Knowledge and Perceptions of the Nurse Practitioner in Surgical Settings: A Quality Improvement Initiative

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Abstract

The role of nurse practitioners (NPs) in healthcare, particularly in surgical settings, has evolved significantly over the years, yet challenges persist in fully harnessing their scope of practice (SOP). This paper explores the knowledge and perceptions of NPs' roles within surgical services at a metropolitan academic hospital. An anonymous survey was distributed to surgical team members, including physicians, NPs, physician assistants (PAs), residents, and medical students. The survey aimed to assess understanding of NP SOP and perceptions of their role in surgical services. Results indicate a significant knowledge gap among physicians regarding NP autonomy and scope of practice, potentially hindering full utilization of NPs. The study underscores the importance of addressing knowledge deficits among physicians to enhance NP utilization in surgical settings. These findings provide valuable insights for future interventions aimed at optimizing NP roles and improving patient care outcomes in surgical services.

Introduction

Problem Description

The nurse practitioner (NP) role has existed for over 50 years; however, the scope of practice (SOP) has been variable over time and across locations (Hudspeth & Klein, 2019). SOP is defined as a set of regulations within which an NP can practice (Kleinpell et al., 2012). Today, over half of the states in the United States acknowledge full practice authority for NPs, meaning they can evaluate, diagnose, order/interpret tests, and manage treatments independently, without oversight from a physician (American Association of Nurse Practitioners, 2023). With more states expected to adopt full practice authority, it is more important to understand their full scope.

The utilization of NPs in the acute care setting continues to grow, particularly in surgical services (Johal & Dodd, 2017). The volume of work often exceeds the capacity of the surgeons; therefore, implementation of advanced practice providers (APPs), such as NPs and physician assistants (PAs), has been a popular intervention to resolve this problem. In addition, resident hours have been under scrutiny by regulatory bodies resulting in a restriction on workable weekly hours, further necessitating independently practicing providers (Johal & Dodd, 2017).

There has been continuous research on the impact of NPs, with studies exhibiting the value of their employment. Benefits include reduced length of stay, increased patient satisfaction, improved team communication, equal or enhanced patient outcomes, improved resident workload, and decreased costs (Cowan et al., 2006; Johal & Dodd, 2017; Laurant et al., 2009; Spence et al., 2019). Despite the push for increased autonomy and growing research on equivalent or improved outcomes when employing NPs, there still seems to be a barrier to full utilization. This project will collect data on the knowledge of NP scope and the perceptions of

NPs working in a surgical setting. This is the first step to identifying the cause of varying acceptance of NPs and their ability to practice to the full extent of their education and training.

Available Knowledge

Current research suggests that physician and resident understanding and perceptions of the NP may impact their utilization and SOP (Pittman et al., 2020). In a survey of general surgery residents, it was found that the role of the APP is not well understood or well-defined in many institutions (Clark et al., 2018). This lack of understanding of the NP role can lead to more task-oriented duties or responsibilities that are below the NP capacity, resulting in an ineffective care team (Chaney et al., 2022). NPs are often found to be functioning in roles other than direct patient care positions including care coordination, case management, research coordination, and traditional nursing roles (Moote et al., 2019).

Also contributing to the misuse of NP skills is the perception of these providers and their skillsets. With resident work-hour restrictions, many hospitals have hired APPs to fill this need. However, only 27% of medical centers reported that NPs and PAs function at a third year resident level or higher (Moote et al., 2019). Additionally, under half of general surgery residents believed that an APP was a substitute for a junior resident, with the majority (91%) believing that an APP was not an appropriate substitute for a senior resident (Clark et al., 2018). This contrasts with the APP majority view of functioning at a fellow level or higher (Eaton et al., 2019).

The impact of NPs on resident training and education has been debated. The employment of APPs to a surgical service has resulted in decreased resident workload and hours, improved sleep time, and increased time in the operating room (Buch et al., 2008; Johal & Dodd, 2017). Despite this, only about 30% of residents or fellows have been found to answer that APPs contribute to their clinical education, whereas about 80% of APPs have answered that they

contribute (Eaton et al., 2019). The resident responses suggest a perceived reduced value of the APP role, possibly leading to a disparity in application of their positions.

Overall, there is a lack of available research in the past five years addressing the utilization of NPs, the knowledge of NP scope, or perceptions of NPs working in this setting. This paucity of representation in the literature may reflect a lack of employment of NPs in surgical specialties or an absence in understanding of the problem. Further data collection is necessary to evaluate the possible factors leading to this dichotomy between increased need for independently practicing providers and lack of autonomy for NPs in actual practice.

Rationale

The Model for Improvement (MFI) developed by the Institute for Healthcare Improvement (IHI) was used as the framework for this project. This model was chosen for its base in scientific study, its encouragement to take quick action, and its focus on implementing change in a healthcare setting (Institute for Healthcare Improvement, n.d.). A review of the literature and root cause analysis (Appendix A) identified that facility culture, paired with the knowledge and perceptions of the NP role can ultimately impact their utilization. By initiating data collection of knowledge and perceptions of the NP, a basis in understanding of NP underutilization was determined. This was the first step in developing knowledge of the problem at this AH, disseminating this information, and creating a method to mitigate this concern.

Specific Aims

This project aimed to gather information on the knowledge and perceptions of the NP in surgical settings at this AH. The data gathered will be used to inform future interventions to improve NP utilization to their full scope of practice.

