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Minnesota Healthcare Barriers to the Medically Underserved

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MINNESOTA HEALTHCARE BARRIERS TO THE MEDICALLY UNDERSERVED

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ABSTRACT

Quality medical services and patient-oriented satisfaction are important factors in a healthcare setting. Barriers preventing such factors are more prevalent in medically underserved areas (MUAs) (Brems, Johnson, Warner, & Roberts, 2006). The purpose of this study was to identify barriers in the care of patients within Minnesota MUAs. The study was conducted by an online survey emailed to Minnesota Academy of Physician Assistant (MAPA) members, and only members who were currently employed in a Minnesota MUA county had valid data collection. Twelve barriers to healthcare were listed on the survey and required the MAPA members to grade the barrier on a Likert scale. The survey response rate was only 8% of the MAPA population; of the responses, the barriers identified greater than 65% of the time as being prevalent in the workplace, were considered "significant" values (in context of our study). The three most common barriers reported were 1) patient misunderstanding of care and treatment plan, 2) time constraints, and 3) misunderstandings between co-workers. The three most reported areas of improvement for new PA graduates to have more education on were 1) cost effective care 2) time management skills and 3) understanding of insurance policies.

ACKNOWLEDGEMENTS

We would like to wholeheartedly thank our families for helping us through this time of our lives, and for their undying support. Additionally we would like to thank our professors and staff at Bethel University helping us make this happen. We couldn't have done it without you all.

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Introduction

Background to Problem

In the medical field, the constant need to improve patient care is never ending. Patient care requires the involvement of the patient, the provider, and the facility itself. Previous research reports that rural areas have an increased shortage of sufficient healthcare that leads to lower patient care quality (Brems, Johnson, Warner, & Roberts, 2006). The literature supports that insufficient healthcare has a high tendency to correlate with specific barriers (Weinhold & Gurtner, 2014). Common healthcare barriers in rural areas as reported by literature are: patient financial barriers, training and clinical skills of healthcare workers, miscommunication both between patient and provider as well as between healthcare workers, patient travel constraints, patient and provider cultural/language barriers, and lack of patient education, whether it be the lapse of explanation by the provider or the inability of the patient to vocalize their misunderstanding (Weinhold & Gurtner, 2014). These barriers are often not addressed by the patient or the provider, but are instead ignored by both the patient and provider leading to frustration, misunderstanding, and, most importantly, a lower quality of patient care (Shapiro, Hollingshead, & Morrison, 2002).

The United States Census reported in 2010 that roughly 60 million people live in rural America (US Census Bureau, 2010). In Minnesota alone, 58% of the counties are considered to be rural counties, which are defined as having a population less than 10,000 people (US Census Bureau, 2013). Furthermore, Minnesota's Office of Rural Health and Primary Care reports that 69 out of the 87 counties in Minnesota qualify as medically

underserved areas (MUA) (Health Resources and Services Administration, 1995). In order for an area to be considered a MUA, the following score criteria are used: 1) Ratio of primary medical care physicians per 1,000 population, 2) Infant mortality rate, 3) Percentage of the population with incomes below the poverty level, and 4) Percentage of the population age 65 or over (Office of Rural Health and Primary Care, 2008). The higher the ratio or percentage, the more the area is weighted as a medically underserved area by the Index of Medically Underserved scoring criteria (Office of Rural Health and Primary Care, 2008). A location must score a 62 or less on the Index of Medically Underserved to be considered a MUA (Office of Rural Health and Primary Care, 2008).

Medically underserved areas of healthcare are prevalent in Minnesota, with 69 out of 87 counties considered MUAs. Therefore, the reported barriers among MUA healthcare facilities may be hampering the patient care in Minnesota healthcare facilities. With this in mind, the need to address and reduce these barriers is essential to improving patient care. Resolving the barriers within the MUA healthcare setting in Minnesota requires specifically identifying the barriers present in the state and devising teamwork to overcome the barriers. Teamwork in a healthcare setting is not limited to healthcare workers, but also includes patient participation and interaction with their own medical plan and therapy.

Problem Statement

Previous literature studies have been conducted to report patient care barriers in rural population settings. However, no previous studies have been conducted within the state of Minnesota. This study chooses to identify and compare barriers in patient care for

medically underserved populations/areas in Minnesota as defined by Minnesota Academy of Physician Assistants (MAPA).

Purpose/Aim

The purpose of this study was to identify barriers to the care of patients within medically underserved areas, as reported by MAPA physician assistants.

Significance of the Problem

Previous literature has identified numerous barriers to patient care resulting in decreased patient care and reduced quality of healthcare. These barriers have resulted in patients waiting to go to the doctor until their conditions have exacerbated or have become potentially irreversible. Therefore, rural healthcare providers play an important role in identifying and addressing barriers providers face while providing medical services. Through a self-reporting survey, Minnesota physician assistants (PAs) will be able to identify barriers in patient care that they feel are most pertinent to current healthcare settings within the state of Minnesota. Identifying these barriers will also increase collaboration and communication between providers. The resulting research will strengthen patient care and allow future practicing PAs to be educated with this knowledge to address and eliminate the reported barriers.

On average, Minnesota is graduating approximately 90 PA students per year which started in 2015. Incorporating the reported barriers specific to Minnesota into the curriculum will provide students with a better understanding as they enter practice, allowing them to strategize methods to alleviate or eliminate the barriers.

The goal of the didactic year in a graduate level physician assistant program is to prepare students with knowledge of clinical medicine and skills in order to provide

proper care (Bethel University, 2014). Educating PA students about healthcare barriers during their didactic year will be beneficial because they will be able to apply this knowledge towards reducing patient care barriers specific to Minnesota. This education will also make students mindful of diagnostic testing cost; medical insurance coverage; pharmaceutical generic options; proper patient education based on culture, language, and socioeconomic status; as well as many other considerations in patient care. Preparing students early in their careers will not only make for better practitioners but also improve rural healthcare.

Hypothesis

For this research it was hypothesized that the three most prominent barriers to care would be time constraints, shortage of providers, and miscommunications/misunderstandings between patients and providers.

Research Questions

The following research questions were addressed in this study:

- What are the current barriers to patient care in Minnesota healthcare settings as self-reported by MAPA physician assistants?
- What are the three most common barriers reported that might better prepare future providers if educated on them?

Limitations of the Study

The limitations faced in the study include the population of PA providers surveyed. Since this research surveyed and was sent to only Minnesota PAs that were current members of MAPA there were Minnesota PAs that were not be surveyed. As stated by a MAPA representative, as of September 2014 there were 2,169 active licensed

PAs in Minnesota, but only 613 of those were MAPA members (MAPA, 2014). That means only about 28% of the PAs in Minnesota were surveyed. It must also be noted that since the research was conducted in a survey format, certain providers chose not to complete the survey resulting in less than 100% response rate due to personal preferences. In addition, only MUA Minnesota MAPA physician assistant surveys were recorded because the focus of the study was conducted on patient care barriers present in MUA Minnesota healthcare settings.

Definition of Terms

The following are key terms for the study and their definitions:

- Barriers that were addressed and researched were based on common prevalence in previous literature: Factors which contributed to a decrease in patient compliance and follow up to appointments, include: 1) Cost – insurance coverage, patient average income, 2) Training of healthcare workers, 3) Communication – appointment reminders to patient and inter-office communication, 4) Travel requirements of the patient, 5) Cultural/Language Barriers, and 6) Patient Education.
- MAPA: Minnesota Academy of Physician Assistants is a constituent chapter of the American Academy of Physician Assistants (AAPA); MAPA represents Minnesota Physician Assistants concerning regional and national affairs. MAPA representatives participate in AAPA House of Delegates, and in visits to Minnesota legislators in Washington DC.

- Medically underserved areas: MUAs are scored off of the following criteria below; these scores are weighted and calculated into an Index of Medically Underserved score.

    1) Ratio of primary medical care physicians per 1,000 populations

    2) Infant mortality rate

    3) Percentage of the population with incomes below the poverty level

    4) Percentage of the population age 65 or over

- Study selection criteria excluded 18 counties in Minnesota out of the total 87 that are not considered MUAs by the Health Resources and Service Administration.

Chapter 2

Literature Review

Introduction

This literature review explored the gaps in healthcare as reported by previous research. The previous conducted studies reported barriers which affect the quality of healthcare to patients; however, these studies have not been focused on the state of Minnesota, nor have resolutions been made to decrease the presence of the barriers within the medical setting.

The scope of this literature review was to examine the previous research in order to identify medical barriers in North America as well as their proposed theoretical methods to decrease or eradicate the barriers. The dominant barriers found in the research literature were: patient and practitioner miscommunication, travel constraints, lack of medical resources, and shortage of providers, time constraints, and cost of care.

Patient and Practitioner Miscommunication

This barrier encompasses the broad category of potential miscommunications between the practitioner and the patient. Examples of such miscommunication are lack of patient education, lack of practitioner inclusion of patient in diagnosis and therapeutic plan, language and cultural differences, and lack of patient appointment reminders.

An estimated 90 million people in the USA have difficulties understanding and using health information (Hawkins, Kantayya, & Sharkey-Anser, 2010). One in five American adults reads at a 5th grade level or below, while the average American reads at a 9th or 10th grade level, yet most healthcare information is written above a 10th grade level (Hawkins, et al., 2010). The obvious lack of patient education exists thereby

creating more confusion and a reduction of compliance to medical advice. In fact, such lack of adherences due to patient illiteracy is costing the US healthcare $50 to $70 billion per year (Hawkins, et al., 2010). While this information is startling, there is a gap in the correlation of patient healthcare illiteracy, not only by geographic locations, such as a specific states, but as well as the population setting of patients (i.e. rural versus urban setting).

In a study conducted using separate patient and primary care physician focus groups, participants were asked to report obstacles that they felt impeded effective doctor-patient communication. The patients' overwhelming response was that poor communication was exhibited by physicians because of physicians' use of an authoritative model of care. Patients stated that good communication, alternatively, involved using a collaborative model of care. This model of care included incorporating the patient in the decision making process about their treatment plan and taking into account their particular situation (Shapiro, et al., 2002). Lowering the use of medical jargon and including the patient's opinions and wishes into the treatment plan will help to increase the effectiveness of the relationship between the practitioner and the patient.

