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Patient Understanding of the Physician Assistant Profession Across Age Groups

Amber Baumann
Bethel University

Galen Hilgendorf
Bethel University

PATIENT UNDERSTANDING OF THE PHYSICIAN ASSISTANT PROFESSION ACROSS AGE GROUPS

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AMBER BAUMANN
GALEN HILGENDORF

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ABSTRACT

The demand for healthcare providers such as Physician Assistants is ever increasing with the growing and aging United States population. The number of Physician Assistant education programs as well as practicing Physician Assistants is growing at an astronomical rate, making the general population's understanding of this profession more important than ever. Therefore, this study is aimed at assessing the degree of understanding of the Physician Assistant profession across the Twin Cities metro and south central Minnesota. It also assesses if a gap in understanding exists across age groups within these areas. The study utilized a web-based questionnaire consisting of 12 original questions, distributed via the online database Survey Monkey in order to assess this population's understanding of the Physician Assistant profession. A total of 145 participants completed the questionnaire with 33 participants in the 18-35-year-old age group, 66 participants in the 36-55-year-old age group, and 46 participants in the >55-year-old age group. On average, participants scored 58% in the 18-35-year-old age group, 56% in the 36-55-year-old age group, and 59% in the >55-year-old age group. Data analysis revealed an insufficient knowledge of the PA profession for each of the three age groups studied. Additionally, there was no correlation found between age group and knowledge of the PA profession.

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Chapter 1: Introduction

Introduction

In this chapter, the researchers looked at the introduction of Physician Assistants (PAs) to healthcare, the differences among non-physician healthcare providers, the current role of the PA, and what the patients' knowledge of the PA's role in healthcare was. The researchers studied the understanding of the PA profession across age groups, its significance, the limitations to the study, and they defined the terms of the study.

Background

Healthcare is an ever-changing field. Up until the mid-1960s, physicians were exclusively responsible for providing healthcare in the United States (Dill & Salsberg, 2008). Over the past five decades, the healthcare system has grown to include non-physician providers such as PAs and Nurse Practitioners (NPs) (Moote, 2011). According to Dill and Salsberg (2008), the United States is predicted to face a shortage in physicians through 2025. Some reasons for this shortage include a small number of students being accepted into medical schools, few residency programs, and less minority students being accepted (Lakhan & Laird, 2009). One proposed solution to address the shortage in physicians is to increase the utilization of PAs and NPs and to expand the roles that PAs and NPs play in healthcare today (Dill & Salsberg, 2008).

Everett, Schumacher, Wright, and Smith (2009) found that PAs and NPs in primary care provide similar patient care to that of physicians, proposing their roles are progressing toward more of a substitution rather than a supplementary role. Although PAs and NPs can be thought of as similar professions with similar roles, they should not be thought of as interchangeable. According to Morgan, Everett and Hing (2015), physicians, PAs and NPs

provide similar patient care overall. However, when significant differences were seen in patient care, PAs and physicians were more similar to each other than PAs were to a NP. PA's education, patient characteristics, and visit characteristics are more similar to a physician than they are to that of a NP (Morgan, Everett, & Hing, 2015).

While researchers have investigated the similarities that PAs, NPs, and physicians share in regards to patient care, a lack of information regarding the public's understanding of the PA profession exists. PAs perform services that were historically only performed by physicians (Mittman, Cawley, & Fenn, 2002). Physician Assistants are medical professionals that hold a master's degree in physician assistant studies from an accredited institution, having obtained a bachelor's degree prior to being accepted into a program. They also have to pass the Physician Assistant National Certifying Exam in order to gain certification and gain their licensure within the state they practice in (Bureau of Labor Statistics, 2014). The duties of a PA include, "take a medical history, conduct physical exams, order and interpret tests, developing treatment plans, counsel preventative care, assist in surgery, write prescriptions, and make rounds in hospitals and nursing homes" (American Association of Physician Assistants [AAPA], pg. #2, 2015). PAs are medical professionals that are certified and licensed to practice within the scope of practice of their supervising physician.

With a further understanding of what a PA is and what they do, it is important to see the extent of their presence within healthcare. Hooker, Cawley, and Leinweber (2010) analyzed AAPA's annual census surveys from 1991-2008 to determine the distribution of PAs by specialty. From 1991-2008, family practice was consistently the most prevalent specialty that PAs worked in. A more recent study analyzed the 2009 AAPA's annual census survey and found that 33.4% of PAs in the United States work in primary care (Coplan, Cawley, and Stoehr,

2013). Although the majority of PAs work in primary care, a lack of research exists to examine who is currently utilizing PAs as their primary care providers. A longitudinal study conducted in Wisconsin showed that only 4.5% of participants reported using a PA or NP as their primary care provider (Everett, Schumacher, Wright, and Smith, 2009). Although this study only looked at Wisconsin residents, the results suggest that many individuals are not receiving routine care from a PA.

In addition, a noticeable trend of PA's moving away from primary care practice has been seen since the mid-1990s. The percentage of PA's working in family medicine fell from 40 percent in 1996 to 27 percent in 2008 (Hooker, Cawley, and Leinweber, 2010). At the same time, the percentage of PA's in surgical subspecialties grew from 16% in 1995 to 27% in 2008 (Hooker, Cawley, and Leinweber, 2010). In 2009, 66.6% of practicing PA's were working in a specialty other than primary care. Since more PA's are choosing to work in specialty areas over family practice, many individuals not requiring a specialist's care may have less exposure to the PA profession and thus may not understand the role of a PA.

The United States Department of Labor (2014) performed a study of the PA profession and states the job outlook for PAs is positive, predicting the number of PAs will increase by 38% in the next 10 years. The department of labor attributes this to the increase in healthcare demand, as a direct result of the aging population. The elderly population, 65 years old and older, has been estimated to double in the next 20 years in Minnesota alone (MN State Demographic Center [MNSDC]). According to the CDC, the largest age group in the United States is 65 years old and older.

