

The Effects of Economic Disadvantage on Psychological Well-being and Quality of Life among People with Multiple Sclerosis

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Abstract

This study investigated the impact of economic disadvantage among people with multiple sclerosis (MS) on their psychological well-being and quality of life. Participants were 113 people with MS (31 males, 82 females). Information was obtained on income, lost income, costs of MS, economic pressure, coping, psychological well-being and quality of life. Economic pressure, and not actual MS-related costs predicted psychological well-being. Costs, economic pressure and coping predicted quality of life. These results demonstrate that pressure due to changed economic circumstances, as well as coping with these pressures is important in the quality of life of people with MS.

Keywords

costs of MS, economic pressures, multiple sclerosis, psychological well-being, quality of life

MULTIPLE SCLEROSIS (MS) is a chronic progressive neurological illness which typically results in progressive deterioration in physical functioning that may impact on employment opportunities (Rudick, Miller, Clough, Gragg, & Farmer, 1992). Since the age of onset is frequently between the ages of 20 and 45 years, MS has both a financial and personal impact on people who contract the illness. This article is concerned with evaluating the costs of MS for Australian respondents, and then evaluating the role of costs, economic pressure and coping strategies to deal with these economic costs, on the psychological well-being and quality of life (QOL) of people with this illness.

It has been estimated in a US study, that MS costs a person nearly 40 per cent of his or her lifetime earnings (Weinfeld & Baum, 1984). Whetten-Goldstein, Sloan, Goldstein and Kulas (1998) found that the annual total cost was more than US\$34,000 per person with MS (including costs of informal unpaid personal assistance), of which approximately 65 per cent of the cost was met by the person or their family. The Canadian Burden of Illness Study Group (1998) estimated the average annual cost of the illness to the person with MS ranged from a mean of CDN\$12,126 for those with low MS severity, to CDN\$27,552 for those in the high severity group. Holmes, Madgwick and Bates (1995) estimated that the total annual cost burden of MS within the UK was £1.2 billion, with these costs primarily stemming from National Health Service costs and lost tax revenue. However, Holmes et al. noted that there remained a heavy out-of-pocket cost to individuals concerned. A range of other studies in a number of western countries has supported the above findings (e.g. Asche, Ho, Chan, & Coyte, 1997; Bourdette et al., 1993; Carton, Loos, Pacolet, Versieck, & Vlietinck, 1998; Catanzaro & Weinert, 1992; Henriksson, Fredrikson, Masterman, & Jönsson, 2001; Inman, 1987; Whetten-Goldstein et al., 1998). Although these data clearly indicate a strong relationship between MS and economic disadvantage, they fail to determine whether or not this financial hardship impacts on the psychological well-being or QOL of people with this illness.

There is a substantial body of research that has demonstrated a link between MS and

problems with psychological well-being (e.g. Devins et al., 1996; Jönsson, Dock, & Ravnborg, 1996; Murphy et al., 1998; Rudick et al., 1992; Schubert & Foliart, 1993; Vickrey, Hays, Harooni, Myers, & Ellison, 1995), and QOL (e.g. Devins, Seland, Klein, Edworthy, & Saary, 1993; Stuifbergen, 1995). However, these studies have not primarily focused on the relationship between the financial hardship experienced by people with MS and their psychological well-being or QOL. Braham, Houser, Cline and Posner (1975) found that people with MS expressed strong financial needs, and Brooks and Matson (1982) found a relationship between higher socioeconomic status and better well-being among people with MS. Likewise, Gregory, Disler and Firth (1996) found that financial needs were prominent in the lives of people with MS, and that unmet financial needs were related to poorer QOL. These relationships between financial disadvantage and QOL were also found by Aronson (1997), Devins et al. (1996) and Stuifbergen (1995). Although these studies have demonstrated relationships between financial strain and psychological well-being and QOL, this was generally not the focus of these articles, the measure of financial strain varied significantly from one study to the other and there was no comprehensive measure of each of the different sources of financial strain.

Mullis (1992) suggested that the relationship between a person's economic situation and their psychological well-being may not be a simple one. In fact, Mullis found that the use of current income was too simplistic a measure of a person's economic situation. He suggested that a combination of future income and assets, current income and household economic demands would provide a more useful index of economic status. However, even using this index, Mullis found that economic status was not a strong predictor of well-being. This may suggest that there are other factors (e.g. the way in which an individual copes with their financial situation), that may predict well-being.

