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# The Prevalence and Impact of Chronic Pain in Baccalaureate Nursing Students

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The Prevalence and Impact of Chronic Pain in Baccalaureate Nursing Students

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### Abstract

Chronic pain is a problem because it can have a large impact on activities of daily life of people, regardless of age. Few researchers have described the prevalence and impact of chronic pain in young adults, while even fewer have done so in the United States. The purpose of this study is to determine the prevalence of chronic pain and the impact it has on daily life for undergraduate nursing students. The theoretical framework is guided on the biopsychosocial model of chronic pain. This cross-sectional, descriptive study uses convenience sampling and data collected through an online Qualtrics survey, which was embedded in three waves of recruitment emails. Self-reporting responses were collected from 80 subjects who completed a survey with a revised version of the Fibromyalgia Daily Activity Checklist scale. The study found that 30% of undergraduate nursing students surveyed experienced chronic pain. The study also found that chronic pain had a significant impact on daily life, with approximately 68% of those reporting chronic pain also reporting some level of difficulty when performing activities of daily living. This is significant for young adults, especially healthcare students and providers because working as healthcare professional can be physically demanding.

### The Prevalence and Impact of Chronic Pain in Baccalaureate Nursing Students

Chronic pain is an interrelationship of “biological changes, psychological status, and the sociocultural context” (Gatchel, Pang, Peters, Fuchs, & Turk, 2007, p. 582). The biological aspect is the physical pain, or what the body feels. The psychological and sociocultural aspects involve both emotions and cognition which affect how a person copes with chronic pain. These together determine how a person experiences pain and how it impacts his/her life.. Chronic pain is defined as ongoing or recurrent pain lasting more than 6 months (American Chronic Pain Association 2014). When the body experiences chronic pain, the sympathetic nervous system cannot sustain the physical response as it does for acute pain because chronic pain is ongoing. This means that while acute pain may cause observable changes, e.g., vital changes, sweating, and physical manifestations, chronic pain does not. Persons with chronic pain report that the pain affects daily activities, relationships, and moods (LeMone, Burke, & Bauldoff, 2011). There is a large variance in the percentage of chronic pain in young adult reported by many studies. Chronic pain is normally measured by self-report. Therefore, chronic pain may be underreported. People may experience chronic pain over extended periods of time with minimal to no relief. In addition, most of the studies done to measure prevalence of chronic pain in young adults were done outside of the United States. This study hopes to determine the prevalence and impact of chronic pain in young adults, specifically undergraduate nursing students, as well as fill in gaps in knowledge due to lack of research done in the United States in the young adult population.

Researchers have found that chronic pain affects quality of life and daily functioning in young adults (Björnsdóttir, Jónsson, & Valdimarsdóttir 2013; Stinson et al., 2013). Few researchers have described the prevalence and impact of chronic pain in young adults, while even fewer studies have been done in the United States. Further, only one study looked at

chronic pain in college students and specifically in undergraduate nursing students (da Silva, et al., 2011). The purpose of this study is to determine the prevalence and impact of chronic pain in undergraduate nursing students in the United States. The following research questions are answered: What is the prevalence of chronic pain in undergraduate nursing students? What is the impact of chronic pain on daily activities in undergraduate nursing students? Studying chronic pain in undergraduate nursing students is important because this population is relatively healthy when compared with others. Nursing students are also in a rigorous education and profession which may aggravate chronic pain. Chronic pain may impact daily functioning and academic performance in these young adults, as well as critical decisions about college, career, and where to live (Björnsdóttir et al., 2013; Stinson et al., 2013). Experiencing chronic pain personally may influence how nursing students view and manage chronic pain in patients as they move into their careers as healthcare professionals. Studying prevalence and impact of chronic pain in this population can help fill gaps in the literature, which may support the need for future studies about interventions for this population.

