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The Effectiveness of Pain Management Education on Patient Satisfaction

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Abstract

The purpose of this study was to determine the long-term effectiveness of pain management education on patient satisfaction scores. The study sought to determine if the knowledge gained by nurses was retained greater than six months, and then determine if there was a need for a potential refresher course. This study examined the nurses at a community hospital in a mid-sized rural southern state who received an educational presentation on pain management to see if this education had a lasting impact on patient satisfaction scores for that hospital. Retrospective scores were compared for an additional six months to determine if the difference was statistically significant, indicating either scores dropped or scores continued to improved, or they stayed the same. One-way ANOVAs indicated there was no statistical significance difference in the scores over the specified time frames. The education offering and intermittent reinforcement through online learning tools may have assisted nurses' to retain and use the information about pain management.

The Effectiveness of Pain Management Education on Patient Satisfaction

Pain is a complex, multidimensional phenomenon (Twycross, 2002). It is one of the most common clinical problems seen in acute care (Simpson, Kautzman, & Dodd, 2002). An estimated 90 percent of patients with cancer report pain while they are in the hospital (Sterman, Gauker, & Krieger, 2003). Pain is subjective and is always exactly what the patient says it is (Innis, Petryshen, & Ciccarelli, 2004). Pain assessment, the sometimes known as fifth vital sign, is an integral part of the nursing assessment (Sterman, Gauker, & Krieger). Nurses spend more time with patients in pain than any other health care team and providing pain relief is an act of simple humanity that is consistent with the beginning ideals of the nursing profession (McCaffery & Ferrell, 1997; Simpson, Kautzman, & Dodd). Pain is seen in every area of nursing and the problem with pain management needs to be addressed by all nurses.

Studies show that patients still are not receiving the adequate pain management that they feel they should be receiving while they are in the hospital (Sterman, Gauker, & Krieger, 2003). Unrelieved pain delays healing, alters immune function, and increases levels of stress and anxiety (Innis, Petryshen, & Ciccarelli, 2004). It has been found that future medical interventions will be anticipated with greater anxiety if pain has not been appropriately managed in the past (Twycross, 2002). A few of the many benefits of pain relief include better patient outcomes, short lengths of stay, reduced costs of care, faster post-operative recovery, improved sleep, increased mobility, and most importantly increased patient satisfaction (Simpson, Kautzman, & Dodd, 2002 ; Innis, Petryshen, & Ciccarelli, 2004).

Review of Literature

Before nurses are able to successfully treat pain, they must understand the physiology of pain, myths and misconceptions about pain, how to assess pain, patient behaviors when in pain, pharmacologic and non-pharmacologic pain management techniques, and ethical issues in pain management (Ferrell, Grant, Ritchey, Ropchan, & Rivera, 1993). Nurse education should be what is teaching them to understand these concepts. Nurse education should begin when nurses are receiving their formal education in school. Many of the barriers that inhibit appropriate pain management begin for nurses when they are students and they do not learn how to properly treat pain (McCaffrey, Zerwikh, & Keller, 2005). For most health care professionals, knowledge regarding pain gained during academic education is sparse (Simpson, Kautzman, & Dodd, 2002).

Although it is crucial that nurses know how to properly manage pain in school, nurses should also be receiving continuing education on pain to maintain and expand their current knowledge and practice (Vallerand, Hasenau, & Templin, 2004). Nurses should be reminding themselves constantly of what they have learned in order to retain knowledge. Each healthcare setting needs to emphasize and reinforce pain management concepts if they are expecting their nurses to retain the knowledge (Wright & Bell, 2001). Despite all the efforts that have been made in educating nurses on pain management since 1968, a deficit continued to exist in 1997 (McCaffery& Ferrell), and it continues to persist today (Ogston-Tuck, 2012). Teaching someone a subject does not mean one has actually learned it, or put it into practice. The definition of learning encompasses the development of new skills, understanding a new attitude or changing a new attitude, and an educational

program is not effective unless there is a change in the behavior of the nurses (Twycross, 2002).

Other barriers besides the sheer lack of knowledge on pain management by some nurses include inadequate pain assessment and concerns about opioids. Whether the nurse simply doesn't believe a patient when he or she says she is in pain, or they are scared of overdose, nurses are having problems adequately managing their patients' pain (Vallerand, Hasenau, & Templin, 2004).

The problem with under treatment of pain and lack of knowledge about pain management has been evident for over two decades (McCaffery & Ferrell, 1997). In 2001, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) introduced standards that must be met for each patient to help deal with their pain management (Berry, 2000). These new standards were developed in hopes to improve patient satisfaction and their outcomes. There are nine standards that were developed that range from recognizing a patients' pain, to assessing it before and after interventions, to educating patients on preventing pain, to discharge instructions for patients on their pain management (Berry, 2000). These standards developed by JCAHO are measured by going to directly to the source of the people whose pain is being managed and looking at patient satisfaction surveys.

One type of patient satisfaction survey that examines a patients' outlook on their pain management is the HCAHPS survey, or Hospital Consumer Assessment of Healthcare Providers and Systems survey. This survey is the first national, standardized, publicly reported survey of patients' perspective of hospital care (Centers for Medicaid & Medicare Services, 2012). It is a 27-question survey that is developed by the federal government so

that hospitals can compare their performance in patient care to nearly all acute-care hospitals nationwide (Greeley, 2012). This survey has three goals: to produce data about patients' perspectives of care that allow objective and meaningful comparisons of hospitals on topics that are important to consumers, to allow public reporting to create new incentives for hospitals to improve quality of care, and to enhance the accountability in health care by increasing transparency of quality of hospital care provided (Centers for Medicaid & Medicare Services, 2012). The survey is given to patients across all medical conditions between 48 hours and six weeks after discharge by mail, telephone, or active interactive voice recognition and the scores are released quarterly (Centers for Medicaid & Medicare Services, 2012).

      Since there is a deficit in nurse knowledge that is leading to inappropriately managed pain, there is a need to find out what can be done about this problem. Until nurses take accountability for this problem, nothing is going to improve and patients are still going to suffer (Innis, Petryshen, & Ciccarelli, 2004). There have been many attempted solutions to the problem of ineffective pain management. Studies have been conducted to try things such as implementing a pain management nurse with a team to reduce patients' pain or giving instant surveys to patients while they are still in the hospital (Sterman, Gauker, & Krieger, 2003; Bell & Wheeler, 2002). Many people have tried pain management education for their nurses and this seems to be the most promising option. If education is the answer to the problem with pain management, then many lives could be changed. If nurses are better educated and seem to know more about pain, then patients' pain can be more effectively managed. If patients' pain is more effectively managed, then patients could have

a better-perceived stay in the hospital and eventually patient satisfaction scores could be improved.

Previous Study of Pain Management in Hospitalized Patients

In the initial pain study (Jarrett et al., 2013) HCAHPS were compared in the immediate pre and post education periods in July 2011 and again in March 2012, as a 6-month follow-up to see if there was a decline in patient satisfaction related to pain management by nurses.

Original Pain Study

The *Nurses' Knowledge and Attitudes about Pain in Hospitalized Patients* study, (Jarrett et al., 2013) tracked HCAHPS to determine long-term effectiveness of a pain management educational presentation given to nurses in a community hospital located in a southern state. The purpose of the original research was to determine whether pain management education was effective in improving patient satisfaction.

Patient satisfaction scores reported as HCAHPS were reviewed to determine if the nurses retained the knowledge they had received and it had an impact on their practice and ultimately led to higher patient satisfaction scores. Long-term effectiveness would have been indicated if the patient satisfaction scores remained constant at the high levels achieved from the previous study, or continued to be on the rise.

The study sought to determine if the knowledge gained by nurses was retained for more than the previously established six months, and to determine if there was a need for a potential refresher course.   It was expected that patient satisfaction scores would have continued to improve over a full one-year period (August 2011 – August 2012).

Findings of Original Pain Study

The findings suggested that because a 6-month window was a satisfactory time period to retain and learn to use new knowledge, perhaps extending the window to find the threshold for education offerings would be beneficial (Jarrett et al., 2013). HCAHPS scores revealed that in the pain domain scores rose from a baseline of 66% to 74% during this period of time.

Recommendations were made for a second study that would measure patient satisfaction with pain management by tracking and trending HCAHCP scores over time. This would reflect long-term changes in practice without formal education offerings or reminders (Jarrett et al., 2013).

Methodology

For this study, HCAHPS were retrieved and examined monthly from April 2012 through September 2012 to determine if there had been any decline in patient satisfaction for pain management by nurses at this facility, which would indicate decay in retention of knowledge over time. This current study extended the follow-up time frame from the measured six months in the previous study to a full year to examine a more thorough time frame and to detect differences in HCAPHS scores.

