The Effect of Intervention based on Health Belief Model on improving the Quality of life in Patients with Multiple Sclerosis

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Abstract: The final purpose of the treatment and care programs for patients with MS is to improve the quality of their lives. This study is performed to investigate the effects of an intervention program based on health belief model on improving the quality of life in patients with MS. This quasi-experimental study was conducted in 1391(2012) in a before-after manner on 34 patients with MS who referred to MS Society of Mashhad which were selected through convenience non-probability sampling method. First, the quality of lives of the patients were determined using the standard SF-36 questionnaire the reliability and validity of which was measured in previous studies and then the intervention program was implemented based on the structures of the health belief model in three educational sessions. Three weeks later, a re-determination of quality of life was conducted and compared with the previous one. The results were analyzed using the statistical software SPSS-11.5, paired-samples T tests, ANOVA and chi-square at the 95% significance level. The results of paired-samples T test showed that after the intervention, the scores of different aspects of quality of life such as General Health, Physical Functioning , Mental Health, Role Physical, Role Emotional, Vitality, Social Functioning and Bodily Pain were increased significantly compared to their scores before the intervention (P = 0/021). The implementation of health belief model is effective in quality of life improvement programs for patients with MS.

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Introduction

Multiple Sclerosis (MS) is a chronic progressive disease of the central nervous system (1) which mainly prevails among 18-45 year-olds and causes personal and social function drop of the patient (2). It is estimated that currently there are approximately 500 thousand patients with MS in the United States (1). And 10 thousand new cases are adding annually. In Iran the risk of disease is 15-30 cases per 100 thousand (3). The cause of this disease is unknown but the immune and viral infections play an important role in its development (4). MS is the most common nervous system autoimmune disease (3). This disease is one of the most debilitating chronic neurological diseases in young adults (4). The prevalence among women is twice as men, but the prognosis is worse in men (5). Despite existence of several palliative treatments at the present, there is no certain cure for this disease, and patients usually experience some degrees of neurological disability (6). MS can cause sensory disturbances, weakness, muscle cramps, impaired vision, cognitive impairment, fatigue and tremor, difficulty in passing urine and stool, sexual dysfunction, difficulty in balance, dementia, hearing loss, numbness, blurred or double vision and speech disorders in patients (7). These symptoms depend on the location of affected nerves (4). The debilitating nature of the disease not only affects the physical, mental, social, cognitive, emotional and role aspects of the patient's life but also creates some constraints and problems for family members as well (6, 26). Although patients with MS have almost a normal longevity but the diseased-caused changes largely affect their quality of life (7). Since the majority of patients are young adults who are in their productive age, the disease's impacts on various aspects of quality of life are harmful and destructive (2). Hence, planning and implementation of training-centered programs with emphasis on improving the quality of life in patients with MS is of great importance. This can on one hand improve patient's spirit and ability to deal with problems caused by the disease by strengthening his independency and competence and on the other hand affect the physical aspects of the patient's life by teaching him about the exercise, diet and exertion and thereby improving his quality of life.

Effectiveness of health education programs largely depends on the proper use of theories and models that are used in this field.

One of these effective models in health education is called Health Belief Model (HBM) which considers behavior as a function of one's knowledge and attitude, and according to its components it is designed based on the idea of causing awareness of a health threat in people to lead their behavior towards health. This model can increase MS patients' perceived susceptibility and severity about the disease and considering the perceived benefits and barriers and cues to action, lead the individual toward health-centered behavior (8). According to this model, the individual adopt health-improving behaviors when the following factors influence on him. These factors are:

1. ***Perceived Susceptibility***: understanding and believing that he is at the risk of the disease.
2. ***Perceived Severity*** : understanding and believing that the problem is a serious health problem that can lead him to death or other serious consequences.
3. ***Perceived Barriers*** : physical, psychological, financial or ... barriers that prevent him from adopting the healthy behavior.
4. ***Perceived Benefits*** : individual's belief in a behavior or recommendations which have benefits or impacts on prevention of the disease or reduction of its severity or complications.
5. ***Cues to Action*** : includes health messages, the media and people trusted by the individual such as physicians, political and religious leaders and trusted media that affect the behavior of the target group.
6. ***Action*** : observing the healthy behavior of the target subject which is influenced by the above structures (9).

Obviously empowering patients with MS through a training-centered program can play an important role in improving their quality of life. Therefore, this study was conducted in Mashhad aiming to determine the effects of interventions based on health belief model on quality of life improvement in patients with multiple sclerosis.

