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ASSOCIATION BETWEEN PERFORMANCE OF PATIENT-CENTERED CLINICAL ACTIVITIES AND EMPLOYEE
ENGAGEMENT IN HOSPITAL PHARMACISTS

by

AN H. LE

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Association between Performance of Patient-Centered Clinical Activities and Employee Engagement in
Hospital Pharmacists

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Hospital Pharmacists

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ASSOCIATION BETWEEN PERFORMANCE OF PATIENT-CENTERED CLINICAL ACTIVITIES AND EMPLOYEE ENGAGEMENT IN HOSPITAL PHARMACISTS

PURPOSE: The objective was to determine the association between the frequency in which a pharmacist performs patient-centered activities on employee engagement and perception of safety in frontline hospital pharmacists.

METHODS: This multi-hospital, cross-sectional study was conducted utilizing a 30-item questionnaire that was emailed to hospital pharmacists in Southeast Texas through convenience sampling. Responses were analyzed using descriptive statistics. The Mann-Whitney U Test and Kruskal-Wallis Test were used to evaluate the impact of performance of patient-centered clinical activities on employee engagement and safety perception.

RESULTS: The survey was sent to the 343 pharmacists within the health system and 111 useable responses were analyzed. There was a trend towards higher employee engagement scores as pharmacists performed more clinical activities. Patient counseling ($p=0.036$) and the average number of daily patient interactions ($p=0.016$) were positively associated with increased employee engagement. Employee engagement decreased when the percentage of day performing clinical activities increased to 61-80% or when the average number of patient interactions per day increased to 10 or more. There was a trend towards less perception of safety as the percentage of day performing clinical activities increased and the average number of daily patient interactions increased. When the percentage of day performing clinical activities increased to 81-100% and average number of patient interactions increased to 7-9, perception of safety decreased.

CONCLUSION: Pharmacists who provide patient counseling and those who have more direct patient interactions have higher employee engagement than their counterparts. Performance of clinical activities did not change perception of safety overall. Employee engagement and perception of safety

may be associated with workload. More studies are needed to explore what drives employee engagement and perception of safety with pharmacists.

Keywords: employee engagement, pharmacist, survey, hospital, safety, clinical, patient counseling

Introduction

Employee engagement is defined as an employee's commitment to an organization and the discretionary effort that they are willing to expend beyond their core responsibilities.¹ This concept is different from employee job satisfaction, which simply measures how content an employee is with their job and working conditions, such as compensation and benefits.² Engaged employees on the other hand, are able to positive impact an organization's performance as they work harder, perform better, are less likely to leave, and perform more safely.^{2,3} According to a study conducted by Gallup, only 30% of U.S. employees reported that they were fully engaged in their work.³ The Society for Human Resource Management identified that the work being performed and the ability to utilize skills are key drivers for employee engagement.⁴ By leveraging these drivers, healthcare organizations can improve employee engagement, increase employee retention, and reduce the costs associated with unengaged employees, such as lost productivity and turnover, which are estimated to cost the U.S. approximately \$370 billion per year.⁵

One of the factors associated with employee engagement is that employees tend to perform more safely.^{2,3} Several studies have shown that highly engaged healthcare employees, such as nurses and physicians, provide better quality care and have a stronger perception of a culture of safety.^{6,7} Two of the studies are presented below in Table 1. A 2016 study evaluated the association between employee engagement and a culture of safety in the intensive care unit, by utilizing the Gallup Q¹² and Agency for Healthcare Research and Quality Hospital Survey on Patient Safety Culture. The results showed a significant relationship between the perception of safety of the individuals and their level of employee engagement, $r = 0.65$, $p < 0.01$.⁶ That same year, a retrospective analysis was published on the association between safety culture and employee engagement in hospital employees, utilizing the Gallup Q¹² Survey and Safety Attitude Questionnaire (SAQ).⁷ They found that there was positive correlation between employee engagement and items within the SAQ domains. However, past studies

have only focused on job satisfaction and not employee engagement in the field of pharmacy. In 1977, a study utilizing a 120-item questionnaire was conducted in 195 pharmacists and found that the average response to general job satisfaction was less than satisfied due to concerns regarding utilization of professional skills and development in hospital pharmacists.⁸ A study conducted in 1996 evaluated the relationship between hospital pharmacists' job satisfaction and involvement in clinical activities found a positive but weak association between the time that is spent performing clinical activities and job satisfaction.⁹ Along that same line, a study conducted in 1999 examined the relationship between job satisfaction and perceived utilization of skills. Variables determined to be related to job satisfaction included underemployment of skills, staffing model, and education.¹⁰ The results of the latter two studies were supported by a 2006 study that found both integrated and clinical pharmacists had higher job satisfaction than staff pharmacists.¹¹

Table 1. Literature Review of Past Studies on Employee Engagement and Job Satisfaction

Title	Methods	Results
Employee engagement and a culture of safety in the intensive care unit Collier et al., 2016	<ul style="list-style-type: none"> • Gallup Q12 Survey • Agency for Healthcare Research and Quality (AHRQ) Hospital Survey on Patient Safety Culture 	<ul style="list-style-type: none"> • $r = 0.65, p < 0.01$ • Perception of safety increased with employee engagement • Longevity of employment also related to culture of safety
Associations between safety culture and employee engagement over time: a retrospective analysis Biddison et al., 2016	<ul style="list-style-type: none"> • Safety Attitude Questionnaire (SAQ) • Gallup Q12 Survey • Survey distributed via electronic and paper-based methods 	<ul style="list-style-type: none"> • $r = 0.43-0.69$ • Positive correlation between employee engagement items and SAQ domains
Levels of satisfaction among hospital pharmacists Johnson et al., 1977	<ul style="list-style-type: none"> • 120-item questionnaire to 195 pharmacists on overall job satisfaction • Results compared to other professions 	<ul style="list-style-type: none"> • 68% response rate • Less than satisfied <ul style="list-style-type: none"> • Staffing practices • Career growth • Less committed and more likely to change jobs

Relationship between hospital pharmacists' job satisfaction and involvement in clinical activities Olson et al., 1996	<ul style="list-style-type: none"> • Barnett and Kimberlin 4-question survey on job satisfaction • 9 yes/no questions on clinical activities 	<ul style="list-style-type: none"> • 58% response rate • Positive correlation between job satisfaction and time performing clinical activities • Small differences but statistically significant
Pharmacists' job satisfaction and perceived utilization of skills Cox et al., 1999	<ul style="list-style-type: none"> • 4 questions adopted from other job satisfaction surveys • 10 questions on perceived utilization of skills 	<ul style="list-style-type: none"> • 35% response rate • Variables related to job satisfaction <ul style="list-style-type: none"> • Underemployment of skills • Staffing • Education
Job satisfaction among staff, clinical, and integrated hospital pharmacists Kerschen, et al., 2006	<ul style="list-style-type: none"> • Barnett and Kimberlin 4-question survey on job satisfaction • 10 questions on percentage of time performing specified activities 	<ul style="list-style-type: none"> • 68% response rate (n = 38) • Integrated and clinical pharmacists had higher job satisfaction than staff pharmacists • No significant differences between integrated and clinical pharmacists

Recognizing the impact and growing focus on employee engagement and the paucity of studies evaluating employee engagement in pharmacists, this study aimed to determine the association between the performance of patient-centered clinical activities and employee engagement. The secondary objective was to determine the correlation between performance of patient-centered clinical activities and the pharmacist's perception of safety. Patient-centered clinical activities were defined as those allowing the pharmacists to have a greater impact in the direction of care for the patient or enabling the pharmacists to have more direct contact with the patients. The hypothesis was that pharmacists who perform more patient-centered clinical activities would have a higher level of engagement compared to those who perform fewer patient-centered clinical activities.