The elderly population has an increased need for healthcare due to their higher incidence of chronic disease and concurrent disability, diminished quality of life, and subsequent increase

in healthcare spending costs (CDC, 2003). In contrast, Minnesota saw 68,783 babies born, with 24% of those babies being within the Twin cities area (MNSDC). Minnesota's population is both growing and aging rapidly, especially within the Twin Cities. With an aging population and growth in sheer numbers of inhabitants, an even higher need for healthcare providers such as PAs is needed. Therefore, it is vital for those receiving care from PAs within the Twin Cities to be aware of the profession and the reason for the researchers to conduct this study.

Problem Statement

To date, the number of Physician Assistants working as healthcare providers is increasing (US. Dept. of Labor, 2014). With 210 accredited PA programs in the United States and soon to be four programs in the state of Minnesota, over 120 Physician Assistant graduates each year will occur from Minnesota alone. Thus, the importance of the understanding of this profession among young, middle aged, and advanced age Minnesota residents is imperative.

Purpose

The purpose of this study was to assess the current understanding of the PA profession across age groups within the Twin Cities metro & south central Minnesota. The study assessed whether or not a gap in understanding of the PA profession across age groups within the general population of Minnesota existed. As shown above, the healthcare field is ever changing. The number of PAs providing primary care is ever increasing and their role is becoming central to young, middle aged, and advanced age populations.

Research Questions

The research questions addressed in this study were as stated below:

1. What is the degree of understanding about the PA profession in patients within the state of Minnesota?

2. What difference, if any, exists in the understanding of the PA profession between age groups of patients within the state of Minnesota?

Limitations of the Study

The study, being survey based, was limited by the willingness and honesty of the participants. The researchers needed a large enough response from the chosen age groups in order to obtain a statistically relevant result. The questionnaire used as instrumentation for this study was only available to those with access to the internet, which could have also been a limitation to the study.

Definition of Terms

The following definitions were used for this study. Physician assistants were defined as healthcare providers who have obtained their national certification, are state-by-state licensed, and are able to treat and prescribe medications to patients within their supervising physician's scope of practice (AAPA, 2015).

Population was defined as young (18-35), middle aged (36-55), and advanced age (55 and above). Those within the study were residents of Minnesota.

Sufficient knowledge of the PA profession was defined as answering 9 out of 12 questions correctly, 75% correct. Insufficient knowledge was defined as answering less than 9 out of 12 questions correctly, <75% correct.

Chapter 2: Literature Review

Introduction

In the early to mid-1900s, physicians were in surplus and acted as the sole healthcare providers (Dill & Salsberg, 2008). For decades' physicians acted as primary care providers for all patients in the United States (Cooper, Laud, & Dietrich, 1998). Physicians remained the exclusive healthcare provider in the United States until the early 1960s. At this time, medical education institutions were scarce, expensive, and training took anywhere from 8 to 10 years. Both of these factors led to a significant decrease in the supply of physicians (Cooper, 2004). Therefore, the introduction of non-physician clinicians (NPCs) such as NPs and PAs was proposed as a solution to this shortage of physicians (Everett, Schumacher, Wright, & Smith, 2009). NPs were formed via a group of nursing leaders realizing that physicians were collaborating with nurses successfully due to the nurses' experience and knowledge. From this, an increase in the responsibilities of nurses was spurred and the first NP program was implemented in 1967 (National Council of State Boards of Nursing, 2015). The first PAs were highly trained military paramedics that took on further training in order to work somewhat autonomously under the supervision of a physician in order to provide care and fulfill the physician shortage (Mittman, Cawley, & Fenn, 2002).

Physician Shortage

Currently, the United States is struggling with another physician shortage. It has been predicted that the United States will continue to face a shortage of physicians for at least the next 10 years (Dill & Salsberg, 2008). According to Hooker & Berlin (2002), the shortage in physicians has perpetuated an increase in the number of NPCs, NPs and PAs in particular. One proposed solution to address the physician shortage is to not only increase the number of NPCs,

but to also expand their current roles and scope of practice in healthcare (Dill & Salsberg, 2008). This idea is similar to how the physician shortage in the 1960s was corrected. NPCs were granted further licensure through legislation and an expanded scope of practice as they were to take on a new and larger role in health care (Cooper, Getzen, McKee, & Laud, 2002). Therefore, as the shortage becomes apparent, PAs and NPs are anticipated to deliver medical services unable to be provided by physicians (Hooker, Cawley, & Everett, 2011).

Non-Physician Clinicians & Physicians

Druss, Marus, Olfson, Tanielan, & Pincus (2013) investigated the differences between NPCs and physicians. They found that NPCs and physicians saw patients with similar demographics, patients from similar geographic regions, and patients with similar clinical characteristics. Patients within this study had appointments with NPCs two times more than physicians in preventive care settings. Additionally, NPCs and physicians have overlap in scope of practice. Like physicians, NPs and PAs are trained to "conduct patient evaluations (interviews and physical evaluations), diagnose conditions (including ordering laboratory tests and interpreting results), develop and implement therapeutic plans, and provide preventive health services and counseling**"** (American College of Physicians, pg 2, 2010). NPs and PAs can be found in nearly all aspects of healthcare, can prescribe medications, and provide a wide range of services (Hooker, Brock, & Cook, 2015). PAs and NPs are commonly seen as a cost effective solution to address the current and future physician shortage as their scope of practice and patient characteristics overlap with that of a physician (American College of Physicians, 2010).