Cultural and language barriers between patients and practitioners are an obvious obstacle to effective communication between the patient and the provider. However, the extent of these barriers being the main cause of the miscommunication is often over-exaggerated. Physicians often report that cultural and language barriers were the starting point of all other miscommunications because without being able to have language, how else are they to communicate to their patient? One physician specifically reported that "if they could simply speak to their patients in a common language everything else would

fall into place" (Shapiro, et. al., 2002). However, that same study interviewed patients on their opinion of cultural and language barriers affecting their relationship with their physician. Patients reported that they often did not see cultural barriers as an issue, and language barriers could be overcome by using an interpreter. A startling patient response also noted that, while using an interpreter, it is key that they "convey the doctor's empathy, as well as the facts" (Shapiro, et. al., 2002). Another study found that language spoken by patients did not change whether patients showed up to their appointment or not, meaning that language did not play a factor in appointment attendance (Kaplan-Lewis & Percac-Lima, 2013). Reports of cultural and language barriers are not often reported in correlation with specific populations or geographic locations. Providing such correlations with language and cultural barriers can provide healthcare workers with expectations to encounter difficulties and target ways to work around such barriers. This includes scheduling an interpreter or having a patient bring in a family member who speaks both the practitioner's language as well as the patient's native language.

A retrospective study was conducted at a community health center serving a predominantly low-income population, which revealed that the second most common reason to a missed appointment, only to forgetting, was miscommunication between the healthcare facility and the patient. The patients specifically stated that they thought they had cancelled the appointment, thought the appointment was a different date or time, tried to call the clinic but did not get through, or did not realize they needed to call and cancel (Kaplan-Lewis & Percac-Lima, 2013). Simple call reminders by clinics or other health centers to the patient can easily eliminate this obstacle to receiving proper healthcare.

Travel Constraints

The lack of access to services due to transportation difficulties and travel distances were overwhelmingly reported more by rural than urban providers (Brems et al., 2006). In addition, burdens in accessing healthcare due to weather, geographic remoteness, terrain challenges and high transportation costs are further burdens on rural residents (Bull, Krout, Rathbone-McCuan, & Shreffler, 2001). A study in Canada reported that distance as a barrier to healthcare was more often raised in an urban setting as opposed to a rural setting. According to the study, distance was accepted as a way of life in a rural setting; therefore, it was rarely invoked as a barrier. However, due to the lack of public or specialized transport, even small distances can be a major barrier in rural areas for those without vehicles or those with limited mobility (Haggerty, Roberge, Levesque, Gauthier, & Loignon, 2014). Recognizing these constraints on patients to receive medical care enables providers to better tailor the patient's care plan in a way that acknowledges the patient's limitations to access healthcare.

Lack of Resources

The lack of resources in a rural medical setting includes the shortage of healthcare providers. A recent study in 2014, stated that the shortage of healthcare providers was due to higher workloads and increased after hour responsibility such as on-call duties, excessive paperwork, professional isolation, insufficient consultation opportunities among colleagues, and insufficient access to hospitals (Weinhold, 2014). Specific to the state of Minnesota, shortage of healthcare providers is present in 79% of state counties (Health Resources and Services Administration, 1995). Surveying Minnesotan PA

viewpoints will enable an up-to-date evaluation of the healthcare provider shortage as a state overall.

Healthcare resources such as medical equipment and supplies are also key factors in barriers to healthcare whether in an urban or rural setting. Those patients living in rural communities face challenges receiving proper diagnostic testing from a clinic due to their lack of medical resources. The lack of resources stems from the small community sizes, lack of health insurance coverage, overall lower incomes from the community, lower rates of Medicaid and Medicare reimbursement, and the constant increase of costs to the healthcare facility (Florida Health, 2013). These factors culminate into a lack of funding which results in the inability of the facility to provide updated medical equipment, resources, and care.

Practitioner training constraints provide an additional influence onto a lack of sources. Most often rural practitioners feel that they have less access to training of various types due to time and staffing limitations. In addition, professional isolation for rural providers is profound and providers often feel they have little opportunity to practice for even short periods of time due to lack of vacation coverage (Gibb, Livesey, & Zyla, 2003).

Shortage of Providers

Literature states that there has been a decrease in the number of physicians interested in pursuing primary care fields, while the proportion of specialists continues to increase. There are several factors at play which contribute to this decrease, such as lifestyle concerns and lack of prestige, with primary medicine most commonly noted (Lakhan & Laird, 2009).

Additionally, providers tend to locate and practice in relatively affluent urban and suburban areas. About 20% of the U.S. population (more than 50 million people) live in rural areas, but only 9% of the nation's physicians practice in rural communities, and this deficit causes a lack of access to care due to the provider shortages (Rosenblatt, & Hart, 2000). To counteract some of the medically underserved areas, populations with too few physicians have been categorized as health professional shortage areas, thus becoming eligible for a broad array of governmental assistance. This aid is in hope of increasing future providers to these areas as they implement loan repayment options to the providers that sign-on for a period of time at a particular facility with a shortage of providers (Rosenblatt, & Hart, 2000).

Other tactics medical schools are implementing include trying to recruit more people from rural areas in the hope that they will return to those areas to practice with benefits such as grants, scholarships, and higher salaries offered to those that work in underserved areas. Some countries have even made it mandatory for healthcare professionals to work for a period of time in underserved areas (Grobler, Marais, Mabunda, Marindi, Reuter, & Volmink, 2009). In particular, a Pennsylvania school introduced a Physician Area Shortage Program (PSAP) and for 22 years studied medical school graduates who went on to practice in primary care. The study found that the graduates had a disproportionately large impact on the rural and underserved physician workforce, and this effect has persisted over time. Based on these program results, policymakers and medical schools can have substantial impact on the shortage of physicians in these areas with the correct implementation and incentives made accessible to providers (Rabinowitz, Diamond, Markham, & Hazelwood, 1999). By allotting

benefits and loan repayment options, etc., to forthcoming providers, we can help eliminate the shortage of care within rural and medically underserved areas.

Time Constraints

Studies have shown that time constraints on the providers have been an ongoing issue in healthcare for many years. One study done in Germany, Britain, and the United States showed that U.S. doctors were allotted the most time for their appointments, but all three of the countries reported that even with the time given for the appointment, the physicians still felt like they needed more time to perform a quality assessment of their patients (Konrad, Link, Shackelton, Marceau, Knesebeck, et al., 2010).

Similarly, a systematic review found no studies supporting a direct association between doctor stress and average appointment length, but found longer physician visits were associated with more attention to psychosocial problems, lower prescribing rates, better quality prescribing, lower referral rates, lower return consultation rates, and patient satisfaction indicators reflecting "patient-centeredness" and "enablement" (Wilson & Childs, 2002).

Physicians throughout the world consult with patients under time limitations. Alongside several consequences for patients and physicians (such as decreased satisfaction and increased risk of errors), clinical diagnosis and history taking under "time constraints" could be strongly flawed (Moayyeri, Soltani, Moosapour, & Razac, 2011). There is a need to get through patients quickly so that more can be seen and certain quotas are met, but ultimately healthcare pays the price, as this may cause further appointments and unnecessary emergency room visits.

Costs

A 2013 survey found that American adults, in comparison to their peers in 11 other countries, were significantly more likely to not seek medical treatment during their initial symptoms due to the cost of medical care. In addition, those patients who forewent care did include those who were medically insured (Schoen, Osborn, Squires, & Doty, 2013). These findings confirm that many American patients tend to decline care or refuse to seek care simply due to the cost of medical care, even if they are insured. This refusal of care often brings repercussion not only to the patient, but also to the medical system in that patients often seek emergency department care later on for their symptoms which dramatically increases both cost to the patient and the medical system.

A retrospective study determined that those patients with poor to intermediate levels of primary care had the highest odds of seeking out emergency department care in non-emergent medical situations. These inappropriate emergency department visits cost the United States' medical system a grand total of $379 million (Xin, Kilgore, Sen, & Blackburn, 2015).

The Affordable Care Act became operational in all 50 states in 2014 and has posed a promise to lower healthcare costs, extend coverage, and prevent a significant rise in insurance premiums (Blumenthal & Collins, 2014). While the Affordable Care Act looked promising to help target medical care costs this seismic issue may have been underestimated. In the last quarter of 2013, health care spending grew at the quickest pace seen in the last ten years. That quarter experienced an $8 billion hospital revenue; which was partially due to an increasing profit margin of hospital based and affiliated emergency rooms since the start of the Affordable Care Act (Geymen, 2015). While the

promises of the Affordable Care Act may have fallen short due to lower costs, patients' distrust of the medical insurance policies and affordability have yet to waiver, even with the extension of insurability that the Affordable Care Act does provide.

An associated press poll in October of 2014 found that roughly one quarter of Americans felt insecure about their ability to pay for necessary health care (Alonso-Zaldivar & Agiesta, 2014). This mistrust and misunderstanding of the health insurance coverage poses a looming barrier to healthcare providers who are hoping to prevent diseases and not treat them. If medical care providers struggle to get patients into their clinics at a primary care level to offer preventative care, medical education, and simple disease treatment, then the alleviation of this issue proves to be more difficult. Without a plan to monitor drug costs, medical care costs, or alleviate unnecessary/inappropriate medical spending, these premiums will continue to raise, further costing patients more and more to access healthcare. This implies that while many families may be able to become insured, they will be receiving insurance through high deductible plans that cover less of the cost of actual health care.

Conclusion

The literature review revealed multiple studies identifying dominant barriers within the healthcare system. Of the previous studies, none have researched barriers presented in a specific state or patient population. The proposed qualitative study will focus on identifying barriers as reported by MUA physician assistants that work in MUAs distinct to the state of Minnesota. Identification of the barriers will provide up to date information for healthcare workers, which in turn will educate both present and

future providers for the state of Minnesota. These changes will bring about new resolutions to barriers and improvements in the quality of patient care.

Chapter 3

Methods

Introduction

This study identified the current barriers to patient care in Minnesota healthcare settings as self-reported by MAPA physician assistants as well as how these barriers can be addressed in the future to resolve the impending barriers and improve patient care in a MUA in Minnesota. Our purpose was to identify potential barriers in the care of patients between medically underserved areas, as reported by MAPA physician assistants. Specifically within this chapter, the following areas are addressed: Study design, population/samples, validity and reliability, data collection, data analysis, and limitations and delimitations.

Study Design

The pre-experimental design study is descriptive of the barriers to patient care. In this study, an online survey was emailed to MAPA members with the first question addressing whether they work in an MUA county. If they did not work in an MUA county, their responses were eliminated from the data, and they did not need to continue with the survey. For those members that did continue they were asked a series of questions regarding barriers to patient health care and rated them on a Likert scale as to the prominence they saw in their own practices. This was a controlled study, therefore, as we set the guidelines for the participants.

