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Perceptions of pain and resilience factors among male and female college students

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Abstract

Background: Young adults' reports of their health concerns and the impact these issues may have on their health-related quality of life are significant issues nationwide. Among the college student population, health concerns related to pain are substantially increasing, and are often related to mental health problems among this particular population. A primary aim of this study was to investigate the relationship between perceptions of pain and perceived self-esteem and types of social support for male and female college-age students. Furthermore, the current study examines the relationships among type of social support, from family, friends or significant others or partners and males' and females' report of pain experiences.

Methods: By May 2012, a sample of 238 college students at a Midwestern university completed a self-report survey assessing their self-esteem, social support, and physical health and pain.

Results: Results indicated there were differences in males' and females' perception of pain experiences. More specifically, females with higher ratings of social support from friends were related to greater number of days in which pain was experienced. In contrast, females reported increased social support from significant others were related to less pain, whereas males reported increased social support from significant others were related to more pain. Self-esteem was inversely related to number of days in pain for males and this was also a trend for females.

Conclusions: The present study found that increased levels of social support and self-esteem could be buffers of pain experiences. However, the relationship among these resilience factors may be complex. Thus, future studies should explore social support and gender differences more closely. Future interventions should aim to increase self-esteem among males and females.

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INTRODUCTION

Perceptions of pain and resilience factors among male and female college students

College students' reports of their health concerns and their impact on their quality of life are significant issues nationwide [1]. In fact, data from the most recent American College Health Association National College Health Assessment revealed that more than half (55.4%) of college students were diagnosed with health problems including asthma, back pain, diabetes within the past 12 months of taking the survey [2]. Of these

students, the majority (61.4%) were females. Additionally, this national survey report found that 5% of college students reported having been diagnosed with chronic illnesses including cancer and diabetes and 5.6% were diagnosed with psychiatric conditions [2]. In regards to these alarming statistics, health-related quality of life issues related to pain felt by college students should be of primary concern for health professionals [3].

Health problems related to pain are frequently associated with physical, psychological, and social factors [4]. Regarding psychological factors, a recent

study found that individuals who experience chronic health problems are three times more likely to seek treatment for mental health issues [5]. Concerning the relationship between pain and social factors, as chronic and recurrent pain is common among individuals, an estimated one in four suffering from chronic health conditions have one or more daily limitations including restrictions to attend school [6]. In addition to school attendance, strong evidence suggests chronic pain adversely impacts students' school functioning and the college experience, including their academic and psychosocial functioning [7].

Pain Experiences of College Students

As aforementioned, health problems related to pain are influenced by physiological, psychological, and social factors and thus may lead to both psychological and physical stress [4]. These particular health problems have been often linked to college stress levels [8]. College students suffering from chronic pain may experience behavioral disruptions from stressors including depressed mood, substance abuse, and academic impairment [9]. Among the college student population, health concerns related to pain are substantially increasing, and are often related to mental health problems among this particular population [10]. With the amount of health concerns growing, researchers have become noticeably interested in how gender influences impact pain [11].

Gender Differences in Pain and Psychosocial Functioning

Gender differences in health beliefs and health behaviors have been well-documented in the literature [12]. Specifically, women are more likely to experience depression and anxiety disorders compared to men who are more likely to experience antisocial behavior [12,13]. Consequently, the symptoms of pain and depression have been found to occur simultaneously among both males and females suffering from health problems related to pain [14,15]. Gender differences regarding health beliefs and behaviors have serious implications for the college student population. For example, previous research found that depressed students are more likely to report academic impairment due to chronic pain than students who were not depressed [16]. Unfortunately, regardless of gender differences, if college students do not believe that they are competent or worthy, they may experience health issues including physical pain, stress, and depression [17]. These abovementioned health problems related to pain are significantly associated with an overall lower life satisfaction [18]. Gender differences regarding life satisfaction do exist as previous research reports that females with chronic medical conditions have poorer quality of life than males with chronic medical

conditions [19].

