The Effects of Patient Expectation on Patient Perception

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ABSTRACT

A medical encounter's quality can be measured both objectively and subjectively. Subjective measures provide insight to the patient's experience. This experience can have many influential factors including patient perceptions and patient expectations. Hospitals are now required to publically report quarterly satisfaction rating or face decreased reimbursement (CMS, 2017). For emergency departments (EDs), that operate under time constraints with a diversity of medical and trauma presentations, building rapport and creating satisfied patients can be a challenge.

The introduction of a pre-visit expectation questionnaire to allow patients to provide a reason for why they have arrived to the ED, their perceived medical severity, and what they believe is medically appropriate, may help physicians better understand their patients' needs and lead to decreased length of stay. Half of the included survey participants were randomized into the control group (n = 117) that received only the post-visit satisfaction, and the second half was randomized into the experimental group (n = 113) that received both the post-visit satisfaction survey and pre-visit expectation questionnaire.

A one-way ANOVA analysis found no significant difference between the control and experimental groups (p = .952) and no statistically significant relationship for the within groups of actual length of stay and estimated (perceived) length of stay (p = .455). Due to the findings the control group and experimental group were pooled together for further analysis (n = 230). A Pearson correlation tested for the relationship between the study participants level of satisfaction with their provider and accuracy of perceived

length of stay, calculated by subtracting the reported estimated length of stay from the actual length of stay ($r = -.135$, $p = .043$).

As the level of satisfaction decreased with the provider the perception of length of stay was inversely effected. This implicated that the level of satisfaction with providers directly impacted the patient's perception of length of stay; which has previously been linked to overall reported satisfaction (Schoenfelder et al., 2013). Further investigations into provider qualities such as bedside manner, communication (Cooke et al., 2006) and demographic features (Toma et al., 2009) which have previously been linked to patient satisfaction may account for this significance.

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Introduction

Most people have found themselves at an emergency department (ED) at some time in their life, whether this visit was for themselves, a family member, or friend. In fact, 136.9 million individuals registered to be seen by an ED provider in the United States (US) in 2015 (CDC, 2015). In the decade previous to 2007 the growth rate for ED registration was almost double the population growth based prediction from 352.8 to 390.5 per every 1,000 persons; this trend is expected to continue (Tang et al., 2010). The ED is busy, and the number of patients attending the ED continues to increase and understanding the impact on patient healthcare outcomes has gained interest. So much so, quantifying and qualifying the quality of the ED visit has emerged as an area of interest in clinical research. Subjectively, the quality of care is assessed through patient reported satisfaction levels; it is proposed that aspects of the patient experience such as patient's perceptions and expectations, can impact the overall healthcare outcomes of the patient. It is unlikely however; provider knowledge of patient expectations will significantly impact the length of stay which is indicated by medical need; not by the healthcare customer's request. Demonstrating the difference between objective and subjective measurements used to assess the quality of the healthcare encounter. Although, the patient's total length of stay is most likely influential to the patient's reported level of satisfaction.

Traditionally, the quality of the healthcare encounter was assessed using objective measures, such as complication rates and mortality (Lateef, 2010; Shirley et al., 2013). In this newer approach, the quality is assessed through qualitative methods including subjective measures such as patient surveys or focus groups providing an insight to the patient experience (Watt et al., 2005; Lateef, 2010; Jain et al., 2017).

The patient experience is the collection of events and occurrences encountered across the continuum of care. Definitions of the patient experience can be ambiguous; with poorly defined patient experience factors. Occasionally factors are unidentified and excluded from a study considering the patient experience. To reduce the ambiguity of terminology related to the patient experience each term is individually defined.

Firstly, the patient's perceptions are formed based on what the patient experiences during their ED visit. Patient perception is what is recognized, understood, and remembered by the patients. Perceptions can vary depending on individual experiences such as beliefs, values, and cultural background (Wolf et al., 2014).

The second factor influential to the patient experience are patient expectations. In healthcare, patient expectations can be formed before, during, or after the visit, in anticipation of what is to come. Similar to patient perceptions, patient expectations can be based on the patient's level of understanding, cultural background, healthcare beliefs, and attitudes (Lateef, 2011).

Lastly, the patient experience influences the patient's level of satisfaction. Patient satisfaction is the individual's emotional reaction and cognitive evaluation of his or her healthcare experience (Shirley et al., 2013). Additionally, reported patient satisfaction levels can be used as an assessment tool for judging the quality of institutions and providers (Shirley et al., 2013).

There has been an increased interest in evaluating subjective aspects of healthcare, such as those mentioned above. This is evident through the increasing body of research found in a review for the twenty years prior to 2010 (Welch, 2010). The review also pointed out the global concern of the patient experience with research being

conducted from small rural located hospitals to large urban located level 1 trauma centers and different healthcare settings e.g. outpatient clinics, primary care providers (Welch, 2010). Clinical research on the patient experience has been conducted world-wide in Canada (Cooke et al., 2006; Watt et al., 2005), the United Kingdom (UK; Whiteley and Goodacre, 2014), Spain (Borras et al., 2001; Perez-Carceles et al., 2008), Switzerland (Björvell and Stieg, 1991), and the US (Karras et al., 2003; Toma et al., 2009; Kinney, 2005; Rhee and Bird, 1996; Wang et al., 2017).

In emergency medicine, emergency physicians are faced with an additional struggle not encountered by other medicine specialties. Unlike primary care physicians, emergency department providers are very unlikely to have built a previous patient rapport with their patients. Working in the ED also created a matter of urgency where there is a large complexity of presenting illness needing addressed in a short time.

The emphasis on patient-centered care comes from not just the patient or provider; in part the increase in clinical research of this topic comes from the need for self-assessment, compensation formulas, accreditation requirements, public policy reform, and aspects of customer service. More frequently the patient is viewed as a customer, consumer, or user of a healthcare service. In this viewpoint the retail aspects of the customer service experience and customer satisfaction are equivalent to the patient experience and patient satisfaction levels (Welch, 2010).

Patient-centered care has become a focal point in current and future goals of public policy. In the UK, the National Health Service (NHS), responsible for setting healthcare requirements views patients as consumers. In the NHS's 2017-2018 revision,

the organization continues to place the patient experience at the forefront of their future endeavors (DH, 2018).

The World Health Organization (WHO) is a specialized agency of the United Nations, whose primary role is to promote international health. In 2016, the WHO declared their new focus to be on people-centered health services, focusing on the needs of the community and people, no longer solely the disease (WHO, 2016; WHO, 2018).

Additionally, the federally regulated Centers for Medicare and Medicaid Services implemented the Hospital Consumer Assessment of Healthcare Providers and System (HCAHPS) survey, in 2006, to measure the patient's experience. With the release of publically reported scores in 2008, a national standard was set in place for collecting and reporting information; allowing for comparisons between hospitals and providers (CMS, 2017). In addition, reported scores are used to determine funding allocated and hospitals failing to collect, submit, and publicly report can potentially reduce the annual payment (FAQs, 2013; Kohring et al., 2018).

Dissatisfied patients have been found to be less likely to recommend a clinic to others, resulting in lost revenue. At an academic otolaryngology head and neck surgery outpatient clinic, a single question survey was used to assess the likelihood of the patient to recommend the provider to a family member, friend, or neighbor. They received a 25% response rate and a 67.3% net promoter score. Overall, there were 872 potential referrals. Based upon their findings a satisfied customer is likely to recommend the ED to 3 potential customers; whereas a patient with low satisfaction is likely to provide a bad report of their experience to 11 individuals equating to 11 lost referrals. Having as few as

7.6% of patients rating their experience as dissatisfactory can cost $2.3 million dollars in lost annual referral revenue for the outpatient clinic (Kinney et al., 2005).

Patients who rate their experience as excellent were found to more likely to recommend the hospital and more likely to return for future care needs. Eight hospitals were included in the study including 14,432 participants using a telephone-based survey 7-to-14 days post-discharge. The survey evaluated the overall quality of services and care experienced during the participant's hospital visit, the participant's willingness to return to the hospital, and the participant's willingness to recommend the hospital to family and friends on a five point Likert-type scale from 1 to 5 (excellent). The mean score for willingness to recommend the hospital was found to be 4.32 and the willingness to return to that particular hospital again was found to be 4.34. After obtaining mean score of the items, a score of 1 was assigned to all reported scores of 5 (excellent) on the survey; all other reported values were assigned to 0. Control variables considered for analysis included age, gender, and race. The mean age was 58.29 years old (Standard Deviation [SD] 17.21). Overall, 5,532 patients rated their experience excellent and 8,896 fell into the "other" category. Significant predictors of an excellent score were the admission process, physician care, staff care, food, room, and being of a younger age ($p < .0001$, Odds Ratio [OR] 0.992; 95% confidence interval [CI], 0.989, 0.995). Suggesting the healthcare community should strive not just for a satisfactory rating, but an excellent rating; where the patient feels their quality of care is above and beyond what was expected (Otani et al., 2009).

Although, patient satisfaction was not directly linked to increased risk management episodes, patient satisfaction was an indicator of whether a complaint would

be generated for a particular encounter. Patient complaint data came from Emergency Medicine Physicians, Ltd corporate headquarters complaint files, where 22% of the complaints were reported by the hospital customer service department, 30% of the complaints were from the local ED director, and 26% of the complaints were from Press-Ganey surveys and other unspecified sources. Mean quarterly physician satisfaction scores were compiled by Press-Ganey using Press-Ganey Physician Satisfaction instrument for Emergency Medicine. Participants included were those of 18 years of age or greater. In all, 3,947 physician quarters of practice data were analyzed totaling to 2,462,617 patient visits, of which 375 complaints with 61 risk management episodes occurred. Patients in the lowest quartile of satisfaction when compared to patients in the highest quartile of satisfaction were twice as likely to file a complaint against their healthcare provider (adjusted Odds Ratio [aOR] 1.84; 95% CI). Physicians that received two or more complaints in a single quarter were 4.13 times more vulnerable to a risk management episode. However, the complaints were not evenly distributed among physicians, a majority of complaints belonged to a small portion of physicians. Satisfaction in this study was not found to directly relate to risk management episodes. Instead, complaints were more strongly associated with risk management than other variables. Although, it is important to note there is a correlation between patient satisfaction and risk management episodes. These findings indicate something particular about these physicians and their practice of medicine put them at a higher risk for having dissatisfied patients (Cydulka et al., 2010).

A randomized controlled trial at a large teaching hospital assessed patient satisfaction and patient compliance for colorectal cancer patients who received treatment

at either an outpatient clinic or at home. In total the study included 87 patients, 42 patients were treated at an outpatient clinic and 45 at home. Satisfaction was assessed using a questionnaire including general satisfaction with healthcare received, continuity of care, availability of doctors, nursing availability (related to waiting times), and communication with medical staff. Voluntary withdrawal in the course of this study was considered as patient noncompliance. There were significantly more voluntary withdrawals from the outpatient treatment group than from the at home treatment group (14% vs 2% difference 12% [1% to 24%] 95% CI). Overall, the level of satisfaction was higher in the home treatment group compared to the outpatient treatment group. Perception of nurse availability of the patients attending the outpatient clinic compared to those who were treated at home believed they had longer wait times to receive their chemotherapy treatment. The findings in this study suggest a link exists between increased patient satisfaction and increased patient compliance; with a particularly strong correlation for patient satisfaction in relation to perceived wait times for treatment based on nursing staff availability between the treatment groups (Borras et al., 2001).

A relationship between bounce-back to a higher level of care within the first 30 days after hospitalization for an acute stroke and patient survival and costs over the following year has been identified. The identifying study included Medicare beneficiaries age 65 and older. Bounce back was considered as the movement from a less intensive care setting to more intensive care setting, defined as: hospital care setting, followed by emergency department care; then skilled nursing facility, rehabilitation center, long-term care; then home with healthcare; lastly home without healthcare at the lowest end of the spectrum. Decreased one year survival depended on the number of bounce backs within

the first 30 days; survival decreased significantly with each additional bounce back ($p < .001$). At one year 83% of the zero bounce back group was still alive, 67% of the one bounce back group, and 55% of the two or more bounce back group, respectively. The zero bounce back group survived 1.96 times longer than the group that experienced one bounce back in the first 30 days and 3.13 times longer than the group that experienced two or more bounce backs in the first 30 days. One year payments between the groups significantly increased with each added bounce-back. A patient with zero bounce backs in the first 30 days adjusted predicted payments ranged from $1,667 to $35,854. Payments ranged from $2,726 to $45,404 for patients that experienced one bounce-back, and those with two or more bounce-backs were expected to pay $3,753 to $53,766, respectively. Those with bounce-backs in the first 30 days are also more likely to die and have greater total healthcare payments over the subsequent year (Kind et al., 2008).