Coping has been shown to be an important factor in predicting psychological well-being among people with MS (e.g. Mohr, Goodkin, Gatto, & Van Der Wende, 1997; Pakenham, 1999; Pakenham, Stewart, & Rogers, 1997; Warren, Warren, & Cockerill, 1991), and QOL

(McCabe & McKern, 2002). However, these studies did not specifically examine how people with MS coped with financial strains in their lives, and how these pressures, in turn, impacted on their psychological well-being or QOL.

The only study that examined the impact of coping with financial stress, was conducted by Wrosch, Heckhausen and Lachman (2000). The results of this study suggested that the effectiveness of the various coping strategies may depend upon the age of the respondent. In the face of financial strain, lowering aspirations was found to be related to poorer QOL at all ages. Persistence in the face of financial stress was shown to be related to higher levels of QOL for young adults, whereas positive reappraisal was related to more positive subjective QOL for respondents in mid-life and old age.

The extent to which these strategies would represent adaptive behaviors among people with MS is difficult to determine, given the fact that many of these people who find themselves unemployed, and so subjected to financial pressures, are unlikely to obtain employment due to their illness. This, then, raises the question of whether problem-focused coping for financial stress is, in fact, an adaptive coping strategy for people with MS. The current study was therefore designed to evaluate the impact of a range of measures of financial stress (income, costs associated with MS, lost income and economic pressure), and coping strategies adopted to deal with financial pressures (problem-focused, detached, wishful thinking, seeking social support and focusing on the positive), on psychological well-being (depression, anxiety, confusion and fatigue) and QOL (physical health, psychological, social and environmental domains).

Method

Respondents

One hundred and thirteen adults with MS aged from 22 to 84 years of age (mean = 48.7 years) recruited through the Multiple Sclerosis Society of Victoria participated in the study. The 31 male respondents (mean age = 54.0 years) were, on average, older than the 82 female respondents (mean age = 46.7 years). The time since the respondents' MS diagnosis

ranged from less than a year to 45 years (mean = 8.1 years), although many had experienced symptoms for a long time before diagnosis. The time since the onset of symptoms ranged from several months to 50 years (mean = 14.1 years). The majority of participants were from professional or para-professional backgrounds (57.8%); 29.4 per cent had been or currently were skilled or semi-skilled workers, and 15.0 per cent listed occupations as home duties, student, retired, unemployed or did not provide any information about occupation. Currently, 61.9 per cent of respondents were not in paid work, 20.3 per cent worked between 1 and 30 hours per week and 17.7 per cent worked more than 30 hours per week. The relationship status of respondents was: married/living with partner, 59.3 per cent, single, 20.4 per cent, separated/divorced, 16.8 per cent and 3.5 per cent were widowed.

Materials

Respondents completed a questionnaire package, which elicited the following information:

Income The questionnaire asked respondents to provide information on either their income per fortnight or per year for the last year, from a variety of sources (e.g. salary, business, primary production, investments, insurance income support payments, superannuation and government pensions). They were also asked the same information for their partner (if they shared finances with a spouse, partner, friend or carer). Family income was calculated by summing respondents' reported income from all sources and that of their partner, and averaging the income (where appropriate).

Income loss percentage Respondents were asked what their estimated annual income would have been if they had continued in their pre-MS career (or planned career). Estimated change of income was calculated by subtracting the person's current annual income from their estimated potential income, divided by their potential income, then multiplied by 100.

Health care costs Respondents were asked the number of visits to health professionals in the last year that related to their MS, and their out-of-pocket cost for each visit. A checklist

was provided of a wide range of health professionals who may treat symptoms of MS. We included general practitioners, medical specialists, allied health professionals and providers of complementary health treatment (acupuncturists, myotherapists, etc.) We calculated annual out-of-pocket costs. Similarly, we asked respondents to list medications used specifically for MS, how long each prescription or supply lasted and the cost they paid after government subsidies. An annual cost was calculated. We also included costs for the year of diagnostic tests, hospitalization, rehabilitation, respite care, continence aids and dietary supplements.

Transport costs The annual cost of travel included costs for purchase of vehicle or modifications to a vehicle because of the respondent's MS (depreciated over the expected useful life of seven years). We also included any extra costs incurred to maintain or regain a driving licence because of their MS. To calculate costs of travel to the health professionals, we asked respondents the distance they travelled for each visit and costs involved. Respondents were asked to nominate if they travelled by car; if so, we calculated costs of travel to health professionals on an estimate of 50c per kilometre). Also included were average fortnightly costs of taxis 'because of your MS', which were multiplied by 26.08 to determine an annual cost.