Methods

The study was conducted within the Memorial Hermann Health System, which composes of 16 hospitals within Southeast Texas, ranging from an academic institution, multiple community hospitals, and rehabilitation centers, and employs over 300 pharmacists. An electronic, self-administered survey was sent to pharmacists within the health system through convenience sampling. The inclusion and exclusion criteria for participation in the study are listed in Table 2. Pharmacists were included in the study if they were frontline pharmacists in the inpatient setting who had been with their current institution for at least one month and worked at least part time. Pharmacy residents and members of the management team were excluded from participating in the study, as well as supplemental pharmacists who worked on a “PRN” basis.

Table 2. Inclusion/Exclusion Criteria

Inclusion	Exclusion
<ul style="list-style-type: none">• Frontline pharmacists• Work in inpatient setting• At least one month at current institution	<ul style="list-style-type: none">• PRN pharmacists• Pharmacy residents• Individuals in management

The survey was composed of 30 items (see Appendix A), with sections focusing on performance of patient-centered clinical activities, which comprised the first 6 questions, employee engagement, which consisted of questions 7 through 15, perception of safety, with questions 16 through 22, and demographics rounded out the remaining eight questions. Questions relating to the performance of patient-centered clinical activities were adopted from a study conducted by Olson and Lawson and consisted of 5 yes or no questions to the performance of specific clinical activities and two questions related to the percentage of day that is spent performing those activities and number of direct patient interactions.⁹ Employee engagement questions were developed based on common themes determined

from employee engagement surveys and existing literature and were measured on a 5-point Likert scale.^{5,11,12} The scores were coded from one through five with five being most engaged. Safety attitude was measured through questions obtained from the Safety Attitude Questionnaire (SAQ), which utilized a 5-point Likert scale.¹³ The responses were coded from 0 through 100, as dictated by the SAQ, and represented as a mean of all scores. The survey was piloted by ten pharmacists who completed the survey and provided feedback on a standard form. Modifications were made based on the feedback that was received.

All data collected were analyzed using descriptive statistics, including mean, standard deviation, and frequency. The median was also calculated and can be found in Appendix B. The Mann-Whitney U test and Kruskal-Wallis test were used to compare differences in employee engagement scores and perception of safety in relation to the performance of clinical activities. The Kendall's tau-b was used to determine if there was an association between employee engagement and the percentage of day that was spent performing clinical activities as well as the number of patient interactions. Statistical analysis was completed through IBM® SPSS® Statistics version 24.0. An alpha level of 0.05 was considered to be statistically significant.

Results

An email containing a description of the study and survey link was emailed to 343 pharmacists within the system. There were 111 useable survey responses after exclusions and removal of incomplete responses, equating a response rate of 32%. The demographic characteristics of those who responded to the survey are listed in Table 3.

The respondents were predominantly females (78.4%), with a Doctor of Pharmacy (84.7%) and employed full-time (88.3%). Less than half of those included in the study completed postgraduate training, with 26.1% completing a PGY1 and 18% completing a PGY2. The pharmacists with PGY1 training

had higher employee engagement ($p=0.026$) and perception of safety ($p=0.005$) than pharmacists who completed PGY2 training. Bed size was associated with differences in both employee engagement ($p=0.036$) and perception of safety ($p=0.001$), with pharmacists working in the smaller institutions having the highest scores. Approximately 58% of those who responded worked in the community setting, with 38% at an academic institution and 3% at a non-acute facility. Although there were no significant differences in employee engagement scores between the type of institutions, the perception of safety score was statistically significant ($p=0.035$), with the pharmacists working in the non-acute care facilities having higher scores. The number of years practicing as a pharmacist and the number of years as a pharmacist at an institution were not associated with differences in employee engagement or perception of safety.

Table 3. Demographics of Study Respondents

Characteristic	No. (%) ⁺	Mean EE ^a ± SD	p-value	Mean PS ^b ± SD	p-value
Gender			0.069 ^c		0.016 ^c
Females	87 (78.4)	4.44 ± 0.77		82.02 ± 21.59	
Males	24 (21.6)	4.72 ± 0.48		91.07 ± 15.96	
Employment status			0.206 ^c		0.130 ^c
Full-time	98 (88.3)	4.50 ± 0.70		83.42 ± 21.13	
Part-time	13 (11.7)	4.47 ± 0.89		88.17 ± 18.08	
Highest level of education			0.499 ^d		0.201 ^d
BS in Pharmacy	13 (11.8)	4.62 ± 0.59		92.31 ± 10.50	
Doctor of Pharmacy	94 (85.5)	4.48 ± 0.75		82.30 ± 21.84	
MS/MBA*	3 (2.7)	4.67 ± 0.11		97.67 ± 2.02	
Post-graduate training			0.026 ^c		0.005 ^c
PGY1	49 (44.1)	4.66 ± 0.63		87.69 ± 16.81	
PGY2	29 (26.1)	4.44 ± 0.65		72.16 ± 22.91	
Years as a pharmacist			0.996 ^d		0.801 ^d
1-5 years	20 (18.0)	4.52 ± 0.66		82.46 ± 21.79	
6-10 years	45 (40.5)	4.48 ± 0.73		85.71 ± 17.84	
11-15 years	26 (23.4)	4.57 ± 0.65		84.24 ± 19.91	
16 or more years	17 (15.3)	4.43 ± 0.90		84.80 ± 23.47	

Years as a pharmacist at institution			0.683 ^d		0.091 ^d
Less than 1 year	17 (15.3)	4.66 ± 0.59		92.85 ± 13.49	
1-5 years	56 (50.5)	4.49 ± 0.68		80.30 ± 22.01	
6-10 years	14 (12.6)	4.51 ± 0.74		90.04 ± 13.45	
11-15 years	13 (11.7)	4.48 ± 0.73		85.13 ± 18.28	
16 or more years	11 (9.9)	4.30 ± 1.09		79.91 ± 29.64	
Type of institution			0.248 ^d		0.035 ^{d,e}
Academic/teaching	42 (37.8)	4.49 ± 0.66		81.39 ± 20.02	
Community	64 (57.7)	4.47 ± 0.78		84.60 ± 21.71	
Non-acute facility	3 (2.7)	4.96 ± 0.06		100.00	
Bed size			0.036 ^{d,f}		0.001 ^{d,g}
0-100	7 (6.3)	4.97 ± 0.08		99.00 ± 1.71	
101-200	5 (4.5)	4.82 ± 0.23		100.00	
201-300	27 (24.3)	4.38 ± 0.91		80.55 ± 26.84	
301-400	5 (4.5)	3.80 ± 0.96		75.70 ± 19.31	
401-500	17 (15.3)	4.70 ± 0.48		91.18 ± 14.03	
501 or more	47 (42.3)	4.49 ± 0.65		81.32 ± 19.37	

