Exploring the Relation of Health-Promoting Behaviors to Role Participation and Health-Related Quality of Life in Women With Multiple Sclerosis: A Pilot Study

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KEY WORDS

• health behavior
• health promotion
• human activities
• multiple sclerosis
• quality of life

OBJECTIVE. We examined the relation of health-promoting behaviors to participation in life roles and health-related quality of life (HR–QOL) in women with multiple sclerosis.

METHOD. We used a correlational design. Frequency of health-promoting behaviors was obtained from the Health-Promoting Lifestyle Profile–II. Role participation was measured by the SF–36 Role-Physical, Role-Emotional, and Social Functioning scales, and HR–QOL was measured with the Physical and Mental Component scales.

RESULTS. Eleven significant positive correlations were found among specific health-promoting behaviors (e.g., nutrition, stress management, physical activity, positive interpersonal relations, spiritual growth), role participation, and HR–QOL.

CONCLUSION. The findings suggest that involvement in health-promoting behaviors is associated with greater participation in life roles and HR–QOL for women with multiple sclerosis. This study provides preliminary evidence for the use and development of health promotion in occupational therapy treatment.


A positive vision of health and its relationship to what people do is woven throughout the profession of occupational therapy. Health facilitates the participation in everyday activities that contributes to personal meaning essential for well-being, which is a fundamental goal of occupational therapy (Christiansen, 1999). Health and participation are essential components of the second edition of the Occupational Therapy Practice Framework: Domain and Process with its new overarching statement: “Supporting health and participation in life through engagement in occupation” (American Occupational Therapy Association [AOTA], 2008a, p. 627). In this document, health promotion is described as an intervention approach, and health and wellness are described as an outcome (AOTA, 2008a). Occupational therapy practitioners’ concerns include the multidimensional factors that empower and allow clients to participate in occupations that promote health (AOTA, 2008a; Wilcock & Townsend, 2008). In addition, the AOTA position paper “Occupational Therapy Services in the Promotion of Health and the Prevention of Disease and Disability” (AOTA, 2008b) includes approaches that work toward secondary prevention or postponement of disability for the communities or populations with already diagnosed disease or disability.

Although health promotion and wellness have been part of the larger vision of the occupational therapy profession, relatively few studies have been published on this topic (Matuska, Giles-Heinz, Flinn, Neighbor, & Bass-Haugen, 2003). Gutman (2008) also noted that this topic was “greatly underrepresented” in
articles published in the American Journal of Occupational Therapy in 2008 (p. 620). She suggested that this may be a missed opportunity for the occupational therapy profession to gain visibility in this area that is so integral to our profession. Health promotion activities and chronic disease management are particularly important for the growing number of people living with chronic illnesses (Moyers, 2007) such as multiple sclerosis (MS). More empirical evidence would be useful to guide development of effective occupational therapy health promotion treatment programs relevant for people with different types of disabilities.

The first edition of the Framework (AOTA, 2002) paralleled the international and interdisciplinary conceptualization of health from the International Classification of Functioning, Disability and Health (ICF) developed by the World Health Organization (WHO; 2001), which posited the role of activity and participation as a key component of health and health-related issues. The second edition of the Framework continues to use the definition of participation from the ICF as “involvement in a life situation” (AOTA, 2008a, p. 673; WHO, 2001, p. 10) and reflects the importance of participation or occupational engagement as a central component of health.

The newer health paradigm of the ICF has influenced intradisciplinary, interdisciplinary, and international discourse on disability, health, and health-related quality of life (HR–QOL; Ware, 2003). HR–QOL is an aspect of quality of life in which physical and mental functioning have been the two central components (Ware, Kosinski, & Gandel, 2003). However, Ware (2003) hypothesized a new configuration to the HR–QOL construct (compatible with the ICF) in which role and social participation may be seen as a third component of HR–QOL. Therefore, the ability to perform life roles or function socially may also be viewed as another pivotal outcome for evaluating HR–QOL. This newer conceptualization proposed for HR–QOL is relevant for occupational therapy.