Mobility and comfort equipment We have spread (amortized) the cost of major purchases across their expected useful life. We used an amortization rate of five years for special chairs and wheelchairs, and three years for scooters. Larger, or more expensive items of equipment such as beds and hoists were expected to last 10 years. Smaller items including walking sticks, crutches, walking frames, bathroom equipment, splints, special shoes and clothing were expected to last two years.

Housing modifications We have spread (amortized) the cost of housing modification according to the straight-line depreciation schedules used in the Department of Family and Community Services study (1999). That is, modifications were allocated a life span of 5 years for those under \$500, 10 years for \$500 to

\$5000 and 20 years for modifications costing more than \$5000. Information was gathered about differences in housing costs due to relocation specifically related to MS. However, these costs were not included, as the wide variation in experiences would have rendered the changes in costs meaningless. There was a tendency for people to sell expensive mortgaged houses in order to buy less expensive disability-friendly houses outright, to relocate to housing subsidized by the Government or to relocate to a smaller home following a marital separation.

Personal care costs We asked respondents about costs incurred per fortnight for personal care, nursing care or other assistance with housework, then calculated an annual cost by multiplying by 26.08.

Miscellaneous costs The annual cost was calculated from costs for gardening and home maintenance, child care, additional food costs and other miscellaneous expenditure in the previous year which respondents attributed to meeting needs arising from their MS.

Total costs This amount was the sum of health care, transport, equipment, housing modifications, personal care and miscellaneous costs.

Economic pressure scale (Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1992) This scale includes three indicators of financial pressure: two items assessed whether respondents felt they cannot make ends meet: difficulty paying bills (1 = no difficulty at all and 5 = a great deal of difficulty) and whether they have money left over at the end of the month (1 = more than enough money left over, and 5 = not enough to make ends meet). Material needs were assessed by asking respondents whether they agreed or disagreed that the family had the money they needed for a home, clothing, household items, a car, food, health care and recreational activities, with responses on five-point scale from strongly agree to strongly disagree. The third indicator of economic pressure, economic well-being, consisted of reports of cutbacks in expenditures during the past year on 17 items (e.g. clothing, holidays, etc.; 1 = yes, 0 = no). However, in the current study, five items

included in the questionnaire were eliminated from the calculation of the scale because of the large number of responses indicating that these items were not applicable (children's activities, school fees, attending sporting events, tobacco and alcohol). In the current study, the alpha coefficient for the Economic Pressure Scale was .92.

Quality of life (QOL) The World Health Organization Quality of Life-100 scale (WHOQOL-100; Power, Bullinger, Harper, & the World Health Organization Quality of Life Group, 1999; WHOQOL Group, 1994) provides an overall subjective quality of life score, plus a score on four specific domains: physical health, psychological, social relationships and environment. This scale comprises 100 items, and all items were rated on a 5-point scale. Eight items were reverse scored. Four items measured global quality of life. The physical health domain included 28 items, the psychological domain included 24 items, the social relationships domain included 12 items and the environment domain included 32 items. Domain scores were divided by the number of items included in each domain. The WHOQOL-100 was developed simultaneously at 15 sites worldwide, and possesses sound psychometric properties (WHOQOL Group, 1994).

The physical health domain incorporated facets of activities of daily living, dependence on medicinal substances and medical aids, energy and fatigue, mobility, pain and discomfort, sleep and rest and work capacity. The psychological domain included body image and appearance, negative affect, positive affect, self-esteem, spirituality and cognition. The social relationships domain included personal relationships, social support and sexual activity. The environment domain included financial resources, freedom, physical safety and security, health and social care, home environment, opportunities for acquiring new information and skills, recreation/leisure activities, physical environment and transport. The WHOQOL has been shown to have good psychometric properties (Power et al., 1999). In the current study, the alpha coefficients for the domain scores were .88 for physical health, .94 for psychological, .82 for social relationships and .92 for environment.