^a EE – employee engagement

^b PS – perception of safety

^c Calculated using Mann-Whitney U test

^d Calculated using Kruskal-Wallis test

^e Post-hoc analysis did not find statistically significant differences across groups

^f Post-hoc analysis found difference between 0-100 and 201-300; 0-100 and 501 or more

^g Post-hoc analysis found difference between smaller bed sizes (0-200) and larger bed sizes of 201-300 and 501 or more

* In addition to BS in Pharmacy or Doctorate of Pharmacy

+ Percentages may not add up to 100 due to rounding

Employee engagement scores were compared to the performance of clinical activities as shown in Table 4. Pharmacists who responded that they counseled patients on medications and disease states had higher employee engagement scores than those who did not, with a p-value of 0.036. Additionally, the differences in employee engagement scores associated with the number of daily patient interactions were also statistically significant ($p = 0.016$). Kendall's tau-b was used to determine the association between the percentage of day performing clinical activities and employee engagement and did not find any significant association between the two variables ($\tau_b = .009$, $p = 0.453$) as shown in Table 4 and Figure 1. However, a positive but weak association was found between the number of daily patient

interactions and employee engagement ($\tau_b = .131$, $p = 0.041$), as depicted in Table 4 and Figure 2. There were no statistically significant differences with individuals that provide dosing consults or participated in rounds. Of note, engagement scores did decrease when the percentage of day performing clinical activities was at 61-80% and when there were 10 or more patient interactions per day.

Table 4. Performance of Clinical Activities and Employee Engagement

Item	No. (%) [†]	Mean EE ^a ± SD	p-value
Perform medication reconciliation			0.209 ^b
Yes	57 (51.4)	4.53 ± 0.75	
No	54 (48.6)	4.47 ± 0.69	
Provide dosing consults			0.239 ^b
Yes	96 (86.5)	4.49 ± 0.76	
No	15 (1.5)	4.56 ± 0.44	
Counsel patients			0.036 ^b
Yes	71 (64.0)	4.58 ± 0.67	
No	40 (36.0)	4.36 ± 0.81	
Participate in rounds			0.054 ^b
Yes	63 (56.8)	4.64 ± 0.55	
No	48 (43.2)	4.32 ± 0.87	
Percentage of day performing clinical activities			0.552 ^{c,d}
0-20%	37 (33.3)	4.45 ± 0.68	
21-40%	14 (12.6)	4.60 ± 0.72	
41-60%	22 (19.8)	4.65 ± 0.58	
61-80%	18 (16.2)	4.32 ± 0.93	
81-100%	20 (18.0)	4.50 ± 0.72	
Average number of daily patient interactions			0.016 ^{c,e,f}
0	35 (31.5)	4.35 ± 0.74	
1-3	34 (30.6)	4.48 ± 0.70	
4-6	16 (14.4)	4.67 ± 0.86	
7-9	8 (7.2)	4.93 ± 0.10	
10 or more	18 (16.2)	4.50 ± 0.71	

^aEE – Employee engagement

^bCalculated using Mann-Whitney U test

^cCalculated using Kruskal-Wallis test

^dKendall's tau-b did not find relationship ($\tau_b = .009$, $p = 0.453$)

^ePost-hoc analysis did not find statistically significant differences across groups

^fKendall's tau-b found a positive relationship that was statistically significant ($\tau_b = .131$, $p = 0.041$)

[†]Percentages may not add up to 100 due to rounding

Figure 1. Association between Percentage of Day Performing Clinical Activities and Employee Engagement

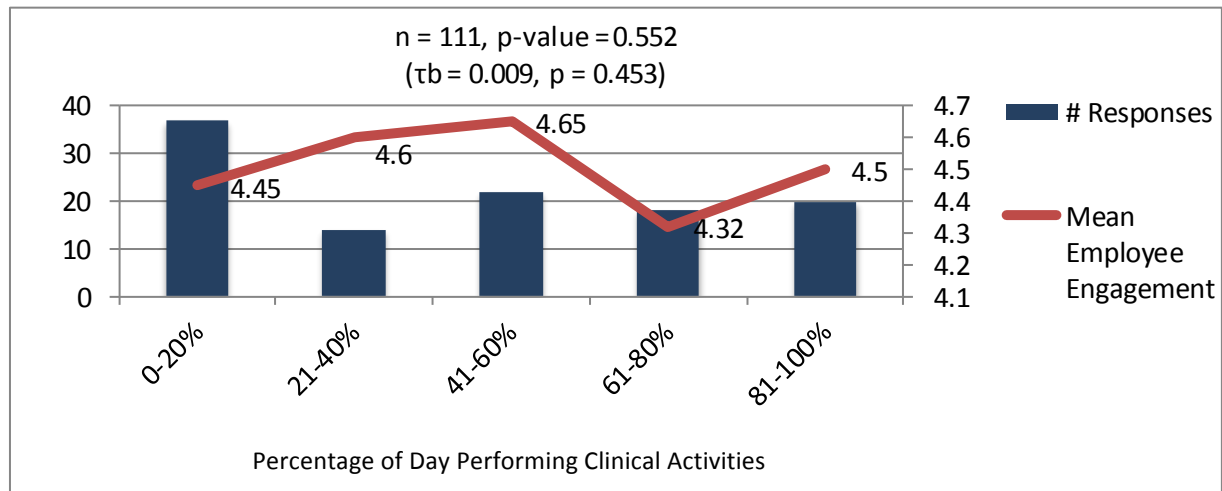


Figure 2. Association between Average Number of Patient Interactions and Employee Engagement