This was a retrospective study. It occurred at a community hospital in a southern state where a group of 150 registered nurses received an educational presentation on pain management during August 2011. This study examined HCAHPS scores for six months from April – September 2012 on a monthly basis to determine if the scores are decreased, increased or remained the same because of the nurses receiving previous pain

management education. The nurses received no further intervention in this study, only HCAHPS scores were compared to see if knowledge was retained.

Data Analysis

The process of data analysis began with analysis of the descriptive data. The descriptive data included looking at the mean, standard deviation, sample variance, kurtosis, and the skew for all data sets. Scores were then analyzed using a One-Way Analysis of Variance (ANOVA) to determine statistical significance. An ANOVA tests the equality of three or more means at one time by using variances. It was necessary to have access to sample size, sample means, and sample variances. The overall hospital patient satisfaction scores from April to September 2012 were first examined. Then, the data from the specific pain domain was examined longitudinally by quarters and month. Descriptive data and results of a one-way ANOVA for each question in the pain domain were reviewed by month and by unit.

Inclusion Data and Protection of Information

The inclusion criteria included all HCAHPS scores reported to the institution for six months April 2012 – September 2012. The secondary data set contained de-identified, group data only reported by units and by months. Individual scores from patients were anonymous so all subjects personal information was protected.

Findings

Data was analyzed according to summary data for the months April 2012 – September 2012, as well as longitudinal from the baseline data in April 2011 – September 2012. HCAPHS scores were not reported if sample size is too small. Missing data for units

was handled by calculating the mean score across the months where data was available

and using the mean score for units with missing data.

Descriptive Data

The overall hospital patient satisfaction scores were examined for April- September

2012. Then, the scores for the specific pain domain were examined by quarters and by

months. Descriptive data for each specific question in the pain domain were reviewed. The

data was then examined by unit because statistical analysis using ANOVA revealed no

statistically significant differences between months. Last, all scores from April 2011 –

September 2012 was analyzed. See table 1.

Hospital HCAHPS - Quarters. Scores for the seven domains on HCAHPS were first

evaluated. The seven domains that are measured in HCAHPS are communication by the

nurses, communication by the physicians, the responsiveness of staff, the hospital

environment, pain management, communication about medications, and discharge

information. Skew was .02. Skew can be used to determine normal distribution of data.   In

normally distributed frequency data, one would expect the skew to be zero. The skew is

slightly above zero, indicating an almost normal distribution of data. The median score,

70.13, was slightly below the mean, 70.27, which indicates a positive skew (Schmidt &

Brown, 2009).

HCAHPS for Pain Domain - Quarters. Pain domain scores were first examined by

quarters beginning with baseline scores. There were seven quarters of data collected. For

the pain domain for this institution, scores ranged from 66.00 to 74.00 Kurtosis was -.27,

skew was -.63, which are both negative responses. Negative skew indicates an asymmetric

right tail, leaning toward negative values. It may indicate there were too few items on the

pain domain, thus, adding more questions could correct this skew (Schmidt & Brown, 2009). Negative kurtosis indicates a flattened distribution. Increasing sample size could correct flatness as well as skew (McNeese, 2008). See figure 1.
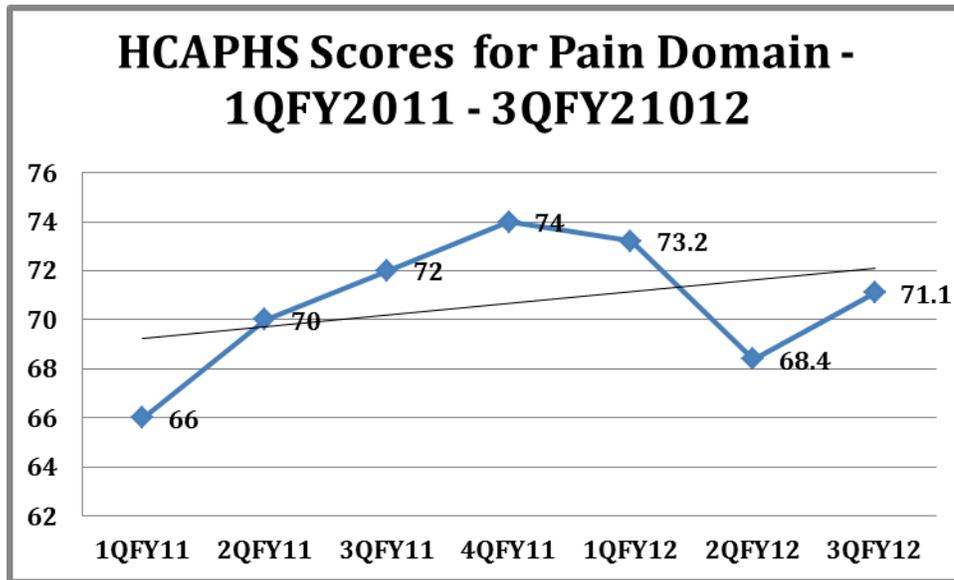

Figure 1. Mean Hospital HCAPHS Scores April 11, 2011 - September 30, 2012

Next, pain domain scores were examined by months to inspect for monthly variability. Scores ranged from 40.57 to 100; positively skewed, and slightly negative kurtosis.

HCAHPS Scores for Pain Domain Examined by Questions. The pain domain consists of just two questions, "Was your pain well controlled throughout your stay in the hospital?" and "Did the staff do everything they could to help with your pain?" The patients then have the opportunity to respond by answering "never", "sometimes", "usually", or "always". For the purpose of this study, the answers indicating "always" were the ones that were compared and measured.

 Scores for each question had a mean of 66.15 and 77.32, with the question; *staff did everything they could* slightly higher. Both kurtosis and skew for the first question were

positive, and for the second question negative. These findings indicate a fairly normal

frequency distribution. Adding another question to the pain domain could correct the skew

and kurtosis.

Table 1

Summary Table for Descriptive Data

Summary Table for Descriptive Data				
SOURCE	Mean	SD	Kurtosis	Skew
Hospital Global Summary- By domain	70.27	6.76	-1.13	.02
Pain Domain- By quarters	70.67	2.79	-.27	-.63
Pain Domain- By months	70.80	18.84	-.02	.04
Pain Well Controlled- By months	66.15	21.20	.06	.33
Staff did everything- By months	77.32	17.91	-.84	-.04

Statistical Analysis Using ANOVA by Months

Overall hospital scores for the same months were first examined. Then, the scores

for the specific pain domain were examined by quarter and month. Last, hospital scores

and pain domain scores were analyzed from baseline April 2011 data through September

2012 to detect variance from the first six months' scores.

Hospital HCAHPS by Quarters. Scores for the seven domains on HCAHPS were

calculated by month and by domain. A one-way ANOVA revealed no statistically significant

source of variation between domains or months.

HCAHPS Scores for Total Pain Domain. There were no statistically significant

differences in the pain domain scores for the eleven units surveyed by HCAHPS. An F_{crit}

2.367 was needed to be significant. Each individual question in the pain domain was

analyzed by month with data from 11 individual units. For both questions in the pain

domain, ANOVA results revealed no statistical significance. ANOVA analysis for the

individual questions indicated no statistically significant difference between months for either question. See table 2.

Table 2

Summary Table for ANOVA Data

Summary Table for ANOVA Data			
SOURCE	*F*	*P-value*	F_{crit}
Hospital Global Summary- By months	.62	.84	1.83
Pain Domain- By months	1.12	.35	2.36
Pain Domain- By units	1.04	.42	2.00
Pain Well Controlled- By months	1.18	.32	2.36
Pain Well Controlled- By units	.96	.48	2.00
Staff did everything- By months	.63	.67	2.36
Staff did everything- By units	1.39	.20	2.00
Baseline data- Oct. 2011-Sep. 2012	.13	.71	4.96

Statistical Analysis Using ANOVA by Units

Because there were no statistically significant findings when reviewing data by month to establish unit variability, data was examined by the hospital units from which the sample came, to determine where targeted units may need more intense and more frequent review of pain management concepts. Total pain domain score, and each pain domain question was reviewed by unit. If specific areas could be identified, these units could receive more intense training about proper pain management.

HCAHPS Scores - Pain Domain. ANOVA revealed no statistical significance of the difference between units in the pain domain. Each individual pain domain question was examined by month, for six consecutive months. ANOVA revealed no statistical significance of the difference between the two pain domain questions. No unit variability was established, indicating that most of the units have the same levels of knowledge regarding

pain. The *F* values ranged from .96 to 1.39, the *p-values* ranged from .20 to .48, and the F_{crit} value was 2.00.