### **Review of Literature**

Researchers have studied chronic pain internationally and in varied populations. Mallen, Peat, Thomas, and Croft (2005) studied chronic pain in patients at three general practices in North Staffordshire, located in England, and found that 14.3% of young adults age 18-25 reported chronic pain. Björnsdóttir et al (2013) studied prevalence of chronic pain in Icelanders age 18-79. They found that 19.9% reported chronic pain. The percentage of chronic pain in young adults age 18-39 was 16.1%. The findings were in line with Henderson, Harrison, Britt, Bayram, and Miller (2013) who did a continuous, national cross-sectional survey of Australian general practices and their patients. They found that 19.2% of patients in the general practices

reported chronic pain. The results showed that this percentage increased with age. In 15-24 year olds, the prevalence of chronic pain was 5%. In 25-44 year olds it was 14%. Among the group age 75+, the percentage was 36% (Henderson et al., 2013). Da Silva et al. (2011) found that 59.7% of the undergraduate nursing students in Brazil reported chronic pain. The research shows that chronic pain varies across populations. Because there is a wide range in the prevalence of chronic pain, this study hopes to increase understanding about prevalence in undergraduate nursing students in a U.S. Midwestern University.

Researchers have consistently found that chronic pain affects adults (Henderson et al., 2013), young adults (Mallen et al., 2005; Richardson et al., 2012; Ruehlmann et al., 2013; Stinson et al., 2013) and adolescents (Richardson et al., 2012). Henderson et al. (2013) studied chronic pain in 1,113 adults and found that chronic pain had a significant impact on activity, sleep, and mood. Mallen et al (2005) found that young adults with severely disabling chronic pain, a Grade IV on the Chronic Pain Grade Scale, reported low self-health and were more likely to have anxiety and depression than those without chronic pain. The Chronic Pain Grade Scale rates chronic pain based on the intensity of the pain and how disabling the chronic pain is measured by the impact on daily activities. Ruehlmann et al. (2013) studied chronic pain in 275 young adults with depression. They found that these persons had more negative attitudes and beliefs than those without chronic pain, which then compromised their ability to adjust to changes in life. Stinson et al. (2013) asked 17 young adults with chronic pain and 17 healthcare professionals (HCPs) working with patients experiencing chronic pain to rate the impact of chronic pain in different areas of life. From highest impact to lowest, the young adults' rankings were: social and emotional, physical impact, role functioning, and future; whereas the HCPs' highest to lowest rankings were: social and emotional, role functioning, future, and physical impact. The

researchers found between-group differences in impact and speculated that HCPs may not completely understand how chronic pain can affect daily life. Richardson et al. (2012) found that adolescents and young adults are at increased risk of long-term opioid use when they have a mental health disorder and chronic pain. In summary, the research shows that chronic pain has a negative impact on sleep, activity, mood, anxiety, depression, attitudes on life, opioid use, and social, emotional, and physical functioning.

Chronic pain is difficult to treat and manage effectively, and many researchers have examined the effects of strategies and interventions on chronic pain. Henderson et al. (2013) studied the effect of medications and non-pharmacological measures in 1,074 adults who reported seeking pain management. They found that the most effective interventions for pain were medication combined with another type of management, such as alternative therapies. Using only medication was 56% effective. The most effective medication was acetaminophen (42.8%). Using only alternative therapies was 7.4% effective. The most effective pain management without medication was physiotherapy (12.6%). Stinson et al. (2013) found that most young adults have not found something to completely manage their chronic pain, but have tried medications and alternative therapies, such as acupuncture, massages, and biofeedback. They also found that HCPs focused mainly on pharmacological strategies and psychological strategies, such as therapy, to deal with the effects of chronic pain, not the pain itself. This means that physicians are treating pain as a symptom, not as a disease itself. In a systematic review of 28 trials, Eccleston, Morley, Williams, Yorke, and Mastroiannopoulou (2002) found that relaxation and cognitive behavioral therapy (psychosocial treatments) reduced severity and frequency of chronic pain. Jensen, Turner, Romano, and Karoly (1991) did a systematic review of coping with chronic pain. In their review of 62 studies, they found that there is a complex

relationship between pain appraisals, coping strategies, and adjustment to chronic pain.