Coping style The shortened 30-item Ways of Coping (WOC) Questionnaire (Scherer, Wiebe, Luther, & Adams, 1988) asked the frequency that respondents would use each behavioural and cognitive coping strategy, 'in a financially stressful situation'. This scale has been used extensively with illness and general population groups. The WOC scale produces five factors, indicating five coping styles: problem-focused coping (ten items), detachment (six items), wishful thinking (five items), seeking social support (five items) and focusing on the positive (four items). In the current study, the alpha coefficients were .78 for problem-focused coping, .73 for detachment, .86 for wishful thinking, .79 for seeking social support and .75 for focusing on the positive.

Psychological well-being The Profile of Mood States-Short Form (POMS-SF; Shacham, 1983) is an adjective checklist that produces subscales that measure state levels of depression (eight items), anxiety (six items), fatigue (five items) and confusion (five items). (We did not include the POMS-SF sub-scales for anger-hostility or vigor-activity.) The POMS-SF has been found to correlate well with other validated measures of mood states (e.g. Conerly, Baker, Dye, Douglas, & Zabora, 2002). In the current study, the alpha coefficients were .94 for depression, .90 for anxiety, .94 for fatigue and .86 for confusion.

Procedure

Respondents were recruited by responding to notices placed in a newsletter mailed to all members of the MS Society of Victoria, and a notice on the society's website, calling for people with MS to participate in a questionnaire study examining the economic impact of MS on individuals and their families. Respondents who volunteered (by mail, telephone or e-mail) were sent a questionnaire package with a pre-paid self-addressed envelope to return to the authors.

There was no attempt to pre-select respondents for this study: it was open to all members of the MS Society of Victoria (over 80 per cent of people with MS are registered with the Society). The proportion of male to female respondents was about the same proportion as occurs in the broader community. The mean age

of both males and females was the age at which MS is likely to have a substantial impact (54.0 years for males, 46.7 years for females), although there was a substantial age range. There was also a wide range in the length of time since the onset of the illness (less than 1 year to 45 years). There was substantial variability in the employment backgrounds, current employment and relationship status of the respondents. Further, there was a variability in the costs incurred as a result of the illness. These demographic details of the respondents would suggest that respondents were drawn from a broad base of people with MS, and not restricted to a particular sub-group of people with this illness.

Results

The family income, percentage of income loss since developing MS, costs associated with MS and scores on the economic pressure scale are summarized in Table 1.

A series of eight hierarchical multiple regressions were conducted to determine the extent to which financial pressures as opposed to ways of coping with financial pressures, predicted the psychological well-being and QOL of people with MS. The independent variables entered on the first step of the regression were total costs of MS, income loss as a percentage of income, family income and economic pressure. In order to determine if coping with financial stress predicted extra variance in well-being and QOL, the variables entered on the second step of the analysis were scores on the five coping scales (problem-focused coping, detachment, wishful thinking, seeking social support, focusing on the positive). The dependent variables for the eight regression equations were well-being (depression, anxiety, confusion, fatigue) and subjective QOL (physical health, psychological, social, environment). The results of the regression analyses are presented in Tables 2 and 3.

The first set of analyses relates to the predictors of psychological well-being (see Table 2). The financial variables significantly predicted depression, $F(4, 108) = 6.70, p < .001, R^2 = .18$. With the coping variables added to the regression equation, $Fchange(9, 103) = 8.03, p < .001,$

$R^2 = .41$. The unique predictors were economic pressure and wishful thinking coping. The financial variables significantly predicted anxiety, $F(4, 108) = 6.70, p < .001, R^2 = .20$. With the coping variables added to the regression equation, $Fchange(9, 103) = 2.69, p < .05, R^2 = .29$. The unique predictors were economic pressure and social support coping. The financial variables significantly predicted confusion, $F(4, 108) = 3.42, p < .05, R^2 = .11$. With the coping variables added to the regression equation, $Fchange(9, 103) = 4.36, p < .01, R^2 = .27$. The unique predictor was wishful thinking coping. The financial variables significantly predicted levels of fatigue, $F(4, 108) = 11.94, p < .001, R^2 = .25$. With the coping variables added to the regression equation, $Fchange(9, 103) = 1.33, p > .05, R^2 = .35$. The unique predictors from the first step of the analysis were family income, total costs of MS and economic pressure.