Yorkston, Johnson, and Klasner (2005) proposed a model using the ICF for understanding the multifaceted construct of participation in people diagnosed with MS. This model was guided by qualitative research in the literature that incorporated the patient perspective. In addition to function and disability, the model posits influencing factors such as personal factors (e.g., self-efficacy, health-promoting behaviors), includes environmental factors (e.g., social support, health care use), and suggests that health care professionals can partner with their clients to optimize participation using those factors. Relevant domains of participation (personal and home management, leisure activities, community involvement, maintaining relationships, work) were also identified. The model hypothesizes that health-promoting behaviors are personal factors that directly affect participation. Although the ICF construct personal factors has yet to be formally coded by WHO, this construct is being used in both conceptual and empirical research internationally (Geyh et al., 2008) and may be important clinically (Finger, Cieza, Stoll, Stucki, & Huber, 2006). Yorkston et al.’s (2005) proposed model suggests that health-promoting behaviors may contribute to fuller occupational engagement (e.g., with increased stamina, less stress). Health-promoting behaviors could also be occupations in themselves for people with or without chronic illness.

Evidence indicates that health-promoting behaviors, such as physical activity and stress management, can contribute to better functional status and quality of life (QOL) for people with MS (Petajan et al., 1996; Stuifbergen, Becker, Blozis, Timmerman, & Kullberg, 2003; White et al., 2004). This health care literature is well suited to be integrated with the ICFs and the Framework’s view of the relationship between positive personal health factors, participation, and occupation. From the occupational therapy literature, Gutman and Schindler (2007) suggested that occupations that facilitate flow and pleasure, reduce stress, preserve cognitive functioning, and increase cardiovascular and musculoskeletal systems may be able to be used as an alternative to pharmacological interventions to promote continued biopsychosocial functioning over the life course.

The information in this study could contribute to knowledge about specific health-promoting interventions for people with MS and possibly shape future interventions that would contribute to fuller occupational engagement. The following section briefly reviews relevant background regarding relationships between participation, health, HR–QOL, and personal factors (health-promoting behaviors) to provide a context for the research.

**Participation, Health, and Well-Being**

Law (2002) described evidence that meaningful participation in daily occupations is positively linked to health and well-being. From psychology, Cantor and Sanderson (1999) posited that participation enhances well-being, specifically when activities are personally valued and dynamic across the lifespan and have benefits beyond what is tangible. Wilhite, Keller, Hodges, and Caldwell (2004) found that critical aspects of optimal health and well-being included the personal meaning from participation in home and community domains, as well as work, for people with MS. A critical review of 23 studies...
examining occupation (the act of participating) and its relationship to health and well-being found that participation was positively correlated with life satisfaction, well-being, and perception of QOL and health (Law, Steinwender, & Leclair, 1998). By contrast, Law et al. (1998) found that withdrawal of occupations has a negative effect on health.

Participation Restrictions in Chronic Illness

Yorkston et al. (2003) found that participation restrictions are often a by-product of coping with a chronic illness such as MS. MS is characterized by exacerbations and remissions and accompanying symptoms in motor, sensory, and cognitive spheres. People with MS most often have a normal lifespan and can maintain an active lifestyle given necessary modifications (Merck, 2003), yet maintaining this lifestyle can be challenging because of the disease’s unpredictable nature. Activity limitations in people with chronic neurological illnesses can have a negative effect on well-being. A study of 156 participants with neurologically disabling conditions found a dynamic reciprocal relationship between activity limitations and emotions (anxiety–depression) and control cognitions, which are “the individual's perception that they have power over their behavior or the achievement of outcomes” (Schroeder et al., 2007, p. 280). Control cognition can also be thought of as an aspect of self-efficacy and can influence effort to participate in rehabilitation, energy conservation, or meaningful activities or roles.

Health-Related Quality of Life in Multiple Sclerosis

HR–QOL is defined as an individual’s “personal health status” and “refers to aspects of our lives that are dominated or significantly influenced by our mental or physical functioning” (Ware et al., 2003, p. 3). HR–QOL described by Ware (2003) consists of two major components: physical health and mental health. However, Ware (2001) also proposed a third distinct component of HR–QOL that includes participation in life roles and social functioning. Although this conceptualization is in the process of further empirical development, he suggested that this construct could be measured using the Role-Physical, Role-Emotional, and Social Functioning scales of the SF–36 (Ware, 2001) and stated that the construct participation may be the “ultimate outcome measure” to measure the effectiveness of a broad range of interventions (Ware, 2003, p. 44).