Comparison between Questions. One-way ANOVAs were performed to determine if there was significant variance between survey responses for the two questions. The Unit labeled *5-East* had a statistically significant difference p-value < .05. Upon closer examination of the scores for this unit, the scores for *staff do everything they can to help with pain* question was significantly higher than the *pain is well controlled* question. This could indicate excellent client service, or possible lack of modalities available for nurses to properly manage the patients' pain.

October 2011 – September 2012. Last, hospital scores for the pain domain scores were analyzed from October 2011 - September 2012 to detect significant variance from the first six months' scores. There was no statistical difference in the scores from the first six months.

Discussion

The findings from the data analysis show that there was no statistical significance in the data, both by months and by units, from the original pain study by Jarrett et al. (2013). There was no significant decrease in the scores from the post-test period. Overall, the scores have maintained stability. The purpose of this study was to determine if the knowledge gained by nurses from the previous education was retained greater than six months, and the scores indicate that the knowledge was retained.

Implications

All of the scores from the second six-month period remained stable from achieved scores in the original study done by Jarrett et al. (2013). There was however a slight

decrease in scores in July 2012. There are many factors that could have caused this slight

decrease in the scores. The biggest culprit to cause this decline in scores is most likely to be

a result of staff turnover. This was a big concern for the hospital during this time. The

nurses that were educated in the original education could have left the hospital and a

completely new group of nurses could have been the ones caring for the patients. July is

also a time when many new graduate nurses begin their first job after grading the previous

May. Those nurses would have not received the education. Another cause of the single-

month score decline could have been because of a lower census for the month of July. July is

a month when many staff and their families go on vacation and staffing from other units

may have occurred. . The extreme heat in the month of July could have affect work

performance, sleep, or overall mental well-being of nurses providing care. There was

construction occurring in the interior of the hospital at this time. The mix of patients was

another concern. There are times when oncology census increases, which in turns means

there are more patients in pain. . Because there was no statistical significance found

between variables measured, normal variation in responses by patients could have caused

the decline. There is no way to determine the actual cause of the decline in scores without a

qualitative interview with these patients completing the survey.

Limitations

One limitation to this study is the use of the top score on the HCAHPS survey. The

HCAPHS survey uses a Likert scale with four options, "always", "usually", "sometimes", and

"never" for patients to respond to questions. When, in fact all scores should be weighted.

The scores are only reported and then not weighted causing the data to be skewed. There

are economic incentives for hospitals to score at target or above and economic

disincentives for hospitals to score below 50% percentile (Jarrett et al., 2013). Scores recorded in Jarrett et al. (2013) were top scores, so scores for this study were replicated using top scores, for consistency in measurement.

Another limitation to the study is the use of such a small set of questions dealing with pain management. It would be more helpful to have a survey with more questions. More questions dealing with pain management would only add more information to help determine patients' feelings and perceptions on their pain. More questions would also result in more normally distributed data by correcting skew and kurtosis.

Another limitation to the study could be extraneous variables, which caused scores to maintain above baseline. Additional education in orientation by the hospital could have caused the nurses to retain knowledge and maintain the higher patient satisfaction scores. There is an influx of new nurses coming from campuses that educate their students with a focus on pain and assessment of pain. This could also affect the scores if nurses have knowledge about proper pain management prior to entering practice. . There has been a sudden surge in research studies about pain since 2012. . More focus than ever before has been placed on the importance of pain and this could have implications for nursing practice.

Recommendations

The findings from this study could lead to several future studies. It is recommended that another study be conducted to include a refresher course from the previous pain management education. It is believed that it would be helpful to re-educate the nurses and then review the future scores. Would further education cause the scores to continue to improve, or would they remain at the constant rate achieved from the first education?

Another recommendation is to examine the correlation between two domains of the patient satisfaction survey: communication about medications and pain management. It was only briefly reviewed, but a future study should be done to determine if there is a correlation between the two. If a patient feels that they were not communicated to well enough about their medications, can their pain really be managed adequately? It is believed that pain management is the key to helping any hospital improve their quality of care, as reflected in high patient satisfaction scores measured by HCAPHS. A focus should be placed on pain management in every hospital, and then if patients are content with their pain management their whole hospital stay would be perceived as a satisfying experience.

Conclusion

This study supported previously published studies that pain management is an area that needs further research, interventions and evaluation of pain management plans and therapies. The side effects of unrelieved and undermanaged pain in hospitals can be detrimental to a patient and their well-being. It needs to become a goal of all nurses to treat the problem of undermanaged pain. This study supports the supposition that education is effective, in short-term, and long-term patient management as well as to improve patients' perceptions of their pain. Nurses are a key component to fix the problem; keeping them well educated on proper pain management will only help the cause.

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Appendices

Charts of Individual Unit and Collective Scores

Appendix A – Individual Unit Scores April – September 2012

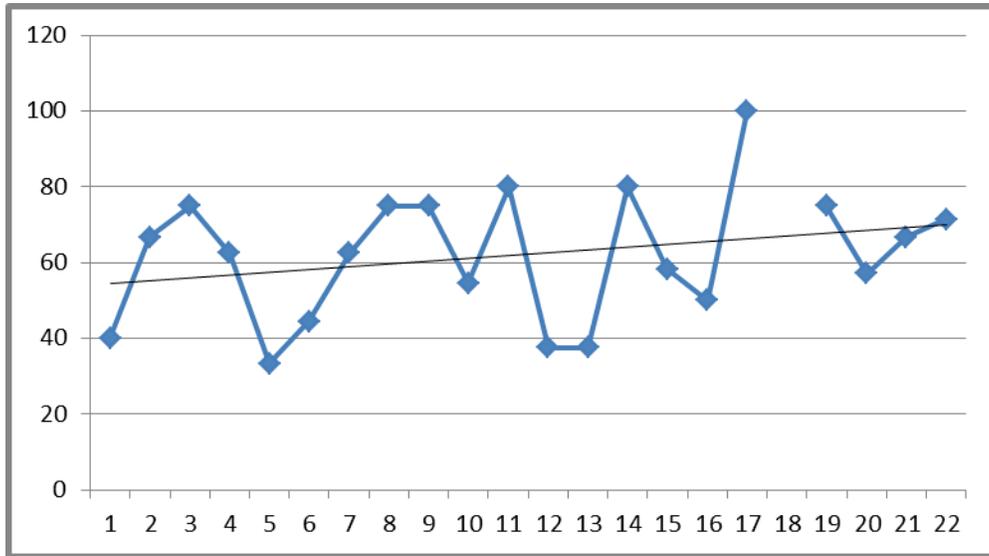*Staff Do Everything to Help with Pain* Question
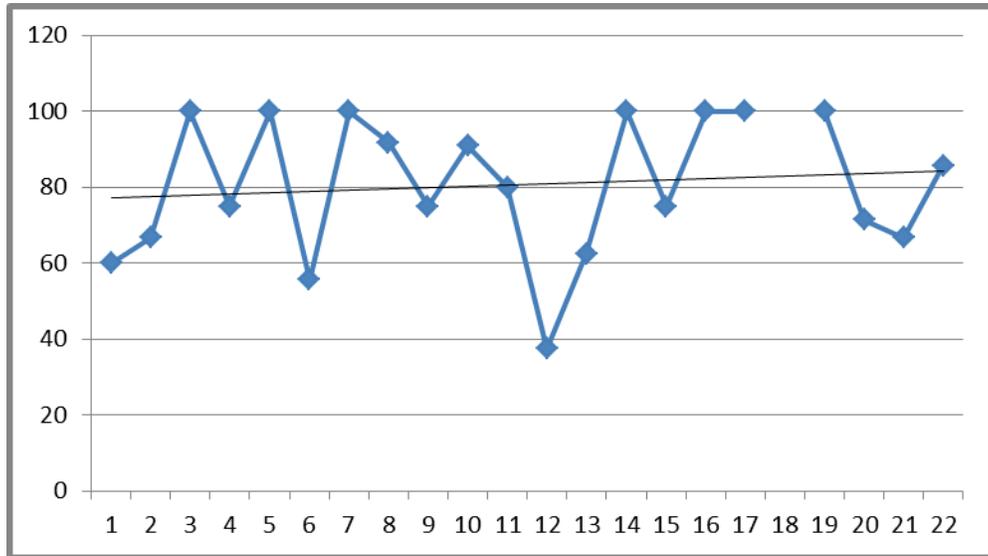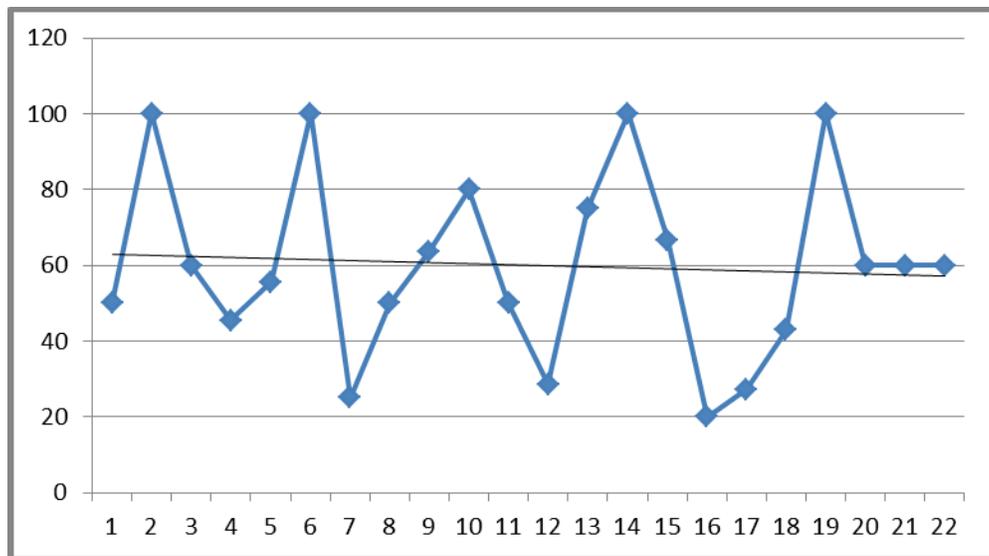