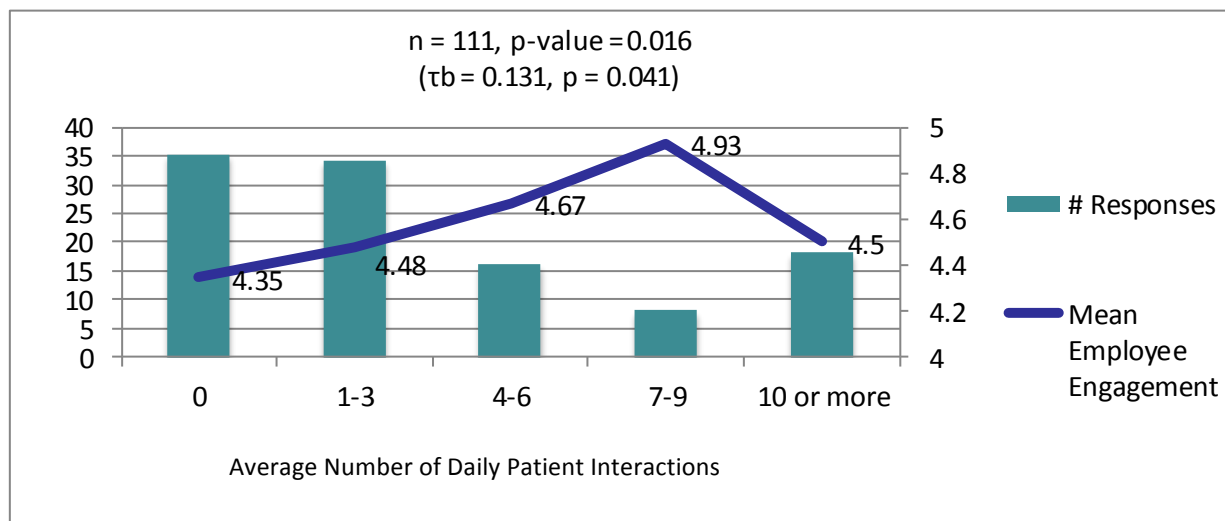


Table 5 depicts the differences in performance of clinical activities on perception of safety. In comparing the responses, there were no statistically significant differences. In general, pharmacists who performed clinical activities had higher perception of safety. However, as the percentage of day performing clinical activities increased, there was a trend in decreasing perception of safety scores. In regards to average number of patient interaction, there is a slight increase in perception of safety scores until the number of patient interactions reaches the range of seven to nine, where the scores declined.

Kendall's tau-b was performed and did not find any significant association between perception of safety scores on the percentage of day performing clinical activities ($\tau_b = -0.106$, $p = 0.078$) or number of patient interactions ($\tau_b = -0.021$, $p = 0.390$), as depicted in Figure 3 and 4, respectively. Similar to what was observed within employee engagement, the perception of safety scores decreased when the percentage of day performing clinical activities was at 81-100% and when there were 7-9 patient interactions per day.

Table 5. Performance of Clinical Activities and Perception of Safety

Item	No. (%) [†]	Mean PS ^a ± SD	p-value
Perform medication reconciliation			0.276 ^b
Yes	57 (51.4)	84.09 ± 22.68	
No	54 (48.6)	83.86 ± 18.78	
Provide dosing consults			0.244 ^b
Yes	96 (86.5)	83.67 ± 20.59	
No	15 (1.5)	85.97 ± 22.59	
Counsel patients			0.432 ^b
Yes	71 (64.0)	84.61 ± 19.48	
No	40 (36.0)	82.86 ± 21.13	
Participate in rounds			0.331 ^b
Yes	63 (56.8)	84.31 ± 18.71	
No	48 (43.2)	83.55 ± 23.42	
Percentage of day performing clinical activities			0.641 ^{c,d}
0-20%	37 (33.3)	87.93 ± 16.46	
21-40%	14 (12.6)	84.95 ± 21.38	
41-60%	22 (19.8)	85.41 ± 17.34	
61-80%	18 (16.2)	83.53 ± 20.06	
81-100%	20 (18.0)	74.83 ± 29.32	
Average number of daily patient interactions			0.065 ^{c,e}
0	35 (31.5)	83.67 ± 19.65	
1-3	34 (30.6)	84.24 ± 19.93	
4-6	16 (14.4)	85.73 ± 28.27	
7-9	8 (7.2)	76.79 ± 20.07	
10 or more	18 (16.2)	83.98 ± 20.78	

^aPS – perception of safety

^bCalculated using Mann-Whitney U test

^cCalculated using Kruskal-Wallis test

^dKendall's tau-b did not find relationship ($\tau_b = -0.106$, $p = 0.078$)

^eKendall's tau-b did not find relationship ($\tau_b = -0.021$, $p = 0.390$)

^{*}Percentages may not add up to 100 due to rounding

Figure 3. Association between Percentage of Day Performing Clinical Activities and Perception of Safety

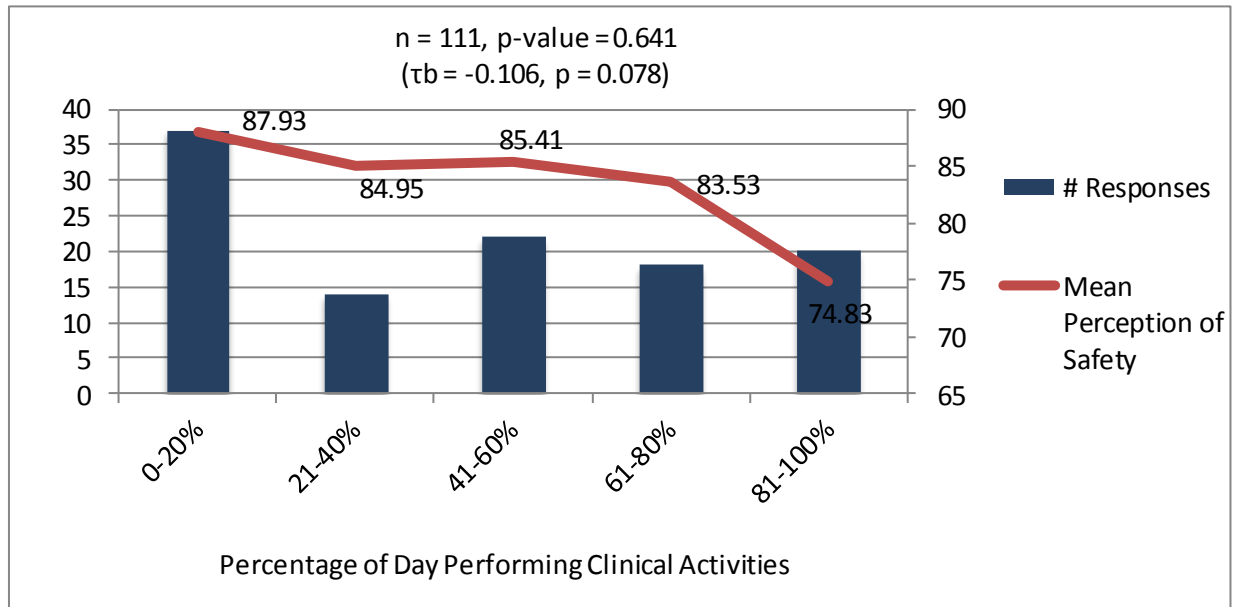
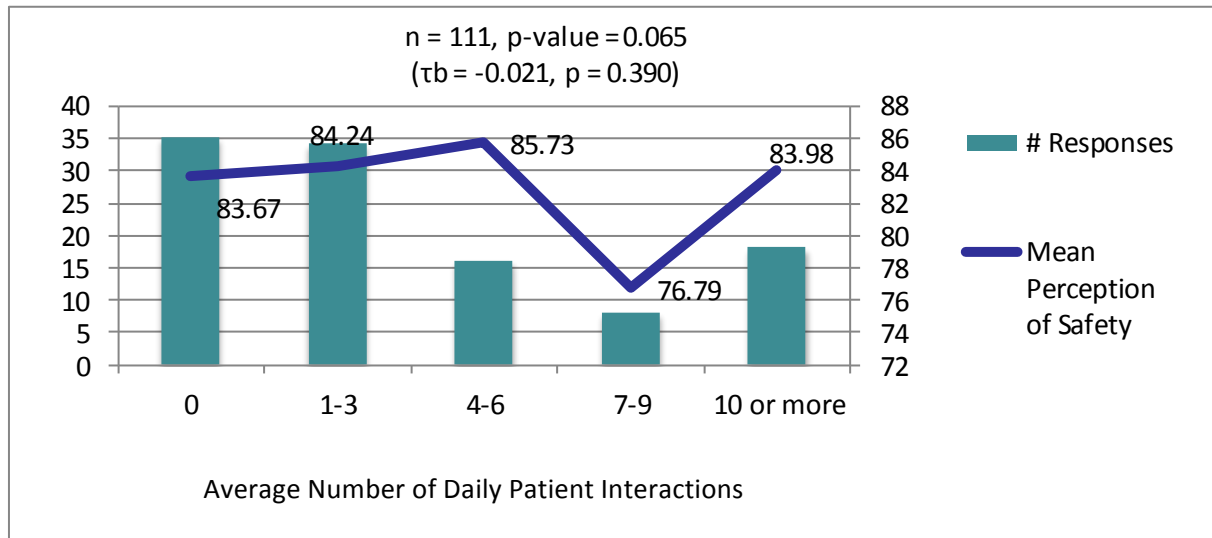