Most studies examining HR–QOL in people with MS have found a decrease in self-reported HR–QOL (Gottberg et al., 2006; Isaksson, Ahlström, & Gunnarsson, 2005; Nortvedt et al., 2001). People with MS not only score lower than the general population on HR–QOL but also score lower than people with other chronic diseases (Isaksson et al., 2005). A variety of variables were found to be linked to decreased HR–QOL, including physical disability, progressive disease, fatigue, pain, cognition, psychological symptoms, and illness perception (Spain, Tubridy, Kilpatrick, Adams, & Holmes, 2007) as well as disease severity, work status, and coping capacity (Gottberg et al., 2006). Studies have also revealed that MS significantly affects work and social participation (Aronson, 1997; Morales-Gonzáles, Benito-León, Rivera-Navarro, & Mitchell, 2004; Yorkston et al., 2003). People who are able to sustain employment after their diagnosis score higher in self-rated HR–QOL measures (Patti et al., 2007).

Health-Promoting Behaviors and Health-Related Quality of Life

A conceptual model by Stuifbergen (1995) suggested that engagement in health-promoting behaviors may be a mitigating factor in the HR–QOL of patients with MS. A method of categorizing behaviors related to health promotion was defined by Stuifbergen and Rogers (1997). They defined health-promoting behaviors as the “ongoing behavioral, cognitive, and emotional activities engaged in to promote health and wellbeing” (p. 4). They identified six categories of health-promoting behaviors, which include physical, psychological, and social attributes: “exercise or physical activity, nutritional strategies, lifestyle adjustment, maintaining a positive attitude, health responsibility behaviors, and seeking and receiving interpersonal support” (p. 11).

The effectiveness of health promotion programs for people with and without disabilities has been found to improve quality of life, particularly HR–QOL (Matuska et al., 2003; Stuifbergen et al., 2003). However, the relationship of health and participation may be complex and circular, especially for people who are coping with chronic illnesses such as MS. Participation in meaningful occupations contributes to health, and taking care of one’s health (through health-promoting activities) may contribute to fuller participation in meaningful occupations. The latter occurs by maintaining strength, increasing stamina, and having better management of symptoms and energy.

Stuifbergen has extensively explored the relationship of health-promoting behavior and QOL (Stuifbergen, 1995; Stuifbergen et al., 2003; Stuifbergen, Blozis, Harrison, & Becker, 2006; Stuifbergen & Roberts, 1997; Stuifbergen & Rogers, 1997); however, she has not
specifically focused on how these behaviors affect role participation, which is essential to the goal of occupational therapy. In light of the growing emphasis on participation from the Framework and the ICF, and for more holistic treatment of those diagnosed with chronic illnesses such as MS, more specific information is needed as to what types of behaviors are related to greater degrees of participation.

Designing interventions to promote participation is conceptually and practically important for occupational therapists. A meta-analysis by Baker and Tickle-Degnen (2001) demonstrated that occupational therapy, in conjunction with other rehabilitation treatments, is effective in improving performance for people with MS (particularly those with moderate impairment). However, the authors concluded that more research was needed to establish the effectiveness of treatment of those diagnosed with chronic illnesses such as MS, more specific information is needed as to what types of behaviors are related to greater degrees of participation.

Therefore, the purpose of this pilot study was to examine the relationship between personal factors, such as engaging in health-promoting behaviors and role participation, and HR–QOL in women diagnosed with MS. The study focused on women because they are statistically more likely to have MS (Merck, 2003) and because women with families are more likely to put the needs of others before their own needs, even with limited energy and time. We hypothesized that women who participated more frequently in health-promoting behaviors would have greater levels of role participation (less limitation) and HR–QOL. Our research was directed by the following questions: (1) What is the relationship between health-promoting behaviors and role participation in women with MS? (2) What is the relationship between health-promoting behaviors and HR–QOL in women with MS?