Self-Esteem as a Buffer for College Students against Pain

A potential protective factor against the frequency of health problems related to pain among college students is an increased psychological well-being including the concept of self-esteem, which is defined as an overall evaluative attitude toward the self [20]. A systematic review reported that overtime college student's grade point average is strongly correlated with self-esteem [21]. College students with high self-esteem tend to have higher academic performance rates than those with low self-esteem [22]. When universities strive to improve students' subjective sense of self-worth, retention also improves [23]. Self-esteem, which is a buffer against negative health outcomes, contributes to the well-being of college students [22].

Social Support as a Buffer for College Students against Pain

Social support of family, friends, and significant others also contributes to positive functioning and reduced health problems for college students [24,25]. Social support is a widely known coping strategy that involves several domains including emotional support, appraisal and affirmation, physical affection, and informational assistance [26]. Individuals may seek social support from their family, friends, and significant others in order to buffer the effects of physical pain [27]. In addition, students who receive more support from their families are more likely to perform better academically and have higher self-esteem [28]. Regarding sex differences, female college students have been found to seek social support and use positive reframing than their male counterparts [29]. Nevertheless, despite such differences, both female and male college students tend to benefit from the positive effects of social support [30].

Purpose of the Study

The present study is part of an ongoing study conducted by Nabors, Ritchey, Sebera, and Haney [31] to examine college students' overall health and quality of life for students with and without chronic illnesses. A primary aim of this study was to investigate the relationship between perceptions of pain and perceived self-esteem and types of social support for male and female college-age students. The resilience factors being examined, including increased levels of self-esteem and social support could be buffers of pain experiences. Therefore, more information is clearly needed to provide health professionals with specific information that could be used in tailoring pain management interventions young adults as results among these factors may be complex. Furthermore, the

current study extends literature in the field by examining the relationships among type of social support, from family, friends or significant others or partners and males' and females' report of pain experiences. Thus, results may provide specific information on whom to involve in interventions to increase support for college students experiencing pain, and also provide information about whether support needs differ for men and women.

METHODS

Participants

Upon approval from the institutional review board (IRB), a sample size of 238 university students at a Midwestern university completed a survey assessing their self-esteem, social support, and physical health and pain by May of 2012. Student participation was voluntary and agreed to participate by signing required informed consent forms. Of these participants, 66.4% were females and 33.6% were males (Table 1). Regarding race and ethnicity, 80.2% were White, 14% African American, 1.6% Hispanic, 1.6% Asian, and 2.7% self-reported another race. Age of students ranged from 18 to 24 years of age, and the mean age was 19.07 (*SD* = 1.2). Most of the participants were freshman (58.9%), 23.3% were sophomores, 13.2% were juniors, and 4.7% were seniors. The family income levels of students were 7% at \$20,000 or below, 13.2% between \$21,000 and \$40,000, 18.2% between \$41,000 and \$60,000, 16.1% between \$61,000 and \$80,000, 21.5% between \$81,000 and \$100,000, and 24% over \$100,000. A few students (6%) did not choose to answer their self-reported family income levels.

Instrumentation

The following three section/items of an ongoing study conducted by Nabors, Ritchey, Sebera, and Haney [31] were used in this study. The Rosenberg Self-Esteem Scale (RSE) [20] section (10 items) requested participants to indicate their agreement with general feelings about themselves via a 4-point scale (1 = strongly disagree, 2 = disagree; 3 = agree; 4 = strongly agree). Regarding interpretation of the scores, participants indicated their agreement on positive feelings about themselves by responding to the following five items: "I feel that I have a number of good qualities," "On the whole, I am satisfied with myself," "I have a positive attitude toward myself," "I am able to do things as well as most other people," and "I feel that I am a person of worth, at least on an equal plane with others." The participants answered using the 4-point scale for the other half of the RSE questions indicating their agreement on negative feelings about

themselves. However these items were reversed in valence resulting in reversing the scores (1 = strongly agree, 2 = agree; 3 = disagree; 4 = strongly disagree). Participants indicated their agreement on negative feelings about themselves by responding to the following five items: "I feel I do not have much to be proud of," "I certainly feel useless at times," "At times, I think I am no good at all," "I wish I could have more respect for myself," and "All in all, I am inclined to feel that I am a failure."