Figure 4. Association between Average Number of Patient Interactions and Perception of Safety



Discussion

As shown in the Table 3, there were some inherent differences in employee engagement and perception of safety scores between groups within the demographic variables. Individuals who completed a PGY1 reported employee engagement and perception of safety scores that were higher than those who completed a PGY2. This difference may be due to the fact that individuals with a PGY2 tend to hold specialized roles within their institution and are often tasked with other responsibilities in addition to patient care, such as administrative projects, research, and oversight of various committees. It could also be related to differences in relationships with other individuals within the department. There were also differences in perception of safety scores for based on gender, size of institution, and type of institution. The differences in scores observed in the size and type of institution could be due to the ability of the pharmacist to be more engaged in direct patient care as the patient population is generally smaller when compared to larger institutions. Employment status and number of years practicing was not associated with differences in employee engagement or perception of safety scores.

Although the study did not obtain as many significant differences in results as previous studies in regards to the primary endpoint, it did recognize a positive trend in employee engagement scores with increased performance of clinical activities.⁸⁻¹⁰ Patient counseling and the average number of daily patient interactions were positively associated with increased employee engagement. However, no significant differences in perception of safety scores were found in relation to performance of clinical activities. It is important to note that there were specific ranges within percentage of day performing clinical activities and number of patient interactions in which the employee engagement and perception of safety scores decrease. It may be important to further explore the relationship between workload with employee engagement and perception of safety, since higher workload may be associated with stress and burnout, which could lead to loss of energy and motivation.¹⁴

There were several limitations for this study. It was underpowered. As a result, the study may not have detected all possible differences that could exist. Additionally, the nonparametric tests that were used are more conservative and are less powerful in detecting differences. Although the study included different types of institution, it was conducted within one health system, which precludes the generalizability of the findings outside this health system. Future studies should be conducted with larger samples sizes to adequately meet power and include other health systems to increase the robustness and applicability of the data. It also may be valuable to compare employee engagement and perception of safety between different types of institutions. It would be of interest to determine the optimal range of clinical activities and patient interactions for employee engagement. With the increase focus on the layered learning model, it would be interesting to determine the effects of the model on employee engagement as pharmacists who practice in this model may have less direct patient interactions.

It may be enough for satisfied employees to stay with an organization and complete the required tasks, but with the surplus of pharmacists available, it would be prudent for individuals in management to focus on hiring and retaining engaged employees who would take on ownership and bring innovation to the department. Job satisfaction is a component of employee engagement, but it alone will not bring about the positive impacts that are recognized with highly engaged employees. According to the Hospital Workforce Engagement report conducted by The Advisory Board Company, pharmacy ranked 34th out of 36 in employee engagement compared to other healthcare departments, such as oncology and nutrition, who had higher employee engagement and ranked 6th and 11th, respectively.¹⁵ With the data to support the benefits of employee engagement in other industries and healthcare professions, more focus needs to be one understanding the drivers for employee engagement in the field of pharmacy and what could be done.

Conclusion

A past study determined that pharmacists, who are able to employ their skills and practice in a more integrated model with increased clinical responsibilities, have higher job satisfaction than those who perform predominantly in a distributive staffing practice.¹¹ In evaluating the impact of performance of clinical activities on employee engagement, the performance of patient counseling and the number of patient interactions were associated with employee engagement. Performance of clinical activities did not change perception of safety overall. Employee engagement and perception of safety may be associated with workload. More studies are needed to explore what drives employee engagement and perception of safety with pharmacists.

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Appendix A – Survey Questions

Patient-centered, Clinical Activities

1. I perform medication reconciliation upon admission and/or discharge.
 - ☐ Yes
 - ☐ No
2. I provide dosing consults (e.g. anticoagulation, antibiotics, and parenteral nutrition)
 - ☐ Yes
 - ☐ No
3. I counsel patients on disease states and medication therapy.
 - ☐ Yes
 - ☐ No
4. I participate in rounds with other healthcare professions.
 - ☐ Yes
 - ☐ No
5. What percentage of your typical work day is spent performing patient-centered activities?
 - ☐ 0-20%
 - ☐ 21-40%
 - ☐ 41-60%
 - ☐ 61-80%
 - ☐ 81-100%
6. On a daily basis, I have an average of ____ direct interactions with patients (e.g. face-to-face interactions, rounding with assessments, and patient/caregiver counseling).
 - ☐ 0
 - ☐ 1-3
 - ☐ 4-6
 - ☐ 7-9
 - ☐ 10 or more

Employee Engagement

7. Overall, I am satisfied with the pharmacy department in which I am employed.
 - ☐ Disagree strongly
 - ☐ Disagree slightly
 - ☐ Neutral
 - ☐ Agree slightly
 - ☐ Agree strongly
 - ☐ Not applicable
8. I have the resources that I need to perform my job well.
 - ☐ Disagree strongly
 - ☐ Disagree slightly
 - ☐ Neutral
 - ☐ Agree slightly
 - ☐ Agree strongly
 - ☐ Not applicable
9. The individual that I report to cares about me and my development. (e.g. manager, supervisor, director, etc.)
 - ☐ Disagree strongly

