The Relationship Between Anxiety and Fatigue in Bachelor of Science Nursing Students

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Problem

Numerous studies have indicated increases in the prevalence and severity of mental health problems in college or university students. This has been found to be especially true among nursing students, who face a myriad of anxiety-producing situations and often report feeling overwhelmed by their coursework (Chernomas & Shapiro, 2013). It has long been known that feeling anxious is a common complaint of nursing students (De Souza, Kusomota, Pereira, Braga, Gaioso, Zamarioli & de Carvalho, 2013) and research has shown that high anxiety can contribute to decreased learning (Kleehammer & Keck, 1990), impaired problem-solving abilities, and can interfere with concentration (Moscaritolo, 2009).

Purpose

The purpose of this study was to examine the relationship between rates of anxiety and fatigue in first year versus second year Bachelor of Science in Nursing Students. Anxiety and fatigue were measured respectively using the Depression Anxiety Stress Scales (DASS) (Lovibond, S.H. & Lovibond, P.F., 1995) and Piper Fatigue Scale Revised (PFS-R) (Piper et al., 1998). The Depression Anxiety Stress Scales questionnaire can be found in Appendix A and the Piper Fatigue Scale Revised in Appendix B.

Literature Review

In a study at a Canadian university, researchers examined the levels of stress, depression, and anxiety among nursing students. The study stated that negative states, such as anxiety, can negatively impact learning and success throughout the nursing program. The impact of anxiety was reported to be particularly detrimental to the ability to perform safe clinical practice throughout the nursing program, in particular during the student’s initial clinical practice (Chernomas & Shapiro, 2013).

Cheung and Au (2011) studied the effect of anxiety on 30 undergraduate nursing students in Hong Kong during a clinical simulation by showing nursing students an anxiety-provoking video featuring interviews with nurses and doctors during the 2003 severe acute respiratory syndrome epidemic in
China prior to having them perform a clinical skill. According to study results, student’s performance was negatively impacted after viewing the video when compared to the control group. The authors suggested further study on the effect of anxiety to determine if anxiety-reducing interventions would enhance clinical performance. According to Moscaritolo (2009), the clinical environment has a history and a future of being a large part of nursing education; therefore, it will progressively become more stressful with the advances in health care and technology.

It is known that registered nurses report high levels of mental and physical fatigue. In a recent study by Barker and Nussbaum (2010), 1,006 registered nurses across the United States participated in an online survey to measure fatigue and performance. Both types of fatigue are known to have negative correlations with performance, increase the risk of nurse injury, and negatively impact patient safety (Barker & Nussbaum, 2010).

According to Rella, Winwood, and Lushington (2008) maladaptive fatigue rates increased the further the student progressed into their nursing coursework. These researchers assessed fatigue in nursing students in Australia during their three years of training. The results showed differences in the rates of chronic fatigue between first and third year students. It was also found that emotional health was a major predictor of fatigue. This study indicated that at the end of the nursing program a significant proportion of students were in a dangerously fatigued state.

A study done by Ghaderi and Shamsi (2012) used a descriptive-analytical design to examine rates of anxiety in nursing students in Iran. The results from the study showed that the rate and severity of anxiety was quite high.

More research needs to be done to determine if fatigue begins after graduation in new registered nurses or if the process begins during the nursing program. Additionally, there is a lack of knowledge concerning the relationship between anxiety and fatigue. It is important to identify if a relationship exists between these two variables and to explore interventions that might mitigate their detrimental effect on nursing students and their performance in clinical practice.

Research Questions

1. What are the prevalence rates of anxiety and fatigue in BSN students?

2. Is there a difference in rates of anxiety between first year and second year BSN students?

3. Is there a relationship between rates of anxiety and fatigue?

Research Method

Design

A descriptive correlational design using the 21-item DASS (Lovibond, S.H. & Lovibond, P.F., 1995) and 23-item PFS-R (Piper et al., 1998) was used to
determine rates of anxiety and fatigue in nursing students. This design allowed data collection to be conducted in a natural setting without any manipulation of variables.

Framework

Adaptation Theory, developed by Sister Callista Roy in 1976, was used as the framework for this study. The Roy Adaptation Theory is applicable to nursing students as they are constantly exposed to new stressors. This theory states that exposure to stressors creates a need for the person to adapt to the new physical, psychosocial, and social changes using effective coping strategies (Boston College Connell School of Nursing, 2013). It is a nurse’s responsibility to assist patients to adapt to changes, therefore it is imperative that nursing students develop effective coping strategies early in their nursing career (Varcarolis & Halter, 2009, p. 32).