Figure 1. 4-South Medical Surgical Unit
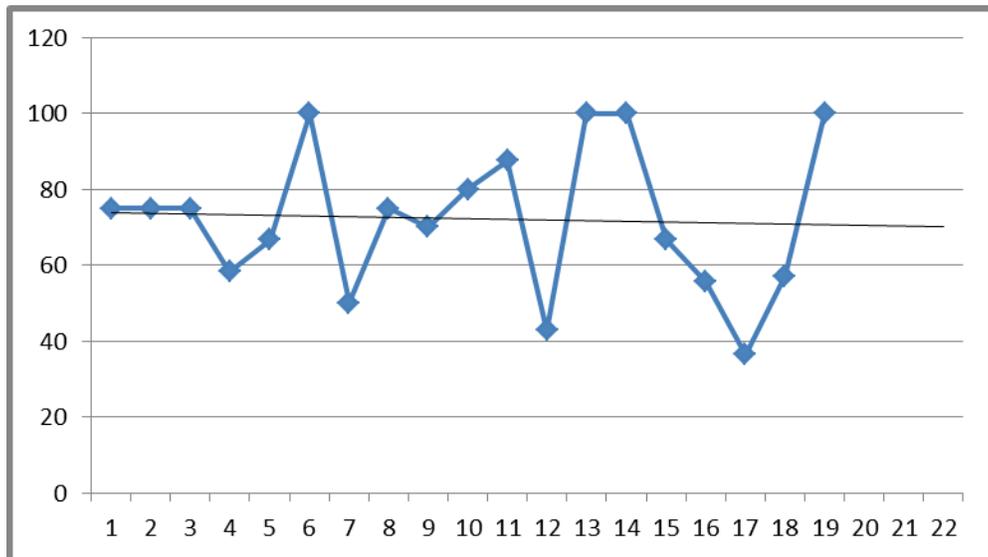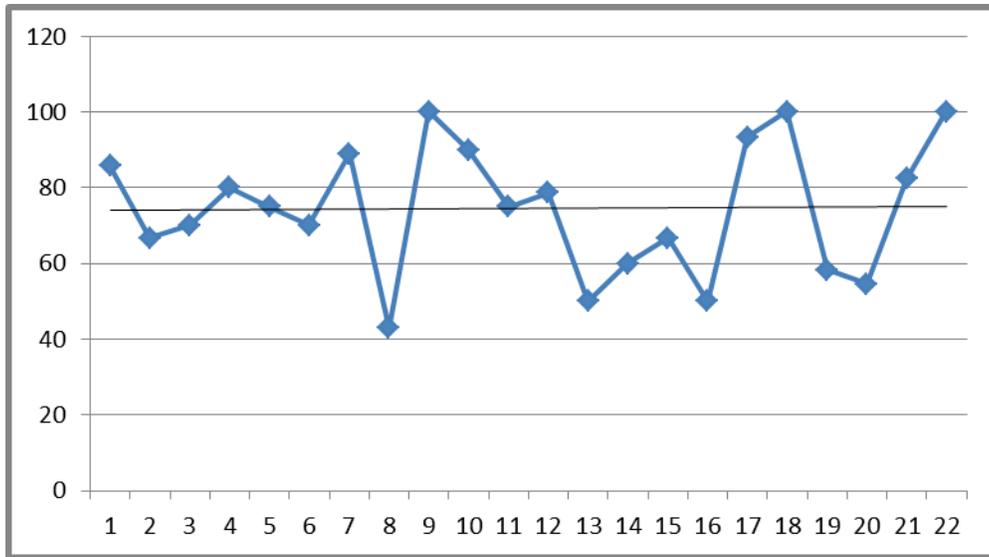
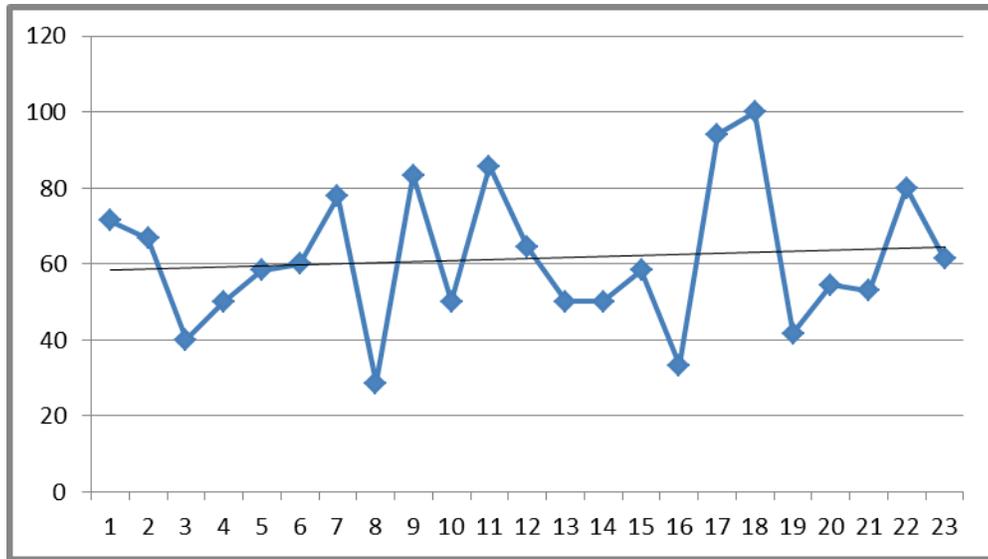Figure 2. 4-West Medical Surgical Unit
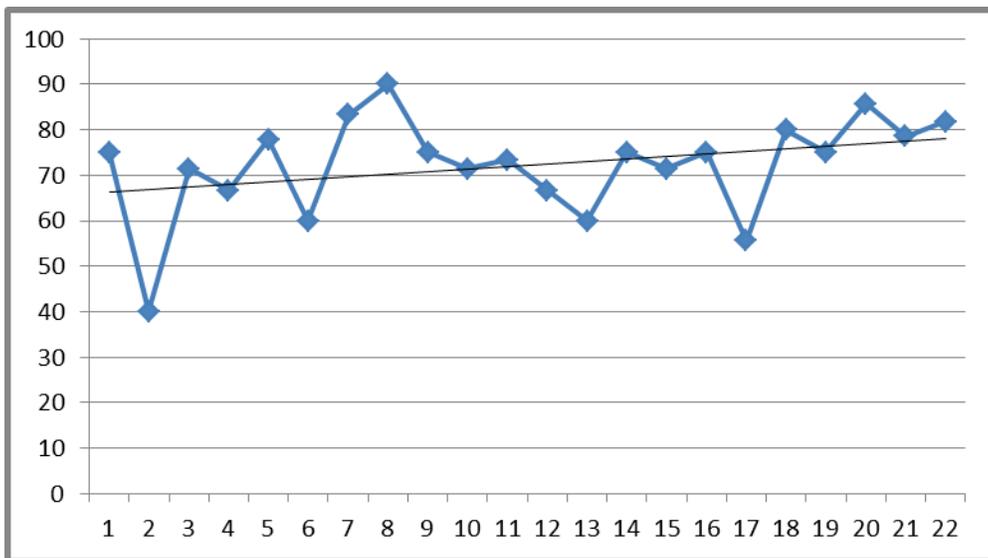
Figure 3. 5-West Medical Surgical Unit
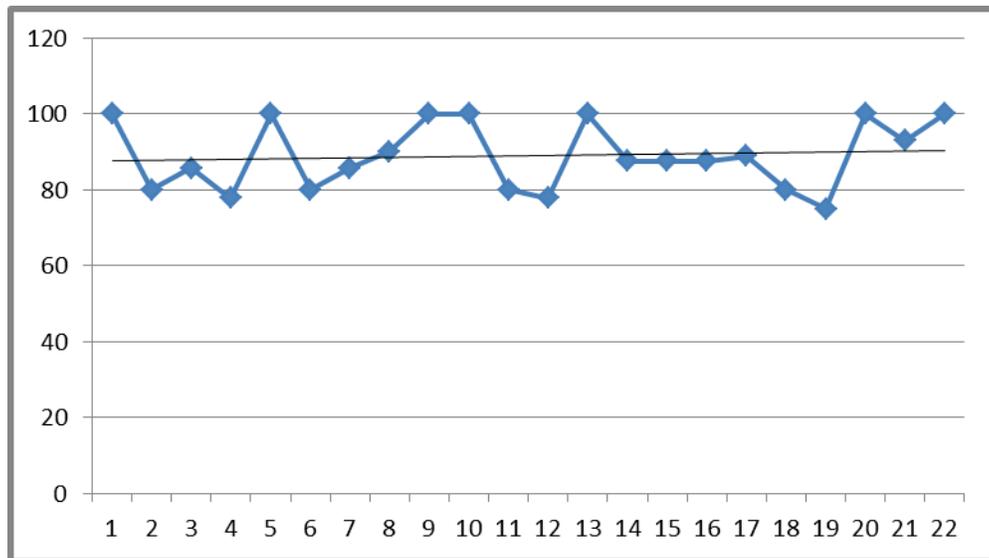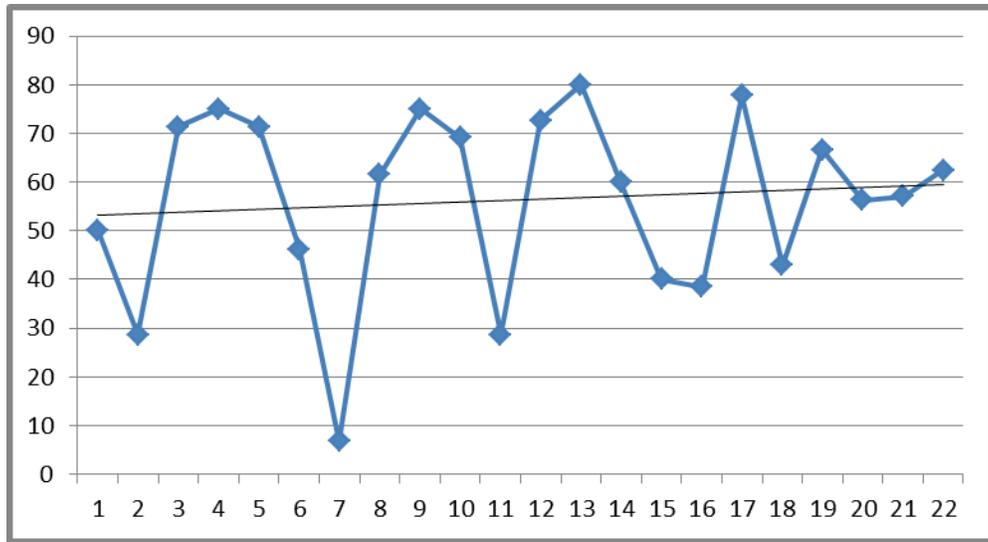