Physician Assistant versus Nurse Practitioner

Although there are similarities between NPs and PAs, they should not be thought of as interchangeable professions. For example, NPs come from a nursing background, receiving a

Bachelor of Science degree in nursing before being accepted into an accredited NP program. Alternatively, PAs come from a variety of backgrounds, but are required to have a bachelor's degree before being accepted into an accredited PA program and are then educated based off of a direct medical model. During their education, NPs are required to choose a specific specialty whereas PAs are able to change their specialty throughout their practice (Hooker & Berlin, 2002). Once certified through an examination process, NPs are not required to retake their certification exam (Hittle, 2010). After completion of a PA program, PA students must pass the Physician Assistant National Certification Exam. They are then required to pass the Physician Assistant National Recertification Exam every 10 years, and must complete 100 hours of continuing medical education every two years to maintain their certification (NCCPA, 2015). Unlike PAs, NPs are able to work independently, without the supervision of a physician (Hutchinson, Marks, & Pittilo, 2001). Hooker, Brock, & Cook (2015) found that PAs are more likely to work full time and are 11 years younger on average than NPs.

Additionally, Morgan, Everett, & Hing (2015) found that PAs and physicians were more similar to each other than physicians were to NPs. PAs' education, patient characteristics, and visit characteristics are more similar to a physician than they are to NPs. For example, physicians and PAs administered chronic disease treatment more often than NPs. Patients also saw physicians and PAs more often in a primary care setting than NPs. These same researchers expanded their search in another study and found that PAs spend significantly significant more time with patients during a typical week than NPs. NPs spend 3.4 days a week with their patients and PAs spend 3.8 days a week with their patients; however, there was not a statistical difference between the two providers when comparing mean time spent with each patient. From this, the

researchers concluded that the increased amount of time with each patient could affect aspects of care such as quality of care and patient satisfaction (Morgan, Everett & Hing, 2014).

Physician Assistants

Mittman, Cawley, & Fenn (2002) found that PAs perform services today that were historically performed only by physicians. These duties include performing physical exams, diagnostic testing, diagnosis, and treatment of a patient. With PAs playing an increasingly large role in healthcare, similar to that of a physician, it is important to understand what exactly a PA is, what they are able to do, and how prevalent PAs are in order to gain insight into their significance. Physician assistants are defined as healthcare providers that are nationally certified, state-by-state licensed, medical providers that are able to treat and prescribe medications to patients within their supervising physician's scope of practice (American Association of Physician Assistants [AAPA], 2015). PAs' duties are outlined as, "take your medical history, conduct physical exams, diagnose and treat illnesses, order and interpret tests, develop treatment plans, counsel on preventative care, assist in surgery, write prescriptions, make rounds in hospitals and nursing homes" (AAPA, 2015). PAs fulfill a vital role in the coordination of patient care and enhance the care team entrusted to manage complex healthcare needs.

PAs scope of practice is important to define although it is dependent upon their training, experience, and state law. PAs are able to practice in all areas of medicine including primary care and subspecialties such as surgery, pediatrics, and dermatology. Due to legislation, PAs are able to prescribe medications in all 50 states. PAs are required by law to be associated with a physician, practicing under their supervision. Therefore, the PA's scope of practice is defined through a contract agreement between the PA and the physician. PAs see the same array of patients that their supervising physician sees, with the PA typically handling the less complex

cases. With working under a physician, PAs are able to work semi-autonomously, utilizing the physician's knowledge and expertise in order to aid in diagnosing and treating patients (UW School of Medicine, 2015). In institutions such as hospitals and nursing homes, PAs are credentialed by the medical staff. PAs' privileges are granted in line with state law and in accordance with that of the physician they work with. Overall, PAs participate in providing healthcare to all patients in a physician-directed environment (AAPA, 2006).

PAs fill gaps seamlessly where there simply are not enough physicians and have emerged as an essential component to today's healthcare system. Mittman, Cawley, & Fenn (2002) found examples of this in PAs being utilized in order to improve access to health care for those patients who live in rural, inner city, and other medically underserved areas. Hooker, Cawley, & Leinweber (2010) analyzed AAPA's annual census surveys from 1991-2008 to determine distribution of PAs by specialty. The researchers examined 11 distinct specialty classes: family practice, general internal medicine, emergency medicine, general pediatrics, general surgery, internal medicine subspecialty, pediatric subspecialty, surgical subspecialty, obstetrics/gynecology, occupational medicine, and others. Over the 17 years examined, family practice was consistently the most common PA specialty followed by surgical subspecialties, emergency medicine, and internal medicine subspecialties. Coplan, Cawley, & Stoehr (2013) analyzed the 2009 AAPA's annual census survey and found that 33.4% of PAs in the United States work in primary care. Although primary care accounts for the majority of working PA's, there is a lack of research examining who is currently utilizing PAs as their primary care providers. A longitudinal study conducted in Wisconsin showed that only 4.5% of participants reported using a PA or NP as their primary care provider (Everett, Schumacher, Wright, & Smith, 2009). Although this study only looked at Wisconsin residents and did not specify

between PA and NP providers, the results suggest that many individuals are not receiving routine care from a PA.

Hooker, Cawley, & Leinweber (2010) expanded on their previous research to include all United States PA school graduates since 1967. As of January 2008, there was a total of 80,688 clinically active PAs, and 51% reported working only one single specialty. Of the 49% that reported working in more than one specialty, 20% had worked in at least three different specialties. These findings suggest that PAs take advantage of their generalist education and career flexibility, giving them the ability to change specialties in response to demand for their services (Hooker, Cawley, & Leinweber, 2010). This is further evidence that PAs are able to fill gaps that physicians are unable to fill.

While PAs were originally developed to meet primary care shortages, to be more cost effective, and fill available positions; promising employment opportunities have drawn more PAs into specialty practice over the past decade (Hooker, Cawley, & Leinweber, 2010). The percentage of PAs working in family medicine fell from 40 percent in 1996 to 27 percent in 2008. The percentage of PAs choosing family medicine upon graduation has also decreased (Hooker, Cawley, & Leinweber, 2010). At the same time, the percentage of PAs in surgical specialties grew from 16% in 1995 to 27% in 2008 (Hooker, Cawley, & Leinweber, 2010). Other common specialty choices include emergency medicine, dermatology, orthopedics, cardiovascular medicine, and the internal medicine subspecialties (Hooker, Cawley, & Leinweber, 2010, p. 885).