Population or Samples

MAPA physician assistants were the focus of this study, specifically those that are employed in MUAs within the state of Minnesota. The PA was required to be a member

of MAPA and a licensed PA within the state. This group was studied specifically since the study is focused within the state of Minnesota. The state of Minnesota had 2,169 actively licensed PAs as of 2014, however only 613 were members of MAPA. This means that approximately 28% of PAs in the state of Minnesota are MAPA members and within the population study. The goal number of respondents for this study was 25.

Through contacts at MAPA and Bethel University as well as being student members of MAPA, we were granted access to send out this survey (Appendix A). Additionally we were granted approval to conduct the survey through the IRB (Appendix B). In time, were able to adequately assess our study by sending an anticipatory alert email to the survey, and two days later sending out the survey, with a week allowed for completion. From the data collected we then had six months to process the responses and complete the study.

Validity and Reliability

The study conducted was reproducible as the same survey questions could be sent out in survey format after a number of years to see how the viewpoint on healthcare barriers have changed. MAPA members could still be surveyed, but the population and number of members will most likely grow. In terms of the survey being reliable, responses cannot be predicted or coerced, and the data had the potential to reflect opinions rather than hard data, but the survey could be conducted in the very same manner, thus making this study reliable.

This study identified barriers to healthcare in MUAs through the survey responses; this data was collected and validated the current barriers to healthcare in Minnesota. Upon responses to the survey, these identified barriers can be addressed in the

didactic year of schooling. These results in turn may alert upcoming PAs of the barriers, in the hopes that they would be better equipped to address and work towards eliminating them. Since this was a novel study, the survey was created by the researchers and not based of any previous surveys. However, the barriers in the survey were chosen based off their prominence in the literature. The Likert scale was utilized to provide a range of opinions. The choices of "Agree, Somewhat Agree, Somewhat Disagree, Disagree" were used to reduce the harsh implications of a provider identifying the barrier in their practice. Validity was also increased as the survey was reviewed by the Committee Chair, and two of her colleagues within the state of Minnesota prior to the survey being sent out.

Data Collection

This study collected data through the use of an online survey tool. Specifically, Bethel Qualtrics was utilized to send out and receive responses from MAPA PAs. The initial survey was sent out and indicated certain counties, 18 specifically in the state of Minnesota that were not considered MUAs. The responses of the PAs that work in these areas were eliminated from the data collection, as we were only gathering data from PAs that work in MUAs. The survey was sent out, and concluded one week later. This gave participants one week to complete the survey. They also received an alert email one week before the survey was released so the MAPA members were aware the survey was coming. The responses gathered from this survey were anonymous, thereby protecting the subjects surveyed. See Appendix C for the informed consent statement, and for the survey questionnaire please see Appendix D.

Data Analysis

Data analysis was completed to identify the most commonly reported barriers by percentage of respondents. Each individual question addressed a specific barrier, and percentages were gathered as to whether MAPA members in MUAs felt the barriers were present in their area of work. The ranking questions (questions 17 and 18) helped identify the three most prominent barriers as reported by MAPA members, as well as the mainstay in which MAPA members felt students need to be better prepared in their education to provide quality patient care.

Data was reported in percentages and reflected in bar graphs and pie charts. The Likert scale options of "Agree and Somewhat Agree" were overall regarded as in agreement to the survey question being presented, which was reported as "Agree" in the figures. The options of "Disagree and Somewhat Disagree" were overall regarded as in disagreement to the survey question being presented, which was reported as "Disagree" in the figures. Only the most statistically significant responses (>65%) were reported this way. The three most common barriers were also reported in a similarly graphed fashion.

At the conclusion of the study, all data was stored on a flash drive and kept at Bethel University PA Program in a secure file.

Limitations & Delimitations

This survey faced limitations including the number of correspondents and response rate. Since there were 613 MAPA members out of the 2,169 licensed PAs in the state of Minnesota, this qualified only 28% of PAs in the state of Minnesota to be surveyed.

Subjects included only Minnesota Physician Assistants who were members of the Minnesota Academy of Physician Assistant (MAPA) and of those, MAPA members who were currently practicing in a medically underserved area in the state of Minnesota.

Subjects excluded were Minnesota Physician Assistants who were not members of MAPA and those who were not currently practicing in a medically underserved area, which included clinics that are located in the following 18 counties: Anoka County, Carver County, Chippewa County, Crow Wing County, Dakota County, Douglas County, Goodhue County, Isanti County, Kanabec County, Kandiyohi county, Lake County, Le Sueur County, Olmsted County, Pennington County, Scott County, Steele County, Stevens County and Washington County. Therefore, PAs who worked within these counties at the time of the survey were excluded after answering the first question.

Chapter 4

Results

Introduction

This chapter will explain the data collected from the survey. The data collected did meet statistically significant values, which were set by the researchers and defined in chapter three. The data collected was analyzed and showed that some healthcare barriers did have respondent rates of 65% or greater and the number of valid respondent surveys, a total of 28, exceeded the respondent number required of 25 valid surveys. The data calculations were split by each (healthcare) barrier question's response and calculated into figures. Demographic related responses are represented in bar graphs and the barrier responses represented in a pie chart.

Data Analysis

Fifty MAPA participants responded to taking the survey during the one-week time frame the survey was available. However, of those 50 participants that took the survey only 56% of the total respondents worked in a MUA (Figure 1). Therefore, 22 surveys of the 50 were not applicable to this study. Additionally, three respondents started but did not complete the survey; these survey results were also removed from the data analysis. The remaining 28 appropriate and completed surveys were recorded and formatted into figures using Microsoft Excel.

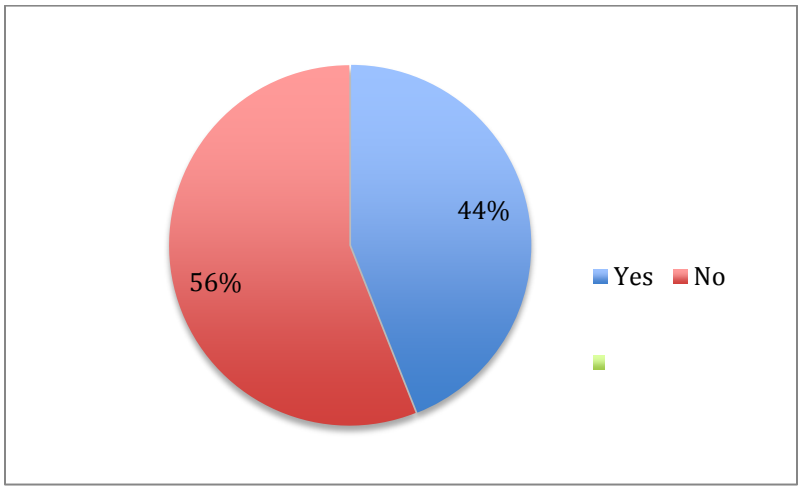

Figure 1. Number of Respondents Working in a Non-MUA County.

Of the 28 respondents that did work in a MUA, 27 of those were female and one was male. This resulted with a 96% female response rate compared to a 4% male response rate (Figure 2). Due to this skew in demographics, no accurate comparisons or trends of healthcare related barriers could be made by comparing female responses to male responses.

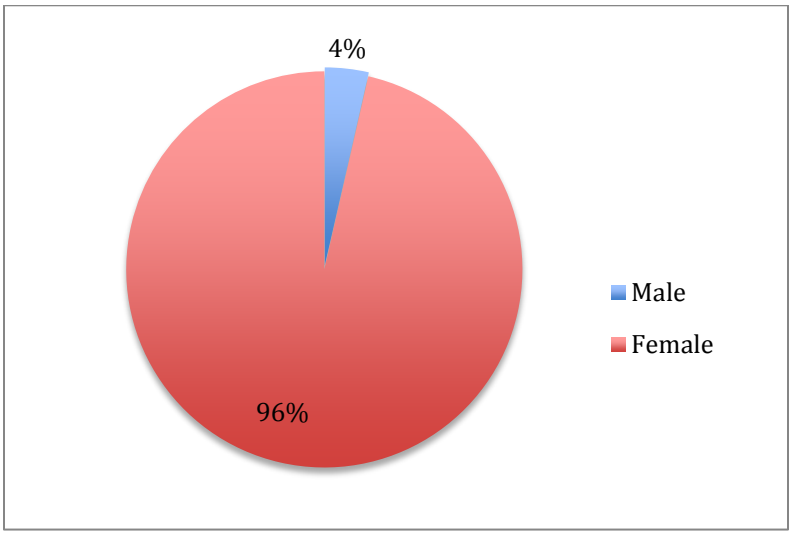

Figure 2. Gender Percentage of Respondents.

The number of respondents did vary based on the number of years in practice as a PA (Figure 3), as well as the number of years worked within the MUA clinic or hospital (Figure 4). The majority of respondents reported practicing as a PA for over ten years. In addition, responding providers reported they had worked at their current facility for greater than ten years, or were new to the profession. There were not many respondents that had been working at an MUA between three and ten years.

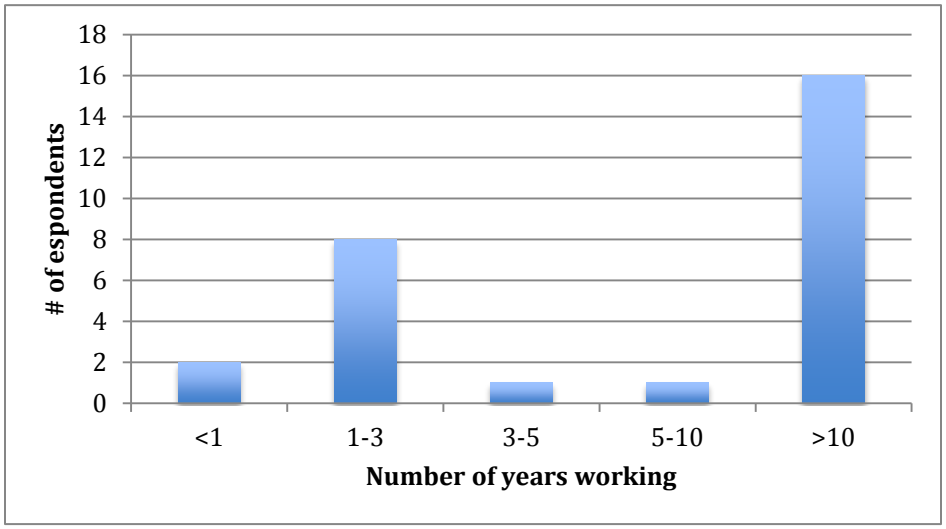

Figure 3. Work experience in the PA Profession.

