Title of project:

Gender differences in Chronic Pain Management outcomes among a sample of Pharmacists licensed to practice in the State of Arizona

Course title: PhPr 898B, Research Project II

Date: April 1, 2021

Faculty advisor(s): Marion Slack, PhD
Rhys Axon, PhD

Student(s): Anita Dangol
Hanh Dinh
Trupti Patel

ABSTRACT

Specific Aims: The aim for this study was to determine differences in pain intensity levels, pain interference with physical activities and leisure activities, overall health, and quality of life between male and female pharmacists with chronic pain.

Methods: This descriptive study used an online questionnaire that was sent to pharmacists 18 years and older with chronic pain and had license to practice in the State of Arizona. The data was responses of a total of 12 questionnaires that were answered by qualified pharmacists. The data were collected anonymously and stored on the College of Pharmacy secure server. Mean and standard deviation were used to analyze continuous data, t-test was used to compare groups, and chi square test was used to analyze frequencies and percentage.

Main Results: Questionnaires were completed by three male (mean age = 42; SD =14) and eight female pharmacists (mean age = 36; SD =22) who were licensed to practice pharmacy in the State of Arizona. There is a significant difference in level of pain between male and female pharmacists, male pharmacists reported higher levels of pain (male = 42, female = 35.9), pain interference with daily activities, and leisure activities, overall health, and quality of life ($p<0.001$).

Conclusions: Male Pharmacists reported higher levels of overall pain, pain interference with physical activities and leisure activities, overall health, and quality of life compared to female pharmacists with chronic pain.

Gender differences in Chronic Pain Management outcomes among a sample of Pharmacists licensed to practice in the State of Arizona

INTRODUCTION

In this study, we defined chronic pain as pain that lasts three months or longer. According to a 2016 report from the Center for Disease Control and Prevention (CDC), approximately fifty million people in the United States (US) had chronic pain (cdc.gov). A sample of pharmacists licensed to practice in Arizona had already completed a questionnaire about if they had chronic pain and how they managed their chronic pain.

The problem that the study addressed was chronic pain management and its major impact on pain intensity, pain interference, in overall health, and quality of life. Chronic pain management was important to improve a patient's quality of life as it can not only affect physical health but also mental health.

CDC had analyzed National Health Interview Survey (NHIS) data in 2016 and estimated 20.4% (50 millions) of US adults had chronic pain while 8.0% of US adults (19.6 million) had high impact chronic pain (cdc.gov). Chronic pain contributed to an estimated $560 billion each year in direct medical costs, lost productivity, and disability programs (Tauben, 2020). Pain management required a group of healthcare providers including physicians, nurses, therapists, and also pharmacists (DeBar, 2012). Pharmacists played an important role in helping patients manage their pain because of knowledge in pharmacology and pharmacokinetic. (Suh, 2004). There was no study about how pharmacists manage their own pain. Therefore this study used this data to compare chronic pain management outcomes between male and female pharmacists who were licensed to practice in the State of Arizona.

METHODS

Design This was a descriptive study that used data from a previously conducted online questionnaire of pharmacists with chronic pain licensed to practice in the State of Arizona.

Subjects Participants were selected based on the responses provided in a previously administered questionnaire. Participants were eligible if they are pharmacists 18 years and older, licensed to practice in the State of Arizona, and reported having chronic pain. The University of Arizona Institutional Review Board approved this study.

Measures Data were collected by Arizona pharmacists by answering questionnaires. The answers that participants provided would be confidential. They were collected from pharmacists licensed to practice in Arizona. The qualified participants were emailed questionnaires via email where they could provide the answers by clicking the link. There were three intake questions listed followed by 12 questions. The first four questions were about participant's health in general; how they rate their overall health, quality of life, physical health, and mental health, including mood and their ability to think, the next three questions were about how they manage their pain; how satisfied they are with their ability to manage pain, how much they would like to improve their ability to manage pain, and the efforts to put in to manage pain, the next four questions asked about how much pain interfered with their daily activities, ability to participate in leisure activities, interference with ability to work, interference in relationships with other people, and the last question was about any comments or suggestions on the content of this section of the questionnaire.