Methods

Context

The setting of this project was a large, 562 staffed-bed academic hospital located in a metropolitan area, well known for its surgical facilities with many services that are often highly ranked. There are 36 operating rooms with tens of thousands of surgical cases each year. This AH also hosts one of the largest surgical residency programs in the country and is the only program in the state. There are currently about 215 NPs employed at this AH, with approximately 28 working in orthopedic, vascular, and general surgery settings.

Currently, there has been no data collection on the knowledge and perceptions of nurse practitioners employed in surgical services at this AH. There have also been no quality improvement initiatives to utilize NPs to their full scope.

Interventions

An anonymous survey was distributed via email to nurse practitioners, physician assistants, residents, medical students, and surgeons or attending physicians within surgical services. This survey (Appendix B) served as the primary method for data collection. Survey design was completed through Qualtrics software and included multiple-choice and Likert scale questions as well as several opportunities for free-text comments, which provided both quantitative and qualitative data. The survey was distributed as links provided through electronic mailing lists to all included surgical service employees. Additionally, quick response (QR) codes were placed in surgical team workrooms to attract participation. Prior to disseminating the survey to included surgical team members, a small test sample of participants was given the survey to evaluate the readability, clarity, and length of the survey. These responses were not

recorded in the results of this study and no changes were made to the survey following this samples' answers.

Measures

The project utilized specific outcome measures to assess NP knowledge of their scope and perceptions within a surgical service. Data was collected via a survey distributed to staff. Knowledge of NP scope was gauged through questions regarding legal guidelines, understanding of scope at the facility, and perceived practice level. Perceptions of NP roles in surgical services were assessed through questions on perceived practice level and overall impressions. Additionally, the survey included inquiries about NP underutilization, including feelings of respect, perceived ability to practice fully, and clarification of daily tasks.

Analysis

Survey response data was compiled using Qualtrics software. Quantitative survey data from multiple-choice and Likert-scale questions were analyzed and visually represented in graphical form. Qualitative analysis was derived from free-text survey questions and was manually assessed for themes with these responses demonstrated through a categorized table of the identified subjects.

Ethical Considerations

Ethical considerations for this project included preserving anonymity of staff members. All surveys were distributed with no identifiable factors to the author and no trackability back to the source of survey distribution. Participation in the survey was voluntary. This project was submitted to the Investigational Review Board (IRB) to assess for any ethical concerns. The author reports no conflict of interest involved in the undertaking of this project.

Results

A total of 92 employees responded to the survey. Sixty respondents were attending physicians or surgeons (65%), 15 were resident or fellow physicians (16%), 13 were nurse practitioners (14%), and four were physician assistants (4%) (Appendix C). Three respondents did not fully complete their surveys; therefore, those individual question responses were excluded from data analysis. To further analyze survey results, responses were broken into two groups. The "Attending Physician/Surgeon" and "Resident/Fellow Physician" responses were grouped as "Physicians" while the "Nurse Practitioner" and "Physician Assistant" responses were grouped as "Advanced Practice Providers (APPs)."

The majority (70%) of providers endorsed working directly with nurse practitioners on their service "often" or "always" (Appendix D) with no significant difference in how APPs and physicians answered this question ($p = 0.307$). When asked whether the nurse practitioner role was well-defined within their service, 51% of all providers responded that they "strongly agree" and an additional 30% responding that they "somewhat agree" to this question (Appendix F). There was no significant difference between how APPs responded and how physicians responded ($p = 0.977$). There was also no significant difference in how the physician and APP groups perceived their respect. Most physicians (90%) and APPs (94%) responded either "strongly agree" or "somewhat agree" that they feel respected in their current role (Appendix E).

Knowledge-based questions included a Likert scale response to the statement "according to legal guidelines, nurse practitioners must practice with oversight from a physician." This resulted in a significant difference in responses between the physician group and the APP group (Appendix G). The vast majority (88%) of APPs responded with "Strongly disagree," whereas 31% of physicians answered "Strongly disagree" to this statement, resulting in a greater than

50% difference in responses between the two groups. A two-sample t-test revealed a p-value of <0.01, making this a statistically significant finding. The subsequent knowledge-based question inquired "what is your knowledge or understanding of the nurse practitioner scope of practice at your facility?" All APPs answered correctly that NPs are independently practicing providers, whereas 67% of physicians answered this question correctly (Appendix H). The last question to evaluate knowledge was "what level do you think that nurse practitioners are allowed to practice given their scope of practice?" which resulted in 47% of APPs answering at a fellow physician level or above compared to 21% of physicians choosing the same answer (Appendix I).

Perception-based questions were also included in the survey, including a "select-all-that-apply" question inquiring on the respondents' perceptions of the NP on a surgical service (Appendix K). Five of the six possible answers resulted in similar choices between physicians and APPs, however, the statement option of "NPs are important for teaching residents" was chosen significantly more frequently by APPs ($p < 0.05$ via chi-square statistic). Additionally, providers were asked to evaluate what level they feel that NPs practice at or are utilized on their service. This prompted many of all respondents (32%) to answer with "other" and leave a comment. These results can be seen in Appendix J.

Lastly, APPs were asked role-specific questions. The first question inquired whether they felt that they practice to the full extent of their education. This resulted in 86% of APPs answering that they "strongly agree" or "somewhat agree" with this statement (Appendix L). The second question intended to gauge how APPs at this institution spent the majority of their work time. However, this question was removed in the final data analysis due to a flaw in the question via the survey software.