Despite monetary incentives, the focus of healthcare should remain on the health of the patient and not the bottom line, as such increased value for the patient should be the main goal in healthcare. This is the only valid reason for ethical reasons, increasing the number of positive healthcare outcomes, not the number of patient visits and costs to the patient (Lateef, 2010).

Patient Perceptions

Quality of the first encounter between a patient registered to be seen in the ED and hospital staff can be pivotal to the patient's perception of their care. A Swedish university hospital conducted a study over a four week period that included 260 participants. Study participants completed a questionnaire to evaluate perceptions of the care received. The overall perception of ED care received was positive, until these patients were sub-grouped. After patients explained their reason for coming to the ED to

ED staff, they were asked to classify the information they first received at registration into one of four choices: informed on exactly what was going to happen next, partly informed on what was going to happen next, no information was provided, but told me to sit down; and finally, let me pay, but said nothing. Among the four reported subgroups: 14% of patients received exact information, 20% were partially informed, and 66% percent received no information; no patients reported being allowed to pay, but received no information. The patients most satisfied with the general treatment, attitude, respect, attention, and contact with the healthcare providers were patients who received the most information at the time of arrival; demonstrating the importance of the quality of the first contact with hospital personnel in relation to patient satisfaction levels before the medical consultation had even begun (Björvell and Stieg, 1991).

A cross-sectional study at the ED of an urban-located teaching hospital in southeastern Spain included 300 participates over a three month period. Study participants included patients 15 years of age and older, with non-gynecological, non-obstetric complaints, and no cognitive deficits. After treatment and discharge from the ED a questionnaire was distributed to measure sociodemographic qualities, variables in the treatment received, and the patient's overall satisfaction. Variables related to the treatment received were assessed using a Likert scale from 1 to 5 (very good). A chart review was performed to obtain the door-to-doctor time; time between ED registration and seeing a provider. The data demonstrated that 90.4% of the participants received information as to why a test was performed, 68.3% received a reason for their discomfort, and 37% received a reason for their complications. In terms of received information 89.9% received information about medication dosages, 85.7% medication duration, and

53% medication side effects. A total of 98.3% of patients reported they understood their diagnosis, but only 37.7% of the participants could accurately provide a written answer that correlated to the diagnosis. The patients who felt the most satisfied with their visit were those who had received the most information about the complementary tests. A statistically significant relationship between patient satisfaction and perceived wait times was established, but not for actual wait times. A total of 42.3% of study participants considered they waited little time before being seen by a provider. Thirty-one participants (10.7%) from the study population thought they had an excessive wait time, of this group 67.7% were women and 32.3% where men ($p < .0001$). Although, medical records indicated there no difference between sexes for wait time before seeing a doctor. The mean actual wait time was 9.94 minutes (SD 5.2, range 1.1-17.9) and a high degree of agreement between perceived and actual times was demonstrated. Participants that rated ED service as excellent had waited less than 15 minutes and additionally reported little time was spent waiting. Overall, patients who waited less time were more satisfied. Interestingly, no significant difference was found between actual wait times and satisfaction. This study demonstrated the importance of patient perception in relation to patient satisfaction (Perez-Carceles et al., 2008).

Patients seen at a Midwestern university medical center's ED were contacted within 60 days of their visit for a telephone survey. Participants were asked to rate their experience on a 5-point scale from 1 to 5 (excellent). The questionnaire included an assessment of the overall service, physician technical performance, physician bedside manner, and registration clerk services. In all, 618 interviews were conducted. A significant relationship was found between overall satisfaction and physician technical

skills ($t = 5.33$, $p < .001$), registration ($t = 4.02$, $p < .001$), and time ($t = 2.83$, $p = .005$; $n = 603$). No significant relationship was demonstrated between overall satisfaction and physician bedside manner ($t = .365$, $p = .72$). Participants were also asked if they would recommend the ED and if they thought their service was timely. A positive correlation was found between recommendation of the ED and patient satisfaction variables (range = .40 - .12), the highest correlation was with overall service. The results suggested that the patient's perception of technical quality of care was more important than the perceived timeliness of care. In addition, the patient's perception of the technical quality of care was also more important than the bedside manner in determination of the patient's level of satisfaction (Rhee and Bird, 1996).

The academic ED of John Peter Smith Health Network in Fort Worth, TX from November 2015 through January 2016 enrolled 1,345 participants. Crowding measures were evaluated in three ways: two objective measures using National ED Overcrowding Scale and Severely Overcrowded - Overcrowded - Not Overcrowded Estimation Tool; and subjectively through participants perceptions of crowding on discharge from the ED with a survey. Each patient was assigned a National ED Overcrowding Scale and Severely Overcrowded - Overcrowded - Not Overcrowded Estimation Tool score upon registration to the ED. Both National ED Overcrowding Scale and Severely Overcrowded - Overcrowded - Not Overcrowded Estimation Tool consider severely overcrowded as > 140, overcrowded > 100 and ≤ 140, and not overcrowded ≤ 100. For comparison between findings, not crowded was considered a score of 1-5, over crowded was considered a score of 6-7, and severely overcrowded a score of 8-10. Patients rated their perception of crowding on a 10-point Likert scale 1 to 10 (worst crowding). Patients also rated their

satisfaction with their overall care on a 10-point Likert scale 1 to 10 (very satisfied). When the ED was found to be overcrowded it was associated with lower odds of patient satisfaction compared to when the ED was found to not be overcrowded (National ED Overcrowding Scale OR = 0.78, 95% CL: 0.65, 0.95; Severely Overcrowded - Overcrowded - Not Overcrowded Estimation Tool OR = 0.82, 95% CL: 0.69, 0.98). A severely overcrowded ED was associated with lower odds of patient satisfaction (National ED Overcrowding Scale OR = 0.79, 95% CL: 0.61, 1.01; Severely Overcrowded - Overcrowded - Not Overcrowded Estimation Tool OR = 0.78, 95% CL: 0.51, 1.18). Overall an inverse relationship was found between ED overcrowding and patient satisfaction (patient perception OR = 0.49, 95% confidence limit [CL]: 0.38, 0.63; National ED Overcrowding Scale OR = 0.78, 95% CL: 0.65, 0.95; Severely Overcrowded - Overcrowded - Not Overcrowded Estimation Tool OR = 0.82, 95% CL: 0.69, 0.98). Contrary to logic, patient perceptions of an overcrowded ED (OR = 0.49; 95% CL: 0.38, 0.63) were associated with lower odds of patient satisfaction than the perception of a severely overcrowded ED (OR = 0.73; 95% CL: 0.56, 0.97). An agreement was seen between objective and subjective measurements of ED crowding; demonstrating patients ability to accurately estimate an overcrowded waiting room. Data also demonstrated that patient perceptions of crowding at the time of admission to the ED had a larger impact on patient satisfaction than objective scores (Wang et al., 2017).

One interesting approach taken to addressing the topic of patient health outcomes and its factors was the phase I study of a focus group followed by the phase II survey group created, in part, by the findings from phase I's study. Watt et al. collected a 12 focus groups of which 5 groups were made up of 34 ED users in the last 12 months, 3

groups were formed of 22 individuals identified as non-ED users who had not been to the ED in the last 3 years, and lastly 4 groups were made from 31 members of ED staff. From the group discussions common expectations of ED care included: improvement to existing service, triage process, management of information, quality of care, staff communication with patients, and appropriate wait times. Staff communication and behavior were identified by both ED and non-ED user groups as an area of high importance. Observations of perceived inappropriate behavior by hospital staff such as personal conversations and standing around was commented on negatively by focus group members. Expectations on how long a patient should wait to see a physician varied on what was appropriate, but a frequent complaint of long wait times lasting 3-6 hours were common. Once brought into the treatment area many patients believed they would be seen promptly and expressed frustration with extended waiting times in treatment areas with no staff updates. Many providers felt patients do not understand the triage process, but if explained to them they can understand and accept the process. Overall, users, non-users, and providers felt a high level of quality was provided. The study highlighted the importance of understanding patient expectations upon arriving at ED. Important also from this study is the need for providers and patients to understand each other's perspectives. Ironically, patients rarely reported clinical aspects as important, which is the focus of the healthcare providers, i.e. treatment efficiency, patient safety, and diagnostic accuracy. All of which were absent from patient expectations in eight focus groups (Watt et al., 2005).

Patient Expectations

Vaginal bleeding, a frequent presenting complaint to the ED was investigated at an academic medical military center. The center sees over 70,000 patients annually of

which more than 700 cases of first trimester vaginal bleeding present. The study included 141 surveys completed in their entirety over a six month period from January 2013 to July 2013 representing approximately 20% of the potential first trimester vaginal bleeding patients presenting annually. Of the 141 surveys, 41.8% (95% CI, 34 – 50.1%) of patients expected blood work with an ultrasound to be performed, 34% (95% CI, 26.7 – 42.2%) wanted to know if they're were having a miscarriage, 7.8% (95% CI, 4.2% - 13.5%) wanted to know if the bleeding was normal (having not considered that they may be having a miscarriage), 4.3% (95% CI, 1.7% - 9.1%) were worried that the bleeding could cause self-harm, 3.5% (95% CI, 1.3% - 8.2%) were worried about an ectopic pregnancy, 3.5% (95% CI, 1.3% - 8.2%) wanted an evaluation not including blood work and an ultrasound, 2.8% (95% CI, 0.8% - 7.3%) wanted to know if they could stop the miscarriage, and 2.1% (95% CI, 0.4 – 6.3%) are concerned they have an abnormal pregnancy. After physicians address what could be life-threatening conditions, they may fail to meet patient expectations (Strommen et al., 2017).

A cross sectional English language telephone survey identified 2,219 patients from the sample population, of which 837 patients submitted surveys without missing or indeterminate data records. None of the patients had a communication barrier. From the surveys 96.5% of the patients placed the highest importance on the explanation of test results, 94.4% placed importance on the explanation of circumstances that would require them to return to the ED, 92.1% placed a high importance on the use of plain language. Nearly half of the patients expected to spend no more than two hours in the ED (44.6%). The expectation of total wait time from arrival to discharge from the ED was significant with triage level ($p = .03$) and wait time for test results ($p = .04$). Actual length of stay

was significantly longer than expected by all patients. Patients placed a large importance on staff communication in plain language about why something occurred during their visit. This study demonstrated the difference between patient and clinician expectations, in part to their different perspectives of healthcare (Cooke et al., 2006).

One of the more trouble things about meeting patient expectations is that they have been shown to change throughout the visit to an outpatient clinic seeing general, medical, and surgical patients; where expectations pre-consultation were not the same post-consultation. Nine public hospitals in Ethiopia participated in a study where every fifth, adult patient attending the outpatient department was asked to participate. In total, 776 patients were interviewed. Study participants were asked to rate twenty items on a five point scale from 1 to 5 (strongly disagree). The questions covered four different categories: navigating the facility, provider patient communication style, treatment and procedures performed, and the healthcare provider's approach to information. Overall, 211 (27.2%) of the patients were disappointed with the visit. A significant difference was shown between the pre-consultation questionnaire and the post-consultation questionnaire administered after treatment. An increase in the mean expectation score indicated study participants had unmet expectations for receiving instructions from the healthcare provider ($p < .001$), the treatment(s) given/procedure(s) performed ($p < .001$), healthcare provider approach to information ($p < .001$), and overall expectation(s) ($p < .001$). Data demonstrated that patient satisfaction was dependent on post-consultation expectation score where the higher post-consultation expectation score led to less satisfied patients. In addition the study reported that patients who perceived their health status as excellent-to-good were 3.5 times (95% CI; 2.27-5.49) more likely to be satisfied than patients who

perceive their health status as fair-to-very poor. These findings implied that patients with more perceived control over their health have increased odds of being more satisfied (Berhane and Enquselassie, 2016).