All these questions had response options provided in a Likert scale form. Questions one through four had answer options (poor, fair, very good, excellent). Questions five through 11 had answer options (not at all, a little bit, somewhat, quite a bit, very much). Questions 12 was a free response text.

Data Collection A questionnaire was sent out to all the pharmacists licensed in Arizona, who would answer the questionnaire and follow on the site. The data were collected anonymously and stored on the College of Pharmacy secure server.

Data analysis Continuous data were summarized using means and standard deviations; groups were compared using t-test. Frequencies and percentages were used for questionnaire's response data and the group's proportion were compared using a Chi square test. An alpha level of 0.05 was determined a priori.

RESULTS

There were a total of 11 pharmacists included in this study. Three of them were male pharmacists and eight of them were female pharmacists.

The demographic characteristics of the pharmacists are shown in Table 1. The average age of male pharmacists was 42 while the female pharmacists were 37 indicates that men were older than women (Mean age 42 vs 37 years, $p<0.001$). Male [ADR(5] and female pharmacists were very similar in having good physical health, normal BMI, little bit managing pain, and years of practicing in Arizona.

The proportion of men (100%) who were practicing full time was significantly higher ($p < 0.001$) than the proportion of women pharmacists (50%) who were practicing full time.

The pain characteristics and outcomes related to pain management for men and women pharmacists were shown in Table 2. Men reported higher pain intensity levels than women based on the confidence score ($p< 0.001$). Men most commonly reported that pain somewhat interfered with their daily activities (100%), whereas women most commonly reported that pain interfered with their daily activities a little bit (63%). However, an equal number of women

(37.5%) reported little bit and quite bit interference with physical activities. When mean total difference scores were compared, Men had a significant difference in overall health and quality of life compared to women ($p < 0.001$).

DISCUSSION

In this study, we measured how a sample of pharmacists licensed to practice in the State of Arizona managed their chronic pain and how much it interfered with pain intensity, pain interference, in overall health, and quality of life. This was important information to know because chronic pain had been linked to high healthcare costs, disability, and lost productivity (Tauben, 2020). This study showed that male pharmacists reported higher levels of pain than female pharmacists when compared among a sample of Pharmacists licensed to practice in the State of Arizona. Most studies were showing that females tend to report higher pain levels compared to male. A study in France reported that 8% of females having neuropathy pain compared to 6% of male for a three months interval (Bouhassira, 2008). Another study was conducted with more than 80000 adults in 17 countries showing that chronic pain was more common in females than in males (45% vs 31%) (Tsang, 2008).There was no study about how pharmacists manage their pain, but a study for student pharmacists in the US in 2018 showed that female students tend to have more both acute and chronic pain than male students (64 vs 34% for acute) and (58 vs 42% for chronic). Even though there was no significant difference in this study, there was a trend that male students reported more pain compared to female students (Axon, 2018).

The study has some strengths. It includes all pharmacists populations working in different pharmacy settings. The questionnaires include Likert and Rating scale questions to determine pain interference. However, there were a lot of limitations for this study. The first one was an online questionnaire where patients recorded their answers. Some questions were left blank while others preferred not to answer. Also, the number of answers received were way less than what was anticipated. Although the data analysis shows p-values of <0.001 are statistically significant, it cannot be generalized to the entire population. The second limitation was data were collected with limited numbers of participants. Emails were sent out to pharmacists during the pandemic, so a lot of them did not have time to check email, so data did not represent the majority of pharmacists who practice in Arizona.

For future research, the questionnaire could be administered to the general population, not just pharmacists. Also making sure that all the administered questionnaires are answered. For this study, questionnaires may be sent out again when everything gets back to normal, so pharmacists would take some time to answer the questionnaire.

