Del Puente et al., J Psychol Psychother 2012, S:3
DOI: 10.4172/2161-0487.S3-001

Journal of Psychology & Psychotherapy
ISSN: 2161-0487

Review Article Open Access

Health Locus of Control and Multiple Sclerosis: A Systematic Review

Giovanni Del Puente[1], Ala Mahamid[2] and Nicola Luigi Bragazzi[3]*

[1]DINOGMI, Department of Neuroscience, Rehabilitation, Ophthalmology, Genetics, Maternal and Child Health, Section of Psychiatry, University of Genoa, 16100 Genoa, Italy
[2]Anesthesia Department, Hillel Yaffe Medical Center, Hadera 38100, Israel
[3]School of Public Health, Department of Health Sciences (DISSAL), University of Genoa, Via Pastore 1, 16132 Genoa, Italy

Abstract

Multiple sclerosis is a chronic neurological disease whose etiology has not been fully understood yet in details. Empirical findings show how psychosocial symptoms are very important features of the clinical presentation of multiple sclerosis, having a deep impact on patient's quality of life, and thus psychological coping strategies may play a central role in reducing the burden of the disease and improving patient's satisfaction of life. Multiple sclerosis' progression and relapses/exacerbations may depend on factors such as stressor chronicity, frequency, severity and type and individual patient characteristics such as depression, health locus of control, optimism and perceived social support. Here, we make a review on the current state of art concerning the relationship between health locus of control and multiple sclerosis.

Keywords: Chronic disease; Multiple sclerosis; Health locus of control

Introduction

Multiple Sclerosis (MS) is considered a chronic autoimmune inflammatory progressive neurological disorder that results in injury of the oligodendrocytes and thus in demyelination of the nerve fibers of the central nervous system [1]. There are at least 2-2.5 million patient's worldwide sufferings from multiple sclerosis and its prevalence is unevenly distributed and highly variable from less than 5 cases per 100,000 inhabitants up to more than 100-200 cases per 100,000 inhabitants [2]. It is more likely to affect women than men with a ratio of 2.3 which has gradually increased over time, and the age of onset is generally young adulthood, usually affecting people in their 20s or 30s [3], even though early onset (Schilder's diffuse myelinoclastic disease, Balo's concentric disease, Marburg's acute disease, which are sometimes difficult to differentiate from an ADEM, acute disseminated encephalomyelitis) [4] and late onset clinical variants have been reported as well.

The progress of the disease is extremely variable and unpredictable, the etiology is unclear, there is currently no cure and only symptomatic therapy is available [1].

Currently according to the United States National Multiple Sclerosis Society's classification, there are four major clinical presentations of multiple sclerosis:

Relapsing–remitting multiple sclerosis

This is the most common form, affecting about 85% of patients. It is marked by relapses and/or exacerbations of symptoms followed by periods of remission.

Secondary progressive multiple sclerosis

The disease course may continue to worsen with or without periods of remission or leveling off of symptoms severity.

Primary progressive multiple sclerosis

It affects approximately 10% of the patients. Symptoms continue to worsen gradually from the beginning.

Progressive-relapsing multiple sclerosis

A very rare form, being progressive from the beginning of the disease.

Psychosocial symptoms are very important clinical features of the presentation of multiple sclerosis, having a deep impact on patient's quality of life, thus suggesting an integrated bio-psycho-social approach [5,6] towards the disease. These symptoms include above all depression, with lifetime prevalence around 50% and an annual prevalence of 20% [7]. Depression is more common during relapses, seems to exacerbate other symptoms such as fatigue and cognitive dysfunction. Anxiety is also frequent, as well as perceived stress and psychological distress while other psychiatric illnesses occur less frequently in multiple sclerosis [8-11].

Multiple sclerosis, being a chronic disease, has a deep impact on patient's life. Collected evidence indicates that the relationship between life stress and relapse is complex, and is likely to depend on factors such as stressor chronicity, frequency, severity and type, and individual patient characteristics such as depression, health locus of control, optimism [12], perceived social support and coping strategy use.

Here, we make a review on the current state of art concerning the relationship between health locus of control and multiple sclerosis.

Locus of control is patient's belief about the location of the control over results of his/her behavior [13-15]. An individual who thinks that he/she can determine events in his/her environment by his/her own actions is said to have an internally oriented locus of control. The contrary orientation is referred as externality of locus of control [16].