Some studies suggested a direct relationship exists between patient expectations and patient satisfaction. However, findings on meeting expectations and their impact on patient satisfaction is inconsistent across studies. A cross-sectional study at an academic urban teaching hospital that annually sees approximately 65,000 patients included 504 study participants from June to September of 2006. Surveys were submitted by the patient or by an accompanying party member. Surveys presented a list of diagnostic interventions and therapeutic interventions to select from. From the respondents 29% had no pre-visit expectations, 24% expected one intervention, and 47% expected multiple interventions. Analysis of the surveys included day and time of patient presentation, whether the patient, parent, or, other responded; patient's insurance, sex of respondent, age of the respondent, race of the respondent, and education level of the respondent. Socioeconomic status which is typically associated with education level and insurance, were strongly correlated with patient satisfaction. A lower socioeconomic status was associated with a lower satisfaction score. Ethnic discordance between the patient and the provider was correlated with lower satisfaction. Healthcare providers in the study were skewed towards middle to upper middle socioeconomic class and non-African-American, non-Hispanic. A trend was shown in lower satisfaction for ages of 18 and 21 years of age. As perceived wait times reduce patient satisfaction increased. This data could not show relationship between meeting expectations and satisfaction (Toma et al., 2009).

Satisfaction at a US general medicine walk-in clinic was assessed at 2-week and 3-month time periods. Patient symptom characteristics, symptom-related expectations, functional status (Medical Outcomes Study Short-Form Health Survey), mental disorders (PRIME-MD), symptom resolution, unmet expectations, satisfaction, visit costs, and health utilization were considered. Pre-visit surveys assessed participants about symptom severity (1-10) and duration (days); common symptom-related expectations (explanation, expected duration, referral, diagnostic test, and prescription). Also a six-item scale assessed functionality for physical pain, general health, role function, social function, emotional health, and general health. Immediately after the visit 260 (52%) of patients were completely satisfied with their care, at 2-weeks 59% and at 3-months 63%, respectively. Patients older than 65 and with better functional status were more likely to be satisfied. At all times unmet expectations resulted in decreased patient satisfaction: immediately post visit (OR: 0.14, 95% CI: 0.07-0.30), 2-week (OR: 0.07, 95% CI: 0.04-0.13), and 3-month (OR: 0.05, 95% CI: 0.03-0.09). Findings implicated meeting expectations and patient demographic features impacted the reported levels of satisfaction (Jackson et al., 2001).

A Lithuanian based study included 44 physicians from 22 primary healthcare centers that asked every 3rd patient to participant over a 5-day period. Prior to the medical consultation with the general practitioner the study participants answered the patient intention questionnaire that evaluated patient expectations on a 3-point scale (agree-uncertain-disagree). Post-consultation the participants answered the expectations met questionnaire that corresponded to the expectation questions on the patient intention questionnaire using the same 3-point scale. Secondly, the study participants completed

the medical interview satisfaction scale that defined the medical consultation for cognitive items, behavioral items, and effective items on a 5-point Likert-scale from 1 to 5 (strongly agree) or N/A. In all 460 sets of questionnaires were completed. Four factors were analyzed: emotional support, explaining and understanding, information, and lastly, diagnosis and treatment. The number of met patient expectations was calculated by dividing the number of expectations after the consultation by the total number of expectations expressed before the consultation. From the patient intention questionnaire the most frequently expressed expectations were: information (mean 89%), understanding and explanation (mean 80.8%), diagnosis and treatment (mean 56.6%), emotional support (mean 42.7%). Comparison between the patient intention questionnaire and expectations met questionnaire found the mean score of met expectations to be 75.8% (SD +/- 21.3%) of the sample population. The mean desired and met expectation for the factors were: emotional support met for 32.2% and unmet in 7%, explaining and understanding met 64.8% and unmet 9.1%, information met in 71.8% and unmet 6.8%, and diagnosis and treatment met in 44% and unmet in 6%. The mean satisfaction index was found to be 4.0/5.0. If 0-35% of the expectations were met they were considered low, moderate was 36-80%, and high was 81-100%, respectively. The mean satisfaction scores found for the group with a low number of expectations met was 2.9, the group with a moderate amount of expectations met was 3.8, and the group with a high number of expectations met was 4.3 ($p < .05$). The most important met expectation was found to be understanding and explanation followed by emotional support. Patients with more expectations met were found to have significantly higher satisfaction index scores (Zebiene et al., 2004).

Another confounding issue of patient expectations is a patient may be discharged from the ED having only some or none of their expectations met, but still satisfied with their visit. A prospective observational cohort study of adults and children reporting to one of ten academic EDs presented with a chief complaint of acute diarrhea. The adult patients and guardians were asked to answer a pre-visit survey regarding treatment expectations before consultation and their satisfaction with medical care at the time of discharge. Physicians were found more likely to prescribe an antibiotic when they believed the patient expected them, but only correctly identified such expectations in 33% of patients participating in the study. Physician assessment of patient expectation of therapy was only accurate in 1 out of 3 patients. Of the 104 patient enrolled in the study, 25% received an antibiotic. Satisfaction with the care received was reported by 100% of the patient who received and antibiotic. In addition, 90% of the patients not receiving antibiotics also rated they were satisfied with the visit (Karras et al., 2003).

Similar outcomes of patients having unmet expectations yet reported their visit as satisfactory was found in a survey of adult patient that attended the urban district ED for nausea. Patient expectations for the results of antiemetic drug administration was reported by 165 (94%) of the individuals included in the study. Expectations for antiemetic drug administration included: total gone 60 (36%), a lot less 84 (51%), or a little less 21 (13%). The reported level of symptom reduction at 30 minutes was either a match to or exceeded the pre-treatment expectations for 43/87 whose expectations were met and 6/33 whose expectations went unmet. Participants rated their nausea as mild (48), moderate (63), or severe (65). The response pattern was dependent of the initial severity of the presented nausea; the mild group most frequently expected symptoms to be totally gone

(20/42), the moderate group expected symptoms to be a lot less (37/59), and the severe group expected symptoms to be a lot less (33/64). Antiemetic drugs were administered to 120 patients and of these 87 (73%) reported having their expectations met, 17 (14%) felt their expectations were not met, and 16 (13%) were unsure if their expectations were met. Of the 120 patients who were administered antiemetic drugs 71 (59%) were satisfied (22 very satisfied, 49 satisfied), 17 (15%) were not satisfied (8 dissatisfied and 9 very dissatisfied), and 32 (27%) were unsure. Of the 120 patient administered an antiemetic drug, 29 (24%) wished for further treatment at 30 minutes. When comparing between the pre-treatment expectations and the post-treatment symptom level changes it was common for patients to report expectations had been met, yet had reported a lesser amount of symptom change than initially expected. Indicating their expectations were not fulfilled, yet they still remained satisfied with the treatment of care (Meek et al., 2017).

An additional study found participants to still be satisfied despite unmet expectations. The study included 300 adult ED patients with minor injuries. Participant expectations were evaluated before consultation. After treatment, satisfaction with care was evaluated on a 5-point Likert scale. The most frequently expected interventions were x-ray, analgesia, and bandaged/strapping. In each case the portion of patients that expected an intervention was significantly higher than the portion that received an intervention. Patients that expected an x-ray intervention was 58% of the population, but only 47% of patients actually received an x-ray intervention ($p < .001$). The number of patients that expected analgesia as an intervention was 40%, but only 20% of the survey participants actually received analgesia as an intervention ($p < .001$). The number of patients that expected bandaged/strapping was 39%, but only 22% of those patients

actually received bandaged/strapping as an intervention ($p < .001$). Of the 300 patients included in the study at least 208 (69%) reported that one expectation went unmet. Of the 208 participants that did not receive an expected intervention, an explanation was provided for 151 (73%) of the cases. Of the other patients with unmet expectations 44 (21%) patients did not receive an explanation. Patients with unmet expectations rated their satisfaction lower, but not significantly lower ($p = .187$). Of the patients, 31% either did not expect any interventions or received all expect interventions, 116 (39%) expected one intervention they did not receive, 68 (23%) patients expected two inventions, 15 (5%) patients expected three interventions, and lastly, 9 (3%) participants expected four more interventions they did not receive. Overall, 128 (43%) participants rated their care as excellent, 94 (31%) rated it very good, 57 (19%) rated as good, 19 (6%) rated as satisfactory, and 2 (1%) rated as poor. An excellent rating was provided by 83 (40%) participants that had unmet expectations, whereas 45 (49%) patients without unmet expectations rated their experience as excellent. A very good rating was provided by 65 (31%) participants with unmet expectations, whereas 29 (31%) patients without unmet expectations rated very good. A good rating was provided by 44 (21%) patients with unmet expectations, whereas 13 (14%) patients without unmet expectations rated as good. A satisfactory rating was provided by 15 (7%) participants with unmet expectations, whereas 4 (4%) patients without unmet expectations rated satisfactory. A poor rating was provided by 1 (4%) participant with unmet expectations, whereas 1 (1%) patient without unmet expectations rated poor. It is possible explanations provided to patients with unmet expectations prevented lower satisfaction ratings with care than those

without unmet expectations. The study was unable to demonstrate an association between unmet patient expectations and satisfaction with care (Whiteley and Goodacre, 2014).

A prospective observational study of sexual assault victims ages ten and up in France was conducted. Victims were asked of the care they received prior to reporting to the Department of Forensic Medicine. The expectations of those visits and the quality of care they received was evaluated on a 5-point scale (no support-weak-moderate-important-crucial support). Of the 1,112 sexual assault victims, 232 had previously attended a consult and were included in the study. Trauma care included prescription pain medication, wound care, and medical imaging. Psychological support included active listening and prescriptions of psychotropic medication. Gynecological care consisted of testing/treatment of sexually transmitted disease, emergency contraception, medical termination of pregnancy, and pregnancy diagnosis. Forensic support included referral to a forensic physician and a medical certificate. Specified expectations were given by 190 of the 232 cases as follows: trauma care was expected in 44% of the cases and it was received it in 40% ($p = .42$); psychological support was expected in 31% of the cases and it was received it in 21% ($p = .02$); gynecological care was expected in 28% and it was received in 31% ($p = .52$), and lastly forensic support was expected in 21% and it was received in 54% ($p < .001$). Of the patients included 107 (44%) reported having consulted with an ED physician, 81 (35%) a general practitioner, 44 (19%) a gynecologist, and 8 (3%) a psychiatrist. Trauma care was most often expected from an ED physician (63% vs 27% vs 31%), psychological support was most often expected from a general practitioner (49% vs 25% vs 9%), and an expectation of gynecological care was most common for victims seeing a gynecologist (60% vs 32% vs 10%). Patients that expected trauma care

were more likely to receive it from an ED physician ($p < .001$), those that expected psychological support were more likely to receive it from a general practitioner ($p < .001$), and those that expected gynecological support were more likely to receive it from a gynecologist ($p < .001$). Patients more often perceived the provided support was crucial when both medical care and forensic support were received than just medical care (12/48 [25%] vs 2/59 [3%], $p = .001$). This study implicated that patient expectations and perceptions can be shaped by the choice of where a patient first seek medical care (Denis et al., 2016).

The relationship between patient expectations pre-operation with patient satisfaction and postoperative outcomes for patient undergoing total hip arthroplasty were investigated. Multiple surveys were used: Hospital for Special Surgery, Hip Replacement Expectations Survey, 12 item short form survey, University of California Los Angeles activity score, and Hip Disability and Osteoarthritis Score. The study included 207 patients in the pre-operative survey. Post-operation there was a 91% follow-up at 6 months and a 92% follow-up at one year post-operation. Postoperative the maximum improvement was expected by 1-year. At 6-months and a year all patient reported outcomes showed significant improvement preoperative to postoperative. University of California Los Angeles activity score change at six months showed higher expectations, lower body mass index, and lower preoperative University of California Los Angeles activity score was a significant predictor of greater improvement in University of California Los Angeles score ($r^2 = .41$). At one year higher expectations, younger age, lower preoperative University of California Los Angeles activity score, higher preoperative Hip Disability and Osteoarthritis Score was a significant predictor for

greater improvement in University of California Los Angeles score (r^2 = .44). Changes in 12-item short form survey at 6-months showed higher expectations, lower body mass index, lower preoperative 12-item short form survey and higher Hip Disability and Osteoarthritis Score were significant predictors for greater improvement in 12-item short form survey (r^2= .50). At 1-year, employment, younger age, low preoperative 12-item short form survey, and higher Hip Disability and Osteoarthritis Score were significantly predictive of greater improvement in 12-item short form survey (r^2= .49). The mean satisfaction score at 6-months was 93.8 +/- 11.9 and at 1-year 94.5 +/- 9.7. At 6-months higher expectations significantly predicted higher satisfaction (r^2= .11). On average patients' rated their fulfillment of expectations at 6-months 83.2 +/- 16.7 and at 1-year 85.3 +/- 13.7. Total hip arthroplasty outcomes have been linked to non-surgical factors and one such suggested factor is patient expectations. The study found that higher expectations led to higher fulfillment of expectations this implicated the importance of preoperative counseling. Study suggests that preoperative education can modify preoperative expectations and be targeted to improve satisfaction and patient reported outcomes. Employment and worse preoperative hip function were predictive of higher preoperative surgery expectations. High expectations equated to higher improvement in patient reported outcomes, increase patient satisfaction, and fulfilled expectations (Jain et al., 2017).