Method
A quantitative, nonexperimental (correlational) design was used. The current study is an outgrowth of a hypothesized model suggested by Farber (2005, 2006a, 2006b) that is based on her research on factors related to role participation of mothers with MS. Study procedures were approved by the university institutional review board. Once verbal consent to participate was obtained, participants were provided with a packet containing a written consent form, three surveys, and a self-addressed, stamped envelope to return materials at their convenience.

Participants
Female participants were recruited through MS programs in the greater Delaware Valley area and two international Internet-based MS programs. These agencies represent people diagnosed with MS and their families as well as health care professionals. A convenience sample of 57 volunteer participants was obtained through distribution of flyers, a magazine advertisement, and Web postings. Fifty-seven inquiries to participate were received. A total of 48 participants returned their surveys. All the participants had a self-reported diagnosis of MS. Tables 1 and 2 provide further demographic information on the participants.

Instruments
Health-Promoting Behaviors. The Health-Promoting Lifestyle Profile II (HPLP–II) was used to measure the participants’ health-promoting behaviors. The HPLP–II is a 52-item questionnaire with a 4-point rating scale. Questions pertain to the frequency of a particular health behavior, and responses are scored as never, sometimes, often, or routinely. The 52 items are coded into six different health-promoting categories: health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. This instrument has been used in many studies (Stuifbergen et al., 2003, 2006; Walker, 2007). Reliability and validity have been psychometrically tested and supported (Carlson, 2000) and determined to be .89 for test–retest reliability over a 3-wk period, with an internal consistency ranging from .93 to .95 (Stuifbergen et al., 2003).

Participation. Participation is a relatively new construct and is still being developed empirically. No single gold standard for measuring this construct has been identified (Heinemann, 2005). For the purpose of this pilot study, participation was measured by the Role-Emotional, Role-Physical, and Social Functioning subscales of the SF–36 (Ware, Kosinski & Dewey, 2002). The instrument as a whole has demonstrated adequate to high internal consistency and discriminant validity (Ware, 2003). Ware suggested the use of the Role-Physical, Role-Emotional, and Social Functioning subscales to describe dimensions of participation (Ware, 2001, 2003; J. E. Ware, personal communication, June 6, 2002). The questions on these SF–36 subscales ask whether physical or mental health limitations affect the respondent’s amount, kind, productivity, or degree of difficulty participating in daily role activities. Higher scores indicate fewer mental or physical

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>21.00</td>
<td>66</td>
<td>45.60</td>
<td>10.93</td>
</tr>
<tr>
<td>Years diagnosed</td>
<td>0.50</td>
<td>34</td>
<td>9.27</td>
<td>8.94</td>
</tr>
<tr>
<td>Years symptoms</td>
<td>0.66</td>
<td>42</td>
<td>14.85</td>
<td>11.65</td>
</tr>
</tbody>
</table>

Note. SD = standard deviation.
health-related limitations on role participation in daily activities. Fransen et al. (2002) used these subscales for measuring participation in a study of people with arthritis. Farber (2006a, 2006b) and Farber & Davidoff (2008) have used this scale in measuring role participation in mothers with MS.

**Health-Related Quality of Life.** The larger construct of HR–QOL (of which role participation is a component) was measured using the major physical and mental component summary scales of the SF–36 (Version 2). Ware (2003) posited the relationship of participation to these two health component scales in his conceptualization of HR–QOL. The SF–36 instrument is a 36-item questionnaire. The two component summary areas, physical component summary (PCS) and mental component summary (MCS), are developed by logarithmically combining (according to the manual) the scores of the eight subscales: Physical Functioning, Role-Physical, Social Functioning, Bodily Pain, General Mental Health, Role-Emotional, Vitality, and General Health Perceptions (Coulthard-Morris, 2000). The SF–36 not only is considered a useful health summary measure and more straightforward to interpret but also provides some statistical advantages (Ware et al., 2003). The SF–36 is widely used in medical outcomes and rehabilitative research and has a reliability coefficient for the PCS of .92 and the MCS of .91. Convergent and discriminant validity are reported to be satisfactory (Coulthard-Morris, 2000).

A 15-item demographic questionnaire was developed to gain relevant demographic information on the sample. It was designed in a question–answer format to allow for individualization of respondent answers.