- Disagree slightly
 - Neutral
 - Agree slightly
 - Agree strongly
 - Not applicable
10. My input is valued.
- Disagree strongly
 - Disagree slightly
 - Neutral
 - Agree slightly
 - Agree strongly
 - Not applicable
11. The work that I do supports the mission and vision of the pharmacy department.
- Disagree strongly
 - Disagree slightly
 - Neutral
 - Agree slightly
 - Agree strongly
 - 99. Not applicable
12. I know what is expected of me.
- Disagree strongly
 - Disagree slightly
 - Neutral
 - Agree slightly
 - Agree strongly
 - Not applicable
13. The work that I do allows me to use my skills and educational training.
- Disagree strongly
 - Disagree slightly
 - Neutral
 - Agree slightly
 - Agree strongly
 - Not applicable
14. The pharmacy department has a culture of recognition and appreciation.
- Disagree strongly
 - Disagree slightly
 - Neutral
 - Agree slightly
 - Agree strongly
 - Not applicable
15. Employees in the pharmacy department are committed to providing quality care.
- Disagree strongly
 - Disagree slightly
 - Neutral
 - Agree slightly
 - Agree strongly
 - Not applicable

Safety Attitude

16. I would feel safe being treated at my institution as a patient.
- ☐ Disagree strongly
 - ☐ Disagree slightly
 - ☐ Neutral
 - ☐ Agree slightly
 - ☐ Agree strongly
 - ☐ Not applicable
17. Medication errors are handled appropriately in the pharmacy department.
- ☐ Disagree strongly
 - ☐ Disagree slightly
 - ☐ Neutral
 - ☐ Agree slightly
 - ☐ Agree strongly
 - ☐ Not applicable
18. I know the proper channels to direct questions or concerns regarding patient safety.
- ☐ Disagree strongly
 - ☐ Disagree slightly
 - ☐ Neutral
 - ☐ Agree slightly
 - ☐ Agree strongly
 - ☐ Not applicable
19. I am encouraged to report any patient safety concerns that I may have.
- ☐ Disagree strongly
 - ☐ Disagree slightly
 - ☐ Neutral
 - ☐ Agree slightly
 - ☐ Agree strongly
 - ☐ Not applicable
20. The culture in the pharmacy department makes it easy to learn from the errors of others.
- ☐ Disagree strongly
 - ☐ Disagree slightly
 - ☐ Neutral
 - ☐ Agree slightly
 - ☐ Agree strongly
 - ☐ Not applicable
21. I feel that my suggestions about safety would be acted upon if I expressed them to management.
- ☐ Disagree strongly
 - ☐ Disagree slightly
 - ☐ Neutral
 - ☐ Agree slightly
 - ☐ Agree strongly
 - ☐ Not applicable
22. It is easy for employees to ask questions when there is something that they do not understand.
- ☐ Disagree strongly
 - ☐ Disagree slightly

- Neutral
- Agree slightly
- Agree strongly
- Not applicable

Demographics

23. What is your gender?
- Male
 - Female
24. How many years have you practiced as a pharmacist?
- < 1
 - 1-5
 - 6-10
 - 11-15
 - 16 or more
25. How many years have you practiced as a pharmacist with your current institution?
- < 1
 - 1-5
 - 6-10
 - 11-15
 - 16 or more
26. What is your current employment status?
- Full-time
 - Part-time
27. What is the highest level of education that you received?
- B.S. in Pharmacy
 - Pharm.D.
 - M.S. in Pharmacy or M.B.A. (in addition to receiving a BS in Pharmacy or PharmD)
 - Other, describe _____
28. What is the highest level of training that you received?
- Post-graduate Year 1 (PGY1)
 - Post-graduate Year 2 (PGY2)
 - Fellowship
 - 99. Not Applicable
29. How many beds is your institution licensed?
- 0-100 beds
 - 101-200 beds
 - 201-300 beds
 - 301-400 beds
 - 401-500 beds
 - 501 or more beds
30. Which type best describes your institution?
- Academic/Teaching
 - Community
 - Non-acute facility (e.g. rehabilitation, hospice)

Appendix B – Data Analysis with Median

Demographics of Study Participants

Characteristic	No. (%) ⁺	Median EE ^a (IQR)	p-value	Median PS ^b (IQR)	p-value
Gender			0.069 ^c		0.016 ^c
Females	87 (78.4)	4.78 (0.89)		92.75 (28.50)	
Males	24 (21.6)	4.89 (0.33)		96.50 (7.25)	
Employment status			0.206 ^c		0.130 ^c
Full-time	98 (88.3)	4.78 (0.59)		92.75 (25.00)	
Part-time	13 (11.7)	5.00 (0.95)		100.00 (21.38)	
Highest level of education			0.499 ^d		0.201 ^d
BS in Pharmacy	13 (11.7)	4.89 (0.73)		96.50 (16.13)	
Doctor of Pharmacy	94 (84.7)	4.78 (0.62)		92.75 (29.44)	
MS/MBA*	3 (2.7)	4.67		96.50	
Post-graduate training			0.026 ^c		0.005 ^c
PGY1	49 (44.1)	4.89 (0.33)		96.50 (21.50)	
PGY2	29 (26.1)	4.67 (0.84)		76.75 (43.75)	
Years as a pharmacist			0.996 ^d		0.801 ^d
1-5 years	20 (18.0)	4.78 (0.62)		92.75 (23.25)	
6-10 years	45 (40.5)	4.84 (0.92)		94.63 (29.44)	
11-15 years	26 (23.4)	4.78 (0.50)		92.75 (23.25)	
16 or more years	17 (15.3)	4.89 (0.89)		96.50 (25.00)	
Years as a pharmacist at institution			0.683 ^d		0.091 ^d
Less than 1 year	17 (15.3)	5.00 (0.45)		100.00 (9.00)	
1-5 years	56 (50.5)	4.78 (0.73)		91.00 (34.88)	
6-10 years	14 (12.6)	4.89 (0.73)		94.63 (14.31)	
11-15 years	13 (11.7)	4.78 (0.73)		92.75 (23.25)	
16 or more years	11 (9.9)	4.78 (1.33)		89.25 (25.00)	
Type of institution			0.248 ^d		0.035 ^{d,e}
Academic/teaching	42 (37.8)	4.78 (0.73)		91.00 (27.69)	
Community	64 (57.7)	4.84 (0.73)		96.50 (25.00)	
Non-acute facility	3 (2.7)	5.00		100.00	
Bed size			0.036 ^{d,f}		0.001 ^{d,g}
0-100	7 (6.3)	5.00 (0.22)		100.00 (3.50)	
101-200	5 (4.5)	4.89 (0.39)		100.00	
201-300	27 (24.3)	4.78 (0.89)		92.75 (32.25)	
301-400	5 (4.5)	3.22 (1.78)		78.50 (35.75)	
401-500	17 (15.3)	4.89 (0.39)		96.50 (12.50)	
501 or more	47 (42.3)	4.78 (0.67)		89.25 (25.00)	

