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## **Article 1: Patterns of Anxiety in Critically Ill Patients Receiving Mechanical Ventilatory Support**

This research study was done by Chlan and Savik, (2011) in an attempt to explore on the anxiety patterns in the ICU patients using mechanical ventilation support. The research employed descriptive statistics for ordinal and interval data that were presented as medians with ranges and provided the skewed data distributions. The categorical data was analyzed and presented as frequencies. The initial analysis graphed the anxiety trajectories for every participant to discern the pattern changes. The mixed model effects were then employed in the analysis since they accommodate non-homogeneous and correlated residuals that were expected in the repeated measures. The research underscores that the mixed models provides ideal models for analysis of data with disparate time assessment missing points of data or both from the subjects being unwilling or unable to complete the daily assessment of anxiety due to mental status, medical condition of level of fatigue. The research estimated a series of models do determine the preferred change model for the study VAS-A. The unconditional model means were then estimated to determine the appropriateness of further modeling. Each outcome Y<sub>it</sub> combined the individual deviations and the linear of the grand mean from the grand mean. The unconditional model means were used to assess the two null hypotheses (a) no changes across occasions (b) no variation between participants. Further, an unconditional model of growth with DAY was added to predict the estimation of change coefficients (Chlan and Savik, 2011). The models with multiple within-person error covariance compatible structures with the

pattern of correlation between VAS-A scores at dissimilar points of time were then explored.

**Research problem** Although critically illnesses and mechanical ventilation induce distress great and anxiety in patients under nursing care, there is little validity on the ratings of anxiety over time in the ventilatory support. The research was conducted to provide the knowledge of anxiety ratings over time for hospitalized patients. According to the author, the research would provide implementation of effective symptom management intervention. The study was based on the problem of anxiety ratings of mechanically ventilated patients over the duration of hospitalization.

**Data Collection** The research identified and randomly assigned 57 mechanically ventilated patients with the usual care group that compost of a randomized controlled trial. The randomized control groups were designed to assess the music efficacy interventions on anxiety of mechanically ventilated patients in the critical care units. The data collection consisted of inventory severity that was moderately correlated in the critical care unit patients. The research nurses screened each subject daily and recorded the results using the VAS-A that provided the main source of data plotted. The ratings of anxiety were then collected daily and at study entry for 30 days. The research used a 100 millimeter visual analogue scale to measure the ratings of anxiety. Thereafter, the visual analogue scale -anxiety scores were plotted as time function studies of every subject to discern the probable changes of anxiety patterns. The analogue VAS-A scale was appropriate for collecting the data because the tool is important for tracking the clinical course of the participants, besides, and they are easily seen by the participants and easily

administered.

**Sample Size Estimation**The research used a sample size of 57 subjects who were ICU patients. The participants used had been under intensive ICU care for a median of eight days. The range was from 1-29, and the participants used had been receiving mechanical ventilatory support for a median of six days before enrolling for the exercise. The randomized sample group used the usual care group who remained enrolled in the study for a median of 4.1 days. Provided the limitation that some of the participants were either too fatigued or bored and could not finish the assessment, the sample used for the study was small and this might have made the results inaccurate as some data points were constantly missing. However, if a larger sample were used, accuracy of the results could be reasonable as the large sample could provide reliable data for estimation (Polit & Beck, 2008).

**Dependent Variable Anxiety**Defined as a state marked by agitation, autonomic arousal, apprehension, increased motor tension and fearful withdrawal, the variable was used to estimate the current anxiety levels using the VAS-A scale. The study used anxiety as the dependent variable.

## **Independent Variables**

**Sedative Exposure.** The variable was important because ICU patients receive a robust analgesic and sedative medications from the desperate drug classes that influence their anxiety ratings. Therefore, to summarize the medications, a dosing frequency was used to count all the analgesic and sedative drugs.