CONCLUSIONS

The study suggests that overall male pharmacists report higher levels of pain indicating that male have less tolerance compared to women. The high pain interference with physical activities and leisure activities in men related to poor chronic pain management. The high difference in overall health and quality of life between male and female pharmacists indicates that pain control is required to maintain quality of life and overall health.

REFERENCES

1. Axon, D. R., Hernandez, C., Lee, J., & Slack, M. (2018). An Exploratory Study of Student Pharmacists' Self-Reported Pain, Management Strategies, Outcomes, and Implications for Pharmacy Education. *Pharmacy (Basel, Switzerland)*, *6*(1), 11. https://doi.org/10.3390/pharmacy6010011

2. Bouhassira D, Lanteri-Minet M, Attal N, Laurent B, Touboul C. Prevalence of chronic pain with neuropathic characteristics in the general population. Pain. 2008;136:380–387

3. Centers for Disease Control and Prevention. 2020. *CDC Works 24/7*. [online] Available at: <https://www.cdc.gov> [Accessed 31 March 2020].

4. DeBar, L. L., Kindler, L., Keefe, F. J., Green, C. A., Smith, D. H., Deyo, R. A., … Feldstein, A. (2012, August 30). *A primary care-based interdisciplinary team approach to the treatment of chronic pain utilizing a pragmatic clinical trials framework*. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3578318/

5. Suh, E. S., Bartlett, G., Inguanti, M., & Folstad, J. (2004). Evaluation of a pharmacist pain management education program and associated medication use in a palliative care population. *American journal of health-system pharmacy : AJHP : official journal of the American Society of Health-System Pharmacists*, *61*(3), 277–280. https://doi.org/10.1093/ajhp/61.3.277

6. Tauben, D., & Stacey, B. (2020, January 23). Evaluation of chronic non-cancer pain in adults.Retrieved April 9, 2020, from https://www-uptodate-com.ezproxy2.library.arizona.edu/contents/evaluation-of-chronic-non-cancer-pain-in-adults?search=chronic musculoskeletal pain&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2

7. Tsang A, Korff MV, Lee S, Alonso J, Karam E, Angermeyer MC, Borges GL, Bromet EJ, de GG, De GR, Gureje O, Lepine JP, Haro JM, Levinson D, Browne MA, Posada-Villa J, Seedat S, Watanabe M. Common chronic pain conditions in developed and developing countries: Gender and age differences and comorbidity with depression-anxiety disorders. J Pain. 2008;3

Table 1: Characteristics of Study Participants by Gender

Characteristics	Gender		p-value
	Men (n=3)	Women (n=8)	
Age (Mean, SD)	(42, 14)	(36, 22)	<0.001
Race/origin (N, %) White Other	 (3, 100) (0, 0)	 (4, 50) (4, 50)	 <0.001
Marital Status (N, %) Married Not married Living with partner	 (3, 100) (0, 0) (0, 0)	 (6, 75) (1, 12.5) (1, 12.5)	 <0.001
Employment status (N, %) Part-time Full-time Retired	 (0, 0) (3, 100) (0, 0)	 (3, 37.5) (4, 50) (1, 12.5)	 <0.001
Primary site of practice (N, %) Community Hospital Long term care Other	 (0, 0) (3, 100) (0, 0) (0, 0)	 (4, 50) (2, 25) (1, 12.5) (1, 12.5)	 <0.001
Years in practice (Mean, SD)	(30, 0)	(28.6, 20)	<0.001
Physical health (N, %) Fair Good Very good Excellent	 (1, 33.33) (1, 33.33) (0, 0) (1, 33.33)	 (0, 0) (3, 37.5) (5, 62.5) (0, 0)	 <0.001