Figure 4. 5-East Joint Rehabilitation Unit
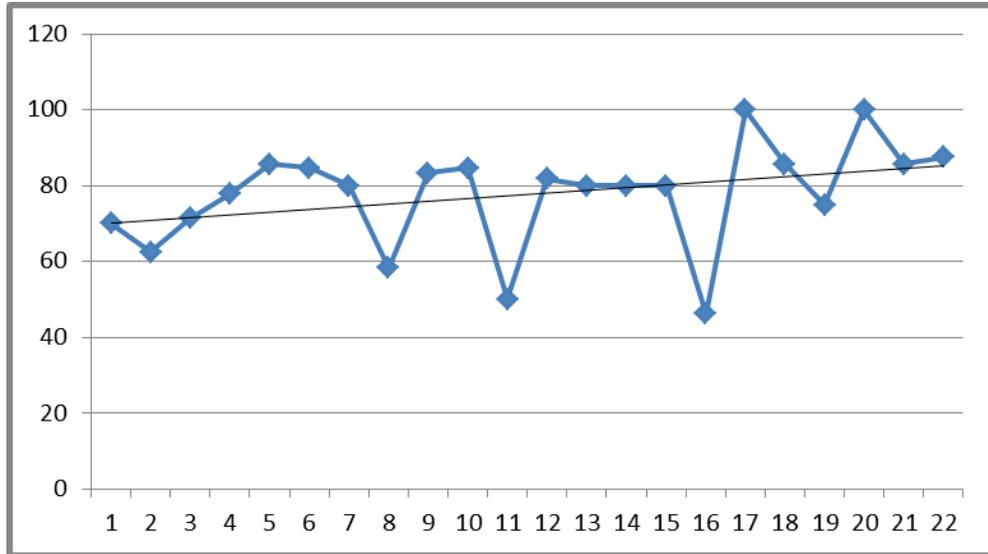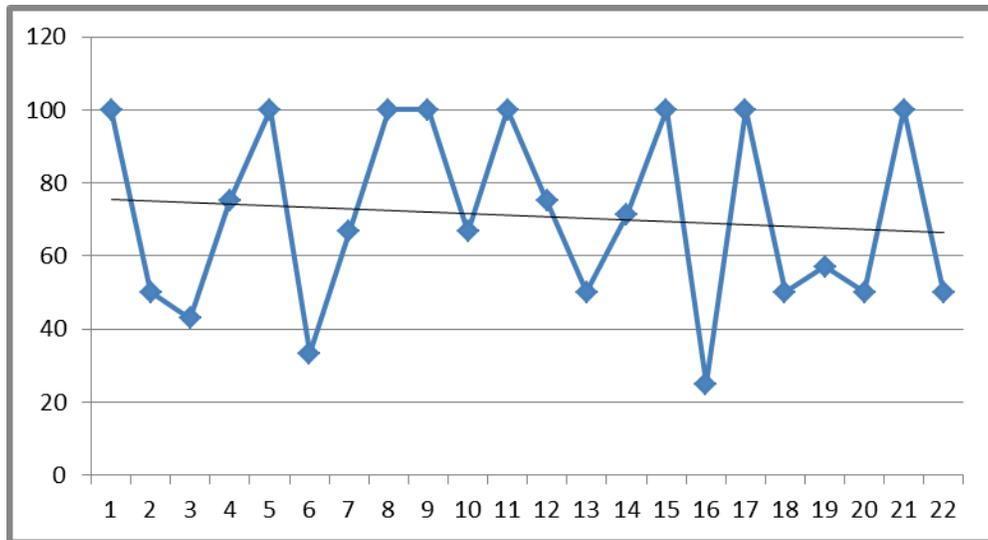
Figure 5. 5-South Senior Specialty Unit
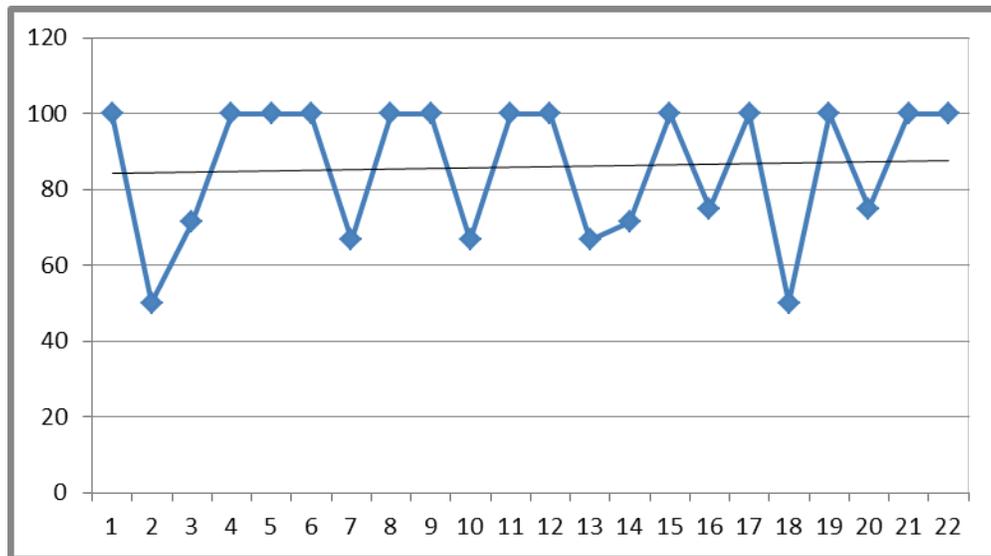
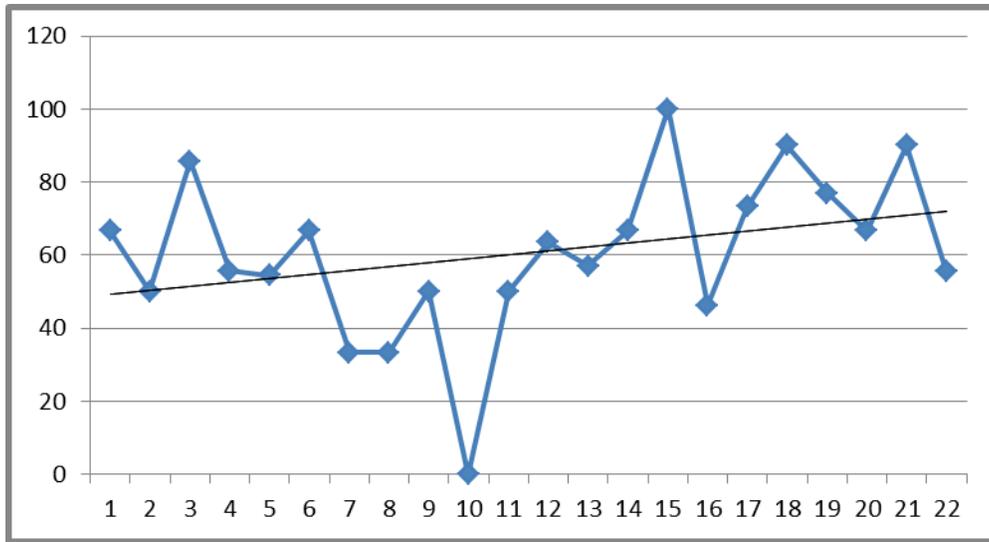Figure 6. 1-South Adult Medical Surgical/Gynecology/Pediatrics Unit