In the most recent AAPA annual survey report from 2013, 32% of clinically practicing PAs were found to work in primary care, 27% in surgical subspecialties, 11% in emergency

medicine, 10% in internal medicine subspecialties, 2% in pediatric subspecialties, and 19% in other specialties. Of the 32.1% in primary care, 14.5% work in family medicine, 8.8% in family medicine with urgent care, 2% in OB GYN, 1.9% in general pediatrics, and 4.9% in general internal medicine. Other specialties include addiction medicine, allergy, anesthesiology, dermatology, diagnostic radiology, genetics, geriatrics, hospice and palliative care, hospital medicine, interventional cardiology, interventional radiology, occupational medicine, ophthalmology, pain management, physical medicine/rehabilitation, psychiatry, public health, radiation oncology, and others (AAPA, 2013). Since more PAs are choosing to work in specialty areas other than family practice, many individuals not requiring a specialist's care may have less exposure to the PA profession and thus may not understand the role of a PA.

The PA profession's growth is projected to increase in the upcoming years. From 2010-2025, the overall supply of PAs is predicted to increase by as much as 72%, from 74,476 to 127,821 (Hooker, Cawley, & Everett, 2011). This predicted increase in PAs was based off of projected increases in the number of PA programs. Hooker, Cawley, & Everett (2011) predicted there would be 188 PA programs in 2015, 203 PA programs in 2020, and 218 PA programs in 2025. Currently, there are 222 PA programs in the U.S which surpasses the predicted number for 2015. This led the researchers to believe that the supply of PAs will also surpass the predicted 72% increase by the year 2025 (PAEA Program Directory, 2015). Hooker & Muchow (2014) conducted a similar study and underpredicted the number of PA programs, with 167 in the year 2015. Their model predicted 125,847 practicing PAs by 2026. With the PA profession growing at such an accelerated rate, the presence of PAs in all healthcare specialties will continue to grow and patients will be seeing PAs more than ever before (Hooker, Cawley, & Everett, 2011).

Healthcare Demand

Although a large increase in the overall supply of PAs has been predicted, the demand for PAs is still expected to be larger than the supply by 2020 (Cawley, 2005). According to one study, the predicted healthcare shortage involves both NPCs and physicians (Cooper, Getzen, McKee, & Laud, 2002). The reason for such a large demand of healthcare providers has been attributed to economic expansion, population growth and aging, physician work effort, and the scope of practice of NPCs, meaning what they are able to diagnose and treat within their practice has expanded in recent years (Cawley, 2005). One of the most important factors increasing demand for healthcare providers is the population trend of the United States. The population was projected to increase from 285 million to 345 million in 2020 (Cooper, Getzen, McKee, & Laud, 2002). Colwill, Cultice, and Kruse (2008) found that from 2005-2025, adult family physician and general internist workloads are expected to increase 29%. The workload for pediatricians and family physicians who care for children is expected to increase 13% as a direct result of this population increase. With the number of people within the United States increasing dramatically, it leaves a shortage of healthcare providers left to care for both the new inhabitants of the country and the aging population that currently exists (Cooper, Getzen, McKee, & Laud, 2002).

One age group in particular that is expected to increase healthcare demand is the elderly. Particularly in specialties such as rheumatology and oncology that predominantly serve elderly populations (Hooker, Cawley, & Everett, 2011). As the population of the United States ages, there is also an increase in chronic disease diagnoses, thus leading to further and more frequent health care visits (Bodenheimer, Chen, & Bennett, 2009). According to Knickman & Snell (2002), a large amount of the aging population is due to the baby boomers. They are a

large subset of the United States that is leading to a large increase in demand of healthcare providers. Along with this will come an increase in need for long-term care, continuing advancements in medicine in order to keep them healthy longer, and an increase in accessibility to healthcare.

Patient Understanding of Physician Assistant Profession

The population of the United States is ever changing. The United States is aging and growing astronomically, leading to an increase in demand of healthcare providers. With PAs having an ever-increasing role in providing healthcare, it is important for patients to understand what a PA does and how they function as part of a healthcare team. One of the last research studies done on the understanding of the PA profession included the public perception of PAs in rural Iowa and Minnesota populations in 1972. Although the public was open to the addition of the PA to the healthcare team, the population studied wanted the approval of the practicing physicians (Litman, 1972). Another study performed by Baldwin, Sisk, Watts, McCubbin, Brockschmidt, & Marion (1998) resulted in similar findings. The underserved communities surveyed would accept NPCs only under certain conditions such as friendliness and competence of providers as well as cost, proximity, and availability. Therefore, there is a large gap in research on the topic of patient understanding of the PA profession.

Conclusion

There is evidence that in the upcoming years there will be another physician shortage coupled with an ever-increasing demand in healthcare needs of patients that are both young and old within a growing and aging population of the United States. Due to the increasing number of PAs, as well as the intention to broaden the PA scope of practice, PAs are being proposed as a solution to the upcoming demand for patient care. It is reasonable to say that it is important to

have an understanding of PAs as providers of healthcare across all age groups. There is a lack of current research looking into the general population's understanding of the PA profession, with the bulk of the evidence being from the 1970s. There is also a lack of emphasis upon differing age groups, leaving out the important factor that the population of the United States is both growing and aging. Therefore, this study explored the understanding of the PA profession across age groups in order to determine if and where a gap resided within the general population of the Twin Cities metro & south central Minnesota.