Mental health (N, %) Good Very good Excellent	 (1, 33.33) (2, 66.67) (0, 0)	 (4, 50) (2, 25) (2, 25)	 <0.001
BMI (N, %) Normal Overweight Obese	 (1, 50) (0, 0) (1, 50)	 (4, 50) (3, 37.5) (1, 12.5)	 <0.001
Burden of managing pain (N %) A little bit Somewhat Quite a bit	 (1, 33.33) (2, 66.67) (0, 0)	 (3, 37.5) (4, 50) (1, 12.5)	 <0.001

*SD = Standard Deviation, BMI = Body Mass Index

Table 2: Pain Characteristics and Outcomes Related to Pain Management

Outcome	Gender		p-value
	Men (n =3)	Women (n= 8)	
Usual level of pain (Mean, SD)	(42, 14)	(35.9, 21.8)	<0.001
Level of tolerable pain (Mean, SD)	(38, 8.8)	(50.3, 18.2)	<0.001
Level of pain after treatment (Mean, SD)	(43, 16.9)	(30.5, 25.4)	<0.001
Pain interference with daily activities (N, %) A little bit Somewhat Quite a bit	 (0, 0) (3, 100) (0, 0)	 (5, 62.5) (2, 25.0) (1, 12.5)	 <0.001

Pain interference with leisure activities (N, %) A little bit Somewhat Quite a bit	 (0, 0) (3, 100) (0, 0)	 (3, 37.5) (2, 25) (3, 37.5)	 <0.001
Overall health (N, %) Fair Good Very good Excellent	 (1, 33.33) (0, 0) (2, 66.67) (0, 0)	 (0, 0) (2, 25) (5, 62.5) (1, 12.5)	 <0.001
Quality of life (N, %) Good Very good Excellent	 (0, 0) (1, 33.33) (2, 66.67)	 (1, 12.5) (4, 50) (3, 37.5)	 <0.001
Satisfaction with ability to manage pain (N, %) A little bit Somewhat Quite a bit Very much	 (0, 0) (1, 33.33) (2, 66.67) (0, 0)	 (1, 12.5) (2, 25) (4, 50) (1, 12.5)	 <0.001
Would like to improve ability to manage pain (N, %) A little bit Somewhat Quite a bit Very much	 (0, 0) (0,0) (3, 100) (0,0)	 (2, 25) (3, 37.5) (1, 12.5) (2, 25)	 <0.001

