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Association of Employment and Health and Well-Being in People with Fibromyalgia

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It is becoming increasingly apparent to rehabilitation and health researchers that employment is linked to health-related quality of life (HRQOL) outcomes in people with chronic musculoskeletal pain conditions including those with fibromyalgia (FM). This study evaluated relationships between employment status and HRQOL outcomes in adults with FM (N=198). This study found employment, both full- and part-time, significantly predicted a number of health-related outcomes. Participants especially those with full-time employment had the least amount of secondary health conditions and better overall functioning, HRQOL, and life satisfaction in comparison to participants without employment. Therefore, rehabilitation health professionals should consider offering health promotion and vocational rehabilitation interventions to people with FM to help them stay at work for as long as possible

Approximately 4 million Americans are living with fibromyalgia (FM)—a chronic musculoskeletal pain disorder of unknown etiology, characterized by widespread pain, muscle tenderness, sleep disturbance, and depressed mood. Seventy-one percent of those diagnosed with FM are women (Walitt, Nahin, Katz, Bergman, & Wolfe, 2015). Other symptoms of FM include problems with depression and anxiety, fatigue, unrefreshed sleep, cognitive issues, and various somatic complaints (Centers for Disease Control and Prevention [CDC], 2015). Difficulty coping with widespread pain and other FM-related symptoms is associated with

loss in functioning and health-related quality of life (HRQOL; Gormsen, Rosenberg, Bach, & Jensen, 2010). Work-related disability, absenteeism, and unemployment, consequently, are commonplace for people with FM (Assefi, Coy, Uslan, Smith, & Buchwald, 2003; Mannerkorpi & Gard, 2012; Skaer, 2014). Individuals who find themselves struggling to keep a steady job or are unemployed tend to experience more mental and physical health problems, consume higher amounts of alcohol, and report lower self-esteem and overall well-being when compared to employed adults (Dutta, Gerve, Chan, Chou, & Ditchman, 2008; Krause, Carter, Pickelsimer, & Wilson, 2008; Murali, & Oyeboode, 2004).

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Work is thought to be beneficial because it enhances financial security and offers access to high-quality health care, which in turn improves health status, social provisions, mental health, and quality of life (Jackson, Jezzi, & Lafreniere, 1996;

Reisine, Fifield, Walsh, & Forrest, 2008). Maintaining competitive employment or finding a new career, therefore, may help to prevent people with FM from experiencing additional stress, pain, sleep problems, fatigue, health complications, and disability (Reisine et al., 2008; Zettel-Watson, Rakovski, Levine, Rutledge, & Jones, 2011). Reisine et al. (2008) found that employed women with FM had better mental health and physical health-related quality of life when compared to unemployed women. Hall, Kurth, and Hunt (2013) investigated the Medicare and Medicaid claim data of 810 working-age adults with prevalent disabilities including FM and found significantly lower rates of smoking, reduced medical costs, and higher levels of self-reported health status and quality of life among employed adults in comparison to those unemployed. Other studies with FM groups indicate that stable employment is associated with higher life satisfaction (Henriksson, Liedberg, & Gerdle, 2005) and hope for work in the future (Henriksson & Liedberg, 2000).

However, there is a paucity of research on the relationships between employment, disability, and overall health-related quality of life among people with FM, and there are no studies exploring the relationships between the varying statuses of employment (e.g., part-time versus full-time employment) with mental health and other health-related outcomes (White et al., 2008). Helping people with FM to stay at work, early return to work, or find new employment with reasonable job accommodations, to engage in a re-training program, or to attain higher education, even if they can only work a few hours per week, may help to alleviate symptoms of FM, promote health and well-being, and offer the option to remain employed for as long as possible. The purpose of this study was to evaluate the relationships between employment status (no employment, part-time employment, and full-time employment) and health-related outcomes including pain intensity, functional disability, secondary health conditions, health-related quality of life, depression, social support, and life satisfaction of people with FM.

Method

Participants

One hundred and ninety-eight prime working-age adults (25 to 54 years) with self-reported FM volunteered to participate in the present study. Information related to the study and a link to the online survey was disseminated to the National Fibromyalgia and Chronic Pain Association (NFMCPA) members through their electronic newsletter. The average age of the participants was 43.89 years ($SD = 7.78$), and the average age at FM onset was 28.79 ($SD = 11.27$). Participants were primarily women (98.4%); 89.9% identified themselves as Caucasian, 1.5% described themselves as African American, 5.1% as Hispanic/Latino, 1.0% as Native/Indian American, and 2.5% as other; and 68.1% were married or cohabitating. Forty-four percent of the participants had earned at least a bachelor's degree or higher and 45.3% had at least some college education. Demographic characteristics are provided in Table 1.