Chapter 3: Methodology

Introduction

The purpose of this study was to assess the current understanding of the PA profession across age groups within the Twin Cities metro & south central Minnesota. The research questions addressed through this investigation were: What is the degree of understanding about the PA profession in patients within the state of Minnesota? What difference, if any, exists in the understanding of the PA profession between age groups of patients within the state of Minnesota? The remainder of this chapter discusses the study design, population, data collection, relevant variables, statistical methods, validity and reliability, as well as the study's limitations.

Study Design

This study was a quantitative, cross sectional research study targeting participants of three different age groups: young (18-35 years old), middle aged (36-55 years old), and advanced age (55+ years old) from patients residing in south central Minnesota and the Twin Cities metro area.

Population

Our ideal population included those of the general public that were Minnesota residents of the south central region or the Twin Cities metro areas, aged 18 and above, having normal cognitive functioning, who were able to participate in a web-based questionnaire. Participants were either employees at Egan Company of Minneapolis, MN or members of Grace Lutheran Church of Fairmont, MN.

Data Collection

In order to evaluate the degree of understanding of the PA profession of patients across age groups, a web-based questionnaire was utilized as the study tool of choice. The questionnaire

consisted of 12 questions, originally formed via the researchers based on PA facts provided by AAPA. The survey consisted of both multiple choice and true/false questions. The web-based questionnaire was a compilation of questions based upon the PA profession job responsibilities, the educational path to become a PA, and common misconceptions of how PAs compare to other medical professionals (see Appendix A). The questionnaire was reviewed by a panel of 3 PA experts consisting of faculty within Bethel University's Physician Assistant program. Prior to questionnaire distribution, the research proposal and instrumentation utilized were also approved by the Bethel University IRB review board (see Appendix B). The questionnaire reviewing process helped to ensure that the instrument was accurate and understandable for all participants.

The researchers then sought approval from both Egan Company of Minneapolis, MN and Grace Lutheran Church of Fairmont, MN to distribute the questionnaire within their facilities. The Senior Vice President of Egan Company was queried via email about the distribution of the questionnaire at this company and approval was granted April 11, 2016 (See Appendix C). The Office Manager at Grace Lutheran Church of Fairmont, MN was queried via email about the distribution of the questionnaire at their facility and approval was granted September 20, 2016 (See Appendix D).

After approval was granted, the researchers uploaded the questionnaire on to the Survey Monkey site, which in turn produced a hyperlink used by participants to access the web-based questionnaire. Access to the web-based questionnaire was distributed via hyperlink within an email to those who currently work at Egan Company of Minneapolis, MN. A flier was placed on the bulletin board of Grace Lutheran Church of Fairmont, MN in order to distribute the hyperlink to the members of this facility (see Appendix E). These two media were used in order to reach various participants across the Twin Cities metro area and south central Minnesota. The email

was sent and the flier was placed within the church on February 10, 2017. The questionnaire remained open to participation until February 26th, 2017.

The participants took part in the study by completing the Survey Monkey questionnaire on a voluntary basis, without any incentive. Each participant was to follow the hyperlink distributed via either email of flier. If they chose to participate, they followed the hyperlink where they were to review an informed consent statement prior to beginning the questionnaire, permitting the researchers to use their answers in the data analysis (see Appendix F). The survey did not collect any personal identifying information. Once finished, the answers to each questionnaire were collected via the web-based questionnaire website, Survey Monkey, which enabled the researchers to ensure anonymity of the participants. The results were received by the researchers and analyzed without any identifying characteristics of the participants having been collected.

Relevant Variables

Within this study, the independent variable was age. The dependent variables were the knowledge and current understanding of the PA profession. These variables were ascertained from the research question: What difference, if any, exists in the understanding of the PA profession between age groups of patients within the state of Minnesota?

Statistical Methods

The survey culminated with 145 participants with viable responses recorded. No responses were excluded from this study. The viable responses to our questionnaire were then transferred from the Survey Monkey site to a Microsoft Excel worksheet. The qualitative “a, b, c, d, etc.” and “true/false” responses were then converted quantitatively into nominal data via a

binary coding system (1=correct, 0=incorrect). The nominal data was then analyzed and compiled into descriptive statistics using Microsoft Excel.

The descriptive analysis conducted involved first acquiring the sum total correct answers for each participant. Once this was found, an overall average score and percentage correct for all participants was calculated in an attempt to convey the amount of "knowledge" the study group held as a whole. The data was then separated via the three different age groups described above. The score for each participant in each of the three age groups was then calculated & a single one-way ANOVA analysis was performed on this data in order to determine if a significant difference between scores of the three separate age groups existed. The resulting data and analysis were compiled into tables and charts (Table 1, 2, 3 & Figure 1) in order to convey both the degree of knowledge of the PA profession the participants portrayed and whether or not the survey participants' knowledge of the PA profession was significantly different across age groups.

Descriptive analysis was conducted based upon the three age groups described above via a single one-way ANOVA analysis, keeping in mind our working definition of "sufficient knowledge" (see Definitions) in order to compare the differences in understanding of the PA profession across the three separate age groups. Data analysis was carried out by the authors of this study under consultation of Don Hopper Ph. D, Statistics consultant. After analysis was performed, all results of this study were placed on a portable storage device and given to the Bethel University Research Coordinator for security purposes, for a minimum of 5 years.

Validity & Reliability

The questionnaire used as instrumentation within this study was made by the researchers themselves, consisting of original questions aimed at this particular research question. Individual

questions from the survey were formed based upon previous articles and questionnaires provided by the AAPA organization regarding facts and common misconceptions about the PA profession. The questionnaire was analyzed for both content validity and reliability by a small panel of experts working within Bethel University's Physician Assistant program.