**Dose Frequency.** This was by the researcher as a variable to control the

sedative exposure variable. Dose frequency was estimated by dividing days in the calendar into 4-hour blocks and for every medication administered. Time. This represented the independent variable measured in days. Day 0 was for enrollment of the subject, however, the mechanical ventilation date for each participant varied for every participant. Statistics Used for Data Analysis

The study by Chlan and Savik, (2011) used descriptive statistics for ordinal and interval data that were presented as medians using the ranges. The categorical data was presented using frequencies and the results of each subject graphed to show the change of pattern. Then, the research employed statistical mixed model analysis using the SPSS version 17. Notably, the statistical method employed was reasonable and could provide desired results. This is because the use of mixed-effects model statistical analysis considers both nonhomogeneous and correlated residuals. Also, since the research was based on assessment of participants on different points of time, the statistical method was excellent to cater for the missing data points and the subjects who were unwilling to complete the assessment on daily basis. Furthermore, the application of unconditional mixed model statistical tool provided estimations for variance for the average score between variance and participants averagely within each subject over time. The parameters of the variance used were significant for the study. Besides, the use of the correlation coefficient further validated the results from the variance parameters that indicated the variations of the variance form the participants over time. Therefore, the assumption that the skewed data could not affect the results could be taken care of using the conditional and

unconditional statistical models of the descriptive data, thus covering the negative effects of the assumptions. Assumption

## **Skewed data could not affect results.**

### Data Display

The research results from the VAS-A scale was plotted in a graph for each participant for each day for 30 days. The data representation technique was appropriate based on the purpose of the study. The graphs were appropriate for observing the changes in anxiety levels over time for each participant. Since every participant scores for each day were plotted on the graphs, the graphical method of data presentation was reasonable. The graph of median of VAS-A scores and day of study provided the median anxiety ratings for each participant. Furthermore, graphical method is instrumental in data representation as it provides clear explanations based on the study results. Interpretation of the results is also easy as it simply involves interpreting the Y and X axes that are observable. Section II Data Analysis Evaluation

The statistical results of the data provided that the correlation decreased with increase in lag time that provides an indication of the autoregressive (AR) structure. The research factored the three covariance structures, and the unstructured covariance model assumes the heterogeneous variance in the VAS-A scores over time. Therefore, there was no pattern in the structure covariance. The researchers assert that the model is significant since it best suits the data and provides a baseline for assessing other structures.

Therefore, the authors concluded that the anxiety is an individual experience of the patient that needs continual management with appropriate

intervention and assessment over the duration of the mechanical ventilatory support. The conclusions are reasonable because mechanical ventilation is one of the widely used technological treatment tool in ICU and induces high anxiety for patients. Study Limitations First, the number of missing scores on the VAS-A scale when the patients were fatigued to complete the assessment provided a challenge to the study. However, the study did not attempt to discern the anxiety sources and only used the anxiety ratings recorded on one assessment time point per day. Secondly, the entry into study time was varied. The participants were enrolled at separate times during their stay in the ICU and on course of the mechanical ventilatory assistance. However, the results of the study provide that there was no relationship between the initial ratings of anxiety obtained and the number of days on the mechanical ventilatory support. Finally, the influence of analgesic and sedative drugs not reflected in the study analysis was possible because of the frequency uniformity that was used to control the variable.

Overall Summary Although the study findings provides that the anxiety does not decrease with time for use of mechanical ventilation support, the environment of the ICU does not provide limits to the anxiety over the treatment course. The findings are significant for clinical practices because it recommends that nurses should never expect anxiety to decrease with time for ventilated patients (Epstein, 2001). Ideally, the only problem in the study was the sample size that was relatively small. However, the study scores high in putting control variables to minimize errors and employs random sampling to limit biases.

Section II: Understanding the Data This study is important for the nurses because the knowledge of anxiety ratings of time in

the ventilatory mechanical support is important for implementing management of the symptoms that may present during intensive care. The description of anxiety ratings of mechanically ventilated ICU patients also explores the influence of analgesic, and sedative drugs use on the anxiety ratings. Besides, the nursing colleagues going for nursing assessment and practice can also use the study to develop individualized, and appropriate interventions with patients receiving mechanical ventilator support do effectively address and manage the symptoms of anxiety. Ideally, the nurses may find it unreasonable that the study enrolled patients with dissimilar days of stay in the ICU (Hassan, Fontaine & Nearman, 1998). However, the studies show that the ratings of initial anxiety and the number of days had no relationship. The study provides good evidence for clinical practice. Ideally, the mechanical ventilation in ICU is widely used in the treatment of respiratory failure. However, the technology may lead to psychological and physical experiences of the patients that are explored in the research.