**Analysis.** Pearson’s *r* correlations were conducted to determine whether a relationship existed between (1) health-promoting behaviors and participation in life roles and social functioning and (2) health-promoting behaviors and HR–QOL (physical and mental health). The α level was set at .05.

**Results**

**Health-Promoting Behavior and Role Participation**

Pearson correlation coefficients were conducted to determine whether correlations exist between the HPLP–II scales (and subscales) and role participation (Role-Physical, Role-Emotional, and Social Functioning subscales of the SF–36). Table 3 provides a summary of the correlations. Significant relationships were found between more routinely engaging in physical exercise, practicing good nutrition, being involved in spiritual and personal growth experiences, maintaining positive interpersonal relations, and maintaining a higher degree of role participation. In addition, total health promotion scores were significantly correlated with all three participation scales.

**Health-Promoting Behaviors and Health-Related Quality of Life**

Pearson correlation coefficients were calculated to determine the relationship between the six subscales and overall score on the HPLP–II and HR–QOL (the PCS and MCS component summaries of the SF–36). Please refer to Table 3 for a summary of the scores.

Significant relationships were found between some health-promoting behaviors and HR–QOL (physical and mental component summaries). Participants who reported more physical exercise had higher perceptions of physical HR–QOL. Participants who were more routinely involved in spiritual and personal growth activities, positive interpersonal relationships, and stress management had a higher perception of mental HR–QOL.

**Discussion**

The findings in this study support earlier work located in the health literature and add a unique perspective of separately examining the relationship of health-promoting behaviors and participation in roles (and daily activities). In this study, significant relationships were found between health-promoting behaviors (total) and increased role participation (fewer limitations from either emotional or physical health reasons) and the mental and physical components of HR–QOL. Using the HPLP–II and Quality of Life Index–MS version, Stuifbergen and Roberts (1997) found that health-promoting behaviors played a mediating role between a person’s level of incapacity from MS and QOL. In an explanatory model of health promotion and quality of life, Stuifbergen, Seraphine, and Roberts (2000) examined the complex interplay between the barriers to health promotion and resources that indirectly encourage health promotion in people diagnosed with MS. They posited that strengthening resources and removing barriers to health-promoting behaviors is a fruitful area for intervention in this population.

In addition to a relationship found from the total scores, some of the subscales were correlated. A significant

### Table 2. Demographics of the Sample (*N* = 48)

<table>
<thead>
<tr>
<th>Multiple Sclerosis Disease Pattern</th>
<th>n</th>
<th>% of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relapse remitting</td>
<td>34</td>
<td>70.8</td>
</tr>
<tr>
<td>Secondary progressive</td>
<td>8</td>
<td>16.7</td>
</tr>
<tr>
<td>Progressive relapsing</td>
<td>1</td>
<td>2.1</td>
</tr>
<tr>
<td>Chronic progressive</td>
<td>1</td>
<td>2.1</td>
</tr>
<tr>
<td>Not determined</td>
<td>4</td>
<td>8.3</td>
</tr>
</tbody>
</table>

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relationship was found between physical activity and physical role participation as well as between physical activity and HR–QOL (Physical Component Scale). In a controlled study of 54 participants diagnosed with MS, exercise was found to improve health-related and functional variables such as aerobic capacity, strength, and body composition (Petajan et al., 1996). Petajan et al. (1996) also found improvements in QOL and participation variables, such as reduced depression and anger, improved social interaction, emotional behavior, and home management within the aerobic exercise group. A similar controlled study found that an 8-wk resistance training program improved strength and ambulation and decreased fatigue in people with MS (White et al., 2004).

Brown and Kraft (2005) concluded from their review of the literature that adequate evidence demonstrated that exercise could increase fitness as well as function for people with milder forms of MS; for those with more severe disability, exercise could contribute to maintaining function. They reported that although the ultimate goal is to integrate a variety of exercises (flexibility, endurance, strength, balance, and coordination), treatment needs to be individualized and incremental. Exercise regimens could begin with passive range of motion, progress toward active range of motion, and eventually take a more integrated approach that includes a combination of activities. The program may need to change with the progression of the illness.