Limitations

The largest limitation to this study was attempting to obtain an adequate response rate to our survey. The researchers needed a large enough response from each of the chosen age groups in order to obtain a statistically relevant result. Due to the entirely web-based questionnaire, the lack of communication between the researchers and participants could have caused a low response rate. The willingness and honesty of the participants could have potentially limited this investigation. Due to the multiple choice and true/false structure of the questionnaire, participants may have guessed the correct answers to the survey questions, without truly knowing the correct answer. Another limitation to this study was that the survey was only available via the internet and was thus limited to those participants who had access to a computer. Additionally, since limited the study's population was limited to only include Minnesota residents in the south central and Twin cities metro area, the results could not be generalized.

Conclusion

Through a web-based questionnaire, provided by the online database Survey Monkey, participants within this study were evaluated on their degree of understanding of the PA profession by answering 12 questions created by the researchers. The data collected from the participant's answers was evaluated for the overall degree of understanding across the Twin

Cities metro area and south central Minnesota as well as across age groups in this region. In the next chapter, the results of the study will be discussed.

Chapter 4: Results

Introduction

The following chapter presents the results of data analysis obtained through this study. The data is represented with various Tables and Figures in attempt to portray the level of knowledge of the PA profession among age groups. The results discussed include participant's overall knowledge of the PA profession, participant demographics, and knowledge of the PA profession among age groups.

Overall Knowledge

The 12 questions within the questionnaire were aimed at evaluating the participant's overall knowledge of the PA profession. The questionnaire inquired regarding the knowledge of the following topics: the PA profession job responsibilities, the educational path to become a PA, and common misconceptions of how PAs compare to other medical professionals. A total of 145 participants completed the questionnaire. There were five surveys that participants did not submit answers to multiple questions. For these participants, the questions left without an answer earned them an "incorrect" score for each question left unanswered. Of the remaining survey responses, the correct, incorrect, and total responses were recorded within a Microsoft Excel worksheet. For ease of analysis, a binary coding system (1=correct, 0=incorrect) was used for all responses. From this, a total score (0-12) was calculated for each participant including the sum total of correct responses per survey participant. In order to evaluate the overall knowledge of the study participants as a whole, regardless of age group, the researchers then calculated the average overall score of the participants as well as the average correct percentage these participants scored on the questionnaire.

Table 1 portrays the total number of participants of this study that consisted of 145 participants and the average score of said participants which was 7, or 58%, out of a possible total of 12 total correct (100%).

Total Participants	Average Correct Score	Average Percent Correct	Total Possible Correct
145	7	58%	12

Table 1: Average correct score of all participants.

Demographics

The first section of the questionnaire collected the age of each participant on the date they chose to participate within this study. The age range of those who chose to participate was 18-55+. Of the participants, 33 (23%) fell in to the age group "18-35", 66 (46%) fell in to the age group "36-55", and 46 (31%) fell in to the age group ">55".

Age Group (Years)	Number of Participants	Percentage
>55	46	31%
36-55	66	46%
18-35	33	23%

Table 2: Age distribution of questionnaire participants.

Knowledge Across Age Groups

In order to determine if a significant difference existed between the three different age groups (young (18-35), middle aged (36-55), and advanced age (55 and above)), each participant and their answers to the questionnaire were separated by these age groups. The total score for each participant within each age group was used to then calculate a mean score and percent correct within each group for later comparison.

Figure 1 includes a bar graph portraying the average correct percentage for participants within each of the three age groups assessed. As seen within the figure, the average Percent correct for those 18-35 years old was 58% or 6.9 out of 12 correct, those 36-55 years old scored

56% or 6.7 out of 12 correct, and those >55 years old scored 59% or 7.0 out of 12 correct on average. Scores had the potential range of 0-12 with 12 representing a perfect score, or 100%.

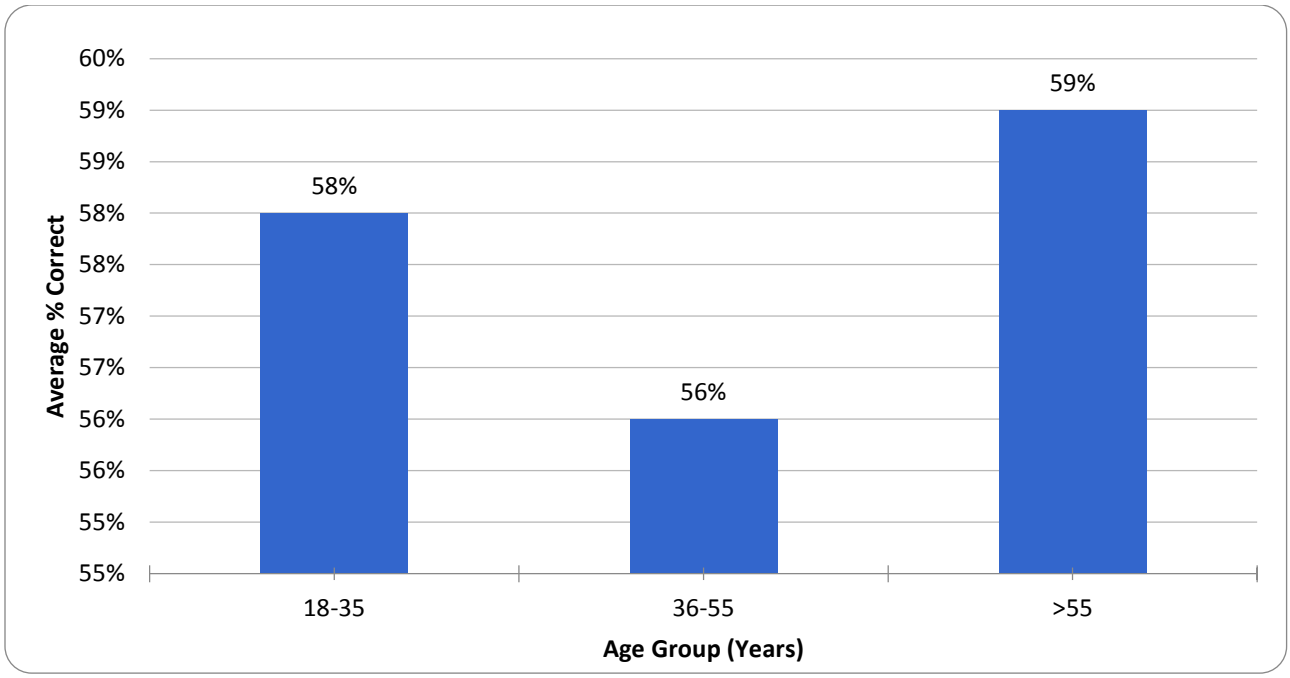

Figure 1: Average correct percentage of questionnaire participants within each age group.