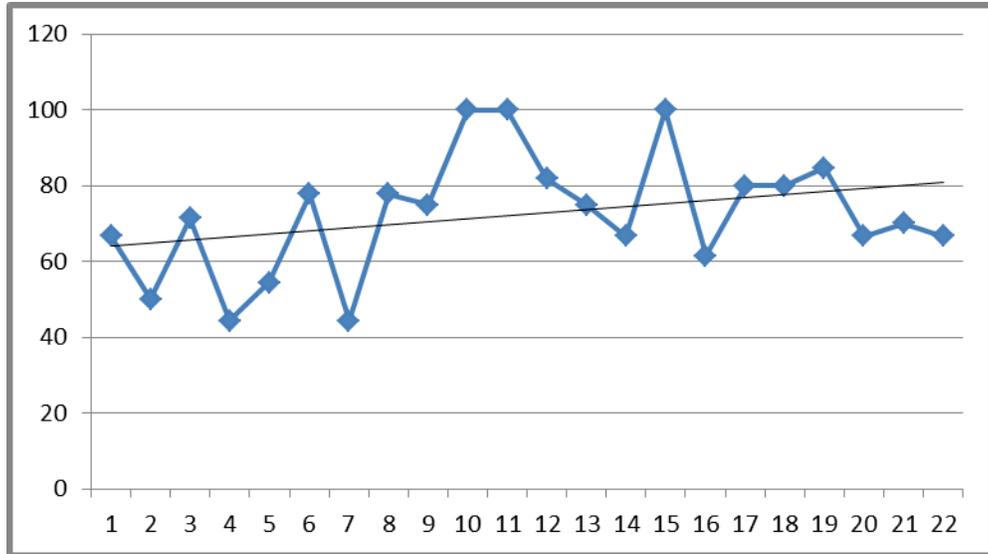
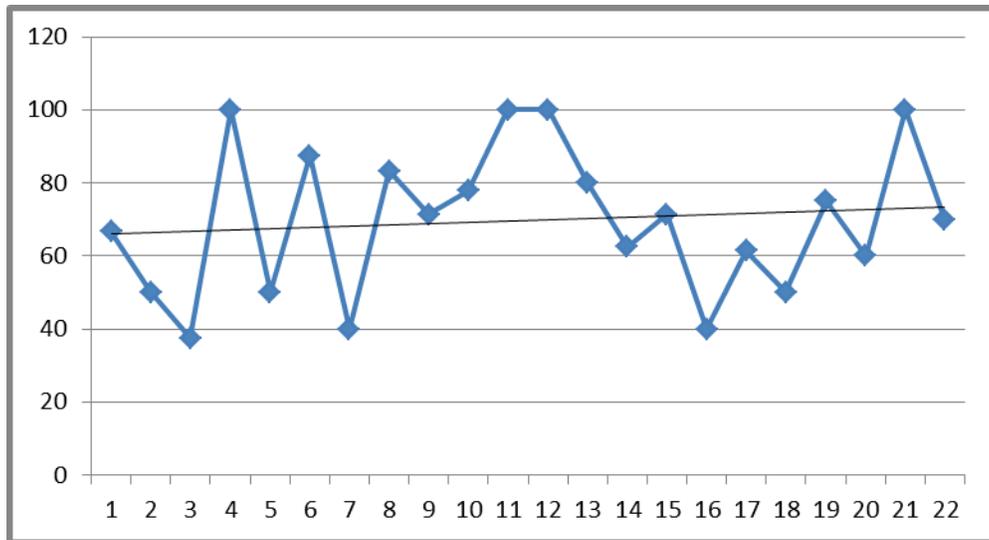Figure 7. 1-West Labor and Delivery/Post-Partum Unit
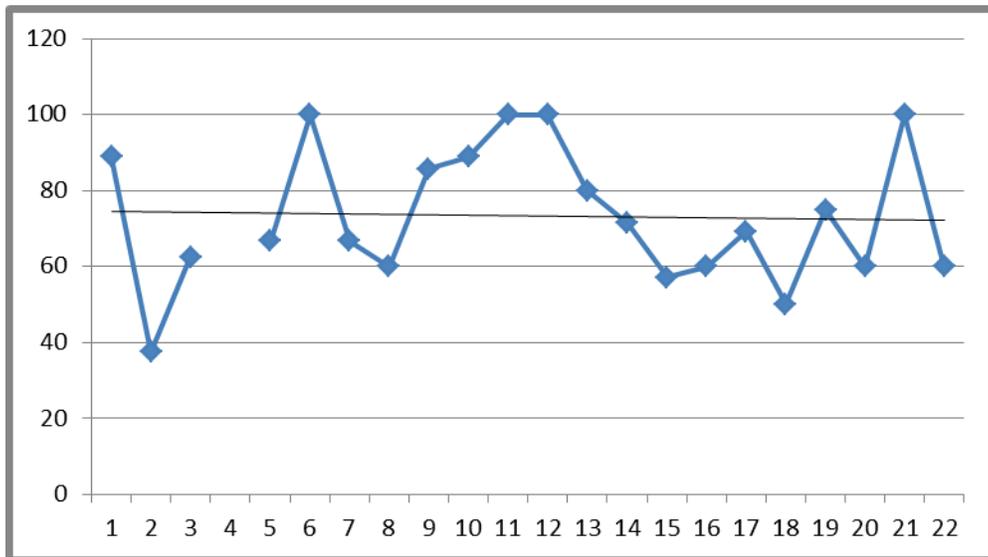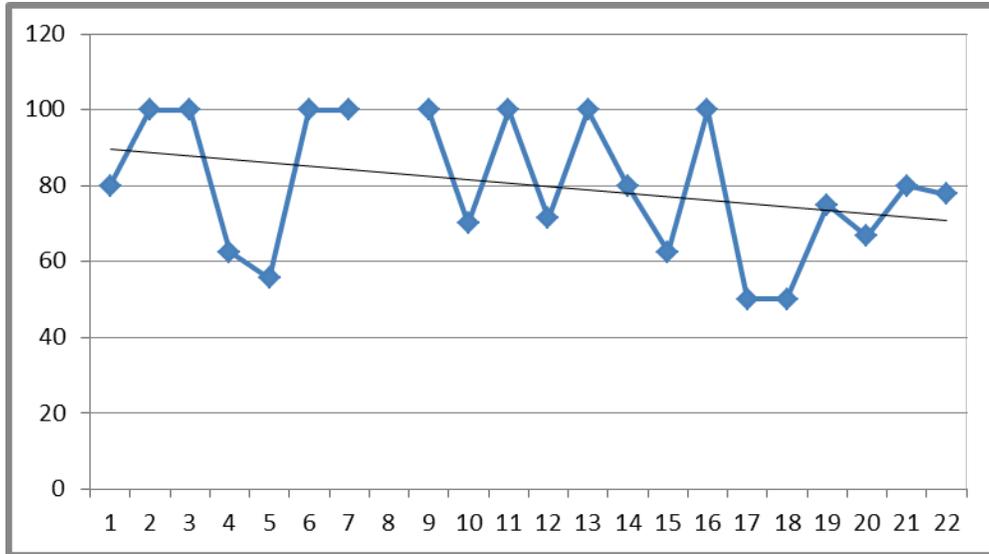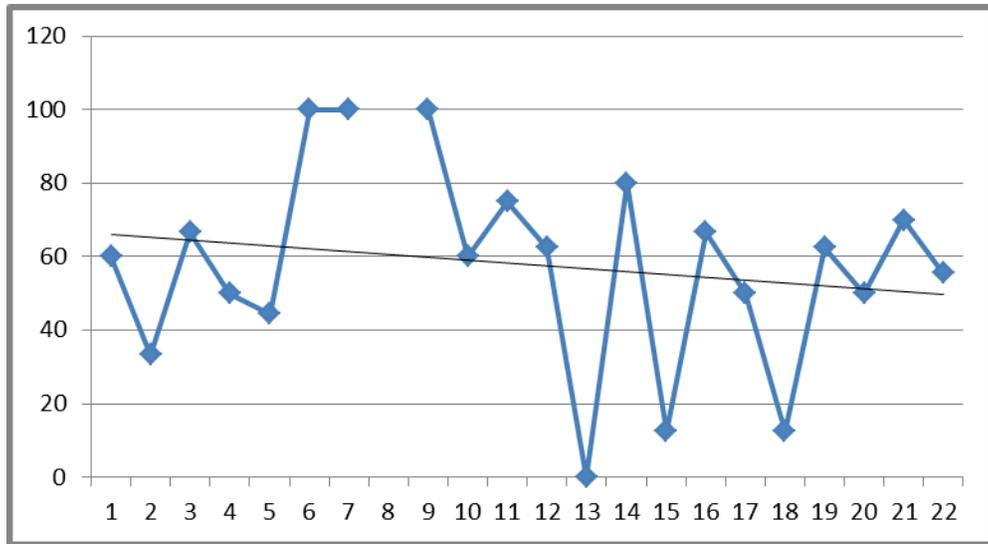