Qualitative data was collected through free-text options throughout the survey. Six major themes were identified, including NPs as valuable team members, negative perceptions of NPs, variable experiences with NPs, differences in utilization depending on service or clinical situation, disagreement with the AH utilization of NPs and suggestions for improvement, and differences in utilization due to surgical setting. Example comments within these themes are displayed in Appendix M

Discussion

Summary

This DNP project sought to gather information on the knowledge and perceptions of the NP in surgical settings and explore the breadth of the problem of NPs not being underutilized at this AH. The desired outcome of this project was to identify a possible cause for the decrease in APP utilization with a hope to target this for potential interventions. A survey was developed that included knowledge-based and perception-based questions, which was disseminated to surgical service providers via electronic mailing lists and on fliers with QR codes in all surgical service workrooms. Survey results revealed a possible knowledge deficit in the physician group.

Interpretation

There was far more involvement from physicians (81%) than from APPs (18%) in responding to the survey. This was surprising considering the study's focus was on the role of the NP. This could be confounded by a higher degree of involvement from physicians at this AH, greater access to the survey by physicians, or possible unforeseen boundaries associated with survey distribution.

Generally, both physicians and APPs felt respected in their roles and there were no major differences in their responses when analyzed as individual groups. These results suggest that

APPs feel that they are treated with respect and that this is not a source of conflict potentially contributing to a decrease in NP utilization at this AH. There was also overall agreement in that the NP role was well defined with no significant difference between the physician and APP groups. This sentiment differs from previous literature as it has been reported that the NP role often lacks a clear definition, leading to confusion about what the NP can do (Clark et al., 2018); therefore, a lack of a clearly defined NP role is likely not contributing to the problem.

Although there appeared to be variances in perceptions of the NP on surgical services between physicians and APPs, it is unclear whether these are significant based on data analysis. This study found that only 30% of providers perceived that NPs were utilized on their service at a senior resident level or above, which aligns with previous research. However, when asked about the perceptions of NPs on a surgical service, the responses were predominantly positive. Most APPs and physicians agreed that NPs are a valuable part of the surgical team and that they help to improve overall workload, making it less likely that perceptions of the NP on a surgical service are contributing to the problem. On the other hand, there was a stark difference between the perception of NPs involvement in teaching residents as well as in survey qualitative data.

Based on the survey results, there may be an overall lack of knowledge about the scope of practice of the NP at this AH. All APPs answered correctly that NPs are independently practicing providers, whereas less than 70% of physicians answered this question correctly. Additionally, less than one third of physicians strongly disagreed that NPs must practice with oversight from a physician, according to legal guidelines and only 21% of physicians were found to answer that NPs were allowed to practice at a fellow level or above. This suggests that physician knowledge deficit could potentially be contributing to the underutilization of NPs at this AH, making it a possible target for improvement of this problem in the future.

Limitations

The generalizability of this study may be limited as the population of focus was confined to those employed in surgical services of the given AH. The sample size was relatively small, particularly with a lesser amount of APP responses, also limiting the generalizability. Additionally, the survey included numerous options for answering questions with "other" and the ability to leave comments. Although this allowed for qualitative data, it also hindered the collection of quantitative data as it permitted respondents to not answer the multiple-choice questions. Finally, there was lack of ability to analyze if the respondents were employed within a surgical service. The email or flyer invited all surgical service employees to respond. However, there was no question in the survey to confirm area or service of employment, creating concern that some respondents do not currently work in a surgical setting, possibly skewing results.

Conclusion

In the setting of increased prevalence of APPs, reduction in resident hours, and more states transitioning to full practice authority, utilization of nurse practitioners to their full scope of practice is even more important. Implementation of NPs has been shown to result in similar or improved patient health, physician and resident wellbeing, and financial outcomes (Cowan et al., 2006; Johal & Dodd, 2017; Laurant et al., 2009; Spence et al., 2019). Despite this, they continue to be underutilized and their scope of practice is often limited depending on their setting. The findings of this study determined there is a knowledge gap in the physician group surrounding what level NPs can practice at and whether oversight is required. Based on these findings, future efforts can target the lack of knowledge on NP scope of practice in the physician population to potentially improve and expand the utilization of NPs on surgical services.

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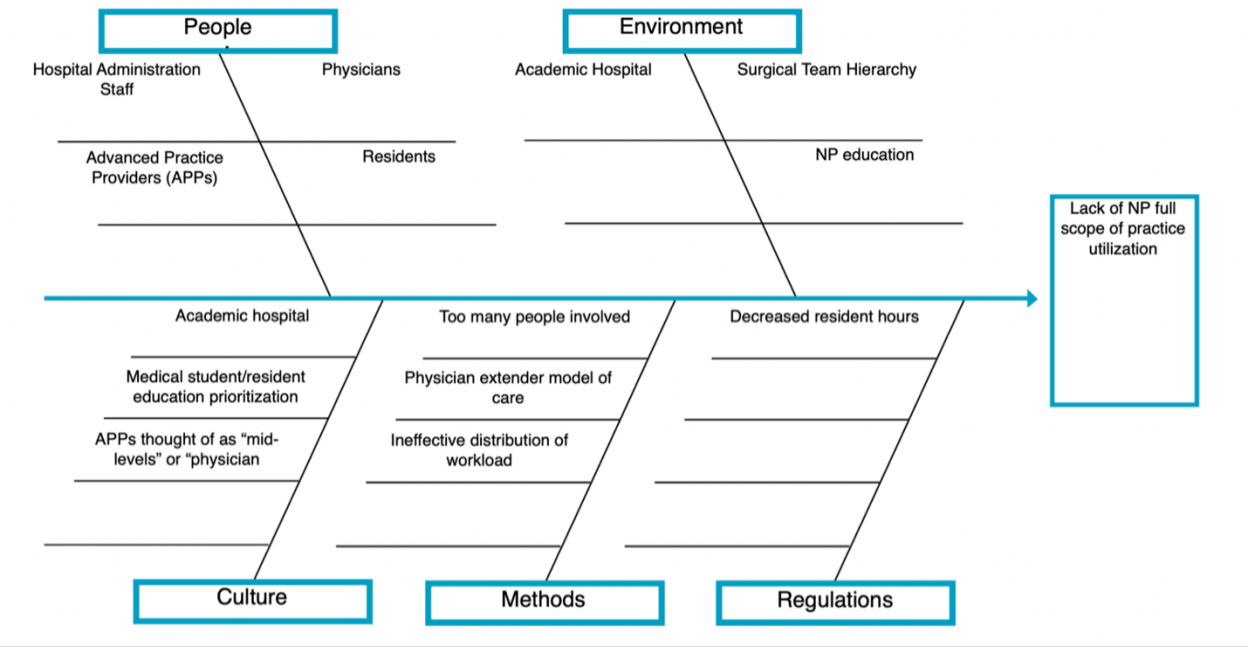
Appendix A