Materials and Methods

This systematic review was carried out according to the standards of PRISMA guidelines [17]. MEDLINE/Pubmed, APA PsycNET/

***Corresponding author:** Nicola Luigi Bragazzi, School of Public Health, Department of Health Sciences (DISSAL), University of Genoa, Via Pastore 1, 16132 Genoa, Italy, E-mail: robertobragazzi@gmail.com

Received October 28, 2012; **Accepted** November 15, 2012; **Published** November 21, 2012

Citation: Del Puente G, Mahamid A, Bragazzi NL (2012) Health Locus of Control and Multiple Sclerosis: A Systematic Review. J Psychol Psychother S3: 001. doi:10.4172/2161-0487.S3-001

PsycINFO, ISI Web of Knowledge archives and databases were consulted searching for a combination of multiple sclerosis and health locus of control, using MeSH (Medical Subject Headings) terms as vocabulary according to the NCBI nomenclature and guidelines.

Inclusion criteria were: 1) articles with relevant quantitative details and information about the type of study (randomized clinical trial, matched case-control, cohort study and so on), 2) clearly stated collected evidence and results, 3) articles being written in English language.

Exclusion criteria were: 1) items not directly pertinent to the query string, 2) articles not containing sufficient information, 3) articles not written in English language, which consequently were discarded.

Results

Our initial query resulted in 47 hits (specifically, 18 articles from MEDLINE/Pubmed, 2 from APA PsycNET/PsycINFO and 27 from ISI Web of Knowledge) and after discarding the duplicated items the resulting list included 28 non-redundant articles. Only 10 studies were finally considered in our systematic review (3 articles were discarded being a review, 8 being not directly pertinent to multiple sclerosis, 4 being not written in English language, 1 being not sufficiently quantitative, 1 being not directly pertinent to the relationship between health locus of control and multiple sclerosis, but focusing on therapeutics, and 1 for sampling issues). The full list is summarized in table 1.

Discussion

Despite the increasing body of research devoted to the psychological

Authors	Reference	Methods	Results
Garfield and Lincoln	[18]	Cohort study, with 157 participants. They were asked to complete questionnaires concerning self-efficacy and locus of control, depression (HADS), anxiety, general stress and psychological distress, and disability. Moreover, they were asked to provide clinical information specifically relevant to their disease status.	89 (57 %) subjects were clinically anxious, showing: 1) higher level of disability (p-value <0.001); 2) lower level of self-efficacy and external locus of control (p-value <0.001); 3) higher level of depression (p-value <0.001); 4) higher level of stress (p-value <0.001).
Artemiadis et al.	[11]	Discarded, because not directly pertinent to the relationship between locus of control and multiple sclerosis, but focusing instead on stress management and psycho-therapeutic techniques.	
Wells et al.	[19]	Cohort study with 140 participants (97 females and 43 males, aged 18-83 years).	Locus of control had an influence on fatigue threshold and perception. When the causes of fatigue were perceived as external, stable, uncontrollable participants reported higher fatigue scores.
Eccles and Sinpson	[20]	Discarded, being a review.	
Matuz et al.	[21]	Discarded, being not directly pertinent to MS.	
Gay et al.	[22]	Cohort study with 115 participants. They were asked about their socio- demographic, medical and psychological characteristics by completing dedicated questionnaires (about depression, anxiety, coping, social support, locus of control, alexithymia and self-esteem).	Functional status (EDSS), trait anxiety, alexithymia and satisfaction with social support system are the predicting factors of depression. Locus of control is not a direct predicting factor.
Mitsonis et al.	[9]	Discarded, being a review.	
Roy-Bellina et al.	[23]	Cohort study with 45 multiple sclerosis patients, 34 women and 11 men, from 21 to 65 years (mean age=45 years ± 11.65) with one mean duration of 9 years (± 7) and an average score EDSS of 3.5 (± 2.3). They were asked to fill in 6 questionnaires: a locus of control scale (MHLC), a social support scale (SSQ), a coping strategies scale (WCC), a representation of the disease scale (IPQ-R), an anxiety scale (STAI) and a depression scale (BDI-II).	Positive representations of the disease and internality of locus of control were positively correlated with problem-focused coping (r=0.316, p=0.0338). Representations of the disease influence coping strategies and psychological adjustments, as well as social support request and access.
Vuger-Kovacic et al.	[24]	Cohort study with 457 participants. They were asked to answer to the locus of control inventory and Crown-Crisp Experiential Index (CCEI) questionnaire of personality.	405 (88.6%) multiple sclerosis patients exhibited external locus of control. As the disease progressed, locus of control shifted to externality. Analysis confirms the hypothesized relationship between external locus of control and anxiety / depression
Siegel and Schrimshaw	[25]	Discarded, being not directly pertinent to MS.	
Kocaman et al.	[26]	Discarded, being not directly pertinent to MS.	
Schepers et al.	[27]	Discarded, being not directly pertinent to MS.	
Brown et al.	[10]	Discarded, being a review.	
Shelley and Pakenham	[28]	Discarded, being not directly pertinent to MS.	
Moradi and Shoa	[29]	Discarded, being not sufficiently quantitative.	
Garber et al.	[30]	Discarded, being not directly pertinent to MS.	
Plahuta et al.	[31]	Discarded, being not directly pertinent to MS.	
Juczyński and Adamiak	[32]	Discarded, being not in English language.	
Schwartz	[33]	2-year randomized trial with 132 multiple sclerosis patients, comparing a coping skills group (n=64) with a peer telephone support group (n=68)	The peer support intervention increased the externality of health locus of control but did not influence psychosocial role performance or well-being.
Schwartz and Daltroy	[34]	Discarded, because the population sample is not homogenous and includes patients suffering also from other chronic diseases.	
Macleod and Macleod	[35]	Cohort study with 25 subjects aged 29-58 years. Locus of control beliefs were investigated in terms of their relationship with anxiety and depression, using the Recovery LOC scale, the Beck Depression Inventory, and the Barthel Activities of Daily Living Index.	Internality was not linked to lower levels of depression or anxiety