Figure 8. 3-East Cardiology Unit

Figure 9. 3-South Cardiology Unit
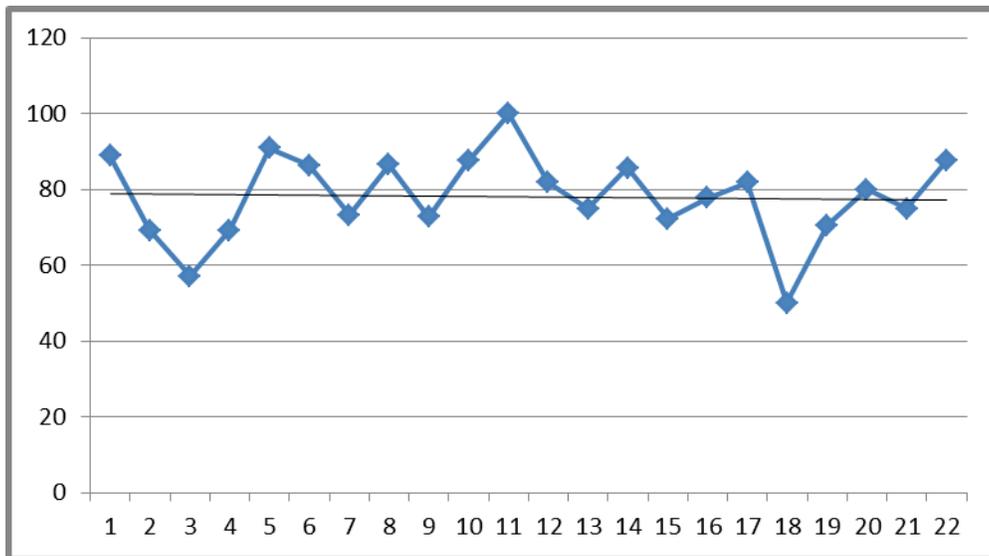
Figure 10. 3-West- Cardiology Unit
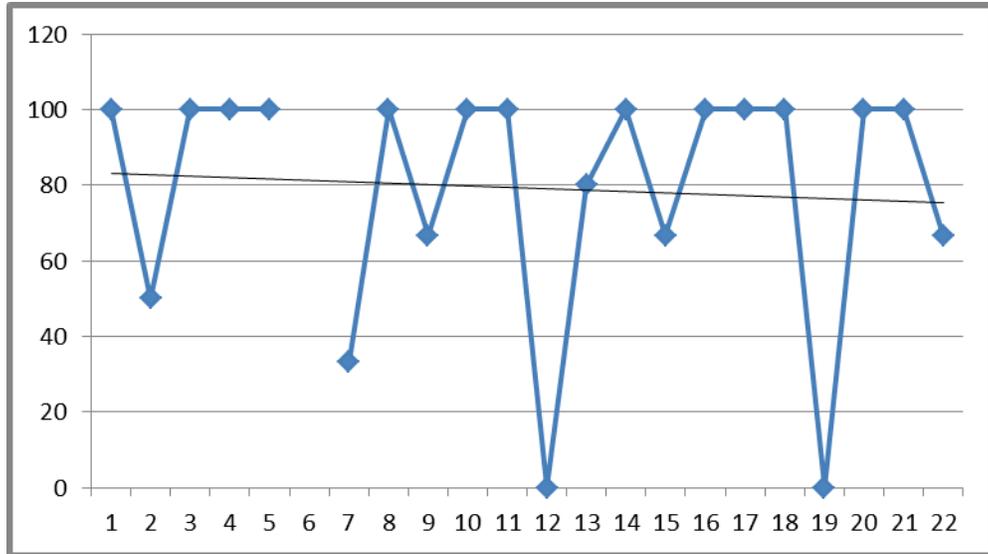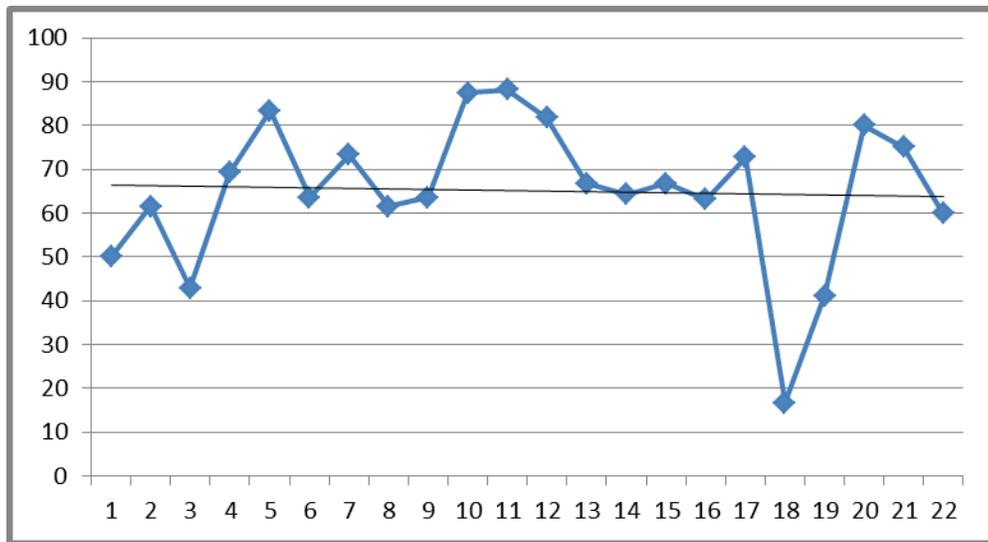
Figure 11. CCU/ICU Critical Care Units