Patient Satisfaction

Interestingly, if you breakdown what can increase, decrease, or have no effect on patient satisfaction across studies the results are inconsistent. Often what is found to increase patient reported satisfaction levels in one study can decrease or have no effect in another.

Prospective cohort study of adult respondents from 2000 to 2007 evaluated national medical expenditure panel survey with 2 years of panel data for each patient along with mortality follow-up data into 2006. The 2002-2005 subsample size n = 36,428. In the first year patient satisfaction was assessed using a 5-item scale from the consumer assessment of Health Plan Survey. Investigators adjusted for associations between year one patient satisfaction and 2-year Health Care utilization including ED and inpatient admission, 2-year healthcare expenditures in total, and expenditures for prescription drugs, and mortality during the mean follow-up duration of 3.9 years. Respondents in the highest patient satisfaction for care relative to the lowest patient satisfaction quartile had lower odds of an ED visit (adjusted odds ratio [aOR] 0.92; 95% CI, 0.84-1.00), higher odds of inpatient admission (aOR 1.12; 95% CI, 1.02-1.23), higher overall total expenditures (8.8%; 95% CI, 1.6% - 16.6%), higher prescription drug expenditures (9.1%; 95% CI, 2.3% - 16.4%), and increased mortality rate (adjusted hazard ratio [aHR] of 1.26; 95% CI, 1.05 – 1.53). During the follow-up duration 2002-2006 a total of 1,396 (3.8%) patients died. An adjusted survival analysis relative to the least satisfied patient at baseline, the most satisfied patients had a 26% greater mortality risk (aHR of 1.26; 95% CI, p = .2). An association between higher patient satisfaction and mortality remained significant in an analysis excluded patients with poor self-rated health and three or more chronic diseases (aHR of 1.44; 95% CI, p = .008). In addition, the highest 1-year patient satisfaction score was significantly associated with increased age, the female sex, identification as a member of the black race/ethnicity, and possession of health insurance coverage. Participants with the highest patient satisfaction scores also

had higher 12-items short form scores, such as better physical and mental health status, and more likely to self-rate their health as excellent or poor (Fenton et al., 2012).

Demographics

A recurrent factor accounted for in the patient experience, especially in relation to patient satisfaction is demographics. As of now the patient's level of satisfaction with their healthcare experience has been linked to both the patient's perceptions and expectations. Additional aspects of the patient experience potentially influencing the patient's level of satisfaction include demographic features; related to the hospital, medical staff, or to the patient themselves. Demographic aspects of the hospital include the hospital size (indicated by the number of beds) and environmental aspects. Demographics of the provider can be considered similar to demographics of the patient such as age, sex, race, socioeconomic status as well as interpersonal aspects and technical skills. Demographic features of the patient include age, sex, race, socioeconomic status, civil status, environment of origin, education level, insurance status, and if they have a chronic health condition. Demographics of just the patient may be considered, or they may be considered against demographics of the provider. Additionally some patient demographics have been found to be interrelated when considered together. Not only have patient demographics been linked to patient satisfaction levels, aspects of the patient perception have been found linked as well.

An observational study in Bucharest, Romania in an obstetrics-gynecology clinic included 150 questionnaires analyzing patient demographic factors. Demographics included were background, age, education level, monthly income levels, civil status, gynecological consultation objective, and sex of gynecologist. Participants were asked to answer questions related to orientation towards healthcare consumer and quality of

service. Possible answers were: total disagreement (0 points), disagreement (1 point), neither agree nor disagree (2 points), agree (3 points), fully agree (4 points). The level of education among the participants were as follows, 21 (14%) completed secondary school studies, 34 (22.7%) high school studies, 74 (49.3%) university studies, and 21 (14%) postgraduate studies. Of the participants, 11 (7.3%) had a monthly income below 1,200 RON, 7 (4.7%) had an income between 1,300 to 1,500 RON, 8 (5.3%) had an income between 1,600 to 2,000 RON, 12 (8%) had an income between 2,100 to 2,500 RON, 34 (22.7%) had an income between 2,600 to 3,000 RON, and 78 (52%) had an income greater than 3,000 RON. Of the participants they reported their civil status as 56 (37.3%) unmarried, 81 (54%) married, and 13 (8.7%) widowed. The reported environment of origin was as follows: 89 (59.3%) were from an urban location and 61 (40.7%) were from a rural location. Environment of origin among urban vs. rural did not significantly differ ($p = .137$ - orientation towards healthcare consumer, $p = .109$ - quality of service) For education level no significant difference was found among secondary school, high school, university studies, and postgraduate studies ($p = .746$ - orientation towards healthcare consumer, $p = .460$ - quality of service). Monthly income in relation to satisfaction scores with secondary school, high school, university, and postgraduate studies did not statistically differ ($p = .989$ - orientation towards healthcare consumer, $p = .557$ - quality of service). A significant difference ($p < .001$) was found between the environment of origin and level of education. Secondary students were primarily from rural areas (100% - secondary, 82.4% - high school) and patients with university or postgraduate studies were predominantly from urban areas (83.8% - university, 100% - postgraduate) with significant and negative correlation ($p < .001$, $r = -.726$). A significant

difference ($p < .001$) between background and monthly income level was found. Participants with incomes below RON 1,200 or an income between RON 1,300 to 1,500 have their environment of origin predominantly rural areas (100% - under RON 1,200, 71.4% - between 1,300 - 1,500) and patients over RON 3,000 are predominantly from an urban environment of origin (88.5%). High income participants to urban and low income to rural areas are significant and have a negative correlation ($p < .001$, $r = -.543$). A significant difference ($p = .002$) for level of education and income level. Participants with incomes below RON 1,200 have predominantly completed secondary education (27.3%) or high school studies (36.4%). Participants with incomes between RON 1,300 - 1,500 have predominantly completed secondary school (17.3%) or high school (42.9%). Participants over RON 3,000 have completed university studies (62.8%) or postgraduate studies (20.5%). This was found to be significant and have a positive correlation ($p < .001$, $r = .346$; Radu et al., 2018).

A study was interested in identifying factors in urology related to patient satisfaction and the extent of the patient satisfaction relationship with patient characteristics and hospital characteristics. Study included 1,040 randomly selected patients discharged from 9 hospitals who responded to a mailed survey. A bivariate analysis showed strong associations between satisfaction scores and length of stay, provider status, workload of nurses, and hospital size; weaker findings for type of hospital (teaching vs. nonteaching) and patient demographics. Multivariate analysis found 9 variables associated with overall satisfaction; strong factors include: treatment outcomes, medical practitioner/nurse interpersonal manner, hotel aspects (i.e. accommodation and quality of food). Interestingly, variables reflected information

received about treatment were found to not be statistically significant to patient satisfaction. Study identified variables related to patient satisfaction in urology and hospital setting helps support healthcare professionals with valuable information to meet needs and preferences of patients. Participants were age 21 and greater discharged in 2009 from one of 22 hospitals in a metropolitan area in Germany who participated in one of four policyholders of statutory health insurance. In total all four hold 80% of the areas total population. Patient satisfaction, sociodemographic, and visit characteristics were assessed with 37 items. Patient satisfaction and medical and service aspects were assessed with 15 items ranging from very poor, poor, acceptable, fair, good, and excellent. Same response options for one item assessing overall satisfaction. Additional data include: age (ten year intervals 21 to >80), gender, occurrence of post-discharge complications (i.e. physical complaints, pain, and infection), perceived length of stay, number of prior hospitalizations, source of admission (e.g. specialist, self-admission, emergency). Hospital characteristics were pulled from quality assessment reports required by hospitals to report publically, including hospital size as number of beds (<400, 400-799, and ≥800), teaching status (teaching vs. nonteaching), provider status (public, non-profit, for-profit) and workload as number of patients per medical practitioner and per nurse (fulltime) per year. For analysis workload was either above (high) or below (low) median. The two highest ratings were considered satisfied and fair to very poor considered dissatisfied (Schoenfelder et al., 2013).

Length of Stay

Similar to the demographic feature of the patient experience, length of stay has been linked to patient expectations, perception, and satisfaction. The length of stay is defined as the time from when the patient registers to be seen in the ED to when the

patient is done with their time in the ED, whether they are being admitted to the hospital, transferred for continued care, or being discharged home. One of the confounding issue of length of stay is there is both the actual length of stay and the perceived length of stay as mentioned previously.

A search for efficiency gains and potential improvements to the patient journey was investigated by a primary care trust. Using qualitative and quantitative methods they described the current patient flow, interested in reduced admissions, reduced delays in discharge, and reduced diagnostic wait times by redesigning pathways along with a change in culture, communication, and treatment. To see an accident and emergency doctor the average wait time was six hours and thirty-eight minutes. This was consistent with the perception. Diagnostic delays were partially responsible for the delay such as limited access to radiology. Another issue that extended length of stay for admitted patients was the availability of medical staff and beds. Admission/Discharge: 47% discharged home, 18% admitted as an inpatient, 5% left without waiting to be seen, 5% referred back to their general practitioner, 13% referred to outpatient clinics, and 9% un-coded. Of the 18% admitted to an adult ward: 43% medical assessment unit, 12% surgical short stay unit, 3% intensive care, 42% spread across 20 other medical/surgical wards. Insufficient beds caused patients to sleepover night in the accident and emergency. On average 13 people stayed each night with the highest number being 34 individuals. Of the patients staying overnight 95% were eventually admitted and 5% discharged. Due to the low bed capacity and high admission/utilization rates, ED admission represented a high percentage of acute bed stock at 57% a week compared to the sector average of 41%. There was a mismatch of supply and demand. Forty-eight beds were frozen by delayed

discharges, of which: 14 patients (29%) were awaiting nursing/residential home care, 34 patients (71%) were waiting for assessments, funding, non-acute care, domiciliary-package/placement of their choice. Suitable management changes could eliminate delays in the transfer of care for the 34 patients. Delays in hospital process of medical diagnostics and treatment census of beds in one week in August 2002 resulted in 71/399 beds (18% in surgery, orthopedics, and medicine) occupied daily by patients waiting more than one day for a diagnostic investigation/result. Sixty-one patients were waiting for a test and 10 waiting on a result. Ultrasound and CT resulted in 53% (38/71) diagnostic delays of which 10/38 were waiting for an MRI scan or cardiac arteriogram at a neighboring hospital. Additional delays came from waiting for specialist opinion and procedures related to cardiology or scoping. Study was successful in eliminating the four hour wait times. Study goal to enhance efficiency and improve patient experience (Crilly and Plant, 2007).

Study examined the length of stay and its factors in an observational study including 105 patients over a three month period at a community urban hospital located in Israel. The average total length of stay was 438 minutes. Significant difference was found for the average length of stay between admitted patients (mean = 544 minutes, SD = 323 minutes) and discharged patients (mean = 291 minutes, SD = 286 minutes). Nurse and physician shift changes were found to be significantly related to length of stay. Of the total participant population 52% were registered during the morning shift from 0700-1500 of which 45% waited over an hour before their physician examination. The remaining 48% of participants were registered during the evening shift from 1500-2300, of which 40% waited over an hour before their first physician examination. Of the total

participants, 64% experienced a shift change of nurses during their stay. For these patients the average length of stay was 564 minutes (mins; SD = 339 mins) compared to the average total length of stay for patients that did not experience a nursing staff shift change of 185 mins (SD = 83 mins) was shown to be significant ($p < .01$). Similarly, a change in physician's during the participants stay resulted in significantly increased total length of stay, 61% of patients experienced a physician shift change total length of stay 563 mins (SD = 350 minutes) compared to average length of stay for patients not experiencing a shift change 257 minutes (SD = 223 mins), an unpaired two sample t-test showed a significant different [$t (103) = 5$, $p < .01$]. Of the study participants 44% were admitted to the hospital and 56% were discharged. Once a decision to admit was made the median time to transfer out the ED to a ward was 514 mins. The median time from the decision to discharge the patient to when the patient left the ED was 203 mins. Average total length of stay of admitted patients was 544 mins (SD = 323 mins) and discharged patients was 291 mins (SD = 286 mins); an unpaired two sample t-test showed a statistically significant difference in total length of stay between admitted patients and discharged patients [$t (103) = 4.19$, $p < .01$]. Decision to admit created a bottleneck related to the admitting ward. Decision to admit approval from the physician in the admitting award was the most time consuming in 43% of ED total length of stay (233 mins; Bashkin et al., 2015).