Table 1. Demographic Characteristics

Item	n	%
Sex		
Female	168	66.4
Male	85	33.6
Race		
White	207	80.2
African American	36	14.0
Hispanic	4	1.6
Asian	4	1.6
Other	7	2.7
Grade Level		
Freshman	152	58.9
Sophomore	60	23.3
Junior	34	13.2
Senior	12	4.7
Chronic Illness		
Yes	163	63.9
No	92	36.1
Clinically Diagnosed Chronic Illness		
Eye vision problems	35	37.6
Asthma	16	17.2
Emotional problems	15	16.1
Fracture bone problems	8	8.6
Other	8	8.6
Arthritis	4	4.3
Walking problem	2	2.2
Hearing problem	2	2.2
Diabetes	1	1.1
Lung breathing problem	1	1.1
Heart problem	1	1.1

Notes: N = 238; Percents refer to valid percents; Missing values excluded

The Multidimensional Scale of Perceived Social Support (MSPSS) [32] section (12 items) requested participants to indicate their agreement on social support felt from family, friends, and significant others via a seven-point scale (1 = very strongly disagree; 2 = strongly disagree; 3 = mildly disagree; 4 = neutral, 5 = mildly agree; 6 = strongly agree; 7 = very strongly agree). The Family Support Subscale (four items) requested students to indicate their agreement of how their family impacts their lives by responding the following items: "I get the emotional help and support I need from my family," "I can talk about my problems

with my family,” “My family tries to help me,” and “My family is willing to help me make decisions.” The Friend Support Subscale (four items) requested students to indicate their agreement of how their friends impact their lives by responding to the following items: “I have friends with whom I can share my joys and sorrows,” “I can count on my friends when things go wrong,” “My friends really try to help me,” and “I can talk about my problems with my friends.” The Significant Other Subscale (four items) requested students to indicate their agreement of how their significant others impact their lives by responding to the following items: “There is a special person with whom I can share my joys and sorrows,” “I have a special person who is a real source of comfort to me,” “There is a special person who is around when I am in need,” and “There is a special person in my life who cares about my feelings.”

The next survey section used four questions from the Centers for Disease Control and Prevention Healthy-Related Quality of Life. These four items from the “Healthy Days Measures” section of the CDC HRQOL requested students to rate their overall general health. The question including in the present study is “During the past 30 days, for about how many days did pain make it hard for you to do your usual activities, such as self-care, work, or recreation?” The students were required to report the number of days pain made it hard for them to engage in usual activities. The final sections of the survey assessed personal and family characteristics including participants’ sex, race and ethnicity, grade level, family income, and report their history of being diagnosed with chronic illnesses.

Overall, the measurement tools utilized for this study have been proven valid and reliable. Rosenberg’s SEM is a widely used tool for assessing individuals’ self-esteem and has indicated internal consistency of .78 of the items [20]. In addition, the MSPSS has been proven to have good psychometric properties in numerous studies [32,33,34]. The CDC HRQOL is incorporated into the Behavioral Risk Factor Surveillance System over the past 20 years and has been incorporated into the National Health and Nutrition Examination Survey over the past 10 years [35]. The CDC HRQOL has also been proven to have good psychometric properties by subsequent studies [36,37,38,39]

Procedures

This study is a part of a study conducted by Nabors and colleagues [31] to examine college students’ overall health and quality of life for students with and without chronic illnesses. After obtaining consent, surveys were administered to students during regular class time on an individual basis or in small groups by research assistants. Research assistants were six undergraduate

students from 20 to 24 years of age volunteering to participate in a research experience. Prior to survey administration, students were informed of the study purpose, voluntary nature of the survey, confidentiality of responses, and the importance of reporting honest and accurate responses. Regarding incentives to participate, students received credit through the subject pool. Participants received class credit if they volunteered to participate. Students had the option of working on assignments besides participating in an experiment, such as a short paper reviewing a journal article, to receive class credit. If students did not wish to participate, the student was excluded from the survey. Students were instructed to refrain from answering items they did not wish to answer and that they could quit participating at any time. Once surveys were completed, students turned in their surveys to the research assistants and their instructor was contacted to provide credit for study participation. All responses were anonymous and confidential.