Setting

This study was conducted in the Nursing Department at LaGrange College in LaGrange, Georgia. All students enrolled in the nursing program were asked to participate.

Sampling Procedure and characteristics

A convenience sample of 45 juniors and 45 senior students was obtained from eligible students in the LaGrange College nursing program. Inclusion criteria for study subjects were as follows: students accepted into the nursing program at LaGrange College and recurrent juniors or seniors in the program. Students who were not accepted into the program were excluded. All members of the research team were excluded from the study. All students were informed of the purpose of the study, invited to participate, and provided with a consent form (Appendix C) detailing the study.

Data Collection Strategies

The data collection took place during the first week of Spring semester 2015. Students were asked to stay after class to participate by completing a demographic questionnaire (Appendix D), PFS-R, and DASS. A designated research assistant was asked to conduct the administration of the questionnaires to eliminate any researcher bias. Packets were distributed that included the demographic questionnaire, DASS, and PFS-R for completion. Each packet was assigned a confidential number to ensure privacy for all subjects.

Instruments

Instruments included a demographic questionnaire, DASS, and PFS-R. The DASS is a 21-item self-report scale that is used to measure depression, anxiety, and stress. This scale used a Likert format with values ranging from 0-3 with respectively, responses of “did not apply to me at all”, “applied to me to some degree, or some of the time”, “applied to me to a considerable degree, or a good part of the time”, and “applied to me very much, or most of the time”. This shorter scale was adapted from the longer 42-item version of the DASS. Both versions have been shown to be reliable and valid (Psychology Foundation of Australia, 2014). The DASS is considered to be public domain and therefore re-
quires no permissions to be used (Psychology Foundation of Australia, 2014). The PFS-R is a 23-item scale that is used to measure fatigue. This questionnaire uses a number rating scale with values 0-10 to rate each item. The PFS-R is public domain and does not require permission for use.

Plans for storing, retrieving, and analyzing data

Prior to data collection, the surveys were given a confidential identification number for record keeping purposes and to ensure anonymity of the subjects. The surveys completed during the data collection session were sealed prior to placement in a secure location in the LaGrange College nursing department. A designated group member, was responsible to ensure placement of the sealed surveys in a locked cabinet within the nursing department. Data was extracted for entry into a data calculation software, which is stored on a secure server within the LaGrange College nursing department. Data was presented to the nursing department and class as aggregate data. No personal information was collected or distributed. All data entered into the database was checked for accuracy. Descriptive statistics including the mean and frequency was used to analyze the demographic data, rate of anxiety, and rate of fatigue. A Spearman Rho calculation was computed to measure the relationship between anxiety and fatigue in nursing students.

Ethical considerations

The Institutional Review Board at LaGrange College granted approval for the proposal prior to the start of the research study. Permission to use the DASS and PFS-R was not required; both of these scales are considered to be public domain. Demographic data did not include any identifying information and scale packets were assigned a confidential number. Subjects were informed of the purpose of the study prior to the beginning of data collection and encouraged to contact the researchers with any questions or concerns. Subjects were provided a consent form detailing expected participation and processes to protect anonymity of all subjects in the study. There were no identified risks or human rights violations during the course of this research study.

Discussion

Data analysis showed that the overall response rate for the DASS was 90.00% and overall response rate for the PFS-R was 91.11%. This was a total of 81 students, of the available 90 students who elected to complete the DASS, and 82 students of the 90 available who completed the PFS-R. Overall demographic results revealed that 70.73% of respondents were Caucasian, 20.73% African American, 2.44% Asian/Pacific Islander, 2.44% Multi-racial, 1.22% Hispanic, 1.22% Other, and 1.22% chose not to respond. Gender demographics showed 84.15% of respondents were female, 14.63% were male, and 4.88% chose not to respond. Age demographics revealed 59.76% of respondents were under age 25, 35.37% over age 25, and 4.88% chose not to respond. The surveys were scored and checked for accuracy by the research team members.
All results were double verified by independent members of the team to ensure accuracy. Both surveys were scored using the validated scoring keys available online.

The DASS measures depression, anxiety, and stress with each score falling into the normal, mild, moderate, severe, or extreme category. Overall results for the anxiety scale of the DASS showed that 44.44% of respondents fell into the normal anxiety category, 24.69% mild, 8.64% moderate, 6.17% severe, and 16.05% extreme. Figure 1 compares the overall rates of anxiety between junior and senior nursing students. The junior class had much higher rates of extreme anxiety at 23.26% compared to the senior class at 7.89%. The junior class also had a slightly higher rate of severe anxiety at 6.98% compared to the senior class at 5.26%.