The second set of analyses related to the predictors of subjective QOL (see Table 3). The financial variables significantly predicted the physical health QOL domain, $F(4, 108) = 13.28, p < .001, R^2 = .33$. With the coping variable added to the regression equation, $Fchange(9, 103) = 4.23, p < .01, R^2 = .44$. The unique predictors were family income, total costs, economic pressure, problem-focused coping, detached coping and wishful thinking coping. The financial variables significantly predicted the psychological QOL domain, $F(4, 108) = 5.82, p < .001, R^2 = .18$. With the coping variables added to the regression equation, $Fchange(9, 103) = 14.26, p < .001, R^2 = .51$. The unique predictors were total costs, problem-focused coping, wishful thinking coping and focusing on the positive. The financial variables significantly predicted the social QOL domain, $F(4, 108) = 7.70, p < .001, R^2 = .22$. With the coping variables added to the regression equation, $Fchange(9, 103) = 4.51, p < .01, R^2 = .36$. The unique predictors were economic pressure, social support coping and focusing on the positive. The financial variables significantly predicted the environment QOL domain, $F(4, 108) = 24.35, p < .001, R^2 = .47$. With the coping variables added to the regression equation, $Fchange(9, 103) = 6.16, p < .001, R^2 = .60$. The unique predictors were total costs, economic pressure, problem-focused coping, detached coping and wishful thinking coping.

Table 1. Financial costs for people with MS (AUST\$)

	<i>Male</i> (<i>n</i> = 31)	<i>Female</i> (<i>n</i> = 82)
Average family income		
Mean	22,177.61	25,269.88
Standard deviation	17,785.31	17,126.34
Minimum	7972.00	5658.00
Maximum	75,000.00	100,000.00
Income loss (%)		
Mean	44.20	31.73
Standard deviation	39.01	36.44
Minimum	.00	.00
Maximum	100.00	100.00
Health care costs		
Mean	812.81	1293.88
Standard deviation	604.74	1239.61
Minimum	45.50	45.50
Maximum	2166.00	6042.00
Transport costs		
Mean	862.25	690.40
Standard deviation	11,153.91	954.73
Minimum	.00	.00
Maximum	4509.57	4308.21
Equipment costs		
Mean	376.91	78.24
Standard deviation	904.79	189.43
Minimum	.00	.00
Maximum	3500.00	1246.67
Home modification costs		
Mean	212.10	134.13
Standard deviation	466.51	373.45
Minimum	.00	.00
Maximum	2250.00	2500.00
Personal care costs		
Mean	161.00	385.94
Standard deviation	392.63	828.31
Minimum	.00	.00
Maximum	1825.25	5476.20
Miscellaneous costs		
Mean	934.37	678.36
Standard deviation	1342.34	956.99
Minimum	.00	.00
Maximum	5025.50	5723.60
Total costs		
Mean	3359.44	3260.95
Standard deviation	2314.38	2560.78
Minimum	238.16	323.20
Maximum	7900.57	13,743.03
Economic pressure scale		
Mean	27.28	28.44
Standard deviation	9.35	10.38
Minimum	8.00	8.00
Maximum	47.00	51.00

Table 2. Summary of significant regression results for financial and coping variables predicting psychological well-being

Significant independent variables	B	Beta	t
	Depression		
Economic pressure	2.44	.27	9.05**
Wishful thinking coping	8.62	.44	16.99***
	Anxiety		
Economic pressure	.25	.46	22.38***
Social support coping	.40	.24	4.01*
	Confusion		
Wishing thinking coping	5.06	.34	8.39**
	Fatigue		
Family income	-6.54	-.20	-4.93*
Total costs	3.98	.26	9.76**
Economic pressure	.20	.35	13.50***

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 3. Summary of significant regression results for financial and coping variables predicting quality of life

Significant independent variables	B	Beta	t
	Physical domain		
Family income	.04	.24	8.72**
Total costs	-.02	-.35	-20.92***
Economic pressure	-.07	-.21	-5.77*
Problem-focused coping	.14	.30	7.36**
Detachment	.15	.22	4.95*
Wishful thinking coping	-.14	-.32	-9.47**
	Psychological domain		
Total costs	-.05	-.20	8.01**
Problem-focused coping	.15	.28	7.13**
Wishful thinking coping	-.19	-.36	-3.59***
Focusing on the positive	.25	.26	8.48**
	Social domain		
Economic pressure	-.09	-.34	13.37***
Social support coping	.26	.35	10.04**
Focusing on the positive	.19	.21	4.34*
	Environment domain		
Total costs	-.01	-.24	13.46***
Economic pressure	-.11	-.50	46.01***
Problem-focused coping	.09	.22	5.69**
Detachment	-.13	-.22	6.41*
Wishful thinking coping	-15	-.36	17.03***

* $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

The current study was designed to examine the extent to which a range of economic factors, as well as coping strategies used to deal with these economic factors, predicted psychological well-being and QOL among people with MS.