Methods

This quasi-experimental study was conducted in 1391(2012) in a before-after manner on 34 patients with MS who referred to MS Society of Mashhad. The study subjects were selected through convenience non-probability sampling method. For sampling, in a two week period, 120 patients who had referred to the Society were randomly contacted and the purpose of the study and the participation being arbitrary was explained to them. 34 subjects who were willing to participate were selected as a sample and the intervention program was carried out on them. Inclusion criteria were being 15-60 years old, having the ability to read and write (being literate) and not being in the acute phase of the disease; the exclusion criteria at the beginning of the study were drug addiction and relapse of the disease in the last three months. The data for this study were collected using the following tools:

1- The demographic information questionnaire of the subjects of the study
2- The Short Form SF-36 for determining the quality of life of the patients. This questionnaire has a high level of reliability and validity and has been used in Iran in several cases including the studies of Mo'tamed (2005), Montazeri (2005) and Tarraqi (2007). Also, the validity of the aforementioned tool was proved in the study of MuhammadPour et al. (2007) conducted in Mazandaran (4) and *Cronbach's Coefficient Alpha* was reported to be 77-90 percent. The Short Form SF-36 tool includes 36 questions related to the domains of General Health (6 questions), Physical Functioning (10 questions), Mental Health (5 questions), Role Physical (4 questions), Role Emotional (3 questions), Vitality (4 questions), Social Functioning (2 questions) and Bodily Pain (2 questions). The scoring of the questionnaire is on scale of 1-5, 1-3 and 1-2, based on the type of the question and the maximum score is 100 which is

classified in five levels of excellent (80-100), very good (60-79), good (40-59), fair (20-39), and poor (0-19) (4).

First, the study subjects completed the demographic information questionnaire and answered questions such as age, gender, education level, occupation, marital status, duration of infection, number of times they have been hospitalized, positive family history and coexistence of another disease; the quality of life forms of the patients were completed using SF-36. Then the resulted information was analyzed and the intervention program was designed based on the structures of the health belief mode. The program was carried out in two 45-minutes sessions. These sessions were held in the form of lectures, group discussions and question-answer. In the end of each session, the discussed materials were sent to the study subjects as a pamphlet. The focus of the discussions was on issues such as the importance of quality of life improvement in chronic diseases such as MS, the necessity of some changes in lifestyle, role of bystanders in rehabilitation and improvement of patients' efficiency, the role of self-care, the importance of following the suitable exercise program and the necessity of periodic examinations. After the training sessions, subjects were asked to repeat and practice the raised issues for 3 weeks. Then, the patients' quality of lives was re-evaluated using the SF-36 questionnaire and compared with the previous measurement. The information was analyzed using SPSS-11.5 software, paired-samples T-tests and chi-square analysis.

Findings

The study subjects were in the age group of 15-60 with an average of 32 ± 3.2 years. 20 subjects were female (58.9%) and 25 individuals were married (73.5%). 80% of the subjects had a school diploma, 63% were employed and 12% had lost their jobs due to the MS. The duration of infection in 55% samples was 6 ± 1.8 years with a domain of 1-24 years. 81% of the study subjects reported a history of hospitalization. 14.7% of samples mentioned the existence of the disease in one of the family members. 97% patients had insurance coverage. A significant inverse correlation was observed between the duration of infection and the quality of life scores (P = 0.0001, r = - 0.73) (figure 1).

T-test and ANOVA showed a significant difference in the average scores of quality of life before and after HBM-based intervention in MS patients in variables such as age, occupation, income, insurance coverage and history of disease (P <0.05), however, the average scores of quality of life in these patients indicated no significant differences in variables such as education, marital status and gender (P> 0.05).

The paired-samples T-test showed a significant difference in all aspects related to the quality of life after the intervention (Table 1).

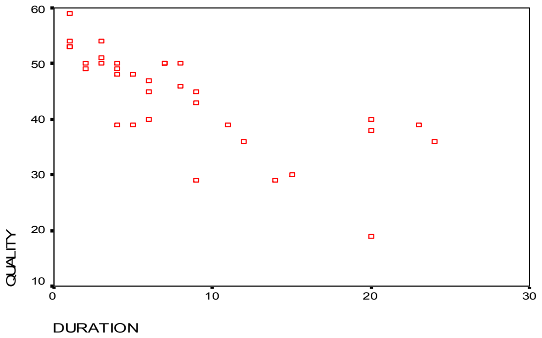

Figure 1: Distribution of the correlation between the pduration of MS infection with the quality scores

Table 1: Mean and Standard Deviation of quality of life scores before and after intervention

Aspects of quality of life	Before the Intervention	After the Intervention	Paired-Samples T-test
general health	35.4±4.2	46.2±5.5	P = 0.003
physical functioning	43.6±5.1	50.2±5.9	P = 0.023
mental health	47.3±6.5	59.3±7.2	P = 0.014
role physical	25.5±4.7	40.5±6.1	P = 0.021
role emotional	31.8±7.6	44.3±6.7	P = 0.007
vitality	48.3±6.2	60.3±7.3	P = 0.018
social functioning	39.7±5.5	50.4±6.5	P = 0.042
bodily pain	46.7±6.2	32.3±4.3	P = 0.037

Discussion

This study examined the impact of a HBM-based intervention program on quality of life in patients with multiple sclerosis. The results of this study showed that after the intervention program, the average scores for the 8 aspects of quality of life had a significant difference compared to before the intervention ($P < 0.05$). This difference has been particularly significant in relation to both general health and mental health (Table 1).