Measures

Pain intensity. Pain intensity was measured by the *0-10 Numerical Pain Rating Scale* (0-10 NRS; Farrar, Young, LaMoreaux, Werth, & Poole, 2001). The 0-10 NRS asks participants to rate their pain intensity during the past week on a 0-10 rating scale, ranging from zero to ten, to the severity of their pain, with "0" means no pain at all and "10" means the worst possible pain imaginable. The 0-10 NRS has been used as a measure of subjective perceptions of pain intensity across a broad range of pain conditions (Hoffman, Sadosky, Dukes, & Alvir, 2010; Jensen, Smith, Ehde, & Robinsin, 2001; Serlin, Mendoza, Nakamura, Edwards, & Cleeland, 1995; Zelman, Hoffman, Seifeldin, & Dukes, 2003) and has demonstrated strong associations with other pain intensity measures (Jensen, Turner, & Romano, 1994).

Functional disability. WHODAS 2.0 12-item version was developed by WHO (2010) to assess activity limitations and participation restrictions experienced by an individual irrespective of medical condition (Üstün, Kostanjsek, Chatterji, & Rehm, 2010). It consists of 12 items (e.g., "How much difficulty have you had in the past 30 days in performing the following activities?"), which are rated on a 5-point Likert-type scale (ranging from 1 = none to 5 = extreme or cannot do). Items assess functioning in six major life domains: (1) cognition (e.g., "Learning a new task, for example, learning how to get to a new place"); (2) mobility (e.g., "Walking for long distance such as a mile or equivalent?"); (3) self-care (e.g., "Washing your whole body?"); (4) getting along (e.g., "Maintaining a friendship?"); (5) life activities/household and life activities/work (e.g., "Taking care of household responsibilities?"); and (6) participation (e.g., "Your day-to-day work activities?"). The scale is demonstrated to have good internal

Table 1

Demographic Characteristics of Study Participants (N=198)

Variables	Unemployed (N=96)	Part-time Employed (N=29)	Full-time Employed (N=73)	Total (N=198)
	M (SD)	M (SD)	M (SD)	M (SD)
Age	44.21(7.99)	40.66 (7.69)	44.77 (7.09)	43.89 (7.78)
Age of FM Onset	28.54 (11.80)	26.52 (10.34)	30.03 (10.89)	28.79 (11.27)
Frequency N (%)				
Gender				
Male	1 (1.0%)	0 (.0%)	2 (2.7%)	3 (1.5%)
Female	95 (99.0%)	29 (100.0%)	71 (97.3%)	195 (98.4%)
Race/Ethnicities				
White	87 (90.6%)	27 (93.1%)	64 (87.7%)	178 (89.9%)
Non-white	9 (9.4%)	2 (6.9%)	9 (12.3%)	20 (10.0%)
Education				
Less than high school	3 (3.1%)	0 (.0%)	0 (.0%)	3 (1.5%)
High school graduate	13 (13.5%)	3 (10.3%)	2 (2.7%)	18 (9.1%)
Post-secondary education	80 (83.3%)	26 (89.7%)	71 (97.3%)	177 (89.3%)
Marital status				
Married and Cohabiting	58 (60.4%)	22 (75.9%)	55 (75.3%)	135 (68.1%)
Other	38 (39.6%)	7 (24.1%)	18 (24.7%)	63 (31.8%)

consistency for a mental health disability subgroup, with a Cronbach's alpha of .98 for the overall score, and good internal consistency estimates at the domain levels: cognition (.94), mobility (.93), self-care (.92), getting along (.94), life activities/household (.92), life activities/work (.94), and participation (.93) (Üstün et al., 2010). The internal consistency reliability coefficient was reported to be .87 in this study.

Secondary health conditions. Secondary health conditions was measured by one item in the demographic questionnaire of the study. Participants were asked the "Do you have any other health conditions?" and were provided with the following answer options: (a) do not have any, (b) physical disability (e.g., require assistance [cane, wheelchair, walker] to walk), (c) mental illness (e.g., depression, anxiety), (d) arthritis, (e) chronic fatigue syndrome (CFS), (f) chronic pain syndrome (CPS), (g) irritable bowel syndrome (IBS), (h) Raynaud's, (i) temporomandibular joint disorder (TMJ), (j) traumatic brain injury, and (k) intellectual disability. The total score was obtained by adding all the scores of the participants.