The PFS-R scores that fell into categories of fatigue which included none, mild, moderate, and severe. Figure 2 compares the overall rates of fatigue scores with the scores of the junior and senior nursing students. No students fell into the moderate or severe categories. However, a significant number of students, 80.49% fell into the mild fatigue category. Also, 74.36% of senior nursing students fell into the mild fatigue category compared to 85.71% of junior nursing students. These findings were contrary to what might be expected as students progress through the nursing program, where increased anxiety and fatigue might have been anticipated.

The research team also examined the relationship between rates of anxiety and fatigue. Figure 3 shows the comparison of overall rates of anxiety and fatigue. It appears that although some students identified higher levels of anxiety, there was not an associated increase in the reported severity of fatigue. The research group calculated the Spearman Rho correlation which showed a positive correlation, of $r_s = 0.76$. The critical value for the Spearman Rho, with an $\alpha=0.05$ and $n=81$ is 4.78, which indicates the correlation is statistically significant.

Limitations

The research team recognized that the small sample size, rural setting, and disproportionate ages and gender may have influenced the results of the study. Although efforts were made to keep the study free from bias, the research team believes that there may have been bias based on the fact that the senior nursing students had already seen our proposed research project. Also, since the schedules for junior and senior students vary it is impossible to determine what impact this had on the results. It is also impossible to know if comorbid medical conditions skewed questionnaire results.

Future Recommendations

It is recommended that future studies seek larger sample sizes and be conducted at more than one institution, preferably representative of a larger geographic area to include rural, suburban, and urban settings. It would also be helpful to examine programs with more equal proportions of age, groups,
gender, and races. The research team believes that the study subjects should have no prior knowledge of the research project. A longitudinal study conducted at the beginning, middle, and end of the nursing program may provide more valuable insight into the impact of anxiety and fatigue on nursing students and new graduate nurses.

Conclusion

Although the research team was not able to identify a strong relationship between anxiety and fatigue in nursing students, there is still a significant number of students that suffer from anxiety and fatigue. It is well established that the rates of anxiety and fatigue in registered nurses are quite high and the data suggest that this process may begin in nursing school. Future studies are needed to determine what impact nursing school has on anxiety and fatigue and what interventions could be introduced to reduce these rates. As nursing students graduate it is more important than ever to have coping skills to help them combat the traditionally high rates of anxiety and fatigue that career nurses face.

Acknowledgements

The research team would like to thank Dr. Maranah Sauter, Associate Provost, Professor of the LaGrange College Nursing department for supporting this research project. We would also like to thank the LaGrange College Undergraduate Research Fund for providing funding for the project. Lastly, a special thank you to Mrs. Ginger Truitt, R.N., M.S.N. of the LaGrange College Nursing department for acting as proctor during the distribution and collection of the questionnaire packets.
References
Appendix A
Depression, anxiety, and stress scales

Please read each statement and circle a number 0, 1, 2 or 3 that indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

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<tr>
<td>0</td>
<td>Did not apply to me at all</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Applied to me to some degree, or some of the time</td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>Applied to me to a considerable degree, or a good part of the time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Applied to me very much, or most of the time</td>
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1. I found it hard to wind down
2. I was aware of dryness of my mouth
3. I couldn’t seem to experience any positive feeling at all
4. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)
5. I found it difficult to work up the initiative to do things
6. I tended to over-react to situations
7. I experienced trembling (eg, in the hands)
8. I felt that I was using a lot of nervous energy
9. I was worried about situations in which I might panic and make a fool of myself
10. I felt that I had nothing to look forward to
11. I found myself getting agitated
12. I found it difficult to relax
13. I felt down-hearted and blue
14. I was intolerant of anything that kept me from getting on with what I was doing
15. I felt I was close to panic
16. I was unable to become enthusiastic about anything
17. I felt I wasn’t worth much as a person
18. I felt that I was rather touchy
19. I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)
20. I felt scared without any good reason
21. I felt that life was meaningless
Appendix B
Piper Fatigue Scale-Revised

1. How long have you been feeling fatigued? (check one response only)
   a. __________ days
   b. __________ weeks
   c. __________ months
   d. __________ other (please describe):

Directions: For each of the following questions, circle the number that best describes the fatigue you may have experienced during the past week. Please make every effort to answer each question to the best of your ability. Thank you very much!