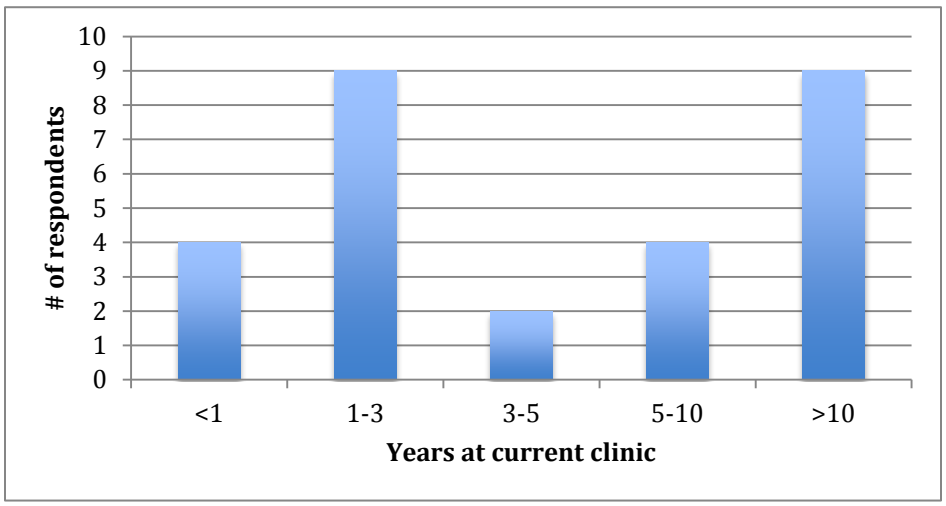

Figure 4. Current Clinic Experience.

In comparison to the hypothesis presented for this research, it was originally hypothesized that the three most prominent barriers to care would be time constraints, shortage of providers, and miscommunications/misunderstandings between patients and providers. The hypothesis was supported in two of the three barriers hypothesized; those supported barriers being misunderstandings and time constraints. When prompted to pick the three most prominent barriers (question number 17 in the survey), time constraints (27%), cost of care to the patient (24%), and patient understanding of healthcare plan (19%) were the most commonly selected (Figure 5). Of note, there was not one barrier that was identified most commonly throughout the survey.

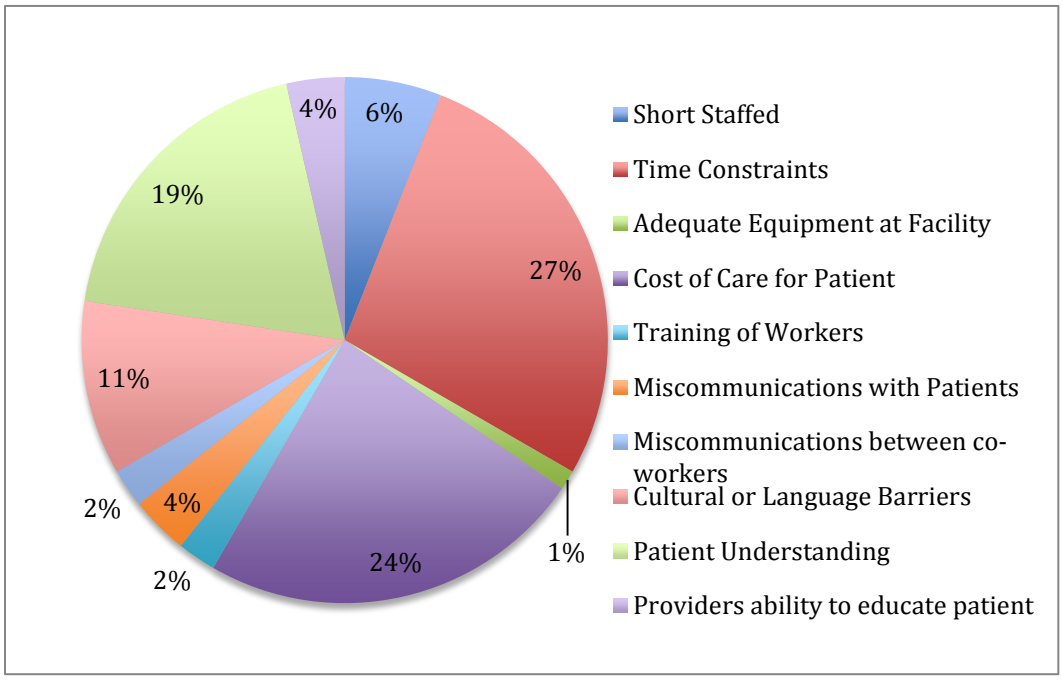

Figure 5. Prominent Barriers to Care.

The final question of the survey, (question 18), asked MAPA members to identify the area that would most benefit future PAs during their didactic year of schooling (Figure 6). The analysis on this question showed that a better understanding of cost

effective care (29%) would most benefit current students, followed by better time management skills (25%), and a better understanding of insurance policies (21%). While none of the responses in question 18 were considered statistically significant since their respective percentages were less than 65%; the responses do report a majority favored answer as 29% of respondents stated cost effective care was a worthy understanding for new PAs.

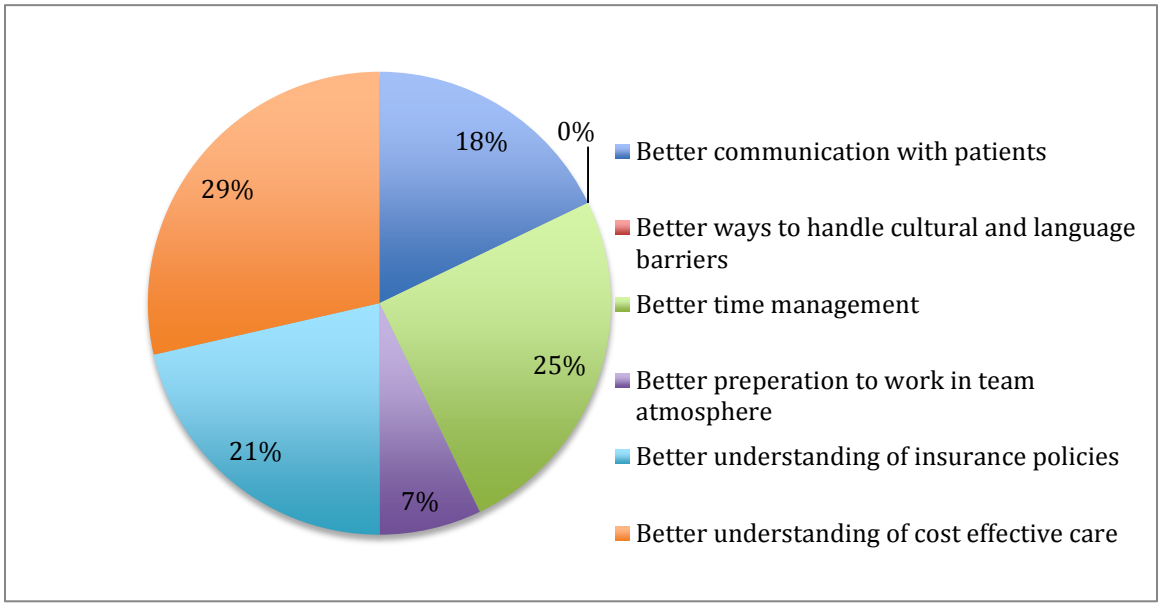

Figure 6. Areas of Improvement Needed for New PAs.

The Likert scale options of "Agree and Somewhat Agree" were overall regarded as in agreement to the survey question being presented, which was reported as "Agree" in the figures. The options of "Disagree and Somewhat Disagree" were overall regarded as in disagreement to the survey question being presented, which was reported as "Disagree" in the figures. Additionally our research identified two statistically significant barriers (>65%) that were evident in the respondents practice. These barriers were patient misunderstandings (Figure 7) and time constraints (Figure 8).

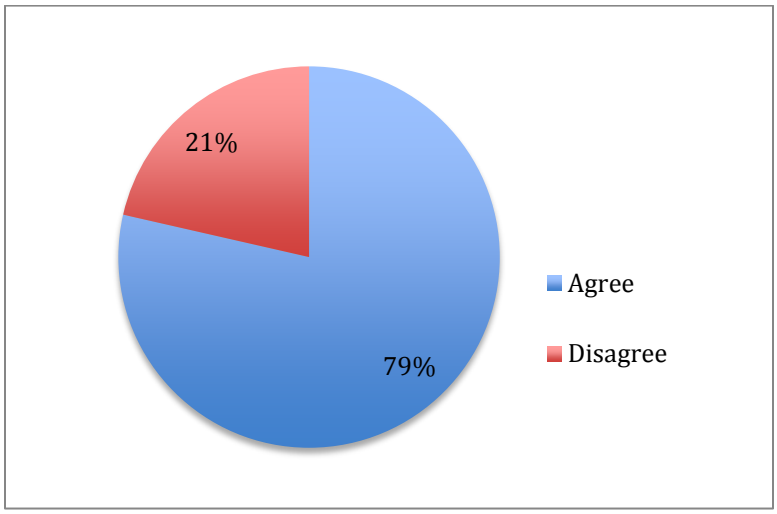

Figure 7. Common Patient Misunderstandings of Care and Treatment Plan.

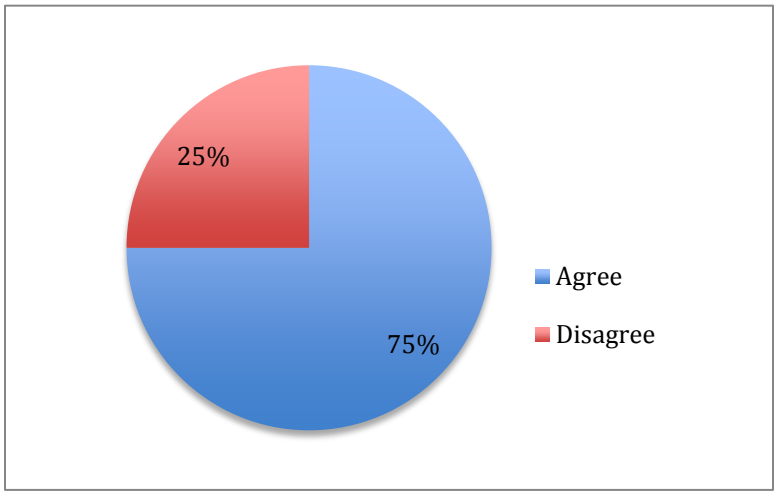

Figure 8. Time Constraints.