Fishtail Graph



Appendix B

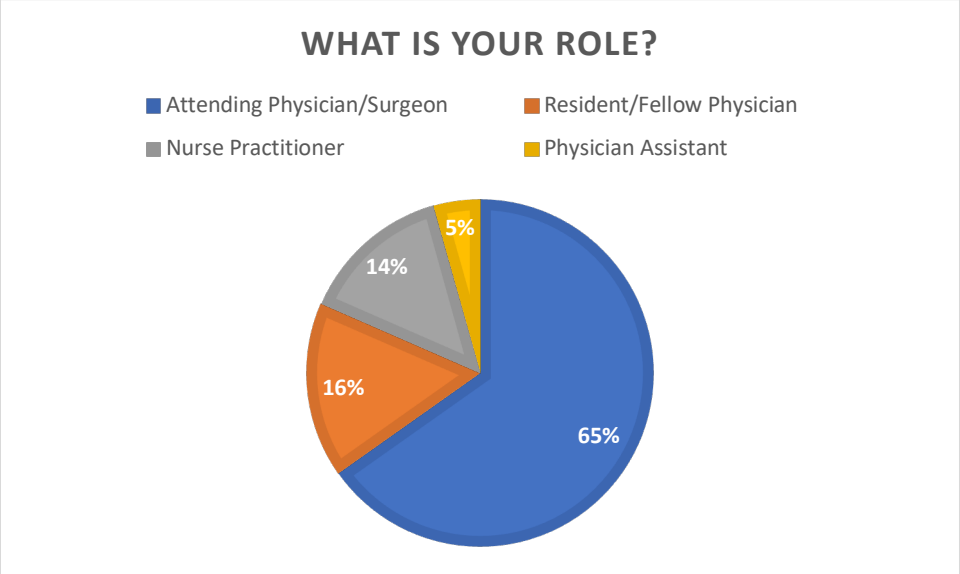
Survey

1. What is your role?
    a. Nurse Practitioner
    b. Physician Assistant
    c. Resident/Fellow Physician
    d. Student
    e. Attending Physician/Surgeon
    f. Administrative Staff
    g. Other
2. Please choose your best response to the following statement:
   I work directly with nurse practitioners on my service
    a. Always
    b. Often
    c. Sometimes
    d. Rarely
    e. Never
3. Please respond to the following statement:
   I feel respected in my role
    a. Strongly agree
    b. Somewhat agree
    c. Undecided/unsure
    d. Somewhat disagree
    e. Strongly disagree
4. Please respond to the following statement:
   The nurse practitioner role is well-defined within my service
    a. Strongly agree
    b. Somewhat agree
    c. Undecided/unsure
    d. Somewhat disagree
    e. Strongly disagree
5. Please respond to the following statement:
   According to legal guidelines, nurse practitioners must practice with oversight from a physician.
    a. Strongly agree
    b. Somewhat agree
    c. Undecided/unsure
    d. Somewhat disagree
    e. Strongly disagree
6. What is your knowledge or understanding of the nurse practitioner scope of practice at your facility?
    a. Nurse practitioners must practice with oversight from a physician
    b. Nurse practitioners are independently practicing providers and do not require physician oversight
    c. Other (please leave comment)

7. What level do you think that nurse practitioners are allowed to practice given their scope of practice?
    a. An intern level
    b. A junior resident level
    c. A senior resident level
    d. A fellow level or above
    e. Other (please leave comment)
8. What level do you feel that nurse practitioners practice at or are utilized at on your service?
    a. An intern level
    b. A junior resident level
    c. A senior resident level
    d. A fellow level or above
    e. Other (please leave comment)
9. What are your perceptions of the nurse practitioner working on a surgical service? (select all that apply)
    a. NPs are a valuable part of the surgical team
    b. NPs help to improve overall workload
    c. NPs are not a necessary member of the surgical team
    d. NPs are important for teaching residents
    e. NPs can take away from resident or medical student learning
    f. NPs take patients away from physicians
10. If you are a nurse practitioner or physician assistant, please respond to the following statement:
    I feel that I practice to the full extent of my education in my current position
    a. Strongly agree
    b. Somewhat agree
    c. Undecided/unsure
    d. Somewhat disagree
    e. Strongly disagree
11. If you are a nurse practitioner or physician assistant, please rank by the amount of time spent on each duty (with 1 being the most time spent and 5 being the least)
    __ Evaluating and assessing patients
    __ Writing notes
    __ Putting in discharge orders
    __ Care coordination responsibilities
    __ Doing procedures or direct treatment of patients
12. Please leave any comments or concerns regarding your experience working with or as nurse practitioners:

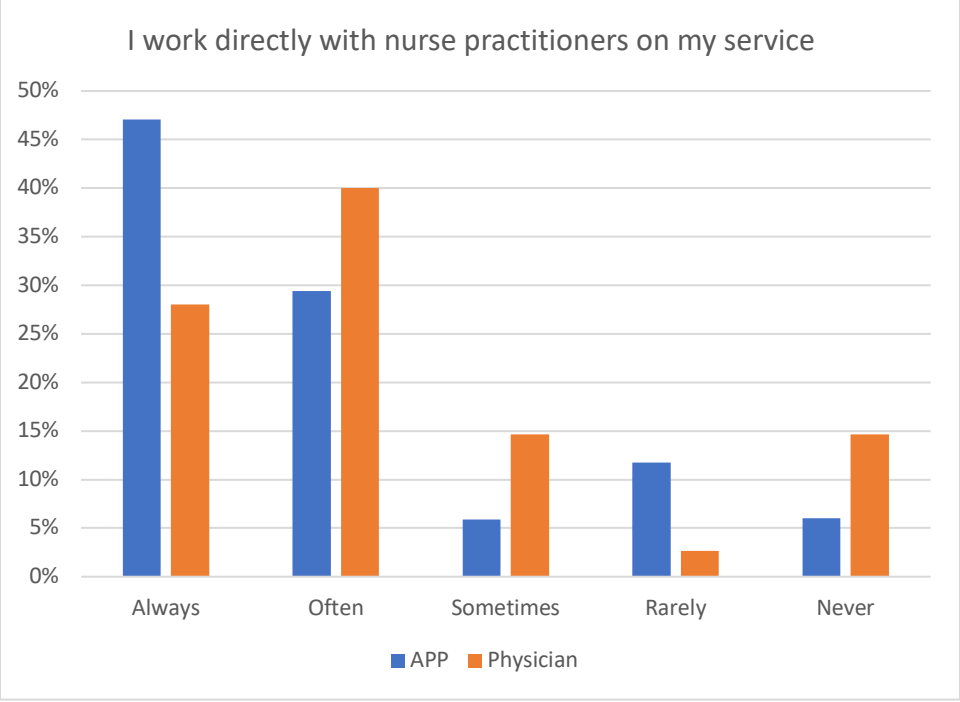
Appendix C

Survey Question 1 Results



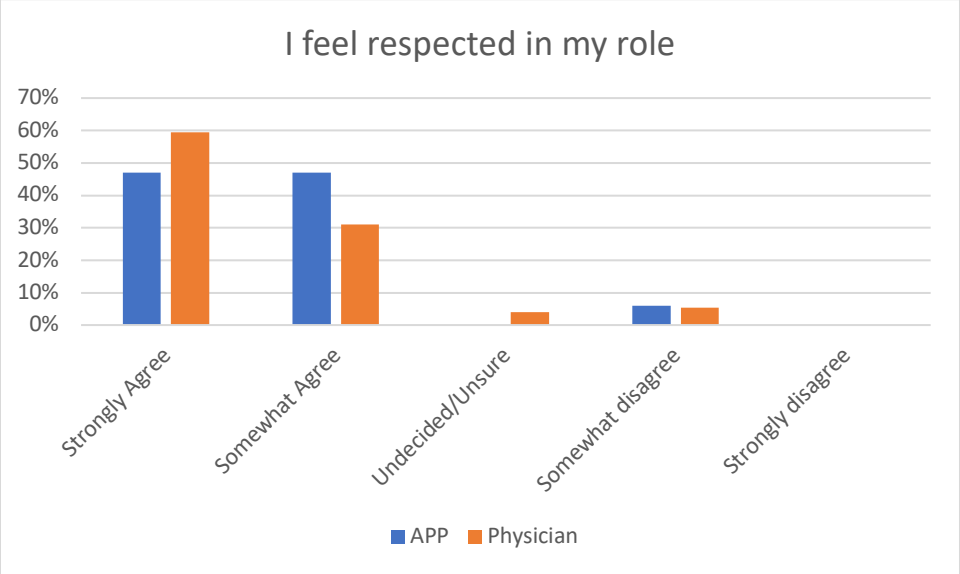
Appendix D

Survey Question 2 Results



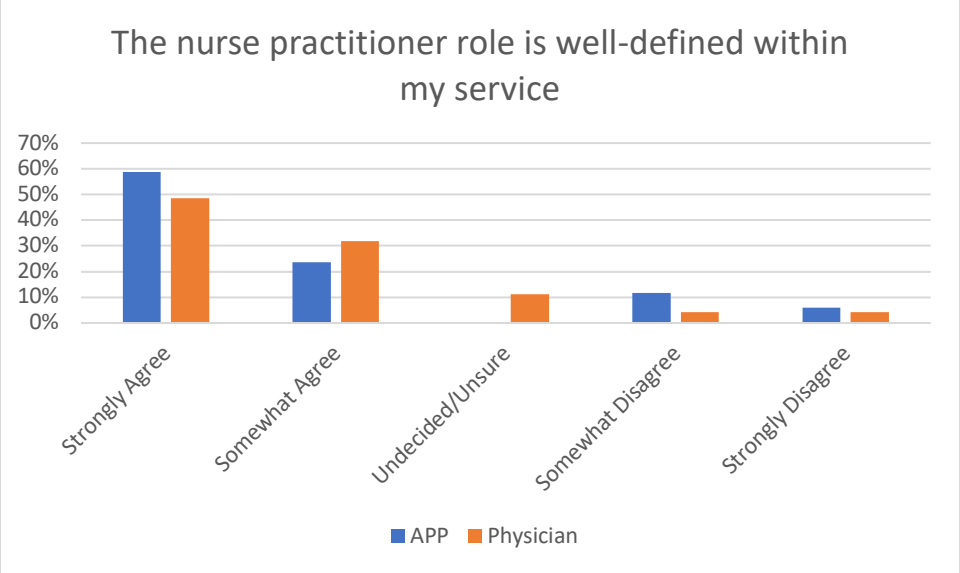
Appendix E

Survey Question 3 Results



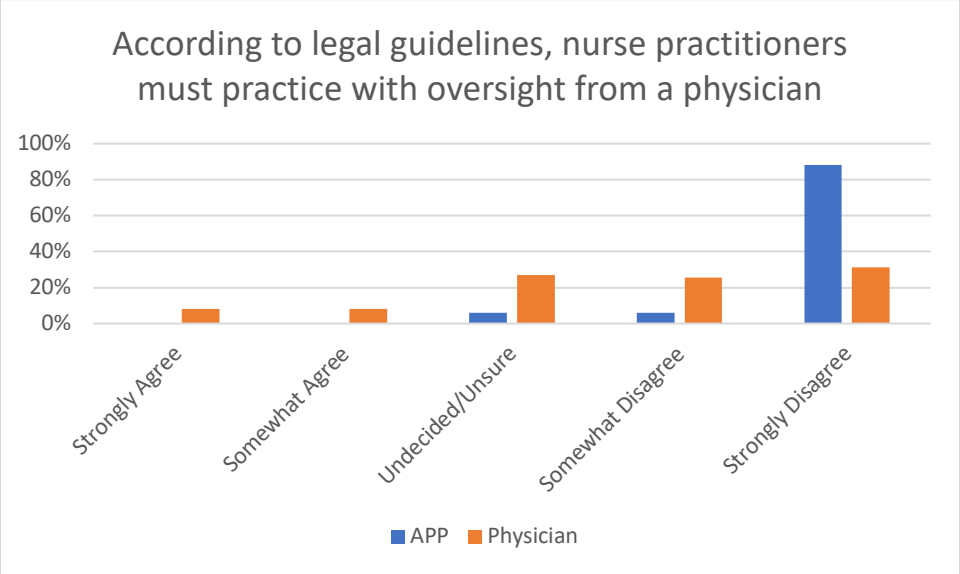
Appendix F

Survey Question 4 Results



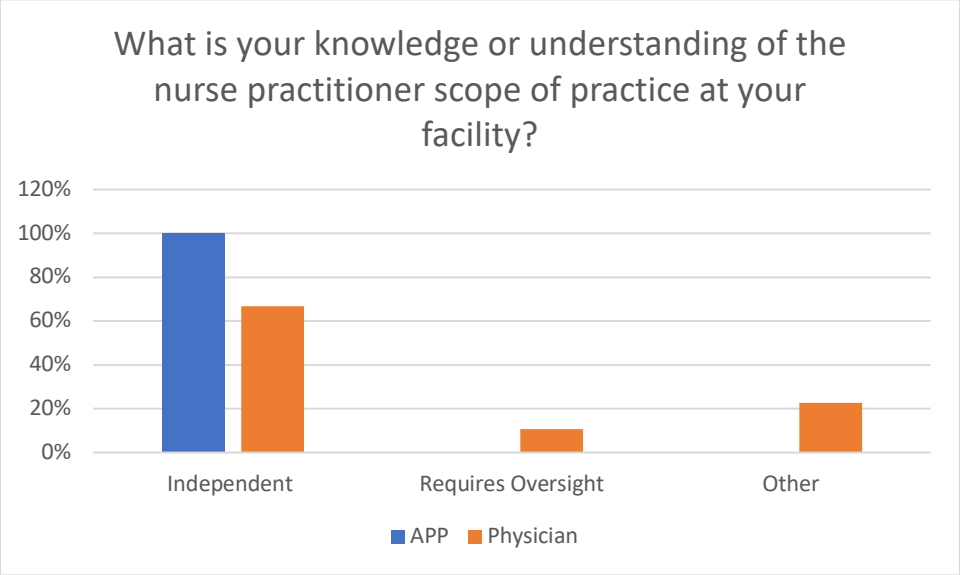
Appendix G

Survey Question 5 Results



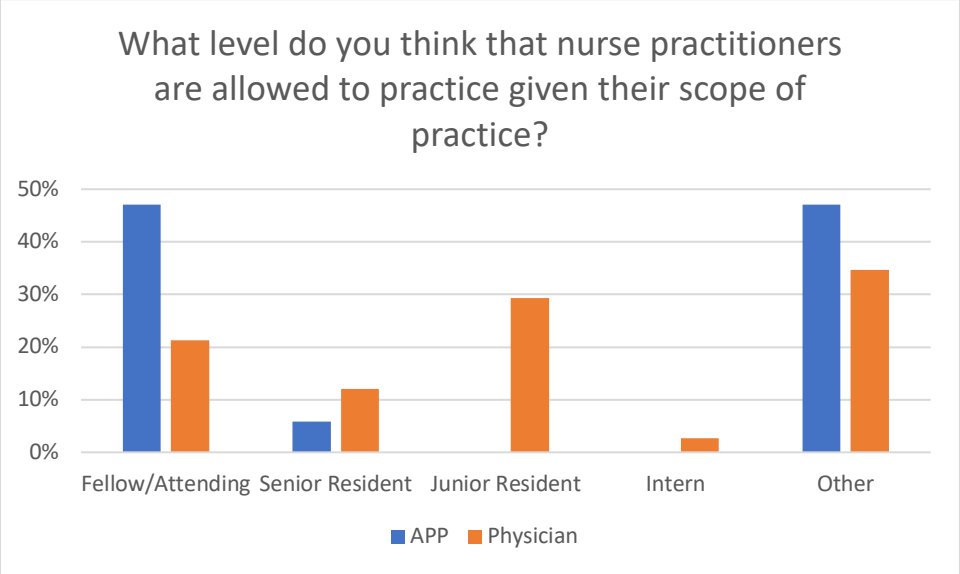
Appendix H

Survey Question 6 Results



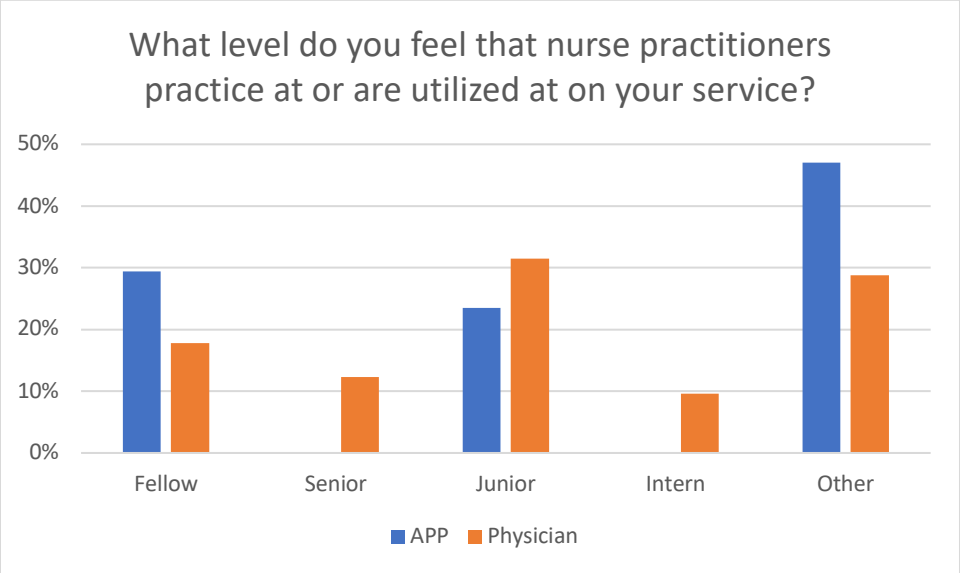
Appendix I

Survey Question 7 Results



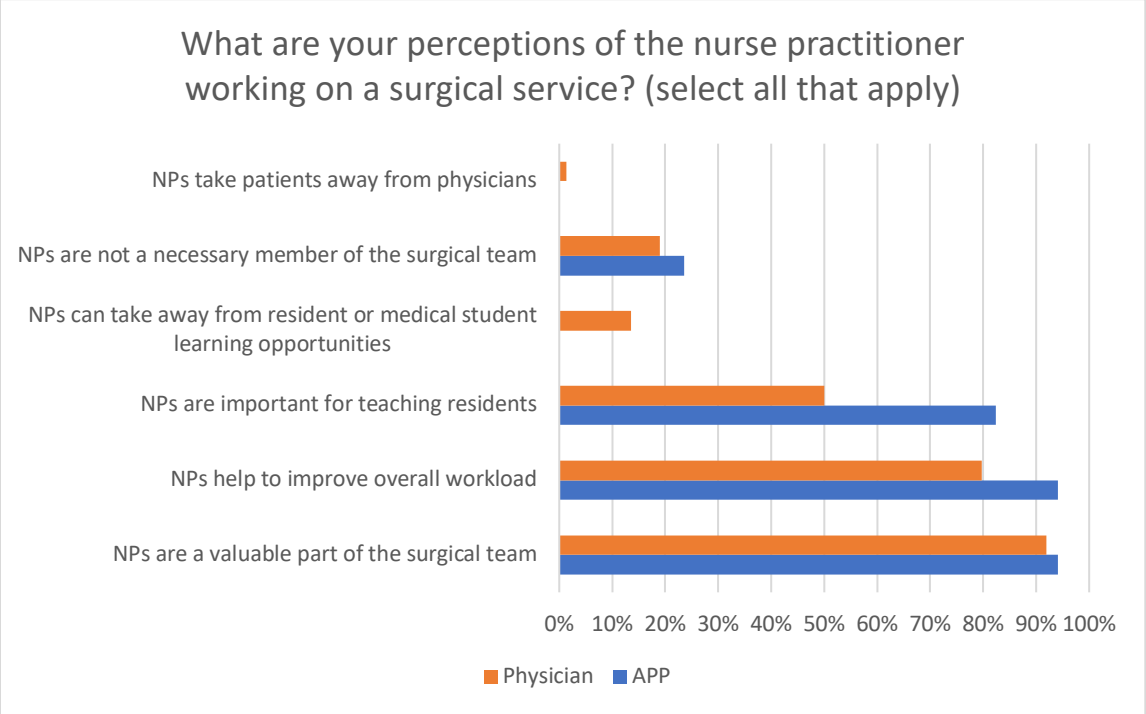
Appendix J

Survey Question 8 Results



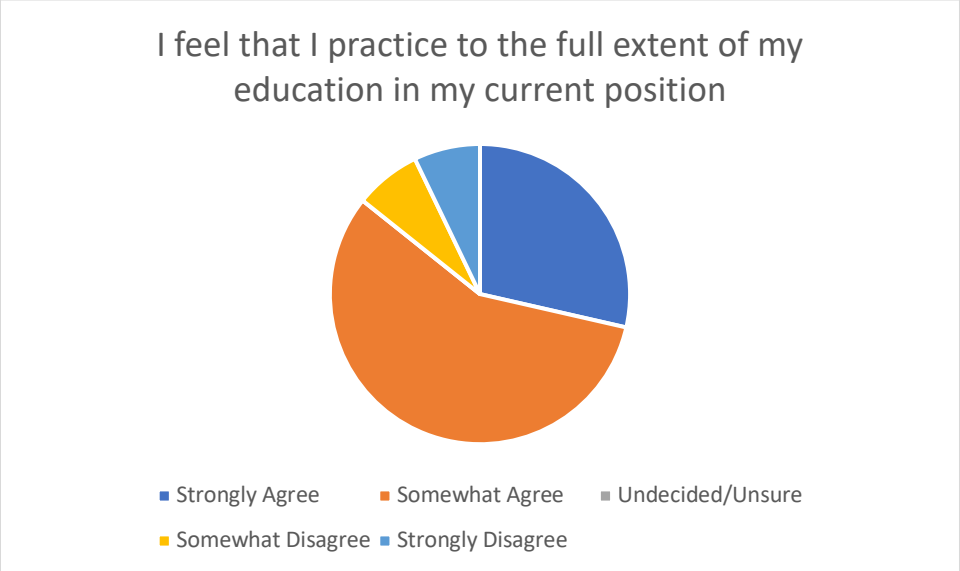
Appendix K

Survey Question 9 Results



Appendix L

Survey Question 10 Results



Appendix M

Qualitative Data Themes and Comments

Themes	**Example Comments**
NPs as valuable team members	• "I think we provide a valuable service, seeing patients as surgeons are in the OR. This is vital to patient access." (NP) • "We utilize NPs to the full extent of their license, and we are hiring more! They are a huge bonus to our service." (Attending/Surgeon) • "I think my department is an exception. APPs are well-respected, work their full scope of practice, and are considered equally valuable as educators and providers" (NP)