Increasing understanding of these relationships may lead to developing more effective pain management for those who suffer from chronic pain. In summary, the research shows that while there are a variety of options to treat chronic pain, they do not work very effectively. Many people with chronic pain use multiple treatment options at once. The research also shows that healthcare providers do not know how to effectively treat chronic pain.

Although researchers studied prevalence of chronic pain in young adults, the prevalence reported varies widely. Also, most studies do not research or split up results into age groups making it hard to compare data. Further, researchers have studied the impact of chronic pain, but comparing findings across studies is difficult because types of impacts are not comparable. Researchers have also found that there is lack of knowledge and understanding about chronic pain experiences in healthcare providers. While healthcare providers treat and manage chronic pain, most healthcare providers lack understanding about the impact, prevalence, and effective treatment of chronic pain (Stinson et al., 2013). Mckenna et al. (2012) studied levels of empathy toward certain health conditions in 106 nursing students and found that while most nursing students have acceptable levels of empathy towards most conditions, there is room for improvement in levels of empathy toward chronic disease, such as chronic pain, chronic mental illness, and terminal illness.

### **Theoretical Framework**

The theoretical framework for this study is the biopsychosocial model of chronic pain, which takes into account biological, psychological, and social factors (Appendix A). The model focuses on disease and illness. Disease is defined as the actual biological event that interferes with a structure or function of the body. Illness is viewed as the way the patient or family



members experience the symptoms of the disease. This is related to chronic pain by comparing disease and illness to the nociception and pain experienced. Nociception is the actual process of how that brain experiences pain through stimulation. Pain is the result of this process and is subjectively felt by a person. Chronic pain is described as an interrelationship of “biological changes, psychological status, and the sociocultural context” (Gatchel et al., 2007, p. 582). While the nociception is the biological aspect, psychological and social aspects include emotion and cognition. Emotion is the immediate reaction to nociception and emotions are led by cognitions. This can then lead to more emotional reactions which can actually exacerbate the pain. In the end, this leads to a vicious circle of increasing pain. All of these aspects can impact daily life for persons living with chronic pain (Gatchel et al., 2007).

The biopsychosocial model takes all aspects of pain into account including the physical reaction to pain as well as the emotional experience and the impact those have on a person’s life. Taking all aspects of pain into account allows us to better understand pain and will hopefully allow us to treat pain more effectively (Gatchel et al., 2007). This model applies to this study because the goal is to better understand the impact chronic pain has on daily life. The model provides a more rounded picture of the impact of pain. This study provides insight into these relationships and the full impact pain has on daily life in undergraduate nursing students.

## **Methods**

### **Design**

A descriptive design and cross-sectional data collection with an online survey was used to answer the research questions. Approval from the university’s institutional review board (IRB) was obtained prior to recruitment and data collection.

### **Setting and Sample**

The setting was in a baccalaureate nursing program at a large urban public university in the Midwest of the United States. The total number of students at university for 2013 was 22,122. The number of students in the school of nursing in 2013 was about 1,000 which includes undergraduate and graduate students. There were about 400 graduate students in the nursing program; the types of nursing programs for graduate students are PhD, CRNA, and DNP programs. There were 600 undergraduate students and the undergraduate programs include traditional baccalaureate (BSN) with 468 students, and the remainder distributed within the RN to BSN, accelerated, and LPN to BSN programs.

The sample was comprised of baccalaureate nursing students in the traditional, accelerated, and RN/BSN programs who meet the following inclusion criteria: young adult, 18 to 40 years of age, as defined by LeMone et al. (2011). Exclusion criteria included: anyone under 18 and anyone older than 40. No one was excluded based on gender, ethnicity, or age, as long as they meet age inclusion criteria.

### **Sampling and Data Collection Procedures**

Three waves of recruitment emails sent to all baccalaureate nursing students were used to construct a convenience sample. The waves were scheduled five days apart and within a space of approximately 15 days during the middle of the Fall 2015 semester. The email provided students with a general description of the study and an embedded link. The link then took them to the survey site, Qualtrics. This page displayed a consent form for students to read (Appendix B and C). The form described the study as well as informed the participant that they could withdrawal from the study at any point. By proceeding to take the survey, they were agreeing to participate. Collaboration with the office of student success facilitated sending the emails out to all baccalaureate nursing students.