2. To what degree is the fatigue you are feeling causing you distress?
No distress          A great deal of distress
0  1  2  3  4  5  6  7  8  9  10

3. To what degree is the fatigue you are feeling interfering with your ability to complete your work or school activities?
None          A great deal
0  1  2  3  4  5  6  7  8  9  10

4. To what degree is the fatigue you are feeling interfering with your ability to visit or socialize with your friends?
None          A great deal
0  1  2  3  4  5  6  7  8  9  10

5. To what degree is the fatigue you are feeling interfering with your ability to engage in sexual activity?
None          A great deal
0  1  2  3  4  5  6  7  8  9  10

6. Overall, how much is the fatigue which you are experiencing interfering with your ability to engage in the kind of activities you enjoy doing?
None          A great deal
0  1  2  3  4  5  6  7  8  9  10

7. How would you describe the degree of intensity or severity of the fatigue which you are experiencing?
Mild          Severe
0  1  2  3  4  5  6  7  8  9  10
To what degree would you describe the fatigue which you are experiencing as being?

8. Pleasant
   Unpleasant
   0 1 2 3 4 5 6 7 8 9 10

9. Agreeable
   Disagreeable
   0 1 2 3 4 5 6 7 8 9 10

10. Protective
    Destructive
    0 1 2 3 4 5 6 7 8 9 10

11. Positive
    Negative
    0 1 2 3 4 5 6 7 8 9 10

12. Normal
    Abnormal
    0 1 2 3 4 5 6 7 8 9 10

13. To what degree are you feeling:
    Strong
    Weak
    0 1 2 3 4 5 6 7 8 9 10

14. To what degree are you feeling:
    Awake
    Sleepy
    0 1 2 3 4 5 6 7 8 9 10

15. To what degree are you feeling:
    Lively
    Listless
    0 1 2 3 4 5 6 7 8 9 10

16. To what degree are you feeling:
    Refreshed
    Tired
    0 1 2 3 4 5 6 7 8 9 10

17. To what degree are you feeling:
    Energetic
    Unenergetic
    0 1 2 3 4 5 6 7 8 9 10

18. To what degree are you feeling:
    Patient
    Impatient
    0 1 2 3 4 5 6 7 8 9 10
19. To what degree are you feeling:  
   Relaxed          Tense  
   0   1   2   3   4   5   6   7   8   9   10

20. To what degree are you feeling:  
   Exhilarated       Depressed  
   0   1   2   3   4   5   6   7   8   9   10

21. To what degree are you feeling:  
   Able to concentrate     Unable to concentrate  
   0   1   2   3   4   5   6   7   8   9   10

22. To what degree are you feeling:  
   Able to remember       Unable to remember  
   0   1   2   3   4   5   6   7   8   9   10

23. To what degree are you feeling:  
   Able to think clearly    Unable to think clearly  
   0   1   2   3   4   5   6   7   8   9   10

Appendix C
Informed Consent Form for Participation in Study
You are invited to participate in a research study conducted by Natalie E. Blaich, Timothy W. Franklin, Kimberly A. Harris, Nicole H. Stermer, and Stephanie E. Thomas. This research study is sponsored by faculty member Maranah Sauter, R.N. PhD, Associate Provost at LaGrange College. The purpose of this research is to examine the relationship between rates of anxiety and fatigue rates in first year versus second year Bachelor of Science in Nursing Students. Your participation will involve completing two questionnaires which include the Piper Fatigue Scale as well as the Depression Anxiety Stress Scale. There are no known risks associated with this research.

We will do everything we can to protect your privacy. The questionnaires will not require you to provide your name or any identifying information. Questionnaires will be assigned a confidential number for record keeping purposes. Your identity will not be revealed in any publication resulting from this study.

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study.
Appendix D
Demographic Questionnaire
Please circle the answer that best describes you.
1. Age:

<table>
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<tr>
<th>18-19</th>
<th>20-21</th>
<th>22-23</th>
<th>24-25</th>
<th>25-28</th>
<th>Over 45</th>
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<tbody>
<tr>
<td>28-30</td>
<td>30-35</td>
<td>35-40</td>
<td>40-45</td>
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2. Gender: Male or Female
3. Class: Junior or Senior
4. Race/Ethnicity:
   b. African American
   c. Asian/Pacific Islander
   d. Hispanic/Latino
   e. Multi-racial
   f. Native American/American Indian
   g. White
   h. Other