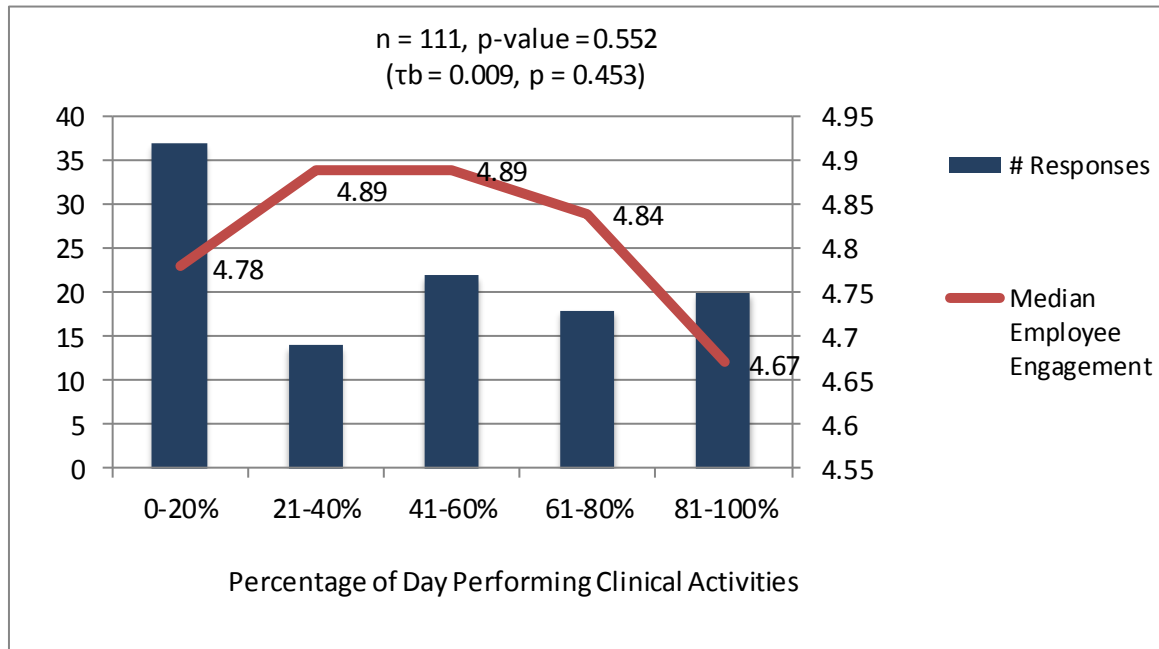
- ^a EE – employee engagement
^b PS – perception of safety
^c Calculated using Mann-Whitney U test
^d Calculated using Kruskal-Wallis test
^e Post-hoc analysis did not find statistically significant differences across groups
^f Post-hoc analysis found difference between 0-100 and 201-300; 0-100 and 501 or more
^g Post-hoc analysis found difference between smaller bed sizes (0-200) and larger bed sizes of 201-300 and 501 or more
^{*} In addition to BS in Pharmacy or Doctorate of Pharmacy
⁺ Percentages may not add up to 100 due to rounding

Performance of Clinical Activities and Employee Engagement

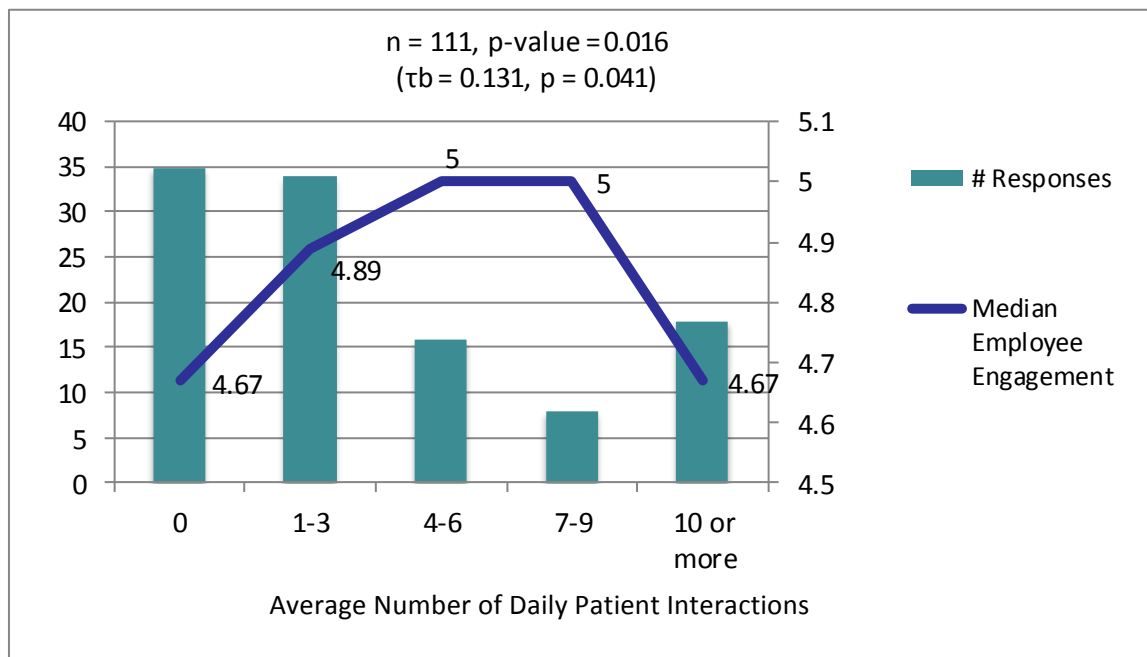
Item	No. (%) ⁺	Median EE ^a (IQR)	p-value
Perform medication reconciliation			0.209 ^b
Yes	57 (51.4)	4.89 (0.56)	
No	54 (48.6)	4.78 (0.89)	
Provide dosing consults			0.239 ^b
Yes	96 (86.5)	4.84 (0.56)	
No	15 (1.5)	4.78 (0.78)	
Counsel patients			0.036 ^b
Yes	71 (64.0)	4.89 (0.50)	
No	40 (36.0)	4.73 (0.95)	
Participate in rounds			0.054 ^b
Yes	63 (56.8)	4.89 (0.44)	
No	48 (43.2)	4.73 (1.33)	
Percentage of day performing clinical activities			0.552 ^{c,d}
0-20%	37 (33.3)	4.78 (0.89)	
21-40%	14 (12.6)	4.89 (0.46)	
41-60%	22 (19.8)	4.89 (0.33)	
61-80%	18 (16.2)	4.84 (0.58)	
81-100%	20 (18.0)	4.67 (1.19)	
Average number of daily patient interactions			0.016 ^{c,e,f}
0	35 (31.5)	4.67 (1.33)	
1-3	34 (30.6)	4.89 (1.00)	
4-6	16 (14.4)	5.00 (0.30)	
7-9	8 (7.2)	5.00 (0.19)	
10 or more	18 (16.2)	4.67 (0.39)	