Participants were able to progress through the online survey at their own pace and in privacy because of the online format. They were able to progress through the survey in spite of choosing not to respond to items and will be able to move forward and backward through the survey, which allowed them to review previously-rated items and change responses.

### **Measures**

Chronic pain was defined as ongoing or recurrent pain lasting more than 6 months (American Chronic Pain Association, 2014). All participants were asked for demographic data including age, gender, year in the program, what program they were enrolled in (traditional, accelerated, or RN/BSN), and race/ethnicity. Prevalence of chronic pain was measured by defining chronic pain then asking participants to check “yes” or “no” to an item asking if they experience chronic pain. If the participant selected “yes,” they continued to questions about the impact of chronic pain on daily life. If the participant selected “no,” the survey ended. Participants were also asked to rate their average daily pain level for the past two to three weeks on a numeric pain rating scale of 0-10, with 10 being the worst pain ever experienced. This measured the severity of the chronic pain.

Impact of chronic pain was measured with an adaptation of the Revised Fibromyalgia Impact Questionnaire (Bennett, Friend, Jones, Ward, Han, & Ross, 2009) (Appendix D). Participants were asked to rate the impact and intensity of chronic pain with 21 items. Participants were asked to respond on a Likert scale. For the first set of questions, the participants were asked to rate activities such as brushing or combing your hair; walking continuously for 20 minutes; preparing a homemade meal; vacuuming, scrubbing, or sweeping floors; lifting and carrying a bag full of groceries; climbing one set of stairs; changing bed sheets; sitting in a chair for 45 minutes; and going shopping for groceries on a scale from no

difficultly to very difficult. This was done using an 11 point scale where 0 was no difficulty and 10 was very difficult. For the second section, the participants were asked to rate how often chronic pain prevented accomplishing goals, and how often they felt overwhelmed by symptoms on a scale from 0 to 10 with 0 being never and 10 being always. The Revised Fibromyalgia Impact Questionnaire has a correlation coefficient of 0.83. The scale has been used in over 300 articles. The scale has also been translated into 14 languages and is often used to evaluate fibromyalgia patients (Bennett et al., 2009). Face validity of the revised scale for chronic pain was determined by consulting project sponsors and readers to review the revised items.

### **Data Analysis Plan**

All data were analyzed using descriptive statistics. The information from each survey was automatically and directly slotted into a data file upon submission. Data were stored in password protected computers to which only the researchers and sponsors had access to. After the study has ended, all data were destroyed. No identifying data were collected during the survey. A software program was used to analyze and calculate the statistics. To answer the research questions, descriptive statistical tests were used to determine prevalence of chronic pain in this sample. Percentages and descriptive statistical tests were also used to determine impact based on data from the study-revised The Revised Fibromyalgia Impact Questionnaire.

### **Results**

The sample was comprised of 80 subjects, 93% of which was female (n=74). Age ranged from 19 to 33 years with a mean of 20.88 (SD=2.55). Approximately 91% (n=73) was white, 4% (n=3) was African American/Black, 1% (n=1) was Hispanic, and 4% (n=3) reported either other or preferred not to specify. The majority at 94% (n=75) were in the traditional baccalaureate nursing program with 5% (n=4) in the RN/BSN program and 1% (n=1) in the accelerate

program. More than 50% (n=41) were 2<sup>nd</sup> year (sophomore level), with 21% (n=17) 3<sup>rd</sup> year (junior) and 28% (n=22) 3<sup>rd</sup> year (senior).

The first research question was: What is the prevalence of chronic pain in undergraduate nursing students? Descriptive statistics were used to calculate that 30% (n=24) of the sample reported chronic pain, which was defined as ongoing or recurrent pain lasting more than 6 months. Subjects rated average daily pain level in past two to three weeks on an ordinal scale of 0 to 10, with 0=no pain and 10= worst pain. Scores ranged from 1 to 7, with a mean of 3.71 (SD=1.68). Therefore, 68% of those with chronic pain reported average pain scores between 2.03 to 5.39 on the 0 to 10 scale.