Previous Interventions

With the importance that is placed on evaluating and meeting patient satisfaction, the goal then is to identify all possible influential factors into one of two categories: modifiable, that can be manipulated for the benefit of the patient, and non-modifiable, so these factors can be controlled for in future investigations of healthcare institutions and

providers. From the identification of possible modifiable factors, studies have approached patient satisfaction from an experimental standpoint attempting to better quantify aspects of the patient experience and improve patient healthcare outcomes.

A multifaceted intervention geared towards improved ED patient satisfaction targeted communication between the staff and the patient as an intervention. Research was conducted over a 12-month period at a university-affiliated ED. Communication intervention included communication workshops for all ED staff, a patient education film that explained the ED process, and a patient liaison nurse. The liaison nurse helped orientation of the patient to the ED which included explanation of tests, procedures, and delays; communication with the hospital staff, and managed the patient's pain level. The study included 321 pre-intervention surveys and 545 post-intervention surveys reported by Press-Ganey as satisfaction scores. Comparison between pre-intervention and post-intervention groups showed improvements in the patients perceptions of being informed about delays (score difference 5.3; 95% CI, 0.6 -10.0), staff cared about them as an individual (score difference 4.4; 95% CI, 0.7-8.1), overall ED facility assessment (score difference 3.9; 95% CI, 0.4-7.5), and overall ED care (score difference 3.8, 95% CI, 0.3-7.3) were found to be significant ($p < .05$). In the post-intervention group there were 22 (22.5%; 95% CI, 14.6-32.8) compared to the pre-intervention group; equating to a decrease in the complaint rate from 3.2 (95% CI, 2.6-3.9) to 2.6 (95% CI, 2.0-3.2) complaints per 1,000 patients. Comparisons between the pre-intervention and post-intervention groups were found to not be significant for age ($p = .19$), nor gender ($p = .72$). Overall, proportions of complaints in each category did not differ between periods ($p = .52$). Interesting to note is three of the four areas were related to the overall

improvement, as were one of the four areas related to communication. This could possibly be due to the impact the interventions had on patient perception (Taylor et al., 2006).

An experimental study investigated the effects of survey implementation to determine if provider knowledge of parental expectations can improve parental satisfaction for non-urgent ED pediatric visits. Over a 1-year period the study included parents of children whose acuity level was non-urgent (4 or 5). The child was included if they were under18 years of age with a non-traumatic complaint. The study included 304 parents. There was 104 expectation surveys completed, of which 97 were initialed and acknowledged by the provider. Parents were sub-grouped into the baseline group that did not complete an expectation survey, the control group that completed an expectation survey, but their provider was blind to study, and lastly, the third group was the intervention group that completed an expectation survey that was reviewed by the provider prior to meeting with the patient. All study groups completed a satisfaction survey that implemented a 5-point Likert scale from 1 to 5 (very good). Participants rated their level of satisfaction for overall care, the likelihood of recommending the ED, and the staff's sensitivity to fears/concerns. The proportion of parents rating the overall care as 5/5 did not differ between the three groups (baseline, control, intervention; 74.8% vs 73.2% vs 69.2%, p = .56). There was also no difference between the three groups for the parents rating a 5/5 for the likelihood of recommending the ED (77.7% vs 72.2% vs 70.2%, p = .45), nor for staff sensitivity to their concerns (78.6% vs 78.4% vs 78.8%, p = .71). The median ED length of stay was not significantly different among the three groups (104 vs 106 vs 107 minutes, p = .98), so provider review of expectation

questionnaires did not affect length of stay. Findings from this study demonstrated provider knowledge of written parental non-urgent pediatric ED visit expectations did not improve parental satisfaction (Zoltowski et al., 2016).

An observational study conducted in 2004-2005 and 2014-2015 evaluated the patient experience through surveys in the inpatient, accident and emergency department, and outpatient of 130 acute NHS hospital trusts. The biggest improvement in all three settings was in cleanliness (inpatient: +7.1, accident and emergency: +6.5, outpatient: +4.7) and information about danger signals (inpatient: +3.8, accident and emergency: +3.9, and outpatient: +4.0). Danger signals are signs to be aware of related to patient's illness or related to a treatment to be aware of especially after discharge. This increase is thought to be in part due to the national policies and targets that have been put in place, such as those by NHS with their clean your hands campaign. NHS collected data using the same survey so allows for easy comparison between facilities and time. Among the three groups accident and emergency had the largest improvement for experience of information about medications (both purpose [+3.3] and side-effects [6.7]), pain control (+4.4), and time to discuss health problems (+3.4). There was a decreased patient experience in waiting to speak with a nurse or doctor (-5.6). Waiting and information about medication side-effects and danger signals have constantly been low scoring among all three setting since survey implementation. Trusts perform consistently in domains overall patient experience scores, access and waiting, safe high quality coordinated care, better information more choices, building closer relationships, clean friendly comfortable place to be, over time, and between settings. Consistently low areas suggest areas requiring trust wide action (Honeyford et al., 2017).

A review of previous literature on strategies to improve communication of patient and caregiver expectations of ED care produced 24 studies meeting inclusion criteria. The review addressed published literature addressing patient and caregiver expectations of the ED and tools that have been used to capture expectations. English language articles were published between January 1990 and June 2014 in MEDLINE/PubMed, CINAHL, and EMBASE. The studies were either qualitative, quantitative, or a mixed method approach. It identified the need for future studies evaluating ED expectation tools with an emphasis on needing to share patient expectations with providers to evaluate their impact. The review showed a global concern for patient expectations as papers came from Australia, Canada, Jordan, UK, US, Netherlands, Pakistan, Saudi Arabia, and Sweden. A majority of studies retrieved used a cross-sectional design and a written survey to capture expectation data (n = 14), of these four used a Likert scale to capture expectations. Of the 24 studies, 7 collected patient expectation while in the waiting room. The need for further studies investigating the impact of the provider being aware of the patient's expectations was demonstrated in a review by Curran et al. where a majority of the studies found did not report expectations of the patient to the provider; limiting the understanding of how expectations impact the healthcare experience (Curran et al., 2016).

Review article examining patient satisfaction literature from the 20 years prior looked at qualitative themes and general trends among studies. Overall five elements were correlated to patient satisfaction: timeliness of care/acceptable wait times (perceived vs. actual), empathy/attitude (bedside manner), technical competence (technical skills and available technology), information dispensation, and pain management. Empathy and concern shown by providers was shown repeatedly in studies as a strong indicator of

patient satisfaction, so much so it can outweigh timeliness of care for patient satisfaction rating. Customer satisfaction is how well the customers' expectations are met; in our particular instance the patient is the customer, so we are concerned with patient satisfaction. Although medicine is a service industry, it is difficult to follow previous customer service models. In part because patients can report high patient satisfaction with poor clinical care and vice versa. Secondly, patients are not exactly a reliable to assess the quality of care received (Welch, 2010).

A systematic review of patient satisfaction in emergency medicine included papers identifying specific factors of patient satisfaction and specific interventions. The databases included: Medline, CINAHL, EMBASE, ASSIA, and HMIC from 1990-2002. Only papers who were investigating patient satisfaction were included, and not those where patient satisfaction was added on to the investigating study. One of the most commonly used tools among studies with the Likert scale. Focus groups were useful to identify key areas of concern. Age and race were found to influence some, but not all studies. Triage was also correlated to patient satisfaction, although this also related to wait times and length of stay. Overall three areas of future study were identified: improve interpersonal, attitudinal, and communication skills in ED staff; provide more information and explanation; and reduce perceived wait times (Taylor and Benger, 2003).

Self-triage is an individual's evaluation of their healthcare needs to determine when and if to seek medical attention. Medical information is easily accessible online to the layperson at any time with questionable medical reliability and limited regulations. Self-triage can impact decisions to seek care. In the context of hypothetical medical situations with limited knowledge, individuals make decisions about the severity of their

medical needs before a medical consult. A study included 27 hypothetical medical scenarios and asked participants when they would seek medical attention for a particular situation. Each scenario was constructed with physician input with three levels of threat severity from low, medium, and to high, with no additional information on diagnosis could be provided, suggested identity of diagnosis, i.e. symptoms indicate a brain aneurysm for high risk, or a definite diagnosis, i.e. you have a brain aneurysm for high risk could be provided. An ANOVA analysis showed that the main effect of severity of high, medium, and low yielded a mean response urgency of 6.31, 4.00, and 1.92 respectively. Those with a definite diagnosis felt a more urgent response was necessary than those with a suggested identity of illness or no information ($M = 4.29$, 4.09, and 3.95; $p = .03$). Females were more likely to respond with urgency than males (4.30 and 3.67). For threats of high severity, a significant difference was seen between those who had a definite diagnosis and those who had a suggested diagnosis ($p = .003$), those who had a definite diagnosis and no information ($p < .001$), and those who has a suggested identity and no information ($p < .001$). Those who were certain of a disease were found more likely to respond with urgency than those who have a suggested disease identity or those who have no information demonstrating that factors of disease severity and diagnosis certainty play a role in when patients seek medical attention (Cooper and Humphreys, 2008).

Typically a patient who registers to be seen in the ED follows a set path. This path can be seen in figure 1. Where the patient after registering is then triaged and roomed while they wait for their assigned provider. The provider meets with the patient then orders the appropriate medical tests, diagnostics, and treatments for the patient.

Afterwards a decision is made by the provider to admit there patient, transfer them, or discharge the patient home.

The purpose of the present investigation is to understand factors that may affect patient satisfaction. The primary outcome will be to determine the accuracy of the patient's perception of the ED total length of stay to the actual length of stay, as well as to examine the relationship between patient satisfaction and ED total length of stay. Secondly, patient demographic factors were compared to the patient level of satisfaction.

Methodology

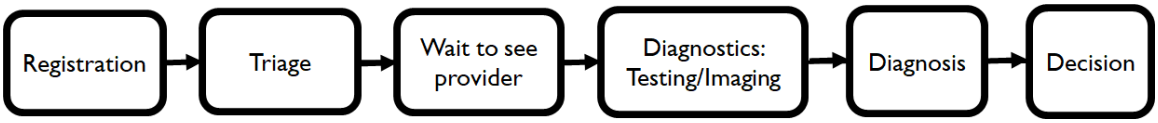

Figure 1: typical ED visit for a patient that walks-in to be registered to be seen in the ED

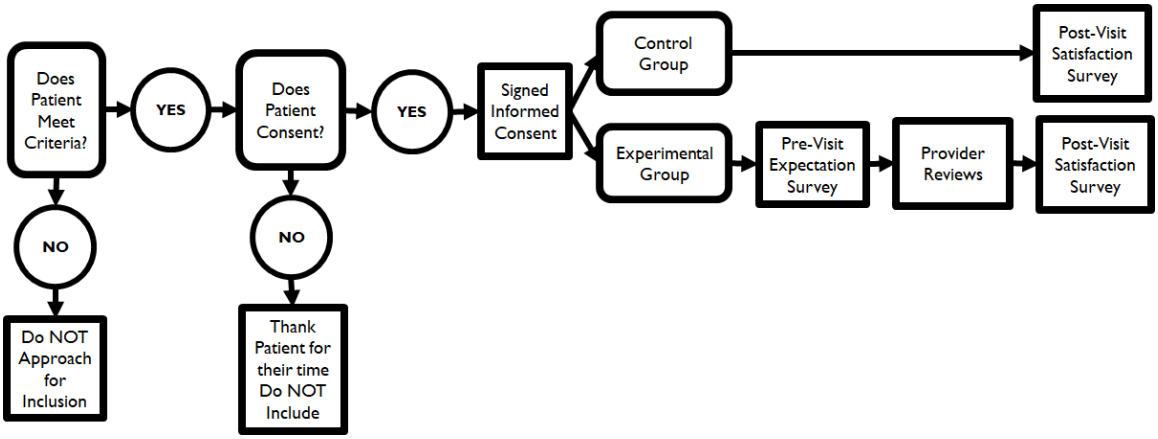

Figure 2: Study design with interventions at the time of registration with enrollment into the study and survey administration to the experimental group. Second point of intervention at the time of discharge with the administration of the post-visit satisfaction survey to all included study participants

The study was IRB approved by Mercy Health (Appendix A) and Youngstown State University (YSU; Appendix B). Graduate and undergraduate students from YSU worked as student investigators at the ED of Mercy Health. All investigators were National Institutes of Health certified by an online training course on protecting human research participants, had documentation of the flu-shot, and returned signed Mercy Health confidentiality agreements to Jill Tall, PhD.