Interestingly, all providers reported that the ability to use layman's terms during medical explanations to enhance patient understanding was not a barrier. Therefore, all reporting providers felt they had the full ability to utilize layman's terms for patient understanding (Figure 9).

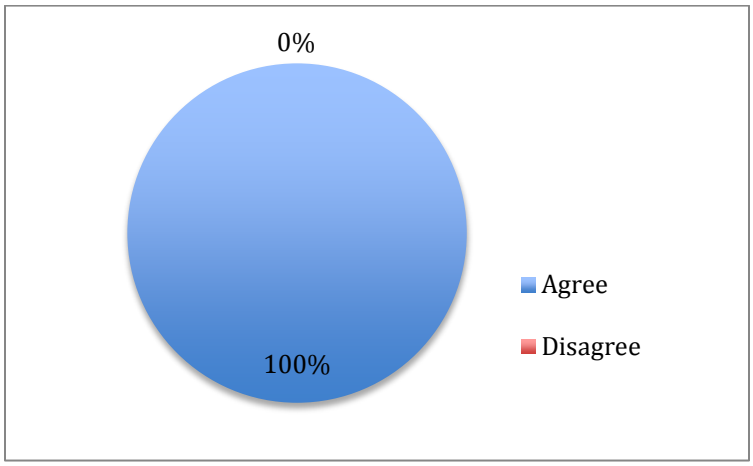

Figure 9. Ability to Utilize Layman's Terms.

The remaining barriers to care did not provide statistically significant values, meaning the response rate was less than 65%. Therefore, no further analysis of these barriers with a response rate of less than 65% was necessary. Please see Appendix E for the remaining barriers that were not statistically significant (Figure 10 – Figure 18).

The above information was all collected in this novel study. Chapter 5 will further discuss these findings as well as compare them to previous literature findings, ending with a summative conclusion of this study.

Chapter 5

Discussion & Conclusion

Introduction

The research was a novel study identifying barriers to healthcare in Minnesota MUAs as reported by Minnesota PAs. The data collected for this study identified the three most prominent barriers to care in Minnesota MUAs, identified the most important area to increase PA students knowledge, and identified statistically significant barriers in MUAs by a response rate greater than 65%. By identifying barriers, this research's aim was to make current and future providers aware so they can implement primary prevention of the barriers, in addition to incorporating techniques to overcome barriers, which cannot be prevented. The study also paves a pathway for future researchers to continue identifying barriers in the healthcare setting, which can be expanded to medically adequate healthcare settings or the Midwest region healthcare setting.

Discussion of Findings

The survey in its entirety resulted with an 8% (50 of 613) response rate of the 2015 MAPA member population. The low response rate prevented demographics and correlations between demographics and barriers from being meaningful; as there was limited variation in the reports of the demographics. Provider demographics were not researched the in previous studies that were reviewed. However, future research studies could utilize a larger population size to create variation in demographics and allow for correlations of specific barriers in the healthcare system.

The three most prominent barriers reported in the survey were ranked 1) provider time constraints, 2) cost effective care and 3) patient misunderstanding. Our hypothesis

was somewhat supported in identifying the three most prominent barriers in MUAs in Minnesota. Our hypothesis correctly identified two of the three barriers; time constraints and patient misunderstandings. However, our hypothesis was unsupported by results showing that cost effective care and not shortage of providers was the third barrier most prominently reported.

Interestingly, by definition, a MUA has a provider shortage; as the ratio of primary care physicians to 1,000 people is a criteria in qualifying the county as medical underserved. Therefore, the majority of providers working in MUAs in Minnesota did not feel that the shortage of providers inhibited their care to patients or caused a barrier in the MUA healthcare setting. Literature supports our hypothesis but not the survey results. A previous study noted that provider shortage in rural populations causes a decreased access to care and, therefore, a barrier to healthcare (Rosenblatt, & Hart, 2000). Additionally, about 20% of the U.S. population (more than 50 million people) live in rural areas, but only 9% of the nation's physicians practice in rural communities (Grobler, Marais, Mabunda, Marindi, Reuter, & Volmink, 2009).

The results of the ranking of the three most prominent barriers reported that the most prominent barrier was time constraints. Time constraints as a barrier to healthcare can range from time constraint of the visit with the patient, hours allotted in the workday, and inadequate time spent with patients. The literature supported the finding of time constraints as a barrier to care. A study in 2002, found that longer physician visits were associated with more attention to psychosocial problems, lower prescribing rates, better quality prescribing, lower referral rates, lower return consultation rates, and patient satisfaction indicators reflecting "patient-centeredness" and "enablement" (Wilson &

Childs, 2002). Time constraints on providers also increase the risk of errors occurring (such as in physical exam findings, lab results, imaging results) and decrease patient satisfactions causing consequences for both the patient and physician (Moayyeri, Soltani, Moosapour, & Razac, 2011). Time constraints on providers cause a barrier as supported by the literature. Constraints due to the increased pressure to stick to rigid appointment times, meet daily patient quotas and allotted work hours are present in the healthcare field.

The second most prominent reported barrier was cost effective care. Cost effective care is based off the development of a concept of quality-adjusted life year (QALY). The QALY concept reflects the years a patient gains with a (specific) medical intervention (Weinstein, 2010). However, what the literature reported is that patients often do not utilize the proper route for receiving medical intervention which causes the lack of cost effective medical care. American adults were less likely to seek medical treatment during initial presentation of symptoms due to the "alleged" cost of medical care (Schoen, Osborn, Squires, & Doty, 2013). This delay of patient presentation ultimately leads to patient presentation at an inappropriate level of medical care or higher medical care required due to life threatening symptoms or condition. Additionally, patients with poor access to intermediate levels of primary care had the highest odds of seeking out emergency department care in non-emergent medical situation, which causes a drastic increase to the cost of medical care. These patient presentations and initial symptoms are more appropriately handled in a primary care setting and have an increase cost effectiveness unknown to patients. With the ultimate inappropriate patient presentation to emergency medical care these visits cost the United States' medical

system a grand total of $379 million annually (Xin, Kilgore, Sen, & Blackburn, 2015). Our research was in support of the literature and other research findings that cost of care causes healthcare barriers. In turn, with patient misunderstanding of cost of care, this causes an increase cost of care to patients and the medical system.

The final and third most prominent barrier reported was patient misunderstanding. Patient misunderstanding is inclusive of misunderstanding of the entire medical staff, which includes, providers, nurses, technicians, schedulers and other medical team members in contact with the patient. A study demonstrated that a simple reminder message from the scheduling staff significantly reduced patients missing appointments (Kaplan-Lewis & Percac-Lima, 2013), as the most common reason for missed appointments was patient forgetfulness.

While patients need to take a role in the responsibility of their healthcare, often providers forget that patient opinion and input is a necessity for good patient-provider relationship and, comparably, good patient communication of medical care. In a research study, patients' reported an overwhelming response that poor provider communication was exhibited due to the provider's use of an authoritative model of care. The study results showed that patients reported good communication incorporated the patient in the medical decisions and took patient situation information into account (Shapiro, et al., 2002).

Good provider communication also includes good explanations of the diagnosis, lab results, imaging results, and treatment plan. In the United States, 90 million people have difficulties understanding and using health information (Hawkins, Kantayya, & Sharkey-Anser, 2010). Difficulties with patient understanding of medical information

make it imperative that medical providers explain medicine in a way patients are able to understand. Of note, our research study found that 100% of providers reported that they could use layman terms in order to describe medical diagnosis, testing, medications, or other pertinent information in a way that their patient felt informed and educated upon conclusion of the of patient's appointment (Question 16). It is strikingly interesting that 100% of the time providers feel that they explained medically relevant information to their patient without causing any misunderstanding, yet they reported patient misunderstanding in their clinical practice. These two conclusions clearly do not add up. Therefore, further exploration in future research is needed to find the bridge missing between the two points.

The research reflected that the most important area of knowledge for future PA providers was a better understanding of cost effective care. Cost effective care has been a well-supported barrier in the literature as well. However, no research studies have been conducted on specific physician assistant schooling programs (or other medical provider schooling programs) of the importance, provider effectiveness, or future provider preparedness in relation to cost effective patient care.

In the analysis of statistically significant healthcare barriers, (greater than 65% response rate), two barriers emerged from the research. The data analysis resulted patient misunderstandings (79%), and time constraints (75%) as statistically significant barriers in MUAs in Minnesota. Therefore the healthcare barriers of time constraint, and patient misunderstanding were consistently identified throughout the survey and analysis as prominent and statistically significant barriers.

Limitations

Limitations to the applicability and generalization of the results in the study are reduced based on the number of responses and the selection of participants. The respondents were comprised of solely MAPA members; while there are many other PAs within the state of Minnesota who may work in a MUA, the researchers focused on this demographic as communicability and member information was easily accessible. In future studies it may be beneficial to find a way to open the survey to all PAs within the state of Minnesota as well as including other healthcare providers with similar patient care responsibilities, such as Nurse Practitioners (NP), Medical Doctors (MD), and Doctors of Osteopathic Medicine (DO).

The number of respondents also represented a limitation to the study. The sample population was small with only 28 of the total 50 respondents reported as working in a MUA at the time of the survey. In future studies, the amount of respondents may be increased with the addition of a reminder email during the survey period, as well as a longer surveying period, or by contacting MUA clinics or hospitals and requesting survey participation.

Limitations to the reliability of the study primarily stem from the survey chosen. By implementing an email format and using a select list of MAPA member emails, the researchers were unable to confirm if the surveys were completed in a controlled environment. Respondents may have possibly questioned co-workers for their opinions before answering the questions. In addition, since the survey was sent out via email with a link corresponding there is the potential that non-PA medical providers may have taken the survey, through forwarding or other means. As researchers the link was originally

only sent to Sustaining and Fellow members of MAPA to reduce the chance that the link was not sent to non-practicing PAs or PA students.