In order to determine if the difference between the average correct scores between the three different age groups was significant, a one-way ANOVA was utilized.

Anova: Single Factor						
SUMMARY						
Groups	*Count*	*Sum*	*Average*	*Variance*		
18-35 years old	33	18.993	0.57555	0.03585		
36-55 years old	66	36.749	0.5568	0.02889		
>55 years old	46	27	0.58696	0.03056		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.02568	2	0.01284	0.41433	0.66158	3.05983
Within Groups	4.40008	142	0.03099			
Total	4.42576	144				

Table 3: ANOVA analysis of the average knowledge scores between three age groups.

Table 3 portrays the data analysis via a one-way ANOVA comparing the average scores of each participant per age group for a significant difference. Analysis to determine whether there is or is not a correlation between age group and knowledge of the PA profession revealed a P-value of 0.66. Note, a P-value less than 0.05 signifies a significant difference between groups analyzed. Therefore, a statistically significant difference in knowledge of the PA profession across age groups was not found.

Conclusion

Upon review, 145 participants of this study from Egan Company of Minneapolis, MN and Grace Lutheran Church of Fairmont, MN obtained the overall knowledge score of 7 out of a possible 12 (58%). Further investigation revealed those participants >55 years of age scoring 7.0 (59%), those 36-55 years of age scored 6.7 (56%) on average, and those 18-35 years old scored 6.9 (58%) on average out of a possible 12. From this data, an ANOVA was performed and a statically significant difference in knowledge between the three age groups was not found.

Chapter 5: Discussion and Conclusion

Introduction

The purpose of this study was to assess the understanding of the PA profession across age groups within the general population of the Twin Cities metro and south central Minnesota. The study assessed whether or not a gap in understanding of the PA profession across age groups within the general population of Minnesota existed. The following research questions were addressed within this study:

1. What is the degree of understanding about the PA profession in patients within the state of Minnesota?
2. What difference, if any, exists in the understanding of the PA profession between age groups of patients within the state of Minnesota?

This study assessed the overall knowledge of the general population within the Twin Cities metro area and south central MN.

Discussion of Findings

Within this study, the definition of "sufficient" knowledge of the PA profession consisted of answering 9 out of 12 questions correctly, 75% correct. Insufficient knowledge consisted of answering less than 9 out of 12 questions correctly, <75% correct. Therefore, with our results, an insufficient amount of knowledge was found within all participants on average (7/12 correct or 58%) as well as the three different age groups.

Implications to Practice

As the United States continues to both age and increase in population size, there will continue to be a demand for healthcare in young, middle aged, and advanced age populations. With PAs being proposed to fill the gap in providing healthcare due to their increasing numbers

and broad scope of practice, it is important for patients to understand what exactly a PA does and how they function as part of a healthcare team. The results of this study reveal that the within the state of Minnesota, there is a large gap in knowledge of the PA profession across adult patients residing in the south central and Twin Cities metro area. Patients over the age of 55 years old had the most knowledge of the PA profession (59%) compared to the 18-35-year-old (58%) and 36-55-year-old age groups (56%), but there was not a significant difference found between these three age groups. The researchers conclude that all patients in the south central and Twin Cities metro area in Minnesota who completed this study have insufficient knowledge of the PA profession and thus, it is important to educate all age groups equally on the PA profession.

Limitations

Once again, our study is limited in its ability to obtain an adequate response rate from each chosen age group as their participation and willingness to complete the questionnaire was entirely optional. As this study was only accessible via the internet, it was limited to those who had access to the internet. The entirely web-based questionnaire set the researchers up for a complete lack of communication with the participants which could have also caused a low response rate. Due to the originality of the questionnaire and its multiple choice and true/false structure, participants may have correctly guessed the correct answer to certain questions without truly knowing the correct answers, thus skewing our results. Additionally, the results of this study cannot be generalized to any areas outside of the south central and Twin Cities metro area where the study's participants hold residency.

Suggestions for Further Research

In order to address limitations to the applicability and generalizability of this study, this study should be replicated with an increase in sample size and location distribution. In the future, it would be of more value to repeat the study with a larger sample size of all age groups as well as to expand the reach of the questionnaire itself to a larger geographical area within Minnesota. In doing so, this would help obtain a better representative sample and more generalizable data for the state of Minnesota and their knowledge of the PA profession. These suggestions would further support the belief that the knowledge of the PA profession within the state of Minnesota is insufficient and therefore warrants an increase in educational information made available to residents of the state of Minnesota.

Summary & Conclusion

The previous chapter presents data from the 145 questionnaires collected from participants within the age groups described above. The survey tool can be reviewed in Appendix A. The data for this thesis was collected by the use of an online survey tool, Survey Monkey. The survey was distributed in two locations including Egan Company of Minneapolis, MN and Grace Lutheran Church of Fairmont, MN via email and flier posting. The number of participants from each location could not be differentiated due to a lack of collection of identifying information in an attempt to uphold the participant's anonymity.

The purpose of this study was to assess the current understanding of the PA profession across age groups within the Twin Cities metro and south central Minnesota areas. The study assessed whether or not a gap in understanding of the PA profession across age groups within the general population of Minnesota existed. A web-based questionnaire was utilized as the study

tool of choice and consisted of a compilation of 12 questions based upon the PA profession job responsibilities, the educational path to become a PA, and common misconceptions of how PAs compare to other medical professionals.