To be included in the study, ED patients had to be eighteen years old or greater, fluent in English, and capable of completing a survey independently. As patients arrived to the hospital's ED entrance, they were greeted at the front counter for registration by

the registration nurse. If the patient agreed to participate, the investigator obtained a signed informed consent. Participants were randomized according to the random number list (online, random number generator www.random.org), where half belonged to the control group and half belonged to the experimental group.

Patients randomized into the control group received only the post-visit satisfaction survey. Patients randomized into the experimental group participated in the post-visit satisfaction survey, in addition to the pre-visit expectation questionnaire. If the potential study participant elected not to participate they were thanked for their time, excluded from the study, and continued their journey through the hospital as normal.

After registration the patients were called into the triage area by nursing staff to determine the acuity level of the patient and if the patient required treatment in the main or minor ED. Acuity levels were as follows: 1 = immediate, 2 = emergent, 3 = urgent, 4 = less urgent, and 5 = non-urgent. A full sheet of patient stickers were printed for each patient. Student investigators collected patient stickers and added them to the bottom left corner on the pre-visit expectation survey, as applicable, and upper right hand corner of the post-visit satisfaction surveys in the designated areas. The assigned provider reviewed the pre-visit expectation survey prior to seeing the patient and signed, printed, or initialed confirming they reviewed it. Upon discharge, transfer, or admission to the hospital 100% of the consented patients were presented a post-visit satisfaction survey. The pre-visit expectation questionnaire can be found in Appendix C. The post-visit satisfaction survey can be found in Appendix D and Appendix E.

Post-visit patient data was collected from the patient's' medical record. This included treatment location (main or minor ED), the triage acuity level (1-5), and time to disposition.

Data Analysis

All collected data was entered into a shared Excel spreadsheet on DropBox. Data entry included patient sticker data providing the medical record number, visit number, patient name, service date, sex, and age. The pre-visit expectation survey and the post-visit satisfaction survey were also entered into the spreadsheet.

For all completed pre-visit expectation questionnaires the reason for the visit was entered directly as written on the survey i.e. “fatigue and nausea”. Survey participants were asked if they believed they needed to be seen in the main or minor ED. Survey participant were also asked to select from a list potential expectations of treatment for their visit including hospital admission, blood test, x-ray, CAT scan, MRI, medicine while in the ED, medication refill, prescription for a new medication, work note, and other. The "other" option allowed patients to write in their own words their specific expectation(s). This as well was entered exactly as written on the pre-visit expectation questionnaire.

Additionally, the post-visit satisfaction survey was entered into Excel. The post-visit survey questions one, two, and six correspond to the Likert scale values measured in centimeters for patients level of satisfaction overall, with the provider, and length of stay, respectively. Additionally, question three asked the patient to evaluate how well they felt their expectations were met using an unmarked Likert scale. Patients were asked to provide the current time, which was entered in the Excel as military time. Patients also estimated their total elapsed time from arrival to discharge in hours and minutes, which was entered as the total minutes in Excel. Study participants were also asked if they had a family doctor, had seen anyone for the same issue before arriving (if yes, who that provider was), their educational level, and current occupational status.

A record review of patient charts was conducted to retrieve the time the patient registered to be seen in the ED (arrival to the ED), time the patient was roomed in the ED, time the provider was assigned to the patient, and the time of disposition. The record review also showed if the patient was seen in the main or fast-track/minor ED and the acuity score/number for each participant. If the patient received during their visit: labs, X-ray, CT, ultrasound, MRI, medications while in the ED, giving a prescription to fill after discharge (none, new, or refill). The disposition of the patient was also reported as discharged, admitted, eloped, AMA, or transferred. The diagnosis was also stated as briefly as possible.

The data was analyzed initially with Microsoft Excel. Overall, 230 participants were included in the study, of which 113 belonged to the experimental group and 117 belonged to the control group (Figure 3). The number of males included in the study was 85 and the number of females included in the study was 145 (Figure 4).

From the pre-visit expectation questionnaire that included 113 study participants, 76.99% of the population believed they needed to be seen in the main ED and 23.01% believed they needed to be seen in the minor ED (Figure 5). A majority of the patients were able to accurately self-triage (66.37%), 21.24% did not accurately self-triage overestimating their medical emergency, and 12.39% did not accurately self-triage underestimating their medical emergency (Figure 12).

A majority of the study participants had a family doctor, with 167 (72.61%) reporting they did, 56 (24.35%) reporting they did not and 4 (3.04%) not indicating either way on the survey (Figure 8). Over half of the patients reported they had not been seen by

a healthcare professional for the problem that brought them into the ED (55.65%), with 42.61% reporting they did, and 1.74% did not provide a response (Figure 9).

Using SPSS version 20 (IBM SPSS, Armonk, NY) statistical software, a p-value of $\leq .05$ demonstrated a statistical significance with 95% confidence claimed in the values reported. The control group and experimental group were compared to each other for estimation on time and actual total ED length of stay using a one way ANOVA (Figure 13). Overall, the control group was found to have a mean estimated length of stay of 174 minutes and actual mean length of stay 159 minutes. Overall, the experimental group had an estimated length of stay of 173 minutes and an actual length of stay 150 minutes. The between groups factor for the control and experimental groups was found to be $p = .952$. The within groups for estimated and actual total length of stay among subjects in the same group was found to be $p = .455$. No significant difference was found among those receiving the pre-visit expectation questionnaire, the experimental group and the control, so data was pooled together for further analysis.

The accuracy of study participants in their estimated length of stay compared to their actual length of stay was determined by taking the difference between the measurements (estimated length of stay - actual length of stay) to find delta. Positive values are an overestimation of the actual total length of stay and negative values are an underestimated of the actual total length of stay. Participants who did not report their estimated length of stay were excluded from the analysis. Using SPSS the Pearson correlation was computed to assess the relationship between the difference in estimated length of stay to actual length of stay in the ED to the overall level of patient satisfaction ($r = -.056$, $p = .403$, $n = 228$; Figure 11). The Pearson correlation was computed to assess

the relationship between the difference in estimated length of stay to actual length of stay in the ED affect if the patient's expectations were met during the ED visit ($r = .007$, $p = .915$, $n = 228$; Figure 12). The Pearson correlation was computed to assess the relationship between the difference in estimated length of stay to actual length of stay in the ED to the level of satisfaction with the provider ($r = -.135$, $p = .043$, $n = 226$; Figure 13).

Total number of survey participants	**230**	**100%**
Total number of individuals in control group	**117**	**50.87%**
Total number of individuals in experimental group	**113**	**49.10%**

Figure 3: The number of participants included in the study and the number of individuals in each group.

Patient sticker data						
Participants:	**All participants (n=230)**		**Experimental Group (n=113)**		**Control Group (n = 117)**	
Sex						
Male	**85**	**37.00%**	**44**	**38.94%**	**41**	**35.04%**
Female	**145**	**63.00%**	**69**	**61.06%**	**76**	**64.96%**

Figure 4: Demographic data collected for the patient sticker for participant's sex. Data is separated by all survey participants (n = 230), experimental group (n = 113), and control group (n = 117).

Pre-visit expectation questionnaire		
Participants:	**Experimental Group (n=113)**	
Today I think I need to be seen in:		
Minor ED	**26**	**23.01%**
Main ED	**87**	**76.99%**

Figure 5: The pre-visit expectation questionnaire related to patient demographics

Post-visit satisfaction survey data: Highest level of education completed						
Participants:	All participants (n=230)		Experimental Group (n=113)		Control Group (n = 117)	
Educational level	#	%	#	%	#	%
No schooling completed	5	2.17%	2	1.77%	3	2.56%
Nursery school to 8th grade	0	0%	0	0%	0	0%
Some high school, no diploma	13	5.65%	6	5.31%	7	5.98%
High school graduate, diploma or the equivalent (GED)	100	43.48%	49	43.36%	51	43.59%
Some college credit, no degree	33	14.35%	17	15.04%	16	13.68%
Trade/technical/vocational training	17	7.39%	8	7.08%	9	7.69%
Associate degree	17	7.39%	7	6.19%	10	8.55%
Bachelor's degree	20	8.70%	10	8.85%	10	8.55%
Master's degree	6	2.61%	3	2.66%	3	2.56%
Professional degree	0	0%	0	0%	0	0%
Doctorate degree	1	0.43%	1	0.88%	0	0%
Prefer not to answer	5	2.17%	4	3.54%	1	0.85%
Incorrectly Answered/No Answer given	13	5.65%	6	5.31%	7	5.98%

Figure 6: Data retrieved from the post-visit satisfaction survey on patient demographics

Post-visit satisfaction survey data: Current occupational status						
Participants:	All participants (n=230)		Experimental Group (n=113)		Control Group (n = 117)	
Occupational status	#	%	#	%	#	%
Employed for wages	91	39.57%	47	41.59%	44	37.61%
Self-employed	18	7.83%	9	7.96%	9	7.69%
Out of work and looking for work	14	6.09%	8	7.08%	6	5.13%
Out of work but not currently looking for work	6	2.61%	2	1.77%	4	3.42%
A homemaker	17	7.39%	8	7.08%	9	7.69%
A student	13	5.65%	4	3.54%	9	7.69%
Active duty military	0	0%	0	0%	0	0%
Retired	33	14.35%	16	14.16%	17	14.53%
Unable to work	19	8.26%	8	7.08%	11	9.40%
Prefer not to answer	12	5.22%	4	3.54%	8	6.84%
Incorrectly answered/no answer given	7	3.04%	7	6.19%	0	0%

Figure 7: Data retrieved from the post-visit satisfaction survey on patient demographics

Post-visit satisfaction survey data: Does the patient have a family doctor?						
Participants:	All participants (n=230)		Experimental Group (n=113)		Control Group (n = 117)	
Do you have a family doctor?	#	%	#	%	#	%
Yes	167	72.61%	82	72.57%	85	72.65%
No	56	24.35%	29	25.66%	27	23.08%
Did not indicate	7	3.04%	2	1.77%	5	4.27%

Figure 8: Data retrieved from the post-visit satisfaction survey on patient demographics

Post-visit satisfaction survey data: Are they a bounce-back patient?						
Participants:	All participants (n=230)		Experimental Group (n=113)		Control Group (n = 117)	
Did you see another healthcare provider before arriving?	#	%	#	%	#	%
Yes	98	42.61%	49	43.36%	49	41.88%
No	128	55.65%	63	55.75%	65	55.56%
Did not indicate	4	1.74%	1	0.88%	3	2.56%

Figure 9: Data retrieved from the post-visit satisfaction survey on patient demographics

Post-Visit Satisfaction Survey: If, they are a bounce-back patient, who did they see previously?						
Participants:	All participants (n=230)		Experimental Group (n=113)		Control Group (n = 117)	
If yes, who they saw	#	%	#	%	#	%
Personal Family Doctor	42	33.07%	20	32.79%	22	33.33%
Personal doctor who is a specialist	20	15.75%	10	16.40%	10	15.15%
Doctor at an urgent care facility	13	10.24%	4	6.56%	9	13.64%
Doctor at this emergency department	26	20.47%	13	21.31%	13	19.70%
Doctor at a different emergency department	4	3.15%	1	1.64%	3	4.55%
Nurse Practitioner	5	3.94%	1	1.64%	4	6.06%
Physician's assistant	5	3.94%	4	6.56%	1	1.51%
Other	12	9.45%	8	13.11%	4	6.06%
Total Responses	127	100%	61	100%	66	100%

Figure: 10: Data retrieved from the post-visit satisfaction survey on patient demographics for question number 8A

Chart Review						
Participants:	All participants (n=230)		Experimental Group (n=113)		Control Group (n = 117)	
Acuity level/score	#	%	#	%	#	%
5	5	2.17%	4	3.54%	1	0.85%
4	105	45.65%	52	46.02%	53	45.30%
3	118	51.30%	56	49.56%	62	53.00%
2	2	0.87%	1	0.88%	1	0.85%
1	0	0%	0	0%	0	0%
Actual Treatment Location						
Main ED	154	66.96%	77	68.14%	77	65.81%
Fast-track/Minor ED	76	33.04%	36	31.86%	40	34.19%

Figure 11: Data pulled from the chart review

Did the patient accurately self-triage?	#	%
Yes	75	66.37%
No	38	33.63%

Figure 12: Did the patient accurately self-triage?