Suggestions for Further Research

Based on the results of the study there is still a wide array of data uncollected. In the future, it would be desirable to replicate the study with a longer survey period and larger sample population to determine if the prominent barriers are sustained in comparison to this study. Surveying PA populations in neighboring states to gain an understanding of the barriers to care throughout the Midwest would be beneficial, and would help obtain a more representative sample and more generalizable data. Implementing some of the areas identified as needing improvement within PA school to see how the educational aspect could potentially decrease the barriers to care would also be desirable. All of these suggestions would help support reliability of this study and future studies.

Implications to Practice

Patient care barriers represent a flaw in healthcare that leads to ineffective and unsatisfactory patient care. Healthcare barriers are also implicated in reduced physical and mental health of patients (Wilson & Childs, 2002). If these barriers can be addressed by medical staff and taught to students during their didactic year of schooling, there is potential for the reduction of the number and severity of barriers to care.

Time constraints was reported as the most prominent barrier in Minnesota MUAs. Resolution to time constraints in a healthcare setting is often difficult because visit times are often set by the corporation the provider is employed through. However, providers and medical staff must advocate for more time for chronic disease patients, patients with

multiple complaints, or other patients deemed with complex symptoms. These complex patients should be allotted increased appointment time to address the issues at hand. Patients with chronic diseases that require routine laboratory results should be requested to have lab draws and results available before their appointment with the provider. This not only improves the flow of the appointment but also allows the provider to review the results before the patient is seen as well as discuss results with the patient face to face. This face to face time allows patients to address questions easily with the attending provider.

Patient misunderstanding of providers, whether it be exam findings, laboratory results, imaging, diagnoses, treatment, or healthcare plan can drastically affect the physical health, mental health, and attitude of patients. Patients who leave a clinic unsure of their health status, unsure of how to resolve their symptoms or unsure of how take their medication(s) cannot comply and participate in attaining their mental or physical health goals. Providers need to check patient understanding as they complete the visit and should utilize the Teach - Back technique. The Teach - Back technique improves patient understanding and compliance by encouraging and requiring the patient to restate the diagnosis, treatment plan and importance of treatment plan (Kemp, Floyd, McCord-Duncan & Lang, 2008). If the patient is either unable to explain or incorrectly states any of the areas (diagnosis, treatment plan, and importance of the treatment plan) the provider is then able to clarify and address the misunderstanding before the patient leaves the office. As this solution to the barrier seems simple, the Teach – Back technique is often forgotten in clinical practice. Providers often move quickly through the appointment and

quick explanations are sometimes not understood fully or patients are unable to think of questions or ask questions in comparison to the pace of the visit.

Lastly, increased medical knowledge in the didactic year of PA programs, as reported by practicing PAs, demonstrated that further review and understanding of cost effective patient care would be of most benefit to future PA providers. The importance of students understanding cost effective care also relays the argument that patient satisfaction and proper workup must have an equal balance. Patients often request labs, imaging or simple clinical procedures (which could be completed by the patient at home with over the counter treatments) without realization of the cost or effectiveness of the request. The providers job is to then educate the patient on why waiting for certain labs or imaging or a trying an over the counter option would be more beneficial to the patient as well as a financial benefit. Additionally, teaching students to order imaging and labs "from the ground up" is important. Clinical discussion of cases by faculty and guest speakers with students about cost of orders, cost effective care, and meeting the required workup per diagnosis should be discussed during the didactic year of studying. Cost effective care understanding could also assist a new graduate in practice when discussing care plans with patients; as again provider knowledge of costs can help to steer patients away from unnecessary imaging and labs which would be costly to the patient.

The discussed clinical implications of the research study identifies starting points for current providers and future providers to reduce barriers present in their healthcare setting, most specifically MUAs. The implications can be applied to all healthcare setting as the ideas are universal throughout the healthcare system, but certain facilities may already have strategies to reduce barriers. The research findings from this study open

pathways to continue to explore, identify, and provide awareness of barriers to care involving patients and providers in a healthcare setting. Looking ahead the research results hopes to aid in the ongoing improvement of healthcare service, patient understanding, and overall patient satisfaction.

Conclusion

This novel research study was conducted to identify the barriers to healthcare, specifically in medically underserved areas in the state of Minnesota. The research found the three most prominent healthcare barriers and two statistically significant healthcare barriers that MAPA physician assistants employed in Minnesota MUAs felt were affecting their patient population and care. The three most prominent barriers reported were 1) provider time constraints, 2) cost effective care and 3) patient misunderstanding. The two statistically significant barriers, reported greater than 65%, were patient misunderstanding (79%) and time constraints (75%). In addition, the research identified areas of knowledge that practicing PAs felt further PA student education was needed on prior to beginning practice as a PA. The area of knowledge most highly identified was cost effective patient care.

References

Alonso-Zaldivar, R. & Agiesta, J. (2014). Poll: Many insured struggle with medical bills. Associated Press. Retrieved from: http://bigstory.ap.org/article/41df6bca84b8454cb059ffe9bef9e222/poll-many-insured-struggle-medical-bills

Bethel University. Program Details. (2014). Retrieved from: http://gs.bethel.edu/academics/masters/physician-assistant/program-details

Blumenthal, D., & Collins, S. R. (2014). Health care coverage under the Affordable Care Act—a progress report. *New England Journal of Medicine*, *371*(3), 275-281. Retrieved from: http://www.nejm.org/doi/full/10.1056/NEJMhpr1405667

Brems, C., Johnson, M. E., Warner, T. D., & Roberts, L. W. (2006). Barriers to healthcare as reported by rural and urban interprofessional providers. *Journal of Interprofessional Care, 20*(2), 105-118.

Bull, C. N., Krout, J. A., Rathbone-McCuan, E., & Shreffler, M. J. (2001). Access and issues of equity in remote/rural areas. *The Journal of Rural Health*. *17*(4), 356–359. Retrieved from: http://onlinelibrary.wiley.com/doi/10.1111/j.17480361.2001.tb00288.x/abstract

Florida Health. (2013). Rural Health Services. Retrieved from: http://www.floridahealth.gov/programs-and-services/community-health/rural-health/rural-health-services.html

Geyman, J. P. (2015). A Five-Year Assessment of the Affordable Care Act Market

Forces Still Trump the Common Good in US Health Care. *International Journal of Health Services*, *45*(2), 209-225. Retrieved from: http://joh.sagepub.com/content/45/2/209.short

Gibb, H., Livesey, L., & Zyla, W. (2003). At 3am who the hell do you call? Case management issues in sole practice as a rural community mental health nurse. Australasian Psychiatry. *11*(S1), S127–S13. Retrieved from: http://onlinelibrary.wiley.com/doi/10.1046/j.1038-5282.2003.02005.x/abstract

Graham, J.E., Karmarkar, A.M. & Ottenbacher, K.J. (2012). Small Sample Research Designs for Evidence-based Rehabilitation: Issues and Methods. Arch Phys Med Rehabil. 93(8S),S 111-S116. Retrieved from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3413737/

Grobler, L., Marais, B., Mabunda, SA., Marindi, PN., Reuter, H., & Volmink, J. (2009) Interventions for Increasing the Proportion of Health Professionals Practising in Rural and other Underserved Areas. Cochrane Library. Retrieved from: http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD005314.pub2/abstract;jsessionid=664DF718C5860CC217895E5405A2C689.f01t02?deniedAccessCustomisedMessage=&userIsAuthenticated=false

Hawkins, PhD, Alesia O., Kantayya, MD, FAAFP, Vivek S., & Sharkey-Asner, MD, Carrie. (2010). Health literacy: A potential barrier in caring for underserved populations. *Disease-a-Month, 56*(12), 734-740. Retrieved from: http://www.diseaseamonth.com/article/S0011-5029(10)00186-0/abstract

Health Resources and Services Administration. (August 2013). Medically Underserved Areas/Populations by State and County. US Department of Health and Human

Services. Retrieved from: http://muafind.hrsa.gov/index.aspx

Kaplan-Lewis, E., & Percac-Lima, S. (2013). No-show to primary care appointments: Why patients do not come. *Journal of Primary Care & Community Health, 4*(4), 251-255. doi:10.1177/2150131913498513 [doi]

Kemp, E., Floyd, M. McCord-Duncan, E. & Lang, F. 2008. Patients prefer the method of "tell back-collaborative inquiry" to assess understanding of medical information. *J Am Board of Fam Med, 21 (1), 24 -30*. Retrieved from: http://www.jabfm.org/content/21/1/24.long

Konrad TR, Link CL, Shackelton RJ, Marceau, L., Knesebeck, O., Siegrist, J., Arber, S., Adams, A., & McKinlay, J. (2010). It's about time: Physicians' perceptions of time constraints in primary care medical practice in three national healthcare systems. *Medical care*. *48*(2):95-100. doi:10.1097/MLR.0b013e3181c12e6a. Retrieved from: http://www.ncbi.nlm.nih.gov/pubmed/20057331

Lakhan, S. & Laird, C. (2009). Addressing the primary care physician shortage in an evolving medical workforce. *Int. Arch Med*. Retrieved from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2686687/

Lensing, A. MAPA Membership. (Interview). 6 November 2014.