*SD = Standard Deviation, BMI = Body Mass Index

APPENDICES

- **Appendix C:** Data Dictionary

	A	B	C
4	3	Race or Origin	White=1; Black or African American =2; American Indian or Alaska Native =3; Asian = 4; Native Hawaiian or other Pacific Islander =5; Hi
5	4	Marital Status	Married=1; Divorced or Widowed=; Separated=3; Never married=4; Living with partner=5; Prefer not to answer=6
6	5	State currently reside	AZ =1, other states = 0
7	6	Pain intensity (0 -10 scale)	No Pain (0) = 1, Mild (1-2) = 2, Moderate (3-4)=3, Severe(5-6)= 4, Very severe(7-8)= 5, Worst pain(9-10)=6
8	7	Site of practice	Community (chain and independent) =1; Hospital (Inpatient and Outpatient) =2; Long-term Care =3; Ambulatory Care =4; other =5
9	8	BMI	Underweight (<18.5) = 1; Normal (18.5-24.9 = 2; Overweight (25-30) =3; Obese (>30) =4
10	9	Pain duration	< 2 years= 0, < 3 years =1, < 5 years =2, < 7 years = 3, <10 years = 4, > 10 years = 5
11	10	Working hours	Part time (<40 hrs /wk) =1; Full time (>/ 40hrs/wk) =2; Retired =3; Unemployed =4
12	11	Physical Health	Poor = 1, Fair = 2, Good=3, Very good=4, Excellent=5
13	12	Overall Health	Poor = 1, Fair = 2, Good=3, Very good=4, Excellent=5
14	13	Quality of life	Poor = 1, Fair = 2, Good=3, Very good=4, Excellent=5
15	14	Mental Health (Mood and Ability to think)	Poor = 1, Fair = 2, Good=3, Very good=4, Excellent=5
16	15	Ability to manage pain	Not at all =1; A little bit =2; Somewhat =3; Quite a bit =4; Very much =5
17	16	Like to improve ability to manage pain	Not at all =1; A little bit =2; Somewhat =3; Quite a bit =4; Very much =5
18	17	Pain managment Burdensome	Not at all =1; A little bit =2; Somewhat =3; Quite a bit =4; Very much =5
19	18	Pain interfere (with daily acitvities)	Not at all =1; A little bit =2; Somewhat =3; Quite a bit =4; Very much =5
20	19	pain interfere (with leisure acitvities)	Not at all =1; A little bit =2; Somewhat =3; Quite a bit =4; Very much =5
21	20	Pain interfere (with work)	Not at all =1; A little bit =2; Somewhat =3; Quite a bit =4; Very much =5
22	21	pain interfere (with relationship with others)	Not at all =1; A little bit =2; Somewhat =3; Quite a bit =4; Very much =5
23	22	Physical or Mental impairment that limits one	Yes =1; No=0
24	23	Chronic Conditions	Yes = 1; No=0; Alcohol abuse; Alzheimer's and Dementia ; Arthritis (OA and RA); Asthma; Afib; ASD; Cancer (breast, colorectal, lung, a
25	24	Musculoskeletal pain	Yes =1; No=0
26			
27			
28			

Questionnaires

Confidential

Outcomes

In this section of the questionnaire, there are several questions about your overall health, your assessment of your ability to manage your pain, and how much your pain interferes with your life.

At the end of the questions, thre will be a comment section for you to provide feedback on this section of the questionnaire.

The following four questions ask about your health generally:

1) In general, how would you rate your overall health?

- ◯ Poor
- ◯ Fair
- ◯ Good
- ◯ Very good
- ◯ Excellent

2) In general, how would you rate your quality of life?

- ◯ Poor
- ◯ Fair
- ◯ Good
- ◯ Very good
- ◯ Excellent

3) In general, how would you rate your physical health?

- ◯ Poor
- ◯ Fair
- ◯ Good
- ◯ Very good
- ◯ Excellent

4) In general, how would you rate your mental health, including your mood and your ability to think?

- ◯ Poor
- ◯ Fair
- ◯ Good
- ◯ Very good
- ◯ Excellent

The following three questions ask about managing your pain:

5) How satisfied are you with your ability to manage your pain?

- ◯ Not at all
- ◯ A little bit
- ◯ Somewhat
- ◯ Quite a bit
- ◯ Very much

6) How much would you like to improve your ability to manage your pain?

◯ Not at all
◯ A little bit
◯ Somewhat
◯ Quite a bit
◯ Very much

7) How burdensome is all the work that you need to do to manage your pain?

◯ Not at all
◯ A little bit
◯ Somewhat
◯ Quite a bit
◯ Very much

The following four questions ask about pain interference:

8) How much does pain interfere with your daily activities?

◯ Not at all
◯ A little bit
◯ Somewhat
◯ Quite a bit
◯ Very much

9) How much does pain interfere with your ability to participate in leisure activities?

◯ Not at all
◯ A little bit
◯ Somewhat
◯ Quite a bit
◯ Very much

10) How much does pain interfere with your ability to work?

◯ Not at all
◯ A little bit
◯ Somewhat
◯ Quite a bit
◯ Very much

11) How much does pain interfere with your relationships with other people?

◯ Not at all
◯ A little bit
◯ Somewhat
◯ Quite a bit
◯ Very much

Comment Section

12) If you have any comments or suggestions on the content of this section of the questionnaire, please enter them into the text box. ______________________________