- ^a EE – Employee engagement
^b Calculated using Mann-Whitney U test
^c Calculated using Kruskal-Wallis test
^d Kendall's tau-b did not find relationship ($\tau_b = .009$, $p = 0.453$)
^e Post-hoc analysis did not find statistically significant differences across groups
^f Kendall's tau-b found a positive relationship that was statistically significant ($\tau_b = .131$, $p = 0.041$)
⁺ Percentages may not add up to 100 due to rounding

Association between Percentage of Day Performing Clinical Activities and Employee Engagement



Association between Average Number of Patient Interactions and Employee Engagement



Performance of Clinical Activities and Perception of Safety

Item	No. (%) ⁺	Median PS ^a (IQR)	p-value
Perform medication reconciliation	Yes 57 (51.4) No 54 (48.6)	96.50 (25.00) 92.75 (22.38)	0.276 ^b
Provide dosing consults	Yes 96 (86.5) No 15 (1.5)	92.75 (25.00) 96.50 (21.50)	0.244 ^b
Counsel patients	Yes 71 (64.0) No 40 (36.0)	96.50 (25.00) 92.75 (24.13)	0.432 ^b
Participate in rounds	Yes 63 (56.8) No 48 (43.2)	92.75 (25.00) 96.50 (21.50)	0.331 ^b
Percentage of day performing clinical activities	0-20% 37 (33.3) 21-40% 14 (12.6) 41-60% 22 (19.8) 61-80% 18 (16.2) 81-100% 20 (18.0)	96.50 (17.88) 98.25 (24.19) 92.75 (25.88) 94.63 (36.63) 83.88 (47.31)	0.641 ^{c,d}
Average number of daily patient interactions	0 35 (31.5) 1-3 34 (30.6) 4-6 16 (14.4) 7-9 8 (7.2) 10 or more 18 (16.2)	92.75 (25.00) 92.75 (29.44) 96.50 (12.50) 98.25 (6.31) 78.50 (36.63)	0.065 ^{c,e}

^aPS – perception of safety

^bCalculated using Mann-Whitney U test

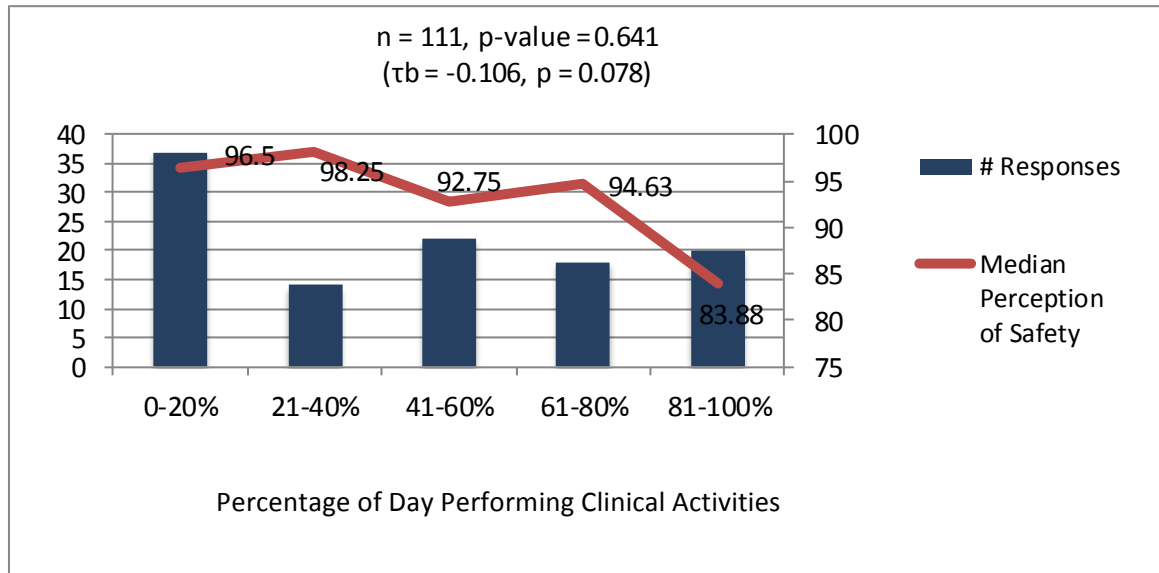
^cCalculated using Kruskal-Wallis test

^dKendall's tau-b did not find relationship ($\tau_b = -0.106$, $p = 0.078$)

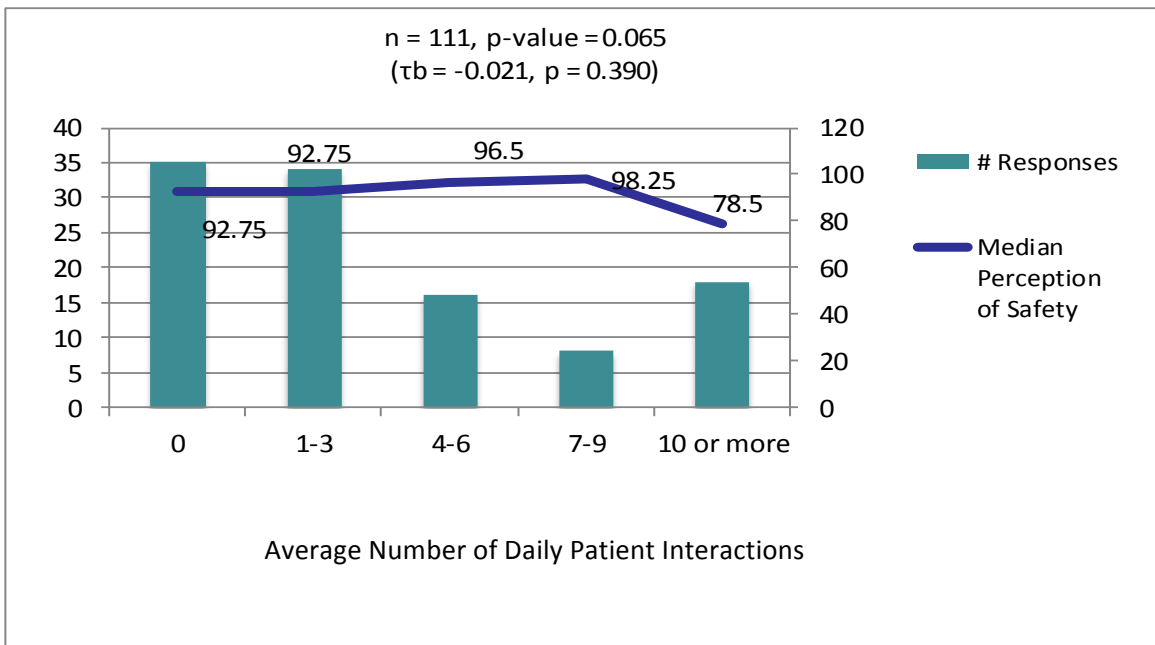
^eKendall's tau-b did not find relationship ($\tau_b = -0.021$, $p = 0.390$)

⁺Percentages may not add up to 100 due to rounding

Association between Percentage of Day Performing Clinical Activities and Perception of Safety



Association between Average Number of Patient Interactions and Perception of Safety



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