Moayyeri A., Soltani A., Moosapour H., & Raza M. (2011). Evidence-based history taking under "time constraint." *Journal of Research in Medical Sciences* : *The Official Journal of Isfahan University of Medical Sciences. 16*(4):559-564. Retrieved from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3214363/

Office of Rural Health and Primary Care. (2008). Metropolitan, Micropolitan and Rural Counties in Minnesota. Minnesota Department of Health. Retrieved from:

http://www.health.state.mn.us/divs/orhpc/define.html

Rabinowitz, H., Diamond, J., Markham, F., & Hazelwood, C. A. (1999). Program to Increase the Number of Family Physicians in Rural and Underserved Areas: Impact After 22 Years. *JAMA*. *281*(3): 255-260. Retrieved from: http://jama.jamanetwork.com/article.aspx?articleid=188379

Rosenblatt, R. & Hart, L. (2000). Physicians and Rural America. West J Med. *173*(5): 348-351. Retrieved from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1071163/

Schoen, C., Osborn, R., Squires, D., & Doty, M. (2013). Access, affordability, and insurance complexity are often worse in the United States compared to ten other countries. *Health Affairs*, *32*(12), 2205-2215. Retrieved from: http://www.nejm.org/toc/nejm/371/3

Shapiro, J., Hollingshead, J., & Morrison, E. (2002). Primary care resident, faculty, and patient views of barriers to cultural competence, and the skills needed to overcome them. *Medical Education*, *36*(8), 749-759. Retrieved from: http://www.ncbi.nlm.nih.gov/pubmed/12191058

US Census Bureau. (n.d.). 2010 Census Urban and Rural Classification and Urban Area Criteria. US Department of Commerce. Retrieved from: http://www.census.gov/geo/reference/ua/urban-rural-2010.html

US Census Bureau. (2013). Metropolitan and Micropolitan Statistical Areas. United States Census Bureau. Retrieved from: http://www.census.gov/population/metro/

Weinhold, I. & Gurtner, S. (2014). Understanding shortages of sufficient health care in rural areas. *Health Policy,* (0)

doi:http://dx.doi.org.ezproxy.bethel.edu/10.1016/j.healthpol.2014.07.018

Wilson A. & Childs S. (2002). The relationship between consultation length, process and outcomes in general practice: a systematic review. *Br J Gen Pract*. Dec; *52*(485):1012-20. Retrieved from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1314474/

Xin, H., Kilgore, M. L., Sen, B. P., & Blackburn, J. (2015). Can Nonurgent Emergency Department Care Costs be Reduced? Empirical Evidence from a US Nationally Representative Sample. *The Journal of emergency medicine*. Retrieved from: http://www.journals.elsevier.com/the-journal-of-emergency-medicine/recent-articles/

Appendix A

MAPA Approval for Survey

From: **Missy Machkhashvili** <missy@mnacadpa.org>
Date: Mon, May 18, 2015 at 8:33 AM
Subject: RE: Student Research Request
To: "Devorak, Judith APRN, CNP" <JDevorak@olmmed.org>, leslie.milteer@comcast.net
Cc: Wallace Boeve <wboeve@juno.com>, cindy goetz63 <cindy.goetz63@gmail.com>, "Wold, Meredith" <meredithwold@hotmail.com>

The research projected is supported by the executive committee, and we can survey the membership.
Thank you!

Missy Machkhashvili
Administrator
Minnesota Academy of Physician Assistants
600 S. Hwy. 169, Suite 1680
St. Louis Park, MN 55426
(952) 542- 8700
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MinnesotaPA.org

Appendix B

IRB Approval

From: **Wallace Boeve** <w-boeve@bethel.edu>
Date: Tue, Jul 14, 2015 at 9:37 AM
Subject: Level 3 Bethel IRB Approval
To: Amanda Walters <amw82597@bethel.edu>, Ashley Hoffmann <ash77952@bethel.edu>
Cc: Cindy Goetz <c-goetz@bethel.edu>, Peter Jankowski <pjankows@bethel.edu>

Miss Walters & Miss Hoffman;

As granted by the Bethel University Human Subjects committee as the program director, I write this letter to you in approval of Level 3 Bethel IRB of your project entitled: "Minnesota Barriers to the Medically Underserved." This approval is good for one year from today's date. You may proceed with data collection and analysis. Please let me know if you have any questions."

Sincerely;

Wallace Boeve, EdD, PA-C
Program Director
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Appendix C

Informed Consent

Thank you for agreeing to complete this survey. This information will attempt to identify patient healthcare barriers in Medically Underserved Areas within the state of Minnesota as reported by MAPA members. This will enable future PAs to be better equipped upon completion of school, with a better understanding of the barriers to care.

Please be advised that participation in the survey is voluntary on your part and will have no effect on your MAPA membership. Your individual responses in this survey are confidential and will not be connected with you as an individual in any reporting of this data. If at any time you choose to stop the survey you may do so.

If you have any questions about this survey or would like to learn more about this study, you may contact:

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Appendix D

Survey Questionnaire

The following is the survey that was presented to the studied population:

1. Do you work in any of the following counties?

- Anoka County, Carver County, Chippewa County, Crow Wing County, Dakota County, Douglas County, Goodhue County, Isanti County, Kanabec County, Kandiyohi county, Lake County, Le Sueur County, Olmsted County, Pennington County, Scott County, Steele County, Stevens County and Washington County.

2. Gender:

A. Male B. Female C. Prefer not to answer

3. How many years have you worked as a PA?

A. <1 year

B. 1-3 years

C. 3-5 years

D. 5-10 years

E. >10 years

4. How many years have you worked at your current clinic?

A. < 1 year

B. 1-3 years

C. 3-5 years

D. 5-10 years

E. >10 years

5. There is a shortage of medical providers in the county in which I work.

A) Agree B) Somewhat Agree C) Somewhat Disagree D) Disagree

6. There are time constraints to patient care where I work.

A) Agree B) Somewhat Agree C) Somewhat Disagree D) Disagree

7. My facility is adequately equipped to manage sufficient medical care for the area in which I work. (This includes adequate ability to refer as needed and expected testing and procedures for the facility).

A) Agree B) Somewhat Agree C) Somewhat Disagree D) Disagree

8. The majority of my patients are able to afford necessary medical care for appropriate care, screening and medications.

A) Agree B) Somewhat Agree C) Somewhat Disagree D) Disagree

9. I have sufficient training in my area of practice to provide patients with efficient and skilled medical care.

A) Agree B) Somewhat Agree C) Somewhat Disagree D) Disagree

10. My coworkers have sufficient training in their area of practice to provide patients with efficient and skilled medical care.

A) Agree B) Somewhat Agree C) Somewhat Disagree D) Disagree

11. Patients have misunderstood directions, which has concurrently led to decreased compliance in their care.

A) Agree B) Somewhat Agree C) Somewhat Disagree D) Disagree

12. Miscommunications between coworkers have led to slowing of medical care for patients.

A) Agree B) Somewhat Agree C) Somewhat Disagree D) Disagree

13. My patients have limited accessibility to proper medical care.

A) Agree B) Somewhat Agree C) Somewhat Disagree D) Disagree

14. Cultural and/or language barriers with patients inhibit my ability to provide adequate medical care.

    A) Agree B) Somewhat Agree C) Somewhat Disagree D) Disagree

15. Patients are hesitant to ask questions in a patient-provider setting. (This includes questions about diagnosis, testing, medications or follow-up appointments)

    A) Agree B) Somewhat Agree C) Somewhat Disagree D) Disagree

16. I can use layman terms in order to describe medical diagnosis, testing, medications or other pertinent information in a way that the patient feels informed and educated upon conclusion of their appointment/stay.

    A) Agree B) Somewhat Agree C) Somewhat Disagree D) Disagree

17. Of the following "medical healthcare barriers" rank 3 barriers you feel most interfere in providing adequate and proficient care to patients? (Rank 3 boxes, with #1 being the most important in your opinion)

    - ☐ Shortage of medical providers
    - ☐ Time constraints
    - ☐ Adequate equipment
    - ☐ Cost of care for patients
    - ☐ Proficient training of healthcare workers
    - ☐ Miscommunications with patients
    - ☐ Miscommunications between co-workers
    - ☐ Cultural or language barriers
    - ☐ Patient understanding of care and health plan
    - ☐ Provider ability to adequately provide patient education

18. Of the following, which of these improvement methods do you think would most benefit students preparing to practice as a PA if they were implemented into their studies? (Check one box).

    - ☐ Better prepare students to communicate effectively with patient
    - ☐ Better prepare students to handle cultural and language barriers
    - ☐ Better prepare students with time management skills
    - ☐ Better prepare students to work in a team atmosphere
    - ☐ Better prepare students with an understanding of healthcare insurance plans (Medicare, Medicaid, Medica, etc.)
    - ☐ Better prepare students to utilize efficient but cost effective care

Appendix E

Figures of Non-Statistically Significant Barriers

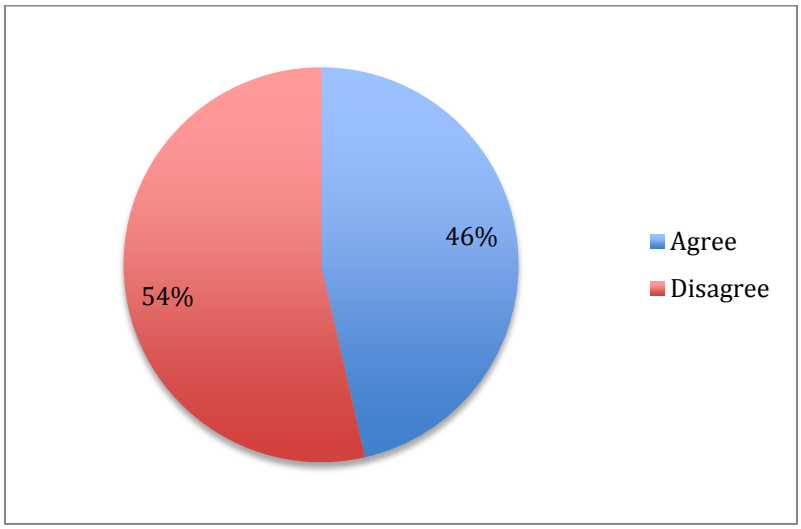

Figure 10. Facility is Understaffed.

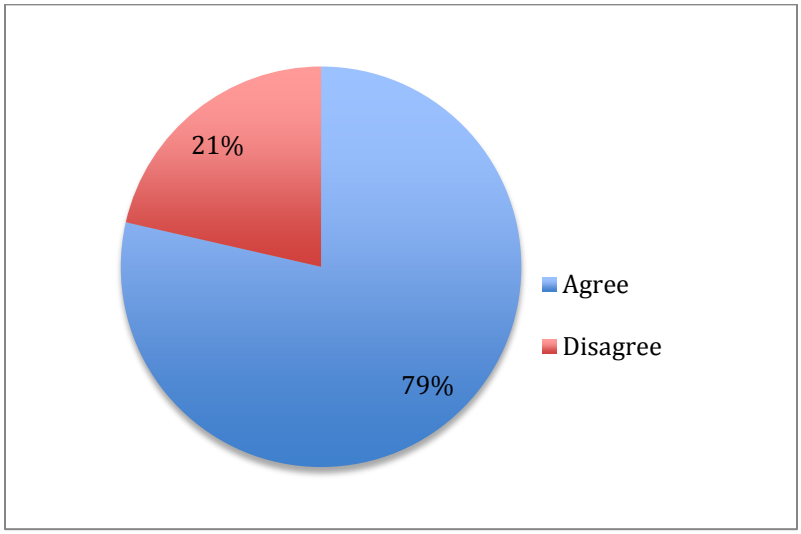

Figure 11. Adequately Equipped Facility.