One-Way ANOVA		
Participants:	Control Group	Experimental Group
Estimated Length of Stay (min)	174	173
Actual Length of Stay (min)	159	150
Between groups factor: p = .952 Within group factor: p = .455		

Figure 13: One-way ANOVA

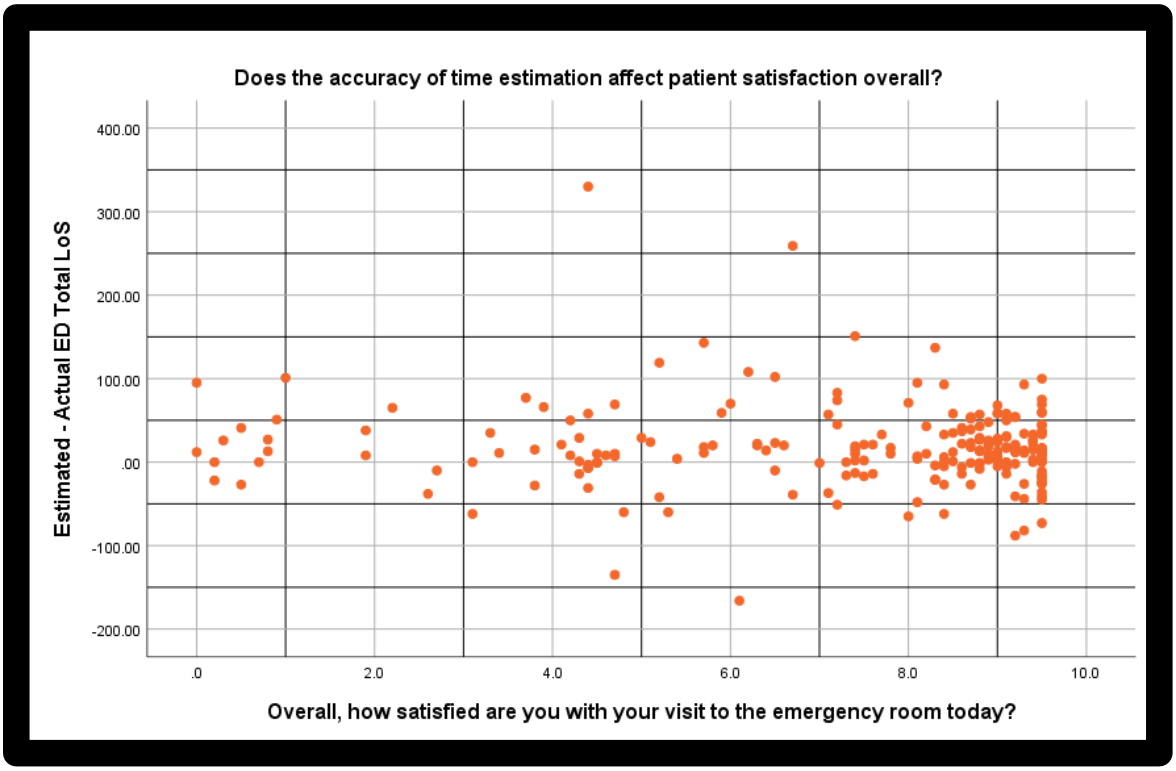

Figure 14: A scatter plot was constructed from the Pearson correlation for the accuracy of time estimation and overall satisfaction. r = -.056, p = .403, n = 228

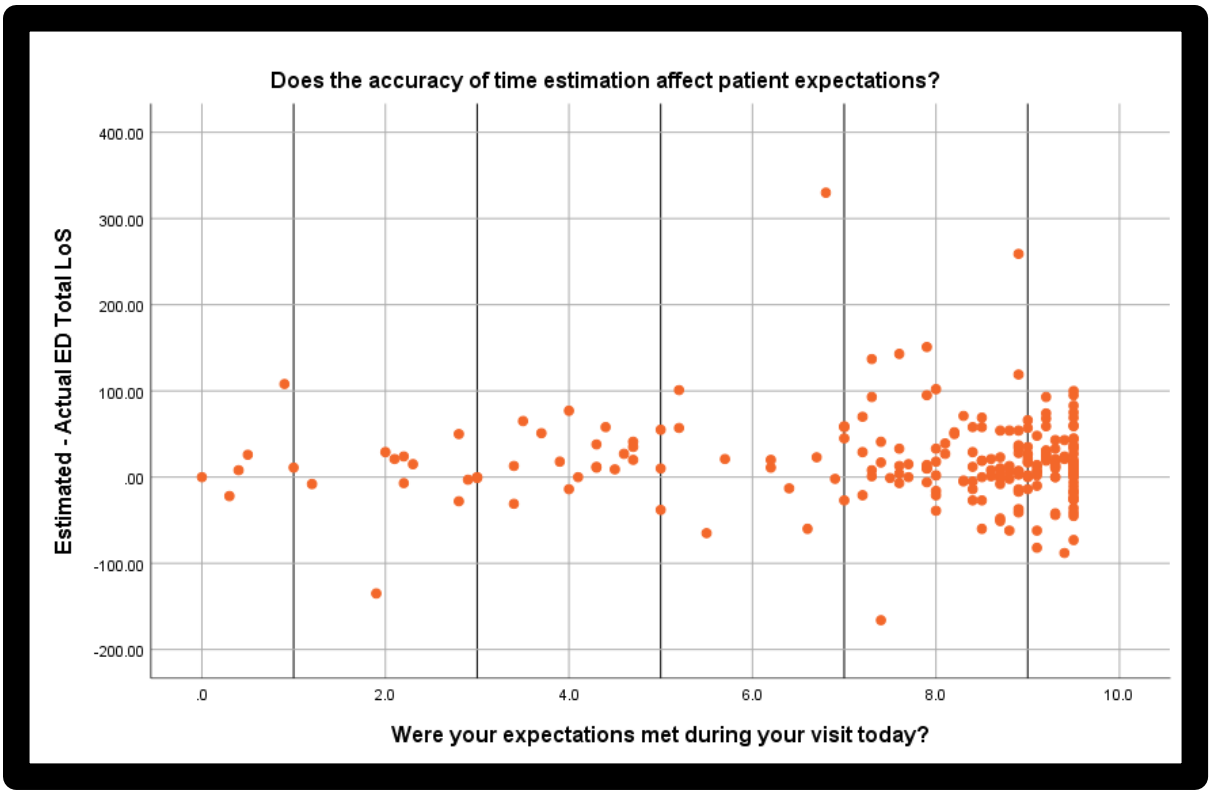

Figure 15: A scatter plot was constructed from the Pearson correlation for the accuracy of time estimation and expectations being met. r = .007, p = .915, n = 228

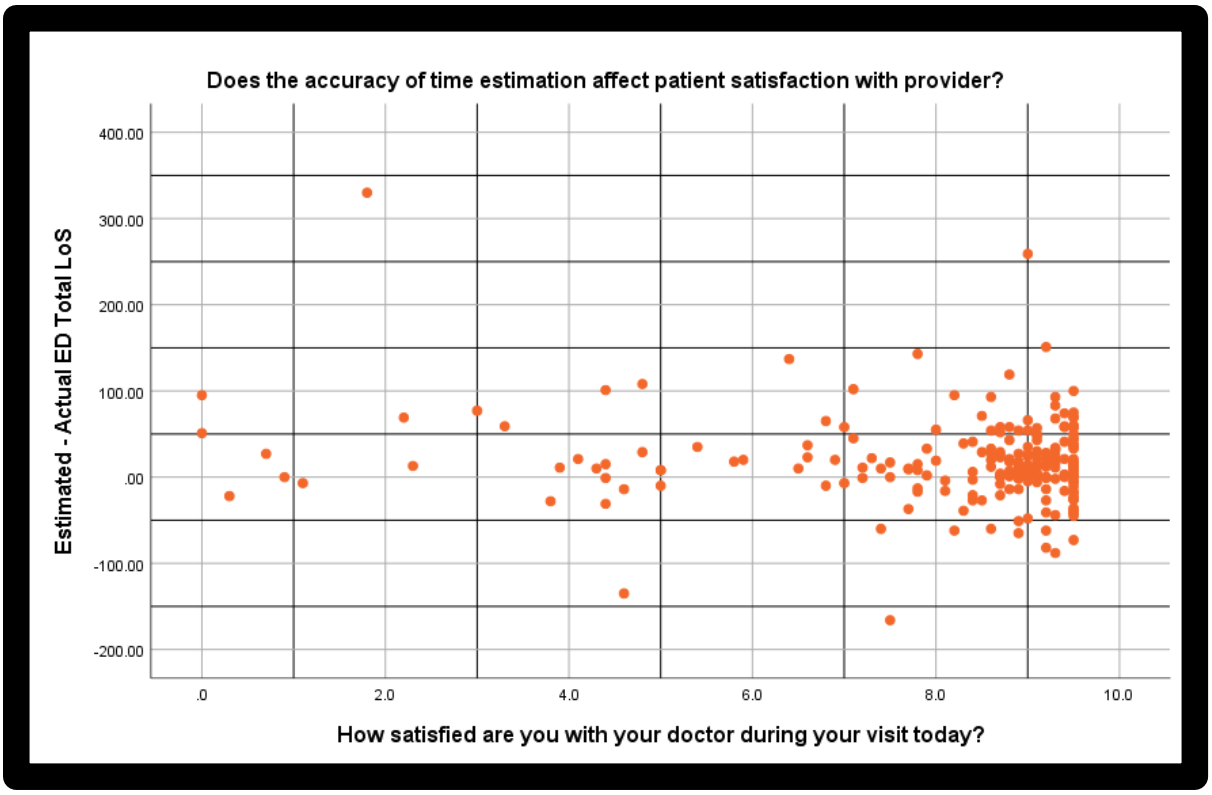

Figure 16: A scatter plot was constructed from the Pearson correlation for the accuracy of time estimation and satisfaction level with provider. r = -.135, p = .043, n = 226

Discussion

Overall, the randomized breakdown between the groups that received both the pre-visit expectation questionnaire and the post-visit satisfaction survey compared to those receiving only the post-visit satisfaction survey was in almost equal parts (50.87% vs. 49.10%) demonstrating the individuals included in the study were randomized equally. Nearly half of the overall participants included in this study (n = 230) had completed high school, earned a GED, or the equivalent (43.48%). A majority of the study participants were also employed for wages (39.57%).

One interesting finding is that even though a majority of study participants reported having a family doctor (167; 72.61%) almost half of the individuals arrived to the ED with non-acute issues and were seen previously by a healthcare provider for the same problem (98; 42.61%). Of the study participants that had previously seen a doctor for the same problem (n = 98) and of the three individuals that left question 8 unmarked two provided a response to the sub-question 8A. There were 127 previous provider encounters for the same issue that brought the patient in that day. A majority of previous encounters were reported to have been with a family doctor (42, 33.07%).

Patients who were previously seen for the same issue are considered bounce-back patients. Patient bounce-back reflect negatively on the hospital and the provider, as it can negatively impact reimbursement. Providers receive pressure from hospital administration to decrease the number of patient bounce-back.

Patient bounce-back in this study may not be accurately represented as the question does not specify an amount of time in which the patient previously met with a provider for the same issue. The addition of a time frame, i.e. 30 days previous to arrival

at the ED, could reduce some of the ambiguity of this question and provide further information on patient bounce-back.

The cause of patient bounce-back is not clearly defined in this study, something future studies may want to consider. Bounce-back may be due to low levels of patient satisfaction, or the patient had unresolved medical concerns. Understanding the cause of patient bounce-back could be beneficial in trying to reduce future bounce-back patients.

Additionally, future studies may want to investigate bounce-back patients in terms of the day and time of the presentation, such that weekend bounce-back may differ from weekday bounce back. This could be due to part to the normal office hours a provider holds and there is an increase in patient bounce back on the weekends and after normal business hours of 9 to 5.

It is interesting to see that over half of the study participants were accurately self-triage. It is demonstrated for the number of incorrectly self-triage assessments that it may not be ethical for patients as laypersons to triage and should be left primarily to the healthcare professionals. Nonetheless, the impact of a patient incorrectly assessing the seriousness of their medical illness or trauma may have a serious detrimental impact. As for the over and under estimation of medical needs, this may be due to patients limited understand of the triage system. Perhaps further public education on the triage system could negate some of the instances of incorrect self-triage. Incorrect self-triage may result in over use of the ED costing both time, money, and resources when a patient would be more appropriately seen at an urgent care facility or their family doctor in a less intensive care setting. Inversely, in correct self-triage may also be dangerous to the patients' health

when they should be seeking a higher intensity of medical care then they are currently receiving if any.