People with MS generally had a low average family income compared to people in the general population. The average family income

in the current study for men was \$AUST22,178 and for women was \$AUST25,270. For people in the general population, the average weekly wage in 2000–1 for men was \$AUST40,404 and for women was \$AUST27,040 (Australian Bureau of Statistics, 2002). Clearly, these individual income levels are substantially below the family income levels (averaged between couples) in the current study. The actual costs associated with MS (average costs \$AUST3359

for men and \$AUST3260 for women) were lower than those reported by respondents in the US (Weinfeld & Baum, 1984), UK (Holmes et al., 1995) or Canada (Asche et al., 1997). However, it is not clear what was included in the cost estimates in each of the above studies. For example, the current study only included costs directly related to the illness (e.g. health care costs, transport costs due to MS), and did not include lost productivity for either the person with MS (this was included as a separate variable) or their caregiver. An estimated cost of unpaid care was also not included in this study.

Consistent with previous studies, there was a relationship between financial disadvantage and both psychological well-being (e.g. Devins et al., 1996; Murphy et al., 1998; Vickrey et al., 1995) and QOL (e.g. Devins et al., 1993). However, the current study demonstrated that psychological well-being was primarily predicted by the pressure the person with MS experienced due to their financial situation, rather than financial hardship per se. This result was obtained when all of the measures of financial disadvantage (income, lost income and costs) were included in the analysis. For both depression and anxiety, economic pressure was the only significant financial predictor. There were no financial predictors for confusion, and family income, costs of MS and economic pressure predicted fatigue. Levels of fatigue may be indicative of level of disability due to MS (rather than a psychological response to the illness), and so, a person with high levels of fatigue may also have advanced MS symptomatology and low family income. Of course, it is also important to consider whether lower psychological well-being may impact on financial disadvantage. It is unlikely that there is a strict linear relationship between the variables in the current study and there is likely to be a cyclical relationship between psychological well-being, financial hardship and economic pressures.

An interesting finding from this study was that the coping strategies that were used to deal with financial hardship significantly predicted psychological well-being beyond the prediction provided by the economic parameters. Wishful thinking in relation to the person's financial situation predicted higher levels of both depression and confusion. High levels of seeking out additional support in relation to the person's

financial situation was associated with high levels of anxiety. These findings indicate that it is not only the financial hardship associated with MS, and the economic pressure that this places on people with this disorder that contributes to the psychological well-being of respondents, but the way in which respondents cope with these pressures has an important impact on their well-being. In fact, between 9 per cent and 23 per cent of the variance in the psychological well-being variables were explained by the financial and coping variables. These results are consistent with the role of coping in other aspects of the lives of people with MS (e.g. Mohr et al., 1997; Pakenham, 1999).

Family income and costs associated with MS played a more significant part in the prediction of QOL among people with MS, at least for the physical health domain. Not surprisingly, increased physical impairment (low scores) was associated with lower family income, higher total costs and increased economic pressure. Respondents who experienced poor physical QOL also demonstrated poor coping strategies in three of the coping domains: they were more likely to engage in wishful thinking, and less likely to demonstrate detachment or problem-focused coping.

Two other QOL domains (social and environment) were primarily predicted by the economic pressure of having MS, rather than the objective financial parameters. Higher economic pressure was associated with lower functioning in each of these domains. Total costs of MS also predicted the environmental and psychological domains, possibly because the amount of money that needed to be spent on MS-related costs precluded respondents from having the financial sources to engage in other types of activities. As for psychological well-being, these relationships between financial hardship, economic pressure and QOL are likely to be cyclical, rather than linear and unidirectional relationships between the variables.

Consistent with the previous findings of McCabe and McKern (2002), coping strategies were strong predictors of QOL. For the psychological and environment domain, high levels of wishful thinking were associated with poorer QOL. On the other hand, focusing on the positive predicted better QOL for both the psychological and social domains, and

problem-focused coping predicted better QOL for the psychological and environment domains. Not surprisingly, high levels of social support coping were also associated with better functioning on the social domain, and high levels of detachment were associated with lower levels of engagement in activities within the person's broader environment. The economic and coping factors outlined earlier were strong predictors of QOL, with between 37 per cent and 63 per cent of the variance in the QOL domains being explained by the financial and coping variables.