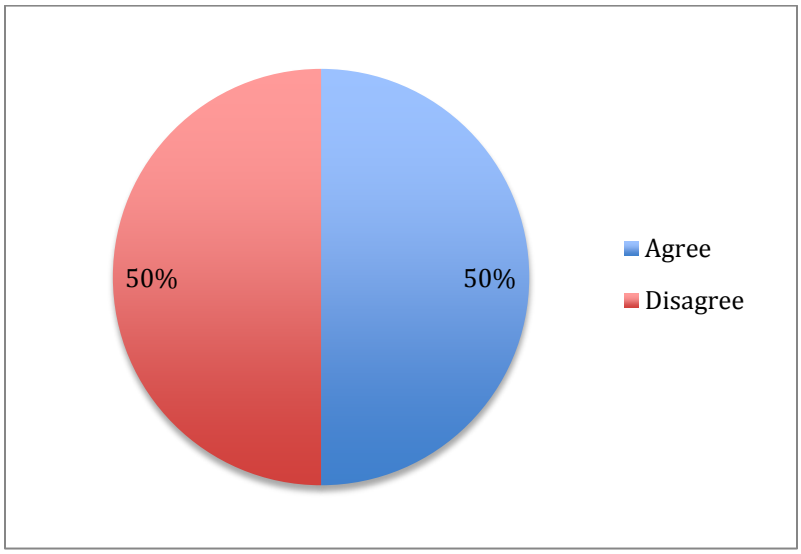

Figure 12. Cost of Care is Affordable.

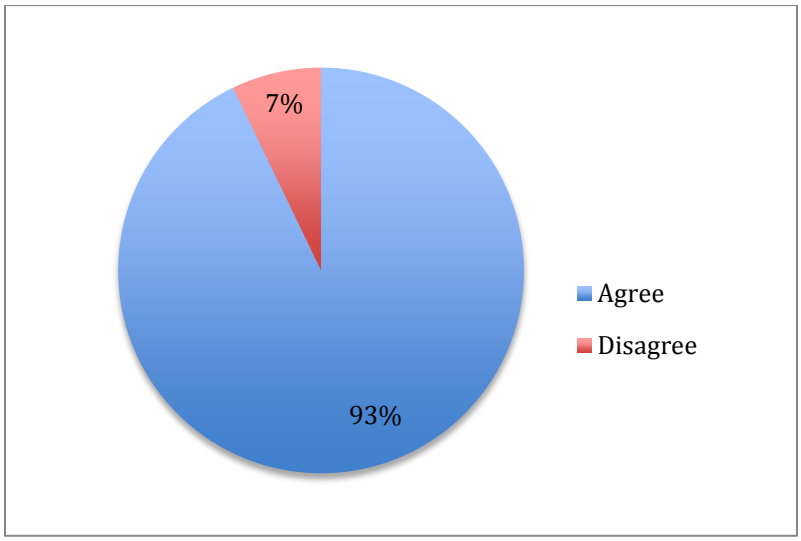

Figure 13. Sufficient Training in the Area of Work.

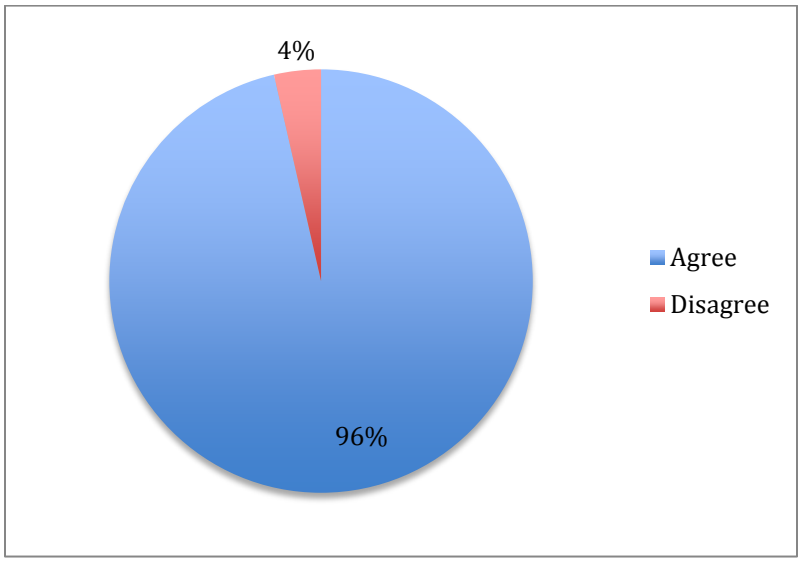

Figure 14. Sufficient Training of Co-Workers.

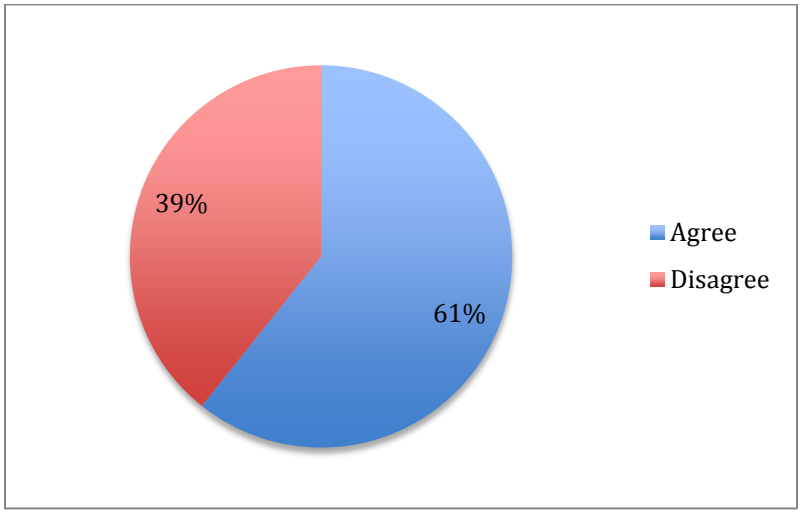

Figure 15. Common Misunderstandings between Co-Workers.

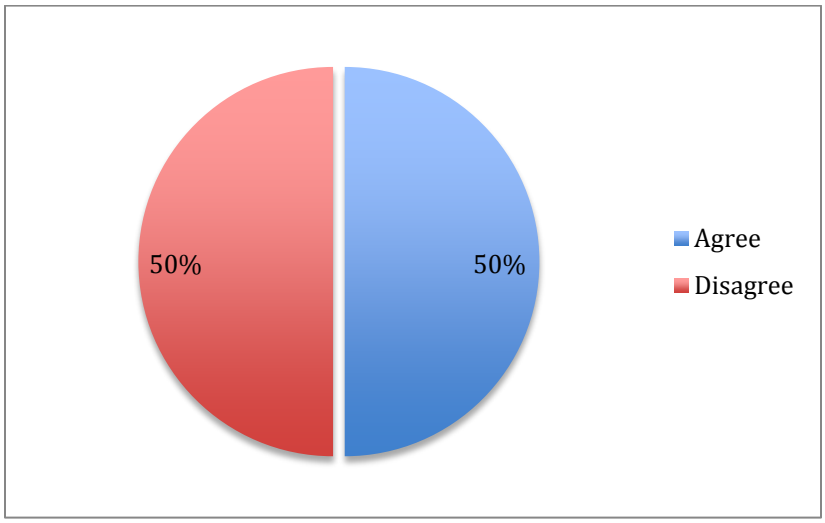

Figure 16. Limited Access to Care for Patients.

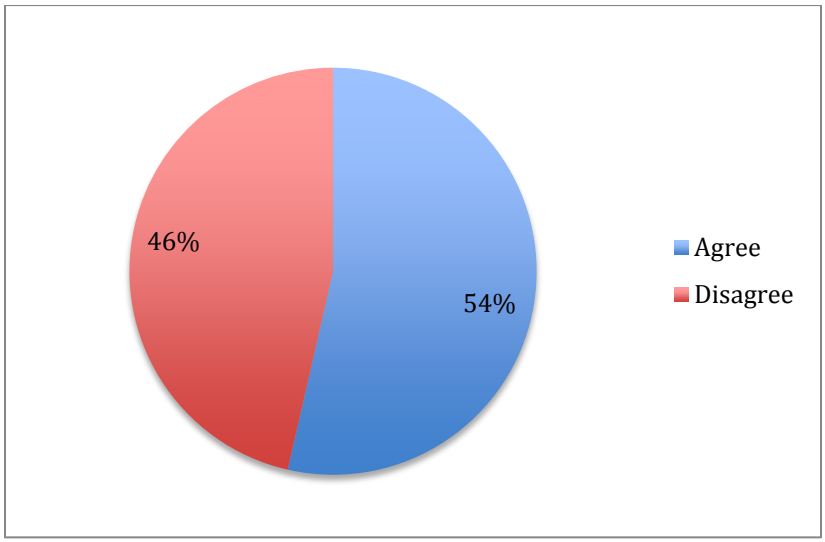

Figure 17. Cultural and Language Barriers.

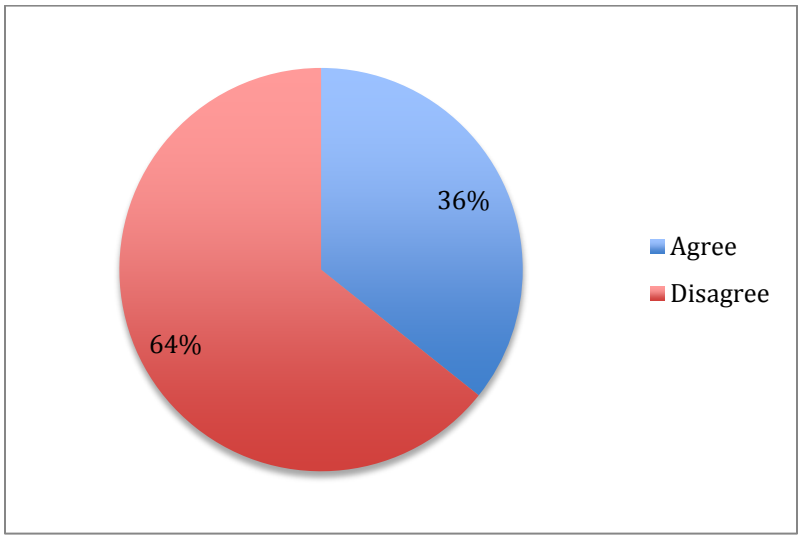

Figure 18. Patients Hesitant to Ask Questions.