Lasar and Kotterba	[36]	Discarded, being not in English language.	
Allen and Blascovich	[37]	Discarded, being not directly pertinent to MS.	
Lasar et al.	[38]	Discarded, being not in English language.	
Lasar and Kotterba	[39]	Discarded, being not in English language.	
Wassem	[40]	Randomized study, with 100 participants randomly selected from the membership list of a state multiple sclerosis support group.	Subjects with an internal health locus of control were more aware and informed about their disease, performed more self-care, and had a more benign course of multiple sclerosis.
Halligan and Reznikoff	[41]	Cross-sectional study with 60 22–72 years old patients. They were asked about their body image and representation, depression, and locus of control (using the Rotter's Internal-External Locus of Control Scale). Moreover, socio-demographical parameters (sex, age) and clinically relevant information (duration of disease and degree of disability) were investigated.	Internal locus of control was negatively related to depression but was uncorrelated with disease duration or disability.
Brooks and Matson	[42]	Longitudinal study with 103 participants They were asked about socio-demographic, disease-related, medical and social-psychological variables.	Females were more likely to show positive adjustment. Subjects with an internal locus of control have more positive adjustment scores.

Table 1: All articles collected for the systematic reviews, including also the discarded ones.

aspects of multiple sclerosis, the relationship between the disease and health locus of control has been poorly explored.

On the basis of the evidences we collected we can conclude that:

1) Externality of locus of control is a predictor of higher disabilities, higher depression, anxiety and stress level; only two studies seem to contradict this conclusion, namely the study by Gay et al. [22] and the study by Macleod and Macleod [35]

2) There seems to be a link between externality of locus of control and self-reported symptoms as fatigue, as noted by Wells et al. [19]

3) Internality of locus of control and good and positive representations of the disease are predictors of the patient's compliance and adherence to therapy and to social support request/access. Moreover internality of locus of control is generally present in subjects with higher awareness of their disease, who results to be more informed, practicing more self-care than those with external locus of control

4) An interesting study by Brooks and coworkers [42] suggest that locus of control may be linked to gender, since they found that females were more likely to have internal locus of control than males

5) There are very few studies focusing on the changes of health locus of control during the progression of multiple sclerosis; an important exception is the beautiful study carried out by Vuger-Kovacic et al. [24], who demonstrated a shift of the locus of the control, which had not been found instead by Halligan and Reznikoff [41]

6) Another little studied topic is the relationship between the health locus of control and the type of psychological support adopted by the physicians. Practitioners should be aware that the methodology of psychological help can have an important influence of the externality of locus of control, as shown by Schwartz [33,34]

Further research will be needed for a better understanding of the role played by health locus of control in multiple sclerosis patients and for providing a better healthcare service.

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This article was originally published in a special issue, **Adherence to Chronic Disease Treatment** handled by Editor(s). Dr. Paraskevi Theofilou, Panteion University, Greece