The findings from this study suggest that economic pressure due to MS, and the extent to which positive coping strategies are employed to deal with this economic pressure, are strong predictors of both psychological well-being and QOL among people with MS. It would appear that adopting a proactive coping style, as opposed to an escapist coping style, is related to better well-being and QOL, even for people with MS who generally experience deteriorating economic circumstance. These findings demonstrate the importance of including information for people with MS on how they can best cope with their new financial situation. It is important that future studies expand on the findings of the current study by examining other aspects of financial hardship that may contribute to well-being and QOL. It is also important to conduct this study with a larger number of respondents, to determine the extent to which the findings obtained in this study can be generalized to other people with MS, and whether they apply across the whole income range.

References

- Aronson, K. J. (1997). Quality of life among persons with multiple sclerosis and their caregivers. *Neurology*, *48*, 74–80.
- Asche, C. V., Ho, E., Chan, B., & Coyte, P. C. (1997). Economic consequences of multiple sclerosis for Canadians. *Acta Neurologica Scandinavica*, *95*, 268–274.
- Australian Bureau of Statistics. (2002). *Economic indicators 1350.0 (August)*. Canberra, ACT: Australian Bureau of Statistics.
- Bourdette, D. N., Prochazka, A. V., Mitchell, W., Licari, P., Burks, J., & the VA Multiple Sclerosis Rehabilitation Study Group. (1993). Health care costs of veterans with multiple sclerosis: Implications for the rehabilitation of MS. *Archives of Physical Medicine and Rehabilitation*, *74*, 26–31.
- Braham, S., Houser, H. B., Cline, A., & Posner, M. (1975). Evaluation of the social needs of nonhospitalized chronically ill persons: 1. Study of 47 patients with multiple sclerosis. *Journal of Chronic Disease*, *28*, 401–419.
- Brooks, N. A., & Matson, R. R. (1982). Social-psychological well-being to multiple sclerosis: A longitudinal study. *Social Science and Medicine*, *16*, 2129–2135.
- Canadian Burden of Illness Study Group. (1998). Burden of illness of multiple sclerosis: Part I. Cost of illness. *Canadian Journal of Neurological Science*, *25*, 23–30.
- Carton, H., Loos, R., Pacolet, J., Versieck, K., & Vlietinck, R. (1998). Utilisation and cost of professional care and assistance according to disability of patients with multiple sclerosis in Flanders (Belgium). *Journal of Neurology, Neurosurgery and Psychiatry*, *64*, 444–450.
- Catanzaro, M., & Weinert, C. (1992). Economic status of families living with multiple sclerosis. *International Journal of Rehabilitation Research*, *15*, 209–218.
- Conerly, R. C., Baker, F., Dye, J., Douglas, C. Y., & Zabora, J. (2002). Measuring depression in African American cancer survivors: The reliability and validity of the Center for Epidemiologic Study-Depression (CES-D) Scale. *Journal of Health Psychology*, *7*, 107–114.
- Conger, R. D., Conger, K. J., Elder, G. H., Jr, Lorenz, F. O., Simons, R. L., & Whitbeck, L. B. (1992). A family process model of economic hardship and adjustment of early adolescent boys. *Child Development*, *63*, 526–541.
- Department of Family and Community Services (DF&CS). (1999). *Cost of disability survey stages 2 and 3—examination and demonstration of relationship: Severity of disability v. cost*. Canberra: Commonwealth of Australia.
- Devins, G. M., Seland, T. P., Klein, G., Edworthy, S. M., & Saary, M. J. (1993). Stability and determinants of psychosocial well-being in multiple sclerosis. *Rehabilitation Psychology*, *38*, 11–26.
- Devins, G. M., Styra, R., O'Connor, P., Gray, T., Seland, T. P., Klein, G. M., & Shapiro, C. M. (1996). Psychosocial impact of illness intrusiveness moderated by age in multiple sclerosis. *Psychology, Health and Medicine*, *1*, 179–191.
- Gregory, R. J., Disler, P., & Firth, S. (1996). Wellbeing and multiple sclerosis: Findings of a survey in the Manawatu-Wanganui area of New Zealand. *Community Mental Health in New Zealand*, *9*, 32–42.
- Henriksson, F., Fredrikson, S., Masterman, T., & Jönsson, B. (2001). Costs, quality of life and disease