Finally, Patti et al. (2002) found that short-term comprehensive outpatient treatment (including occupational therapy) with a home exercise program component was more effective than a home exercise program alone in improving general health, role-physical, physical functioning, social functioning, and body pain. This finding indicates the importance of embedding exercise within a larger holistic program including occupational therapy. The current study also found significant relationships among involvement in spiritual growth experiences, maintenance of meaningful interpersonal relations, and role participation (emotional), social functioning, and HR–QOL (mental health). This finding means that these health-promoting practices are related to less limitation in the participation of work and other daily activities as well as to mental health.

The findings of this current study support the results of similar studies within the psychosocial and medical literature examining the effects of stress and coping in people diagnosed with MS. A randomized control trial found that a coping skills intervention enhanced psychosocial role performance and aspects of well-being (Schwartz, 1999). Mohr, Goodkin, Nelson, Cox, and Weiner (2002) found that coping techniques moderated the relationship between stress and MS disease activity, with modest effects noted. Mohr, Hart, and Vella (2007) also found a significant decrease in depression and disability in a randomized controlled trial studying the effects of telephone-administered cognitive–behavioral therapy in patients with MS. They posited that further reductions would be found by combining cognitive–behavioral therapy and interventions to manage fatigue. Given that occupational therapists have a strong psychosocial background and expertise in energy conservation, they are well suited to intervene holistically in this area to support clients with MS or to collaborate with other health professionals, including psychologists, in this capacity.

### Implications for Occupational Therapy

Because health-promoting behaviors were found to be related to greater role participation, individualizing health promotion plans for patients with unique MS symptoms would be within the domain of occupational therapy. Although correlation does not necessarily ensure causality, these preliminary findings support the interrelationship of these constructs. Regardless of the direction of the

<table>
<thead>
<tr>
<th>HPLP–II</th>
<th>Physical Health–Related QOL</th>
<th>Mental Health–Related QOL</th>
<th>Participation (Role-Physical)</th>
<th>Participation (Role-Emotional)</th>
<th>Participation (Social Functioning)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health responsibility</td>
<td>.03</td>
<td>.01</td>
<td>.00</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Physical activity</td>
<td>.39**</td>
<td>.22</td>
<td>.39**</td>
<td>.28</td>
<td>.23</td>
</tr>
<tr>
<td>Nutrition</td>
<td>.20</td>
<td>.12</td>
<td>.29*</td>
<td>.11</td>
<td>.06</td>
</tr>
<tr>
<td>Spiritual growth</td>
<td>.22</td>
<td>.56**</td>
<td>.43**</td>
<td>.43**</td>
<td>.43**</td>
</tr>
<tr>
<td>Interpersonal relations</td>
<td>.16</td>
<td>.40**</td>
<td>.21</td>
<td>.46**</td>
<td>.38**</td>
</tr>
<tr>
<td>Stress management</td>
<td>.08</td>
<td>.37*</td>
<td>.12</td>
<td>.24</td>
<td>.21</td>
</tr>
<tr>
<td>Total score</td>
<td>.27</td>
<td>.42**</td>
<td>.36*</td>
<td>.38**</td>
<td>.33*</td>
</tr>
</tbody>
</table>

Note. HPLP–II = Health-Promoting Lifestyle Profile II; QOL = quality of life. 
*p < .05
**p < .01

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relationships, facilitating health-promoting behaviors may be a place to intervene to foster participation in context. For example, when clients have concerns about the fulfillment of their current roles, therapists can use traditionally effective strategies such as teaching clients energy conservation techniques (Matuska, Mathiowetz, & Finlayson, 2007) and activity adaptations; however, they can also help their clients discover additional health-promoting activities. For instance, they may explore developing an individualized physical activity plan that does not aggravate MS symptoms. Adverse reactions may include heat sensitivity, which can cause pseudoever-accretions in some people. Therefore, the occupational therapist can help the client by incorporating ways to stay cool while moving (e.g., a pool with a cool enough temperature, wearing a cooling vest during activity). Exercise has been found to contribute to improved fitness and functional capacities in people with MS (Petajan et al., 1996; Stuifbergen et al., 2006; White et al., 2004).