The second research question was: What is the impact of chronic pain on daily activities in undergraduate nursing students? Subjects with chronic pain rated the difficulty of various activities in nine items on ordinal scales of 0-10, where 0 was no difficulty and 10 was very difficult. Table 1 (Appendix E) shows the Revised Fibromyalgia Impact Questionnaire rating means. Item ratings were summed to calculate the total difficulty during these activities with possible scores ranging from 0 to 100. Descriptive statistics were used to calculate total difficulty, which ranged from 9 to 46 with a mean of 20.30 (SD=10.50). Therefore, 68% of those with chronic pain reported difficulty from 9.80 to 30.80. The activities that rated most difficult were vacuuming, scrubbing, or sweeping floor (Mean=3.61). The activity that rated least difficult was brushing or combing hair (Mean=1.22).

When asked to rate on 0-10 scale how often chronic pain prevented subjects from accomplishing goals, responses ranged from 0 to 7 (0=not at all). Approximately 22% (n=5) reported 0, meaning that 78% of respondents felt that at some point chronic pain prevented him/her from accomplishing goals (Appendix E). When asked to rate how often subjects felt

completely overwhelmed by chronic pain on a 0-10 scale, only 4% reported 0 with the remaining results in Table 2 (Appendix E).

### **Discussion**

The percentage of students reporting chronic pain in this survey was 30% with the severity of pain ranging from 1 to 7 on a scale of 0-10 with ten being the worst pain. Only 22% of those that reported chronic pain said chronic pain did not prevent them from accomplishing goals, and only 4% said they have never felt completely overwhelmed by chronic pain. Approximately 68% of those that reported chronic pain reported some level of difficulty when performing activities of daily living such as brushing hair, walking continuously for 20 minutes, climbing a flight of stairs, etc. These results show that chronic pain is an issue in the young adult population and has a significant impact on daily living.

Researchers have reported wide range in the prevalence of chronic pain with ranges of chronic pain reported by all ages varying from 19.2% to 59.7% in previous. When looking specifically at young adults, researchers have reported ranges from 5% to 59.7% in previous studies. The results of this study showed that 30% of undergraduate nursing students reported pain which falls within the range of other studies; however the majority of the studies reported the percentage of chronic pain in young adults closer to 14% or 16%. There was only one study that reported a higher percentage of 59.7% (Da Silva et al., 2011), meaning the results of this study are higher when compared to previous studies (Björnsdóttir et al., 2013; Da Silva et al., 2011; Henderson et al., 2013; & Mallen et al., 2005).

In the biopsychosocial model, chronic pain is described as an interrelationship of “biological changes, psychological status, and the sociocultural context” (Gatchel et al., 2007, p. 582). The biopsychosocial model looks at how pain affects the person on more than just a

physical level. This survey asked questions to determine how much chronic pain impacts daily living. The literature review showed that chronic pain has a negative impact on social, emotional, and physical functioning. This study also found that chronic pain impacts and affects the psychological, emotional, social aspects of daily living; therefore, the findings of this study support the biopsychosocial model of chronic pain.

Thirty percent of undergraduate nursing students in this study reported chronic pain. The majority of previous research has found percentages ranging from 14% to 16% in young adults (Björnsdóttir et al., 2013; Da Silva et al., 2011; Henderson et al., 2013; & Mallen et al., 2005). The finding of 30% prevalence in younger adults is an unexpected result due to the fact that chronic pain is thought to be mainly in the older adult populations and not in young adults. It is possible that young adults may have under-reported chronic pain meaning the true prevalence of chronic pain in this population may be higher than 30%.

### **Conclusion**

This study showed that 30% of undergraduate nursing students in a Midwestern nursing program experience chronic pain defined as ongoing or recurrent pain lasting more than 6 months. This result is higher than most of the previous studies. The study also showed that chronic pain impacts and affects the psychological, emotional, and social aspects of daily living in young adults. The study showed that chronic pain impacts daily living for this population. Results suggest that chronic pain is a problem in young adults and can cause difficulty in daily life. This is important for nursing practice because chronic pain is thought to be mainly in older adults. Nurses need to keep in mind that young adults may also be dealing with chronic pain, and that chronic pain can impact daily life for those patients. Chronic pain is hard to treat and manage, so new or innovative solutions may be needed to manage chronic pain.