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APPENDIX A: Questionnaire

Please answer the following questions regarding the PA profession to your best ability.

1. What is your age group in years?
    a. 18-35 years
    b. 36-55 years
    c. ≥55 years
2. The role/job description of a PA most closely resembles that of a:
    a. Pharmacist
    b. Doctor
    c. Nurse
    d. Emergency medical technician (EMT)
3. What degree of education does a PA hold?
    a. Doctorate
    b. Bachelor's
    c. Master's
    d. Associate's
4. What is the average length of a PA program?
    a. 20 months
    b. 23 months

   c. 26 months
   d. 29 months
5. In order to become a PA, one must do all of the following EXCEPT:
   a. Graduate from an accepted PA program
   b. Pass the national PA certification exam
   c. Complete a 2 year internship in a clinic or hospital
   d. Obtain a state license
6. In order for a PA to maintain their certification, they need to:
   a. Pass a recertification exam every 10 years
   b. Complete 100 hours of continuing medical education every 2 years
   c. Both A and B
   d. Neither A or B, once a PA becomes certified their certification does not expire
7. PA's are trained to work in primary care and therefore are unable to practice in specialties (such as emergency department, rheumatology, cardiology, pediatrics, dermatology, etc.)
   a. True
   b. False
8. PAs can prescribe medications in all 50 states
   a. True
   b. False
9. A PA's white coat is:
   a. Shorter than a physician's
   b. The same length as a physician's
   c. Longer than a physician's
   d. PA's do not wear white coats
10. A Doctor has to be in the same building in order for a PA to see patients.
   a. True
   b. False
11. PAs work as part of a healthcare team, therefore, the main role/responsibility of a PA is to assist the doctor with their daily tasks and responsibilities.
   a. True
   b. False
12. PAs are unable to see new patients or patients with complex disease states (such as cancer).
   a. True
   b. False
13. PAs cannot order lab tests or imaging studies.
   a. True
   b. False

APPENDIX B: IRB Approval

Wallace Boeve <w-boeve@bethel.edu> 10/6/16

to Peter, me, Galen, Lisa, Christy

October 6, 2016

Amber & Galen;

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: "Patient Understanding of the Physician Assistant Profession Across Age Groups." 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
Physician Assistant Program
Bethel University
w-boeve@bethel.edu
651 308-1398 cell
651 635-1013 office
651 635-8039 fax
http://gs.bethel.edu/academics/masters/physician-assistant

CC: Bethel IRB Chair
Faculty Chair Advisor
PA Program Research Coordinator

Wallace Boeve, EdD, PA-C
Program Director

APPENDIX C: Permission correspondence with Egan Company

From: Jeff Hawthorne
Sent: Monday, April 11, 2016 9:30 AM
To: David Baumann
Subject: RE: Request for survey distribution

Go for it..

Thank you,

Jeff Hawthorne

Egan Company - Senior Vice President

Cell phone (612) 328-2964

jfh@eganco.com

APPENDIX D: Permission correspondence with Grace Lutheran Church of Fairmont, MN

From: Caroline Hilgendorf

Sent: September 20, 2016 10:20 AM

To: Galen Hilgendorf

Subject: Survey Participation

Galen,

We would be happy to help distribute your questionnaire to our congregation. Just let me know what you need me to do, timelines, etc.

Blessings,

Tina Hilgendorf

APPENDIX E: Research Study Flyer

PATIENT UNDERSTANDING OF THE PHYSICIAN ASSISTANT PROFESSION ACROSS AGE GROUPS

A RESEARCH STUDY- SURVEY PARTICIPATION

DATE: FEBRUARY 10TH- 26TH

LOCATION: HTTPS://WWW.SURVEYMONKEY.COM/R/P75X6QJ

Who? Two Physician Assistant students from Bethel University
What? A survey that can be accessed at the URL listed above
*Participation is voluntary
*Your identity will be kept anonymous
Why? This study is aiming to assess the general public's understanding of the Physician Assistant profession across age groups. Your input will guide us in making recommendations to the public & organizations.

Thank you so much for your participation!

FOR MORE INFORMATION CONTACT: GALEN HILGENDORF @ 507-236-7482
AMBER BAUMANN @ 952-836-8853

Dear Participant,

We invite you to participate in a questionnaire pertaining to the understanding of the Physician Assistant profession across age groups. You may access this survey by clicking "next" below. By choosing to move forward with the questionnaire, you are agreeing to the terms of this study and are willing to participate. You were selected to participate in this investigation by random selection of facilities willing to distribute this study's questionnaire. You do not have to identify yourself in any manner and participation is strictly voluntary with the option of refusing to participate. You may choose to discontinue participation at any time during the questionnaire, without penalty by simply exiting from the site. This questionnaire consists of 12 original questions and will take approximately 5 minutes. Data coming from this study is to be strictly anonymous and the results will be treated in the same manner. Nothing with your identifying factors will be kept on file or utilized within the final research paper. Any data or results from this study are to be kept in a secure file within Bethel University for a minimum of 5 years before being destroyed in order to maintain security and uphold anonymity of all participants. This is the first investigation measuring the general public's understanding of the Physician Assistant profession across age groups. Your input will guide us in making recommendations to the public and organizations. This investigation was approved as exempt by the Institutional Review Board of Bethel University. Please contact either of the stated researchers below if you have any questions or if you would like a copy of this consent form. We greatly appreciate your help in this matter and for taking the time to help in our investigation.

Sincerely,

Amber Baumann PA-S & Galen Hilgendorf PA-S

Contact Information:

Amber Baumann PA-S 952-836-8853

Galen Hilgendorf PA-S 507-236-7482

Christy Hanson 651-635-8042