Health-related quality of life (HRQOL). HRQOL was assessed using the MOS Short Form Health Survey (SF-12). The SF-12 was developed by Ware, Kosinski, and Keller (1996) to operationalize the construct of health-related quality of life. It is composed of 12 items and eight subscales: (a) physical functioning (2 items), (b) role limitations due to physical problems (2 items), (c) bodily pain (1 item), (d) general health (1 item), (e) vitality (1 item), (f) social functioning (1 item), (g) role limitations due to emotional problems (2 items), and (h) mental health (2 items). Nine items are rated on a 5-point scale from 1 (excellent) to 5 (poor); others use a 3-point Likert type scale from 1 (yes, limited a lot) to 3 (no, not limited at all). The sum of the 12 items constitute the physical component summary scale (PCS), mental component summary scale (MCS), and a total score, all of which are standardized on a general population sample ($M = 50$, $SD = 10$). Test-retest reliability over a 2-week interval was reported to be .89 for the PCS and .76 for the MCS. The internal consistency reliability coefficient (Cronbach's alpha) for the PCS and the MCS was computed to be .87 and .82 respectively in the present study.

Depression. The Center for Epidemiologic Studies Depression Scale (CESD-10) was designed to operationalize depression in the general population (Andresen, Malmgren, Carter, & Patrick, 1994). Each item is rated on a 4-point Likert rating ranging from 0 (rarely or none of the time, less than 1 day), 1 (some or a little of the time, 1-2 days), 2 (occasionally or a moderate amount of the time, 3-4 days), and 3 (all of the time, 5-7 days). The internal consistency reliability (Cronbach's alpha) of the CESD-10 was reported to be .92 (Irwin, Artin, & Oxman, 1999).

Social support. Social support was measured with the *Multidimensional Scale of Perceived Social Support* (MSPSS). The MSPSS was developed by Zimet, Dahlmé, Zimet, and Farley (1988) to measure the respondent's perception of social support from multiple sources. It is composed of 12 items and three domains of social support: Family, Friends, and Significant Other. Sample items are: "My family really tries to help me" (family subscale), "My friends really try to help me" (friends subscale), and "There is a special person who is around when I am in need" (significant other subscale). Each item is rated on a 7-point type Likert-type scale ranging from 1 (very strongly disagree) to 7 (very strongly agree). Scores for each subscale are represented by the mean of the raw scores for items in the subscale. The reported Cronbach's alpha of the individual subscales range from .81 to .90 for the family subscale, .90 to .94 for the friends subscale, and from .83 to .98 for the significant other subscale. Only the social support from friends subscale was used in this study.

Life satisfaction. Life satisfaction was assessed using the *Satisfaction with Life Scale* (SWLS). The five-item SWLS was developed by Diener, Emmons, Larsen, and Griffin (1985) to operationalize the concept of subjective well-being. The SWLS items are rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) with a total score between 5 and 35. Higher total scores indicate greater life satisfaction. Test-retest reliability estimated over a 2-month interval was reported by Diener et al. (1985) to be .82. Cronbach's alpha was .93 for the present study.

Results

In this study, 73 participants (36.8%) maintained full-time employment, 29 participants (14.6%) had part-time employment, and 96 participants (48.5%) were unemployed. The means and standard deviations of pain intensity, functional disability, secondary health condition, health-related quality of life, depression, social support, and life satisfaction measures by employment status are presented in Table 2.

Pain Intensity

Group differences in pain intensity were investigated by a one-way analysis of variance (ANOVA), and no significant differences were found, $F(2, 195) = 4.21$, $p > .01$, $\eta^2 = .041$, suggesting that pain intensity did not vary significantly by employment status.