- severity in multiple sclerosis: A cross-sectional study in Sweden. *European Journal of Neurology*, 8, 27–35.
- Holmes, J., Madgwick, T., & Bates, D. (1995). The cost of multiple sclerosis. *British Journal of Medical Economics*, 8, 181–193.
- Inman, R. P. (1987). The economic consequences of debilitating illness: The case of multiple sclerosis. *Review of Economics and Statistics*, 69, 651–660.
- Jönsson, A., Dock, J., & Ravnborg, M. H. (1996). Quality of life as a measure of rehabilitation outcome in patients with multiple sclerosis. *Acta Neurologica Scandinavica*, 93, 229–235.
- McCabe, M. P., & McKern, S. (2002). Quality of life and multiple sclerosis: Comparison between people with MS and people from the general population. *Journal of Clinical Psychology in Medical Settings*, 9, 287–295.
- Mohr, D. C., Goodkin, D. E., Gatto, N., & Van Der Wende, J. (1997). Depression, coping and level of neurological impairment in multiple sclerosis. *Multiple Sclerosis*, 3, 254–258.
- Mullis, R. J. (1992). Measures of economic well-being as predictors of psychological well-being. *Social Indicators Research*, 26, 119–135.
- Murphy, N., Confavreux, C., Hass, J., König, N., Roulet, E., Sailer, M., Swash, M., Young, C., the Cost of Multiple Sclerosis Study Group, & Mérot, J.-L. (1998). Quality of life in multiple sclerosis in France, Germany, and the United Kingdom. *Journal of Neurology, Neurosurgery and Psychiatry*, 65, 460–466.
- Pakenham, K. I. (1999). Adjustment to multiple sclerosis: Application of a stress and coping model. *Health Psychology*, 18, 383–392.
- Pakenham, K. I., Stewart, C. A., & Rogers, A. (1997). The role of coping in adjustment to multiple sclerosis-related adaptive demands. *Psychology, Health and Medicine*, 2, 197–211.
- Power, M., Bullinger, M., Harper, A., & the World Health Organization Quality of Life Group. (1999). The World Health Organization WHOQOL-100: Test of the universality of quality of life in 15 cultural groups worldwide. *Health Psychology*, 18, 495–505.
- Rudick, R. A., Miller, D., Clough, J. D., Gragg, L. A., & Farmer, R. G. (1992). Quality of life in multiple sclerosis: Comparison with inflammatory bowel disease and rheumatoid arthritis. *Archives of Neurology*, 49, 1237–1242.
- Scherer, R. F., Wiebe, F. A., Luther, D. C., & Adams, J. S. (1988). Dimensionality of coping: Factor stability using the Ways of Coping Questionnaire. *Psychological Reports*, 62, 763–770.
- Schubert, D. S. P., & Foliart, R. H. (1993). Increased depression in multiple sclerosis patients: A meta-analysis. *Psychosomatics*, 34, 124–130.
- Shacham, S. (1983). A shortened version of the Profile of Mood States. *Journal of Personality Assessment*, 47, 305–306.
- Stuifbergen, A. K. (1995). Health-promoting behaviors and quality of life among individuals with multiple sclerosis. *Scholarly Inquiry for Nursing Practice: An International Journal*, 9, 31–50.
- Vickrey, B. G., Hays, R. D., Harooni, R., Myers, L. W., & Ellison G. W. (1995). A health-related quality of life measure for multiple sclerosis. *Quality of Life Research*, 4, 187–206.
- Warren, S., Warren, K. G., & Cockerill, R. (1991). Emotional stress and coping in multiple sclerosis (MS) exacerbations. *Journal of Psychosomatic Research*, 35, 37–47.
- Weinfeld, F. D., & Baum, H. M. (1984). The National Multiple Sclerosis Survey: Background and economic impact. *Annals of the New York Academy of Science*, 436, 469–471.
- Whetten-Goldstein, K., Sloan, F. A., Goldstein, L. B., & Kulas, E. D. (1998). A comprehensive assessment of the cost of multiple sclerosis in the United States. *Multiple Sclerosis*, 4, 419–425.
- WHOQOL Group. (1994). Development of the WHOQOL: Rationale and current status. *International Journal of Mental Health*, 23, 24–56.
- Wrosch, C., Heckhausen, J., & Lachman, M. E. (2000). Primary and secondary control strategies for managing health and financial stress across adulthood. *Psychology and Aging*, 15, 387–399.