One limitation to this study is small sample (n=80), which can cause bias and limit ability to generalize to larger samples. Another limitation to this study is that there are so few previous studies researching chronic pain in this population, making it more difficult to compare results. Another limitation is that all data collected in this study were self-reported data which can create biased data. Further, it is also possible that findings are biased due to sample bias. Perhaps those with chronic pain were more likely to participate in this study, in spite of recruitment of all students with and without chronic pain. Bias may account for the high percentage of students reporting chronic pain in this study.

Future studies should be done on this topic because there are few studies about chronic pain in young adults. There is also not a lot of information on the management and treatment of chronic pain and especially in young adults. Since chronic pain has an impact on daily living, treatment and management of chronic pain should be studied to increase understanding about effective ways to manage chronic pain and especially in younger adults. Lastly, researchers need to study the effects of interventions on chronic pain outcomes in younger adults, and especially in healthcare students and providers. The work of healthcare professionals is often physically demanding, and the work days may be 12-hour shifts. Further, healthcare professionals often work with and have access to medications and substances that could be abused. This, in the presence of chronic pain, may contribute to problems for providers and patients, so it is imperative that researchers continue to increase understanding of chronic pain in younger adults.



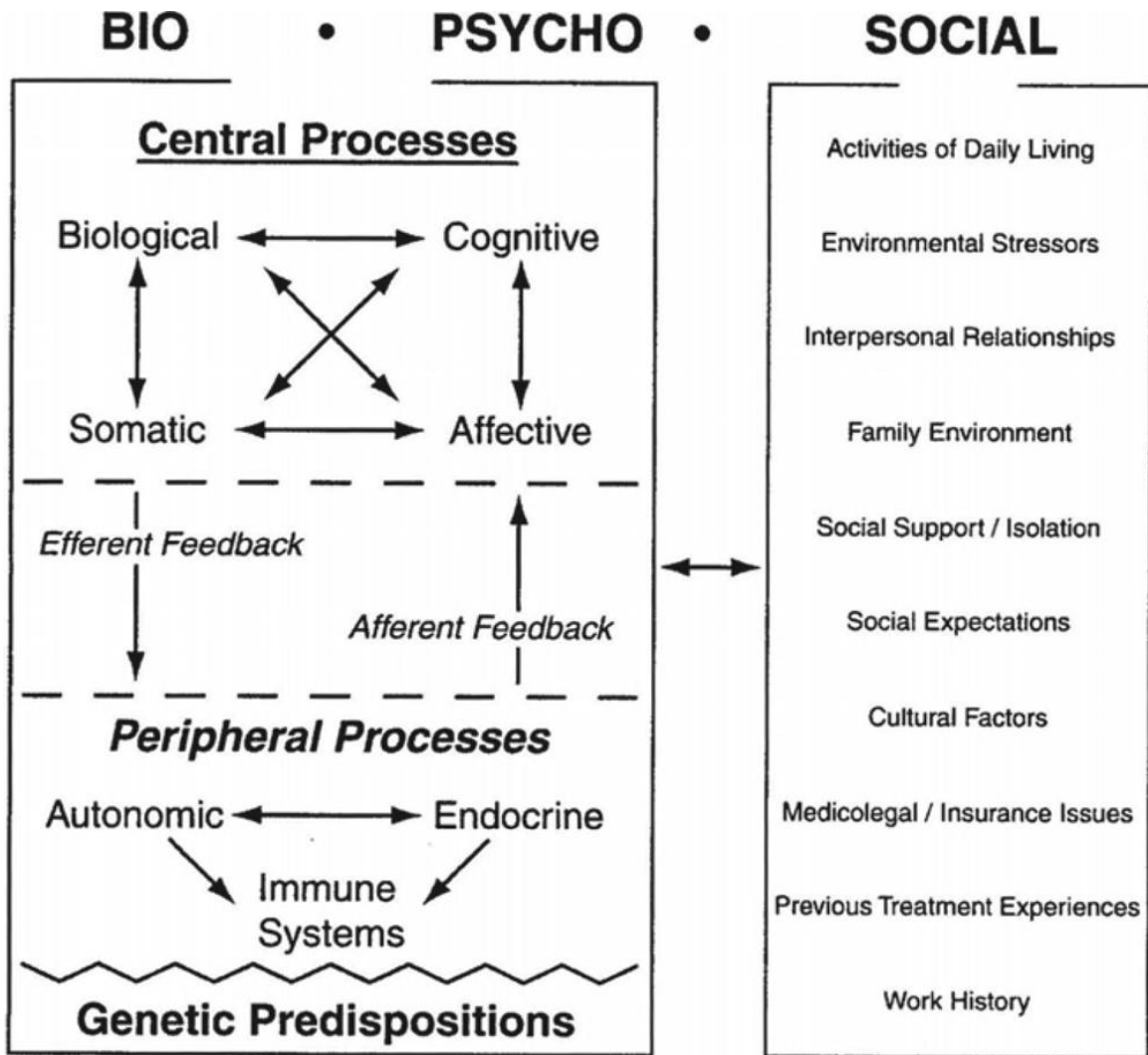
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Appendix A