Data Analysis

Data were entered and analyzed using the SPSS statistical software package. Frequency distributions, means, standard deviations, and ranges were used to describe personal and family characteristics, self-esteem, social support, and the number of days participants had pain that made it hard for them to do their usual activities. Linear regression analyses were performed to determine if college students’ perceptions of the number of days in the last month the students felt pain that made it hard for them to do their usual activities differed significantly based on self-esteem and social support. The alpha level of significance was set at .05.

RESULTS

Demographic Information

Participants of this study were students ($N = 238$) at a Midwestern university. The number of days in the last month where students reported pain made it hard for them to do their usual activities ranged from 0-30 ($M = 1.63$; $SD = 4.69$). Specifically, females reported pain made it hard for them to do their usual activities an average of 1.72 days ($SD = 4.71$) and males reported pain made it hard for them to do their usual activities an average of 1.42 days ($SD = 4.69$). Thirty-six percent of participants reported health problems. The top three conditions were vision problems (e.g., needing glasses or contacts; 37.6%), asthma (17.1%), and mental health problems (16.1%). Preliminary analyses did not reveal a significant positive relationship among illness status and pain, and thus this factor was not included in our regression model.

College Students' Perception of Self-Esteem and Social Support

Regarding self-esteem, students' mean ratings were 3.50 (SD = 0.49). Regarding social support, students' mean ratings for the social support felt from family is 5.90 (SD = 0.52), social support felt from significant others is 5.88 (SD = 0.57), and social support felt by friends was 5.70 (SD = 0.48).

Predictor Variables of College Students' Perceptions of Pain Experienced

A linear regression analysis was conducted to examine the impact of self-esteem and social support variables (friends, family, and significant other) on college students' perceptions of number of days pain made it hard for them to participate in their usual activities. Predictor variables in the best fit model included self-reports of their pain, self-esteem, social support variables, and gender. Results were significant, $F(10, 233) = 5.174, p < .001$. This model predicted approximately 19% of the variance in the number of days experiencing pain that made it hard for students to engage in their usual activities. More specifically, perceptions of higher support from friends and significant others were related to fewer days experiencing pain. In addition, higher levels of self-esteem were related to fewer days experiencing pain. The interaction of gender and self-esteem, and support from friends and self-esteem, and the higher level interaction terms were not significant and reduced the predictive power of the model. Therefore, these interaction terms were not included in the best fit model (Table 2). The interaction terms for gender and support from significant others, and self-esteem and support from significant others were significant. Follow-up regression analyses were used to examine

significant interaction terms.

Follow-up Analyses for Predictor Variables of Female College Students' Perceptions of Pain Experienced

The interaction of gender and support from significant others was significant. Two follow-up regression analyses were used to analyze the influence of self-esteem and support from significant others, family, and friends for males and females. Results of the follow-up regression analysis for females, with self-esteem and the three types of support as predictors of days experiencing pain was significant, $F(4, 156) = 4.25, p = .003$, and it predicted 10% of the variance in number of days that pain was experienced (Table 3). Higher ratings of social support from a significant other were related to fewer days that pain was experienced. In contrast, higher ratings of social support from friends were related to greater number of days in which pain was experienced. There was a trend ($p = .07$) for higher levels of self-esteem to be positively related to fewer days of pain experienced (see Table 3).