Appendix B – Individual Unit Scores April – September 2012

Pain Well Controlled Question

Figure 1. 4-South Medical Surgical Unit

Figure 2. 4-West Medical Surgical Unit

Figure 3. 5-West Medical Surgical Unit

Figure 4. 5-East Joint Rehabilitation Unit

Figure 5. 5-South Senior Specialty Unit

Figure 6. 1-South Adult Medical Surgical/Gynecology/Pediatrics

Figure 7. 1-West Labor and Delivery/Post-Partum Unit

Figure 8. 3-East Cardiology Unit

Figure 9. 3-South Cardiology Unit

Figure 10. 3-West Cardiology Unit
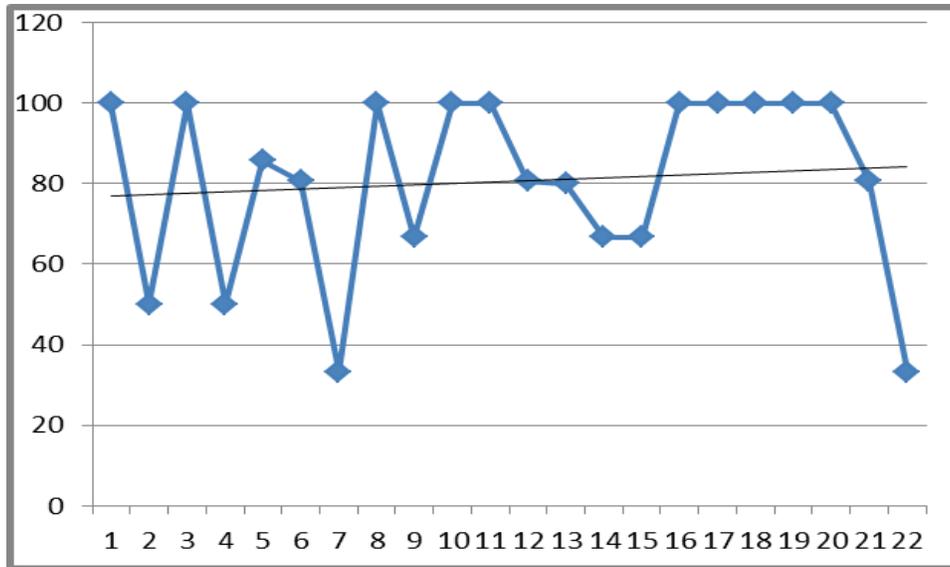
Figure 11. CCU/ICU Critical Care Units

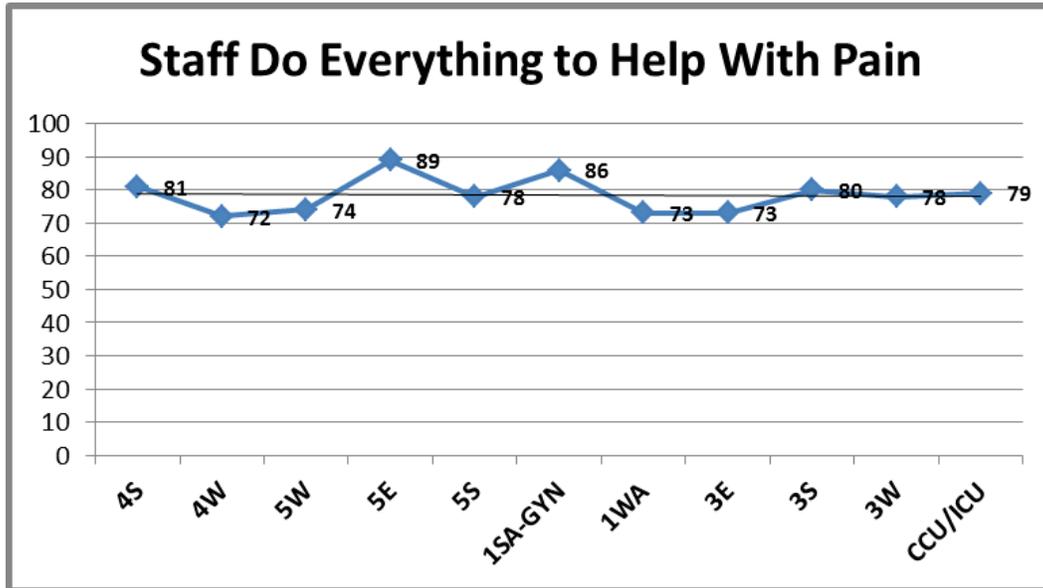Appendix C. Eleven Units' Mean Scores on Pain Domain Questions
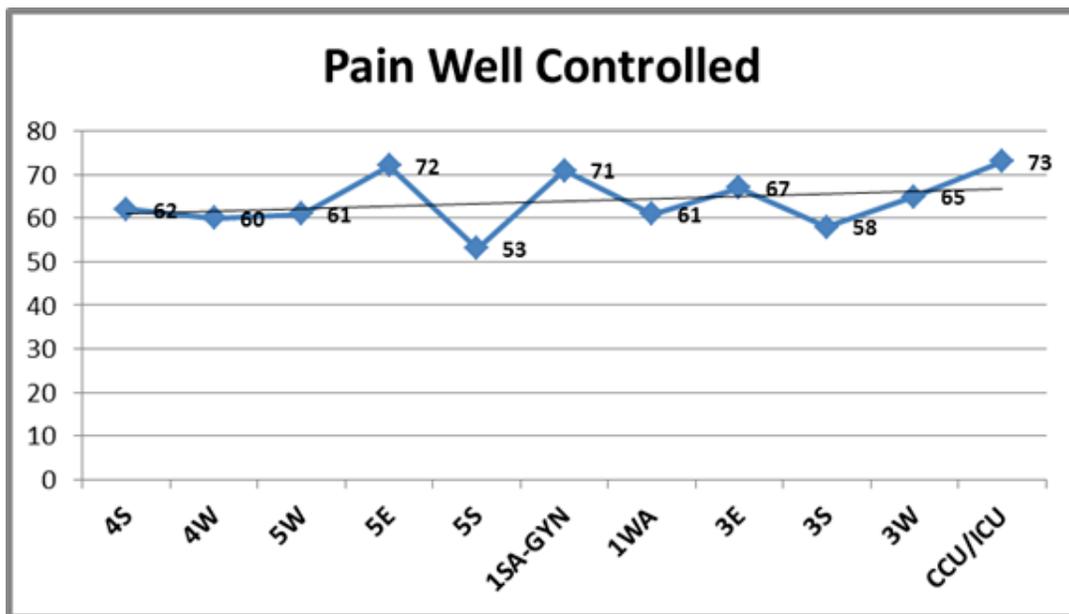

Figure 1. All Units Mean HCAHPS Scores

Figure 2. All Units Mean HCAHPS Scores
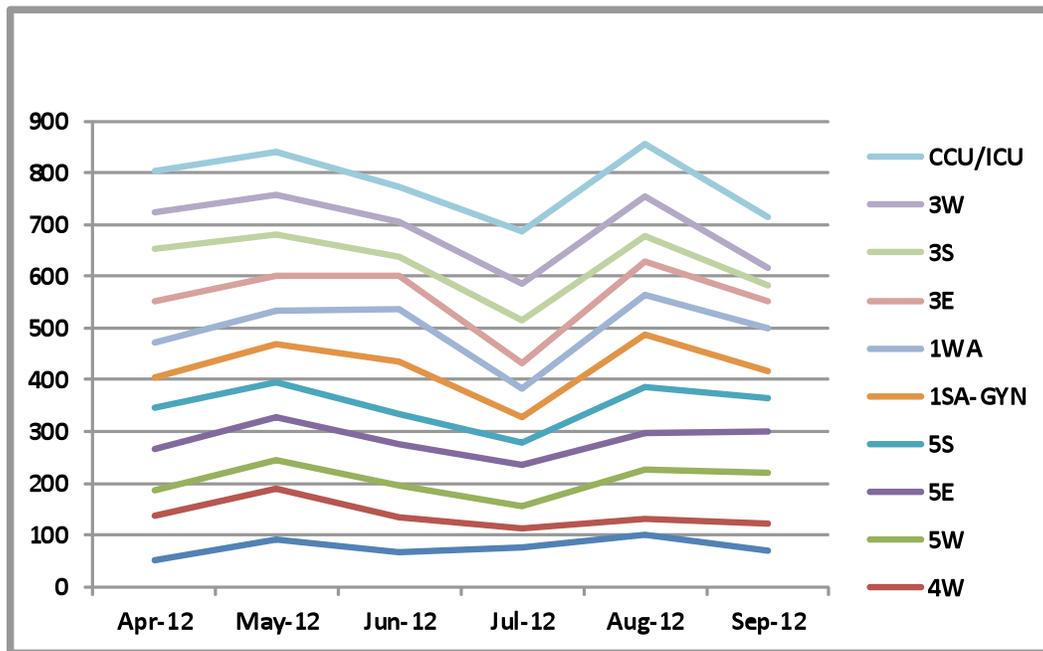
Appendix D. Eleven Unit Comparison of Pain Domain Scores

Figure 1. Unit Comparison of Pain Domain Scores April – September, 2012