Bio-Psycho-Social Model



## Appendix B

### Recruiting Email

Hello, Nursing Students! You are invited to participate in a nursing honors research project entitled “The Prevalence and Impact of Chronic Pain in Baccalaureate Nursing Students.” This study is by Kathleen Davis and Julia Schwarz, senior nursing students at The University of Akron. If you choose to participate, you will take an online survey which should take less than 10 minutes to complete. All data are collected anonymously, as described on this link: [Click here to go to the survey!!](#)

Please take 10 minutes to complete our survey, and thank you in advance for your participation and dedication to the advancement of nursing knowledge! Your time is greatly appreciated!

## Appendix C

### Consent Form

**Title of Study:** The Prevalence and Impact of Chronic Pain in Baccalaureate Nursing Students

**Introduction:** You are invited to participate in a research project being conducted by Kathleen Davis and Julia Schwarz, Senior nursing students in the Department of Honors Nursing at The University of Akron.

**Purpose:** The purpose of this study to determine the prevalence and impact of chronic pain in Baccalaureate nursing students. The survey is being sent to all undergraduate nursing students. .

**Procedures:** If you choose to participate in the study, you will be asked first to tell us a little about yourself, such as your age, sex, race/ethnicity, year in the program, what program you are in enrolled in (traditional, accelerated, or RN/BSN). Next, you will be asked to answer the question “do you experience chronic pain?” If the answer is no, the survey ends. If the answer is yes, you will continue with the survey. You will not be asked to give any identifying information about yourself, so there is no way you can be connected with your responses.

**Exclusion:** Exclusion criteria is anyone younger than 18 and older than 40 years of age

**Risks and Discomforts:** There are no risks associated with participating in this study.

**Benefits:** There is no direct benefit to you for participating in this study, but your participation will help increase understanding about chronic pain and its impact on daily functioning in young adults.

**Right to refuse or withdraw:** Whether or not you participate in this study is completely up to you. You can volunteer to participate, refuse to participate, or withdrawal at any time during the survey. Not participating or withdrawing will in no way affect your grades in any class.

**Anonymous and Confidential Data Collection:** No identifying information will be collected, and your anonymity is further protected by not asking you to sign and return the informed consent form.

**Confidentiality of records:** All data will be coded and stored on a password protected computer that only the researchers and sponsors have access to. At the end of the study this data will be destroyed.