Follow-up Analyses for Predictor Variables of Male College Students' Perceptions of Pain Experienced

A second follow-up regression analysis was conducted for males. The overall model, with self-esteem and the three types of social support as predictors of pain was significant, $F(4, 76) = 4.57, p = .002$, and this model predicted 20% of the variance in number of days of pain experienced in a month (Table 4). Self-esteem was inversely related to number of days in pain for males, such that higher self-esteem was related to fewer days of pain per month. Also, findings indicated that higher levels of support from a significant other were related to more days of pain per month.

Table 2. Model for Predictors of Number of Days in the Past Month that Pain was Experienced

Variable	Standard Error	Standardized Beta	t	p
Gender	.636	-.041	-.641	.522
Do you have mental health problems diagnosed by a doctor	.848	-.126	-1.614	.108
Do you have a chronic illness	.745	.057	.734	.463
Self-esteem	.656	-.180	-2.611	.010
Support from Friends	.079	.183	2.221	.027
Support from Family	.076	-.167	-1.941	.053
Support from Significant Others	.066	-.080	-.983	.326

Notes: interaction terms were not included in the best fit model

Table 3. Best Fit Model, Including Interaction Terms, for Number of Days in Pain the Past Month

Variable	Unstandardized Beta	Standard Error	Standardized Beta	t	p
Gender	2.437	3.342	.248	.729	.467
Self-esteem	-12.054	2.558	-1.273	-4.713	.001
Support from Friends	.462	.224	.491	2.063	.040
Support from Family	-.272	.426	-.315	-.639	.523
Support from Significant Others	-1.469	.423	-1.843	-3.475	.001
Interaction: Gender x support from Friends	-.264	.158	-.716	-1.676	.095
Interaction: Gender x Support from Family	-.255	.145	-.705	-1.765	.079
Interaction: Gender x Support from Significant Other	.395	.132	1.085	2.997	.003
Interaction: Self-Esteem x Support from Family	.165	.121	.834	1.363	.174
Interaction: Self-Esteem x Support from Significant Other	.271	.115	1.400	2.355	.019

Notes: $F(4, 156) = 4.25, p = .003$

Table 4. Model for Predictors of Number of Days in the Past Month that Pain was Experienced

Variable	Unstandardized Beta	Standard Error	Standardized Beta	t	p
Self-esteem	-2.933	.958	-.341	-3.060	.003
Support from Friends	-.040	.119	-.043	-.335	.739
Support from Family	-.189	.111	-.217	-1.706	.092
Support from Significant Others	.199	.094	.256	.256	.038

Notes: $F(4, 76) = 4.57, p = .002$

As mentioned, the interaction of self-esteem and support from significant others was significant. A median split was used to divide self-esteem into higher and lower levels of self-esteem (Median = 3.3). Two follow-up regression models were conducted for participants with higher and lower levels of self-esteem. Predictors were gender and support from significant others. The regression analysis for participants with relatively higher levels of self-esteem did not yield significant findings and the coefficients for the two predictors were not significant. The regression model for lower levels of self-esteem was not significant. Examination of the coefficients revealed that gender was not significantly related to number of days experiencing pain; however, there was a trend ($p = .07$) for higher levels of support from a significant other being related to fewer days of pain experienced (Standardized Beta = $-.175$, Unstandardized Beta = $-.159$, SE = $.088$, $t = 1.803$).

Comment

The present study found that the number of days in the last month college students reported having pain that

made it hard for them to engage in their usual activities was more than 1.5 days. These results are consistent with previous research indicating that college students are experiencing health problems, many of which involve pain experiences [1, 3]. As a result of pain, college students' health-related quality of life is likely compromised as they cannot engage in their usual activities including self-care, work, or recreation for more than one day per month on average [41]. Such findings underscore the importance of wellness centers roles in increasing student knowledge about factors related to pain management and coping. Results of this study supported the idea that resilience factors, such as increased levels of self-esteem and social support could be buffers of pain experiences; however, the relationships among these resilience factors may be complex. For example, self-esteem and support from significant others may have a different impact on males' and females' pain experiences. This suggests that interventions targeting these resilience factors need to be tailored for males and females.