## **Article 2: Evaluation of the Effect of Cranberry Juice on Symptoms Associated with a Urinary Tract Infection**

The article was authored by Altheia Bass-Ware, Diana Weed, Reresa (2014) Johnson and Army Spurlock to determine if the constant consumption of cranberry juice limits the symptoms of urinary tract infections (UTIs) among women of ages from 30 and 39 years that were previously reported. The researchers conducted a descriptive research and used the SPSS version 17.5 software for accuracy verification. The ICSI scores and ICPI scores expressed as the ratio of time were analyzed using the descriptive statistics. The results were analyzed using tables that provided the mean consumption



of cranberry juice by glass weekly by every research subject. According to the analyzed results in the tables, the mean of cranberry juice consumption by each participant on a weekly basis was 6.27 glasses. The researchers also used the inferential statistics to analyze the data. The independent samples from the t-test were conducted to evaluate the disparities in education level and age and the totals of the ICSI scores and ICPI scores at 2, 4, and 8-week intervals. A repeat of the analysis of the data using analysis of variance (ANOVA) was then conducted to assess the effects of treatment within the subjects. Assumption 1) The repeated measures of ANOVA with sphericity when determining the ICSI scores differed between time points significantly. Research Problem/ Concern Diagnosis and treatment of UTIs accounts for nearly 4 million ambulatory care inpatients each year. The figure represents approximately 1 percent of all the outpatient visits in the U. S alone. Besides, urinary tract infection is the second most prevalent infection in women globally (Bass-Ware, Weed, Johnson & Spurlock, 2014). Following the troubling health concerns of the urinary tract infections in the world, the authors conducted research in response of the possible causes of UTIs in women. In doing so, the authors identified cranberry juice to explain its contributions on the UTIs infection. Data Collection During the initial clinic visits, patients ailing from UTIs were engaged on a short course of antibiotics on a voluntary capacity. The researchers enrolled a total of 26 participants for the study. The Interstitial Cystitis Problem Index (ICPI) Interstitial Cystitis Symptom Index (ICSI) tools were then used to evaluate the symptoms of UTIs. These medical tools focused on the problems and the symptoms of UTIs to collect the required data. The data needed included frequency,

urgency, dysuria, nocturia and pain in the bladder. The scores from the ICSI scores and ICPI evaluated the symptoms of UTIs, and the informational data were then analyzed using ANOVA, t-test and tables. Literature review also provided significant information on providing a definition of best practice as described by the results from the data.

Independent Variables1) Age2) EducationDependent Variable1) Cranberry juice consumptionSample Size EstimationThe researchers used a sample population of 26 participants of ages from 20 to 40 years. However, two participants withdrew from the research and failed to complete the study. Therefore, the data that was studied consisted of 24 patients who completed the assessment. The participants enrolled for the study had a current diagnosis of UTIs at least within the past one year. Based on the study objectives that started to evaluate the effects of cranberry juice on women, the sample size was insignificant. Besides, the effects of the cranberry juice on women may vary widely. Thus, a bigger sample size was needed. Although using a larger sample size would have limitations such as, time constraints, a larger sample was appropriate to provide accurate results. Therefore, the sample size was not justifiable. The authors employed the ANOVA and t-test for analyzing the research results. However, the application of ICSI scores and ICPI tools used to evaluate the data had been tested from multiple studies, including interstitial bladder pains syndrome and women with childhood trauma. Owing the varied statistical tools used to analyze the data and the accurate tools used to evaluate the data, one could argue that there was sufficient backup for the research suggesting that the statistical tools chosen were significant for accurate data analysis.

**Data Display**The results from the study were tested for accuracy using the SPSS version 17.0. Thereafter, the demographic data characteristics were displayed on tables. The researchers used tables to present the results from multiple data collected based on the variables. Ideally, the weakness of the tables is that they may not show a significant relationship between the variables under study (Feldman, Weiss, Ofek & Steinberg, 2009). Therefore, more accurate data display techniques could be appropriate for the data display.

**Section II: Data Analysis Evaluation**The research was analyzed using inferential statistics based on the ANOVA and t-tests. The results were analyzed using the ANOVA were based on assumptions of the sphericity. According to the ANOVA results, determined that the mean ICPI score differed significantly between the time points. The post hoc test using Bonferroni correction provided that consumption of cranberry juice elicited a decrease in ICPI scores from week 2 to 4 and from week 4 to 8. Thus, the consumption of cranberry juice within 8 weeks elicited a reduction in ICPI score. Furthermore, the results from the t-test showed no statistical difference in the scores.