T-test showed a significant difference in the quality of life in variables such as age and occupation ($P < 0.05$), and no significant differences in variables such as education, marital status and gender ($P > 0.05$). Different studies found inconsistent results in regard with the correlation between demographic characteristics and the quality of life in patients with MS. For example Sharifi et al. (2012) that studied the self-esteem factors in 395 patients with MS in Tehran, reported a significant difference between self-esteem and age, marital status, education and occupation. However, this significance was not observed in relation with variables such as gender and income (3). In contrast, the study of Coleman et al. (2013) in the US showed a direct correlation between the quality of life in patients with MS and financial issues (2). One of the interesting findings of the present study was that only 12% of the sample reported losing their jobs due to MS. This finding is inconsistent with the study of Morales (2004) in Spain, where almost 66% of the subjects had lost their jobs due to their disease (10). This can be attributed to the degree of inability caused by the disease. Naturally, the more severe the disability is the more likely is to lose the job. It should be mentioned that one of the main constrains of this study was lack of investigation on the severity of MS in the study subjects due to time limitation. Therefore, it is not possible to compare the severity of the disease and its impact on quality of life with other studies.

The interventional framework of the present study consisted of the structures of health belief model. This model is one of the most common models used in the educational health improvement programs and by far has been used in several studies such as the studies of Karimi (2009, Shamsi (2009) and Mo'tamedi (2009) during which AIDS, Diabetes and Leishmaniasis have been studied (8).

There are other studies conducted on MS the interventional framework of which are consisted of other patterns and models; including the study of Masoodi et al. (2009) that has investigated the effects of self-care educational program based on Orem framework on the mental aspects of the quality of life in 70 patient with MS in Tehran. The results of that study indicated that the mental aspects of the quality of life in the patients with MS had a significant increase after the educational program based on Orem framework (1). The similarity of the study of Masoodi with the present study is that in both studies the educational models and frameworks have been used. Obviously, implementation of these models and frameworks can strengthen the structure of the study and highlight the researcher's path of study (11).

Despite the sustentative differences between these two models both are helpful in planning the educational program. In addition to the differences in the utilized model, this study and the Masoodi study are different within the scope of work. So that the Masoodi study was conducted on the mental quality on patients with MS while the present study focuses on different aspects of the quality of life. In the course of chronic diseases such as MS different aspects of life that are affected (12, 19), studying all these aspects can provide a holistic and health-centered attitude toward the subject of study which helps in preparing a more comprehensive care plan for the patients (13, 18). The study of Madani et al (2005) also showed that the planned self-care program have a positive impact on the coping ways for the patients with MS. In fact, the center point of this study was to enhance patients' compliance with MS disease and a program designed by the researcher himself has been used.

Considering the nature of MS, it is expected that the quality of life of these patients to be lower than other people (14, 17). For example, the study of Nejat et al. (2006) showed that the quality of life in patient with MS has a lower level than of the healthy population. In the present study, 67/8 % of the patient had evaluated the quality of their life before implementation of the intervention program as "fair". This finding contradicts the results of the study of Tarraqi et al. (2007) in which the quality of life of 101 patients with MS was studied in Mazandaran. In Taraqi3s study, 56% of the patients evaluated the quality of their lives as "good", 18% "very good" and only 28% "fair" and "poor" (4). The quality of life is a structure that depends on several factors (15, 16) and such inconsistency can have various reasons including the differences in disease severity, demographic differences between the samples, the presence of family and social support and etc. It should though be mentioned that the present study is performed only on 34 patients; certainly more accurate estimates of the quality of life for patients with MS needs a larger size sample.

In regard with the 8 aspects of the quality of life, the results show that after the intervention, general health, role physical, role emotional and social functioning indexes turned from "fair" to "good" and mental health and vitality indexes changed from "good" to "very good". Also, the differences in the physical functioning and bodily pain indexes were statistically significant (Table 1). These findings indicate the positive effect of a HBM-based intervention program on improvement of the quality of life in patients with MS which is consistent with the studies of Masoodi and Madani that showed the positive impacts of the educational programs based on pattern and plan on the quality of life in patients with MS.

Conclusion

Based on the findings of this study, it can be concluded that providing educational interventions based on health belief model is effective in improvement of the quality of life in patients with MS, thus, it is recommended that, this model be used in planning of health-centered interventions based on empowerment of study subjects in a self-care activity.

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