb@buffalocov.org Today at 9:14 AM

To llahr11@yahoo.com

Lauren –
Just letting you know that Pastor Max and I have looked over your survey and we've given you approval to use Buffalo Covenant Church as a location for you to distribute the survey with the members of our congregation. You can choose a Sunday that works best for you and let me know ahead of time so we can set things up for you on our end. We're happy to help you and your team out with this Lauren.

Barb Anderson
Executive Director of Building Operations
Buffalo Covenant Church
1601 Hwy 25 N
Buffalo, MN 55313

APPENDIX G

Bulletin Insert

Hello BCC!

It's Brittany Geditz, Yu Guan, and Lauren Lahr here. We are three physician assistant students from Bethel University, conducting research in partial fulfillment of the requirements for a Masters Degree in Physician Assistant Studies. Our study is investigating satisfaction of care provided by emergency department (ED) physician assistants and physicians. We are asking for your help in filling out a survey, if you are greater than 18 years of age and have been to the ED in the past five "5" years. **Please come to the table in the commons by the coffee bar after the service and we will be there with the surveys for you to fill out if you meet the two requirements above.**

The survey is voluntary and will take approximately 5 minutes. Individual responses will not be discussed; only group data will be analyzed. No identifiable information will be obtained and the survey will be kept strictly confidential.

We understand that your time is limited. Your participation is important to the success of this research and may increase patient satisfaction for others. The information that you provide is essential to this study. Thank you for your help!

Brittany Geditz
Yu Guan
Lauren Lahr

APPENDIX H

BCC Approval to Use Bulletin Insert

One Last Detail (3) People

Lauren Lahr <llahr11@yahoo.com> May 23 at 5:48 PM
To barb@buffalocov.org

Hello Barb,

We just have one last piece of information that we need approved by you before you can proceed with the IRB approval process through Bethel.

We need to have the bulletin insertion approved by you, which was crafted by my researchers and me. Please look at the bulletin paragraphs we have written below and please let us know of any changes you would like us to make to it. As soon as we receive the final draft of the bulletin insert, we can then add it as an appendix in our thesis and proceed with the approval process.

Just for your information, once you approve this bulletin it cannot change as we would then have to make an addendum in our research, so please make any changes you would like :) We appreciate BCC and yourself so much for helping us in our research.

Thanks again,

Lauren

Hello BCC!

It's Brittany Geditz, Yu Guan, and Lauren Lahr here. We are three physician assistant students from Bethel University, conducting research in partial fulfillment of the requirements for a Masters Degree in Physician Assistant Studies. Our study is investigating satisfaction of care provided by emergency department (ED) physician assistants and physicians. We are asking for your help in filling out a survey, if you are greater than 18 years of age and have been to the ED in the past five "5" years. **Please come to the table in the commons by the coffee bar after the service and we will be there with the surveys for you to fill out if you meet the two requirements above.**

The survey is voluntary and will only take approximately 5 minutes. Individual responses will not be discussed; only group data will be analyzed. No identifiable information will be obtained and the survey will be kept strictly confidential.

We understand that your time is limited. Your participation is important to the success of this research and may increase patient satisfaction for others. The information that you provide is essential to this study. Thank you for your help!

Brittany Geditz
Yu Guan
Lauren Lahr

barb@buffalocov.org May 23 at 8:04 PM
To 'Lauren Lahr'

Lauren –
The wording looks great to me. Once we decide on a date, we will use this exactly like it's stated below. I don't see any changes that need to be made.
-Barb

› Show original message

APPENDIX H

Consent Form

Hello Participants,

Thank you for taking a moment to complete this patient satisfaction survey. We are three physician assistant students from Bethel University, conducting research in partial fulfillment of the requirements for a Masters Degree in Physician Assistant Studies. Our study is investigating satisfaction of care provided by emergency department physician assistants and physicians.

On the backside of this paper is a 2-page survey to collect information to complete the data collection of this research. The survey can be completed voluntarily and will only take 5 minutes of your time. Individual responses will not be discussed; only group data will be analyzed. Your identity will be kept strictly confidential because no identifiable information will be obtained.

We understand that your time is limited. Your participation is important to the success of this research and may increase patient satisfaction for others. The information that you provide is essential to the validity of this study; however, your participation in this study is completely voluntary. If you have any questions, please contact Lauren Lahr at 763-807-3437, Brittany Geditz at 952-221-4776, Yu Guan at 865-292-4570, or research chair Lisa Naser at 651-635-8679.

By proceeding with this survey, you are implying consent to participate in this research. All answers will remain anonymous. We truly appreciate your participation in the on-going effort to increase patient satisfaction in the emergency department.

Sincerely,

Brittany Geditz
Yu Guan
Lauren Lahr