Table 2

Means and Standard Deviations of Pain Intensity, Functional Disability, Secondary Health Conditions, Health-Related Quality of Life, and Life Satisfaction Measures by Employment Status of People with FM

Variable	Unemployed <i>M (SD)</i>	Employed Part-Time <i>M (SD)</i>	Employed Full-Time <i>M (SD)</i>
Pain intensity	7.34 (1.77)	6.24 (1.88)	7.00 (1.82)
Functional disability	38.81 (8.10)	35.09 (8.34)	33.98 (8.06)
Secondary health conditions	3.70 (1.57)	3.00 (1.34)	3.03 (1.39)
Health-related QOL-physical	25.17 (8.09)	27.66 (8.54)	29.32 (9.15)
Health-related QOL-mental	35.13 (11.48)	40.27 (9.50)	40.35 (9.59)
Depression	17.37 (5.46)	15.00 (5.32)	13.82 (6.58)
Social support	4.25 (1.92)	4.66 (1.32)	4.93 (1.66)
Life satisfaction	13.27 (7.48)	16.72 (8.03)	17.72 (7.27)

Functional Disability

The one-way ANOVA results indicated the three employment groups differed significantly on functional disability, $F(2, 195) = 7.83, p < .01, \eta^2 = .074$, indicating the effect of group differences accounted for 7.4% of the variance in functional disability and is considered a medium effect size. Participants in the unemployed group had the highest average scores on functional disability ($M = 38.81, SD = 8.10$), followed by the part-time employment group ($M = 35.09, SD = 8.34$) and the full-time employment group ($M = 33.98, SD = 8.06$). Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the full-time employment group was significantly different from unemployed group. There were no statistical differences in mean scores between the full-time employment and part-time employment groups as well as the part-time employment and unemployment groups.

Secondary Health Conditions

As can be observed from Table 2, participants in the unemployed group had the highest number of secondary health conditions ($M = 3.70, SD = 1.57$). The one-way ANOVA, $F(2, 195) = 5.23, p < .01, \eta^2 = .051$ demonstrated statistically significant differences, indicating that the effect of group differences accounted for 5.1% of the variance in secondary health conditions and is considered a medium effect size. Follow-up Tukey HSD tests indicated that the mean scores for both full-time employment and part-time employment groups were significantly different from the unemployed group. No statistically significant difference was found between the full-time employment group and the part-time employment group.

Health-Related Quality of Life

Participants in the unemployed group had the lowest average score on the PCS of SF-12 ($M = 25.17, SD = 8.09$), and the full-time employment group had the highest average score ($M = 29.32, SD = 9.15$). Similarly, both the full-time employment and part-time employment groups had higher average scores on MCS of SF-12 than the unemployed group. A one-way ANOVA was computed for each dependent variable (PCS and MCS scores). The results indicated significant differences between groups for PCS scores, $F(2, 195) = 4.95, p < .01, \eta^2 = .048$, as well as MCS scores, $F(2, 195) = 6.02, p < .01, \eta^2 = .058$, suggesting that employment status accounted for 4.8% of the variances in physical health-related quality of life and 5.8% in mental health-related quality of life, and both were considered medium effect sizes. Follow-up Tukey HSD tests indicated that the full-time employment group and the unemployed group were statistically significant different in physical health-related quality of life, and both full-time and part-time employment groups were significantly different from the unemployed group in mental health-related quality of life.

Depression

Participants in the full-time employment group had the lowest average scores on the CESD-10 ($M = 13.82, SD = 6.58$), followed by the part-time employment group ($M = 15.00, SD = 5.32$) and the unemployed group ($M = 17.37, SD = 5.46$). There were statistically significant differences be-

tween groups as determined by one-way ANOVA, $F(2, 195) = 7.78, p < .01, \eta^2 = .079$. The result indicated that employment status accounted for 7.9% of the variance in depression scores and is considered a medium effect size. Tukey HSD post-hoc comparisons indicated that statistically significant differences were only found between the full-time employment group and the unemployed group in depression.

Social Support

Participants in the full-time employment group had higher average scores of self-reported social support from friends ($M = 4.93, SD = 1.66$) compared to the part-time employed group ($M = 4.66, SD = 1.32$) and the unemployed group ($M = 4.25, SD = 1.92$), but no statistically significant differences were found by the one-way ANOVA, $F(2, 195) = 3.16, p > .01, \eta^2 = .031$, suggesting that participants in the employment groups and the unemployed group had similar levels of social support from their friends.

Life Satisfaction

Participants in the unemployed group had the lowest average scores on SWLS ($M = 13.27, SD = 7.48$) compared to the full-time employment group ($M = 17.72, SD = 7.27$) and the part-time employment group ($M = 16.72, SD = 8.03$). The one-way ANOVA result was significant, $F(2, 195) = 7.83, p < .01, \eta^2 = .074$, indicating employment status accounted for 7.4% of the variance in life satisfaction and is considered a medium effect size. Tukey HSD tests results indicated statistically significant differences between the full-time employment group and the unemployed group, as well as the part-time employment group and the unemployed group. No significant differences were found between the full-time employment group and the part-time employment group.