Negative perceptions of NPs	• "Even though NPs are allowed to practice at fellow level they are not equipped to do so and they bring significant liability to the team as well as order unnecessary tests and require additional appointments for the patient because they can't answer the question by themselves." (Attending/Surgeon) • "Not comparable to a physician and should not be independent. Less than a tenth of the appropriate training" (Resident/Fellow)
Variable experiences with NPs	• "The wide variation in the quality of NPs make your questions difficult to answer. Most NPs are great. Often though they seem to carry a burden of trying to show how much they know etc." (Attending/Surgeon) • "Completely depends on the experience and skill set of the nurse practitioner. a new graduate functions very differently that an NP practicing in the same field for 20 years." (Attending/Surgeon) • "Depends on their year of experience" (Attending/Surgeon)
Differences in utilization depending on service or clinical situation	• "Significant amount of culture-dependent activity by service and department." (Resident/Fellow) • "Independent provider in clinic, team-based role inpatient" (NP) • "Can practice independently for certain diagnosis, conditions, especially the ones that could be protocolized" (Attending/Surgeon)
Disagreement w/ AH utilization and suggestions for improvement	• "Generally speaking, {AH} does not use NPs to their highest scope of practice which is limiting their function on the team and leading to expense without coordinating

	revenue. They are not just physician extenders which is how they are often used." (Attending/Surgeon) • "Some simple changes in the use of NPs and the structure of our institution could improve the relationships, job satisfaction and quality of care rendered in an academic mixed provider model such as {AH}. Some of these improvements should include (1) allowing LIPs to practice at their full scope. (2) A step-wise grading of capabilities, i.e. NP-1, NP-2, etc to denote the experience and capabilities of the given NP. (3) consideration of some NP-only services that do not include residents to avoid the relative conflict of non-physicians providing education to physician trainees and eliminate the potential for feelings of preferential treatment from residents/APPs. Of course there are more but these are some of my suggestions." (Attending/Surgeon)
Differences in utilization due to surgery	• "I don't think it's fair to compare the NP role to that of a resident, at least not in surgery, as our NPs do not participate in the OR, and therefore their scope of practice/level is not comparable. There are many things that the NPs knowledge and experience far outweighs the resident/fellow/etc experience, and other areas in which a surgically trained practitioner would be more necessary for patient care" (Resident/Fellow) • "It's a surgical service so we don't do surgery" (NP) • "PA's can scrub in the OR, NP's only with additional certification. Overall PA's background is more closely aligned with a surgery service. NP's in my opinion best suited for non-surgical services. As a whole. On an individual level this can differ of course and there are absolute rockstar NP's around on surgical services." (Attending/Surgeon"