**Who to contact with questions:** If you have any questions please contact Kathleen Davis at [kmd107@zips.uakron.edu](mailto:kmd107@zips.uakron.edu) or Julia Schwarz at [jes147@zips.uakron.edu](mailto:jes147@zips.uakron.edu). You can also contact our Sponsor Lori Kidd at [kidd@uakron.edu](mailto:kidd@uakron.edu) or our co-sponsor Christine Graor at [graor@uakron.edu](mailto:graor@uakron.edu). This project has been reviewed and approved by The University of Akron Institutional Review Board. If you have any questions about your rights as a research participant, you may call the IRB at (330) 972-7666.

**Acceptance:**

I have read the information provided and all of my questions have been answered. I voluntarily agree to participate in this study. My completion and return of this survey will serve as my consent. I may print a copy of this consent statement for future reference.

## Appendix D

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**The Revised Fibromyalgia Impact Questionnaire**

Domain 1 directions: For each of the following nine questions, check the one box that best indicates how much your fibromyalgia made it difficult to do each of the following activities over the past 7 days:

Brush or comb your hair	No difficulty <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very difficult
Walk continuously for 20 minutes	No difficulty <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very difficult
Prepare a homemade meal	No difficulty <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very difficult
Vacuum, scrub, or sweep floors	No difficulty <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very difficult
Lift and carry a bag full of groceries	No difficulty <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very difficult
Climb one flight of stairs	No difficulty <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very difficult
Change bed sheets	No difficulty <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very difficult
Sit in a chair for 45 minutes	No difficulty <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very difficult
Go shopping for groceries	No difficulty <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very difficult

Domain 2 directions: For each of the following two questions, check the one box that best describes the overall impact of your fibromyalgia over the past 7 days:

Fibromyalgia prevented me from accomplishing goals for the week	Never <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Always
I was completely overwhelmed by my fibromyalgia symptoms	Never <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Always

Domain 3 directions: For each of the following 10 questions, check the one box that best indicates the intensity of your fibromyalgia symptoms over the past 7 days:

Please rate your level of pain	No pain <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Unbearable pain
Please rate your level of energy	Lots of energy <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> No energy
Please rate your level of stiffness	No stiffness <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Severe stiffness
Please rate the quality of your sleep	Awoke rested <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Awoke very tired
Please rate your level of depression	No depression <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very depressed
Please rate your level of memory problems	Good memory <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very poor memory
Please rate your level of anxiety	Not anxious <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very anxious
Please rate your level of tenderness to touch	No tenderness <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Very tender
Please rate your level of balance problems	No imbalance <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Severe imbalance
Please rate your level of sensitivity to loud noises, bright lights, odors, and cold	No sensitivity <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Extreme sensitivity

Scoring: Step 1. Sum the scores for each of the three domains (function, overall, and symptoms). Step 2. Divide domain 1 score by three, divide domain 2 score by one (that is, it is unchanged), and divide domain 3 by two. Step 3. Add the three resulting domain scores to obtain the total Revised Fibromyalgia Impact Questionnaire score.

## Appendix E

	range	Mean (SD)
Brush or comb hair	1-2	1.22 (0.42)
Walk continuously for 20 minutes	1-8	3.04 (2.64)
Prepare a homemade meal	1-5	1.48 (0.95)
Vacuum, scrub, or sweep floors	1-9	3.61 (2.61)
Lift and carry a bag full of groceries	1-7	2.61 (1.83)
Climb one set of stairs	1-9	2.43 (2.21)
Change bed Sheets	1-6	1.96 (1.58)
Sit in a chair for 45 minutes	1-7	2.04 (1.80)
Go shopping for groceries	1-8	1.91 (1.76)

Table 2. Frequency chronic pain, accomplishing goals, and feeling completely overwhelmed (n=23)

	Frequency of chronic pain preventing goal accomplishment	Frequency of feeling completely overwhelmed by chronic pain
	Percent (n)	Percent (n)
0 (not at all)	21.7 (5)	4.3 (1)
1	4.3 (1)	17.4 (4)
2	17.4 (4)	17.4 (4)
3	34.8 (3)	8.7 (2)
4	13 (3)	21.7 (4)
5	4.3 (1)	13 (3)
6	0	13 (3)
7	4.3 (1)	0
8	0	0
9	0	4.3 (1)
10	0	0