**Conclusions**Based on the studies on the effects of cranberry juice on the effects of UTIs symptoms, the researchers reached a conclusion that consumption of cranberry juice within the time of study (8 weeks) elicited a statistically significant reduction in the Interstitial Cystitis Symptom Index score. The conclusions from the authors have elements of truth as justified by the statistical analysis (Bass-Ware, Weed, Johnson & Spurlock, 2014). However, based on a small sample size that was used for an 8-week time frame, the results could have elements of the shortcomings. Therefore, the results could have been inaccurate. Furthermore, the analysis

of t-test failed to produce the relationship on the variables of analysis. This might also suggest that there were elements of inaccuracy. Study Limitations Firstly, the researchers failed to obtain the baseline data before registering the patients for the study. Besides, the duration of 8 weeks' time frame was too short to make concrete conclusions on the studies. Furthermore, the inability to put the participants on a controlled research provided considerable limitations for the research (Bass-Ware, Weed, Johnson. & Spurlock, 2014). This is because they were not put on controlled reports on the intake of cranberry juice, and their diet was also not monitored. In addition, factors such as sexual behaviour could have manipulated the results. Lastly, the researchers did not have an idea on the exact amount of cranberry juice per gram that was needed to trigger the symptoms of the UTIs also made the research unidirectional. However, there has been no evidence on the amount of cranberry juice that offsets the UTIs symptoms. Furthermore, there were statistical limitations because they were not able to identify the appropriate study sample size since the pilot study was just a projection. However, to account for the limitations, the researchers recommended another research to be conducted using a larger sample group under controlled environment. Other than that, there was no substantial in-research ensure that was taken to respond to the limitations and the researchers used the reviewed literature to provide that most of the limitations had not been previously validated by research findings. Overall Evaluation The researchers had a recommendable idea on based on the prevalence of UTIs on women. The organization of research was reputable, and consent forms were received for the research. Ethically, the researchers

scored high marks. Besides, analyzing the results using multiple statistics tools provided a substantial backup for the research analysis, good job. However, the research had chances of creeping due to wide limitations documented that might have manipulated the results. Since the researchers were knowledgeable on the effects of sexual activity and diet on the outcomes of the research, it was significant to conduct the study under a controlled environment to increase research accuracy (Feldman, Weiss, Ofek & Steinberg, 2009). Therefore, the findings of the research may have been manipulated and may not depend on for nursing practice. Section III Drawing from the reported prevalence of UTIs on women globally, the use of the research can be used by peer nurses to educate the patients on the effects of cranberry juice on UTIs symptoms. Published research on cranberry product UTIs symptoms is, however, conflicting, but the findings of the study are consistent with multiple documentation. Therefore, the research can be used by peer nurses as a roadmap for educating the patients on the possible effect of cranberry juice on UTIs in women. Furthermore, peer nurses in reach of the research studies my experience conflicting information. Based on the wide range of limitations, there are chances of inaccuracy and this could provide them with argument platform. Besides, the possibility of the inaccuracy in the research and the consistency of the research with other published evidence on the effects of cranberry juice on UTIs symptoms may provide a confusing argument. Besides, research on this field is conflicting that further provides more confusion for the nurses. Although the study is consistent with other publications, peer nurses may question the accuracy of the study based on the wide limitations. Besides, the use of statistical tools

of t-test and ANOVA produced dissimilar results. This might further make them raise additional questions on the accuracy of the data findings due to dissimilar results. However, the study provides elements of change of practice in nursing. This is because educational intervention on nutrition is required in nursing practice. Currently, nutrition has been documented as one of the major causes of chronic diseases (Feldman, Weiss, Ofek & Steinberg, 2009). Therefore, consumption of cranberry may also be just one of the nutritional factors to be enlightened. Although the research has numerous hindrances, the findings provide a change in nursing practice. Lastly, statistical tools used in the analysis of data are very useful for validation of the data findings. For instance, the use of ANOVA in the research provided significant meaning for the research as a backup. This is because the t-test did not show the difference of the findings; the use of ANOVA provided the difference that further reveals the significance of this statistical tool in nursing. In a nutshell, nursing and the entire healthcare field requires interventions that may only be influenced by research findings. Therefore, statistical tools are significant for validation of research in the nursing field used to change nursing practice.

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