Discussion

In addition to the financial security and other extrinsic rewards of paid employment, a growing body of empirical evidence indicates that prime working-age adults may enjoy mental and physical health benefits from part-time or full-time employment. There are limited studies on the benefits of working for prime working-age adults living with FM; therefore, the primary aim of this study was to evaluate the relationships between employment status and health-related outcomes among working-age adults with FM.

In this present study, there is no difference in pain intensity among individuals with FM. However, participants with full-time employment had the least amount of secondary health conditions and better overall functioning, HRQOL, and life satisfaction than participants without employment. Participants with full-time employment had similar health-related outcomes to those with part-time employment. Possible reasons why unemployed cohorts have poorer health than their employed counterparts may include that those who leave the workforce may have more severe symptoms associated with FM, or illness adjustment issues. In this case, timely interventions tailored to address the challenges of working while experiencing symptoms could help with job retention. In

addition to standard care, mental health and rehabilitation counseling professionals should consider offering health promotion interventions and stay-at-work and return-to-work interventions to unemployed adults with FM. Research studies indicate that a healthy diet and regular exercise has beneficial effects on FM symptoms, physical function, and quality of life (Busch, Schachter, Overend, Peloso, & Barber, 2008). Providing such health promotion interventions may improve health and assist adults with FM to maintain employment or return to work. In the United States, the state-federal vocational rehabilitation program spends more than \$2.5 billion per year to provide vocational services for individuals with disabilities. The state-federal vocational rehabilitation program has consistently been shown to be effective in helping people with disabilities obtain and retain employment, with a success rate at around 55.8% (U.S. Department of Education, 2016). However, state vocational rehabilitation services are significantly underutilized by people living with FM and health professionals need to become familiar with state vocational rehabilitation services and know when and how to refer people diagnosed with FM for job retention or job placement assistance from these rehabilitation agencies.

With regard to depression and social support, adults with FM employed either full-time or part-time had the lowest scores on clinical depression measures—albeit there was only a significant difference between participants in the full-time and unemployed cohorts. Employed participants reported higher levels of social support, yet there were no significant differences between full-time, part-time, and unemployed groups. Our combined findings are in line with prior research that demonstrates unemployment, chronic stress, coping difficulties, and limited social support related to high health risks and adversely affect well-being for people with significant disabilities (Baum, Fleming, & Reddy, 1986; Kessler, Turner, & House, 1989; McEwen & Stellar, 1993; Murphy & Athanasou, 1999; Paul & Moser, 2009; Roelfs, Shor, Davidson, & Schwartz, 2011). These findings also mirror the public health argument that employment is a necessary component of health and wellness (Waddell & Burton, 2006). Employment is therapeutic by nature—it leads to better health outcomes; reduces disability; promotes full participation in society, independence, and human rights; and reduces poverty (Coulter, Entwistle, & Gilbert, 1998; Detmer et al., 2003; Waddell & Burton, 2006). The results from emerging literature coupled with findings from this study indicate that vocational rehabilitation efforts may be effective in promoting health-related quality of life for people with FM. Finally, our results revealed that pain intensity did not significantly differ among the employed and unemployed groups, which may suggest that pain severity is not a significant factor associated with employment in people with FM.

Limitations

There are several limitations to this study that need to be considered. First, a convenient sampling method was used to collect data from people with FM who are members of the National Fibromyalgia and Chronic Pain Association (NFMC-PA). In addition, the participants completed the assessment

instruments online, which may cause sampling bias because people having the requisite skill, access, and comfort in using the Internet may not constitute a widely representative group of individuals with FM. Second, self-report instruments were used to measure all variables in the current study, which increases susceptibility to response bias (Antonak & Livneh, 1995). Finally, this study employed cross-sectional design. Thus, we are limited in our interpretation of causality.

Conclusion

In conclusion, these results demonstrate that employment, health, disability, and well-being are related to each other in people with FM. Mental health and rehabilitation counselors should encourage people with FM to engage in health promotion interventions as well as work-related activities such as paid employment. Through work, people with FM are offered the opportunity to remain active and to be participants in social and community activities. While our preliminary research findings suggest that employment may be positively related to health and well-being in people with FM, future research should continue to investigate how employment influences mental health and other health-related outcomes. Understanding such mechanisms will provide the information necessary to develop and test innovative rehabilitation and mental health counseling interventions for people living with FM.

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