Overall, a positive trend could be seen in survey responses with responses clustered to the right side of the scatter plot, showing study participants were overall satisfied with their visit and believed a majority of their expectations had been met. The negative r value showed an inverse relationship between the patients' ability to accurately estimate their length of stay and their overall satisfaction level, as such as their perceived length of stay increased the level of overall satisfaction decreased. However, these were not statistically significant findings with a reported p-value of .403 (Figure 14).

The Pearson correlation between the accuracy of the perceived length of stay and the perception of patient expectations being met was found to have a positive r value ($r = .007$), so that the longer the patient perceived they were there the more they perceived their expectations had been met. Perhaps the perceived increase in length of stay is believed to be due to an increased number of testing and diagnostics being performed. Although, it is important to not these were not found to significantly correlation ($p = .915$).

Lastly, a Pearson correlation was done to test for the relationship between the accuracy of perceived length of stay and satisfaction with the patient's provider. Overall, patients reported high levels of satisfaction with their provider. The r value was found to be -.135 where the increased perception of length of stay inversely associated with level of satisfaction with their provider. This was found to be statistically significant ($p = .043$). This significance indicates there is something about the way these providers

approach these patients that directly impacts their perception of length of stay which is related to the overall satisfaction a patient reports.

This study is not to suggest a patient should be able to walk into an ED and order any treatment of medication they see fit. Healthcare is not meant to be an equivalent to the fast-food industry where you can have it your way. Which may even be dangerous to long term patient health (Fenton et al., 2009), evident by increased mortality rates. Instead, the goal of this study intervention is to increase communication between the provider and patients which has been indicated as a large area of focus by patients to increase their satisfaction.

In addition, a study asked patients to report consultation expectations prior to the consult gives providers time to address inappropriate expectations of healthcare. A side note to the expectations of treatment and care a patient expresses may be due to a misunderstanding of the treatment or procedure, possibly linked to education level, e.g. a lower level of education is associated with a decreased patient satisfaction level.

The administration of surveys while the patient was still in the ED was advantageous to this study. An advantage to survey administration while the patient is still in the hospital is the elimination of recall bias introduced by the time between the visit and survey completion as found in other studies like the one completed by Taylor et al. and Rhee and Bird. Response rate can be challenging for studies, which can be corrected for with on the spot surveys in the ED (Taylor and Benger, 2003).

In future studies, it may be advantageous to provide all included survey participants with a pre-visit expectation survey and control in a random 1 or 2 fashion of which providers will see the pre-visit expectation survey, to assess the effect the survey

has on meeting or managing patient expectations. Similar to the study conducted by Zoltowski et al. who controlled for which providers received expectation surveys. Made the intervention group the providers who did see the expectation survey and a baseline with only satisfaction survey administration. The current study included a baseline and an intervention, but did not account for a control group.

Due to the statistical significant finding for the relationship between the accuracy to estimate the length of stay and the patient's provider it may be interesting to conduct future studies investigating aspects of the provider. This could include perceptions of time spent with provider and aspects of bedside manner and communication.

There may be issues with the survey construction affecting survey validity. This is seen by multiple study participants selecting multiple answers to the pick-one answer questions. Additionally, some participants did not mark yes or no to question 8 if they previously saw a provider, but provided an answer to who they did see. In future investigations, the wording of question eight and the select one answer questions should be adjusted to increase participant understanding and question clarity.

Limitations

This is an opt-in study, thereby patients who elected not to participate in the study are not described in the study. Not all patients may have been asked to participate in the study. The late hours between 9 pm and 8 am are also underrepresented in this study since more survey collection times took place in the morning, afternoon, and evening hours. Patients arriving by ambulance are not included in this study. Essentially, only the "walking wounded" was represented in this form of study (Booth, 1992).

Additionally, this study was undertaken at a single ED which may limit the generalizability of this study to this particular ED. Although an association was found between aspects of the patient experience and overall satisfaction, it does not demonstrate a cause and effect relationship. Lastly, questionnaires may limit the patients' opportunity to express themselves and concerns about different aspects of care that cannot be answered in the form of a simple survey.

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Appendix

Appendix A: IRB approval Mercy Health

MERCYHEALTH

St. Elizabeth Youngstown Hospital
Research Department
1044 Belmont Ave.
Youngstown, OH 44501
mercy.com

February 21, 2019

Institutional Review Board

Thomas Gifford, DO
St. Elizabeth Boardman Hospital
8401 Market St.
Boardman, OH 44512

RE: **IRB Approval #** 16-002
Project Title: Will Physicians Knowledge of Patient Expectation Improve Emergency Department Length of Stay and Patient Satisfaction

Dear Dr. Gifford:

At the February 20, 2019 Institutional Review Board meeting, the following was reviewed and the study was allowed to continue.

- Addition of Sub-PI: Richard Urbanski, DO

This IRB is in compliance with the regulations of the FDA as described in 21 CFR parts 50 and 56 as well as 45 CFR 46. According to federal guidelines, any changes in research methodology, protocol design, or principal investigator are required to have prior approval of the IRB before implementation and continuation. The IRB further requests an annual progress review and a final report at the conclusion of the study as well as reports of any adverse events as they occur. For multi-site studies, it is the investigator's responsibility and obligation to be aware of any safety reports/adverse events occurring at other sites reported to other IRBs, the FDA, or the study sponsor and report them to the HMHP IRB as well.

If you have any questions or concerns, please contact me through the Department of Research at 330-480-3610.

Sincerely,

Timothy J. Barreiro, DO
Chair, Institutional Review Board
Mercy Health Youngstown, LLC

TJB/cal

Appendix B: IRB approval YSU

From: Karen H Larwin
Sent: Wednesday, May 29, 2019 3:53:43 PM
To: Sal Sanders; Dr. Jill Tall
Cc: Angie J Urmson Jeffries; ckcoy@ysu.edu
Subject: Re: IRB Status

Dear Investigators,

Your protocol entitled "Will physician knowledge of patient expectations improve emergency department length of stay and patient satisfaction?" has been reviewed, per the guidelines of the YSU IRB and is deemed to meet the criteria of an expedited review, 45 CFR 46.110(7).

The PI and the student researchers have collected pre and post data from individuals who visited the emergency room at a local hospital after the PI received approval to conduct the research by the Mercy Health IRB. This data was analyzed with some basic patient information that is provided to the students by the attending physician.

According to Dr. Tall, "prisoners, minors, mentally incapacitated, non-English speaking/comprehending, and fetuses"… who walked into the emergency room were excluded from the data collection. Pregnant women and the elderly (two groups identified as vulnerable by the YSU IRB guidelines) were included in the data collection; however full assurance has been provided that these individuals were not coerced to participate and had the mental capacity to make a decision to freely participate in the pre- and post-data collection, if they wished.

This investigation is approved, per the charge of YSU IRB. Please note that it is the responsibility of the principal investigator to report immediately to the YSU IRB any deviations from the protocol and/or any adverse events that occur. Please reference your protocol number 187-19 in all correspondence about the research associated with this protocol.

In the future, protocols to Mercy Health and the YSU IRB both ***must be submitted and approved prior the conducting the study***. The Regulations and Procedures of the YSU IRB indicated "An investigator **must refer all research** to Youngstown State University's Institutional Review Board (IRB) whenever human subjects (including medical records, tissues, and other individually identifiable records) are involved." (p.3)

This response to your protocol reflects the decision of the YSU IRB that was reached at the meeting conducted on May 7th, 2019, based on the additional information provided by Dr. Tall.

Best.
Karen

Karen H. Larwin, Ph.D.
Associate Professor, YSU IRB Chair &
Distinguished Professor
Counseling, School Psychology, & Educational Leadership
Beeghly College of Education
Youngstown State University
One University Plaza
Youngstown, Ohio 44555-0001

"If you can't explain it simply, you don't understand it well enough." -Einstein

Leadership is not about titles, positions or flowcharts. It is about one life influencing another."
— John C. Maxwell

Appendix C: Pre-visit expectation questionnaire

Attachment 1: Pre-visit (Expectations) Questionnaire

1. **In a few words, please explain the main reason or problem that brings you (or your family member) to the emergency room today?**

2. **Today I think I need to be seen in the _____.**
(CHECK ONE BOX, please note: the triage nurse will determine if you will be seen in the main or minor emergency department)

☐Main emergency department

☐Minor emergency department, also called urgent care

3. **What do you think you will need during today's visit?**
(CHECK ALL THAT APPLY, please note: the doctor will determine the types of tests and treatment you require)

☐Admission to the hospital

☐Blood tests

☐X-ray

☐CAT scan

☐MRI

☐Medicine while in the emergency room

☐Refill on your regular medicine(s)

☐Prescription for a new medicine

☐"Work note" or documentation you were seen today

☐Other (please describe) _____

Treating Physician

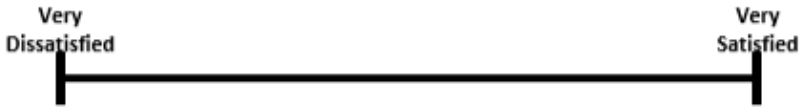
Please review this document and handwrite your initials in the space provided.

_____

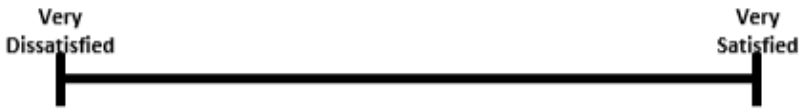
Appendix D: Post-visit satisfaction survey (front)

Attachment 2: Post-visit (Satisfaction) Questionnaire

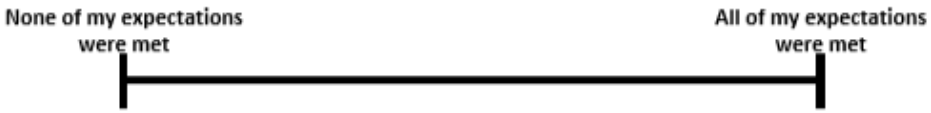
1. **Overall, how satisfied are you with your visit to the emergency room today?**
   (Place an "X" on the line indicating your level of satisfaction)



2. **How satisfied are you with your doctor during your visit today?**
   (Place an "X" on the line indicating your level of satisfaction)



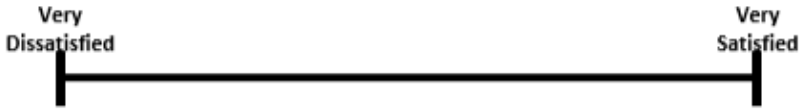
3. **Were your expectations met during your visit today?**
   (Place an "X" on the line indicating the degree your expectations were met)



4. **What is the current time? _____ AM** or **PM**

5. **Please estimate the amount of time you were here today.** _____hours _____minutes

6. **How satisfied are you with the amount of time you were here today?**
   (Place an "X" on the line indicating your level of satisfaction)



7. **Do you have a family doctor? (CHECK ONE BOX)**

☐Yes ☐No

Appendix E: Post-visit satisfaction survey (back)

8. **Have you been seen by a health care professional for the problem that brought you into the emergency department today? (CHECK ONE BOX)**
   ☐Yes ☐No

   If yes, then who did you see prior to today's visit? (CHECK ALL THAT APPLY)
   ☐Personal family doctor
   ☐Personal doctor who is a specialist
   ☐Doctor at an urgent care facility
   ☐Doctor at this emergency department
   ☐Doctor at a different emergency department (Not at St. Joseph Health Center)
   ☐Nurse practitioner
   ☐Physician's assistant
   ☐Other, please list
   _____

9. **What is the highest degree or level of school you have completed? If currently enrolled, highest degree received. (CHECK ONE BOX)**
   ☐No schooling completed
   ☐Nursery school to 8th grade
   ☐Some high school, no diploma
   ☐High school graduate, diploma or the equivalent (for example: GED)
   ☐Some college credit, no degree
   ☐Trade/technical/vocational training
   ☐Associate degree
   ☐Bachelor's degree
   ☐Master's degree
   ☐Professional degree
   ☐Doctorate degree
   ☐Prefer not to answer

10. **I am currently (CHECK ONE BOX)**
    ☐Employed for wages
    ☐Self-employed
    ☐Out of work and looking for work
    ☐Out of work but not currently looking for work
    ☐A homemaker
    ☐A student
    ☐Active duty military
    ☐Retired
    ☐Unable to work
    ☐Prefer not to answer