In addition, for people who have higher levels of impairment, activities of daily living may be used for physical activity (Brown & Kraft, 2005). Occupational therapists can integrate this growing evidence in innovative ways (downgrade or upgrade daily activities) for people functioning at various levels to keep people moving and remaining as flexible as possible to prevent secondary disuse or deconditioning. Also, developing physical activities within a group context may foster socialization and help promote clients’ adherence to the program (Brown & Kraft, 2005).

Socialization was also examined in the current study. The frequency of engaging in positive interpersonal relationships was found to be related to increased role participation in this study. Although socialization is important, it may be complicated because of the elusive symptoms and the fluctuating nature of MS. For instance, people with MS may have internal experience and sensations (such as tingling and weakness) invisible to another person (which may be distracting or difficult to explain). Also, the unpredictability of energy level makes it difficult to commit to upcoming events or get-togethers, and the need to ask for accommodation or assistance compounds the difficulty. If a client’s goal is to increase his or her fulfillment of family and friendship roles or social roles in the workplace, treatment could facilitate the development of more complex social skills such as illness disclosure and self-advocacy. Moreover, asking for or accepting help comfortably and gracefully is an art that may have to be cultivated for very independent people.

Experiencing spiritual growth was significantly correlated with mental health–related quality of life and all three measures of role participation. Spiritual growth items included having goals and a purpose in life, contentment, personal growth challenges, and a connection to a force greater than oneself. Therapists may need to help clients realistically reframe personal growth goals and spiritual growth activities affected by ever-changing abilities and limitations inherent with MS. This aspect of treatment can be easily overlooked, yet it may be of utmost importance. Maintaining a positive attitude and sense of purpose can be invaluable in a group at high risk for depression—which is often a symptom of MS as well as a side effect of certain disease-modifying treatments. Several studies support the relationship between spirituality and QOL in people with chronic illness (O’Neill & Kenny, 1998; Whitford, Olver, & Peterson, 2008).

Finally, relationships were found between health-promoting behaviors and mental HR–QOL. This relationship not only has been supported at the theoretical level (Stuifbergen & Roberts, 1997; Stuifbergen & Rogers, 1997; Stuifbergen et al., 2000) but also has been studied at the intervention level, in which HR–QOL (mental health component summary) increased after participation in a wellness program for older adults run by occupational therapists (Matuska et al., 2003). Our findings suggest that occupational therapists could explore health promotion activities with clients with MS, within the confines of each client’s particular abilities and limitations, to potentially improve their role participation and QOL. The idea of engagement in health-promoting behaviors to proactively protect or possibly build their physical and emotional reserves, thereby increasing their ability to participate in other desired roles (friend, wife, mother), may feel counterintuitive or foreign for someone with an illness considered chronic and fatigue related. Sharing research on the importance of health promotion and its link to participation can be valuable to clients, especially women, who often place the needs of others first.

Limitations and Future Research

This study was exploratory, descriptive, and correlational. Correlation demonstrates association, not causality. Further research is needed with larger samples to confirm the directionality of the variables. The findings of this study need to be interpreted with caution because of the sample size (N = 48), type (volunteer sample), and potential for self-selection bias. Participants may not be representative of the larger population. In addition, this study did not control for the type and severity of MS symptoms, nor
did it control for the use of disease-modifying therapies. Future research with larger sample sizes and the examination of subtypes of MS is suggested.

Another limitation of this study is the use of the SF–36 subscales as the sole measure of participation. Although its use has been supported in the literature, the relationships are not explicit. Further examination of the participation variable using a variety of measures is indicated as well.

Conclusion
We found significant relationships between health promotion and occupational participation. The evidence underscores the relationship between health and occupational engagement. Also, this research adds to the growing body of knowledge emphasizing the importance of health promotion programs for people with disabilities and contributes to information to guide future intervention. Occupational therapists can have a vital role in the development and implementation of these programs in addition to the opportunities they have to facilitate health-promoting behaviors within the context of their individual treatment sessions.

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the 14th annual North American Collaborating Center (NACC) Conference on the International Classification of Functioning, Disability and Health (ICF), Quebec City, Quebec.


in chronic disabling conditions. *Nursing Research, 49*, 122–129. doi:10.1097/00006199-200005000-00002