Social Support and Self-Esteem as Protective Factors

The present study's initial results revealed that both male and female college students who perceived higher support from friends were related to fewer days experiencing pain. Also, for many, increased levels of self-esteem may be related to fewer days experiencing pain. These initial findings are complimentary to previous literature as social support has been hypothesized to be a protective factor for college students against multiple health issues including stress, depression, low self-esteem, and decreased health-related quality of life[24,42]. Previous research among college students has shown self-esteem to be correlated with better health [43] and research showing that self-esteem is resilience factor in the face of medical problems and improves achievement for college students[44]. However, this finding may need qualification, as our results also indicated a trend for those with higher support from significant others and lower self-esteem to report fewer days experiencing pain. Thus, in terms of importance, support from a significant other may be more important than self-esteem in promoting resilience in the face of pain. Additionally, our findings suggested that the aforementioned factors may operate differently in their relationship to pain for males and females.

Gender Differences in Pain Experiences

Regarding significant predictors of female college students experiencing pain, follow-up regression analyses revealed that females who had higher social support from a significant other reported fewer days of pain per month. Females who are not experiencing pain may be more likely to pursue or be involved in romantic relationships. Conversely, higher social support from friends was related to greater number of days in which pain was experienced. It may be that females are more likely to discuss stress and negative interpersonal events with friends compared to males, and this tendency influenced study findings, causing females to be more likely to seek support from friends when they were experiencing more pain [45]. In future studies, using qualitative methods to explore females' report of why they believe significant others and friends do or do not support them when they feel pain may provide an answer to our speculations as to how support from others affects females' pain experiences.

Contrary to female college students, males who had higher social support from a significant other reported more days of pain each month. Previous research found that males receive social support primarily from their spouses [46]; therefore, those experiencing pain may lean heavily on significant others for support. Support from friends was not related to men's report of number

of days in pain each month. This could have occurred because males tend to turn inward to cope with pain rather than reaching out for support from their male counterparts [47]. Culturally, males are expected to be in emotional control, which also makes it difficult for them to turn outward to their friends to seek support [48]. If men do turn inward for pain support, it makes sense that results showed that increased self-esteem was related to lower reports of days in pain for men, as was the case for the present study. Furthermore, males report higher thresholds for pain than women, and this could make social support less important as a buffer for them[13]. More specifically, the present study found that females reported having slightly higher amount of pain (1.72 days per month) than their male counterparts (1.42 days per month). This is not surprising since women are more likely to report feeling pain than their male counterparts [13]. However, these ideas are speculative in nature, and further research is needed to explore males and females reasons for perceiving different types of support as a buffer against pain.

Limitations

The study limitations should be noted. The sensitive, self-reported nature of the survey may have resulted in some socially desirable responses. However, the survey used in the present study was validated, reliable, and these scales have been successfully utilized in previous studies [36,37,38,39]. Second, more information is needed to determine why resilience factors operate differently for males and females. Third, since the data was cross-sectional, causal relationships could not be determined. Fourth, a smaller percentage of the variance in number of days experienced was reported in the models presented. Finally, the sample consisted of students from a Midwestern university. This study was conducted with ambulatory students, who were healthy enough to attend classes on a college campus. Results might have differed if students with disabilities or chronic pain conditions limiting their college participation were recruited. Therefore, caution should be taken in attempting to generalize these results to students in other geographical locations.

CONCLUSIONS

This study provides additional insight into the link between social support and health-related quality of life of college students. Social support felt from friends buffered the effects of pain felt by students. Study findings also supported the notion that relations among social support, self-esteem, gender, and pain are marked by complexity. For instance, increased self-esteem was a protective factor against pain for males. However, self-esteem might be less important when a

young adult has support from a significant other, irrespective of whether that young adult is male or female. Females' pain experiences differed based on the source of support. Hence, gender differences in reactions to support from significant others should be taken into account when discussing ways in which loved ones can assist with pain coping. Nonetheless, colleges present unique settings to identify, prevent and treat health problems related to pain because campuses offer many services. If students do not seek help to determine what is causing their pain, then opportunities to help these students may be missed.

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