THE ROLE OF PHYSICAL ACTIVITY IN REDUCING SOCIAL ISOLATION AMONG PATIENTS WITH MULTIPLE SCLEROSIS IN LIGHT OF THE COVID-19 PANDEMIC

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ABSTRACT
The aim of this study was to assess the role of physical activity in reducing social isolation among patients with multiple sclerosis in light of the COVID-19 pandemic in Jordan. The descriptive method was used for this study. The Arabic Social Isolation questionnaire was used in this study to measure the Social Isolation among Multiple Sclerosis Patients during COVID-19 pandemic. The study sample consisted of 20 patients with Multiple Sclerosis from the health insurance center in capital Amman. The researchers used the following statistical analysis (Cronbach Alpha, Mean, Standard Deviation, and Independent sample t-test). The result of this study revealed that multiple sclerosis patients suffered from social isolation (84.15±2.621). Moreover, there was no significant difference in social isolation scores between males and females among patients with multiple sclerosis (P>0.05). Furthermore, there was a significant difference in social isolation scores between participants and non-participants in physical activity among patients with multiple sclerosis (P<0.05). As Social Isolation was lower for those who were physical active compared to those who were less active. The researchers recommend Multiple Sclerosis patients to perform physical activity to decrease social isolation during COVID-19 Pandemic.

Key words: Physical Activity, Social Isolation, Multiple Sclerosis, COVID-19 Pandemic.

I. INTRODUCTION
The COVID-19 pandemic has already changed the world and will continue to do so. The social consequences are completely unpredictable, but there is no doubt that it will have an impact on all areas of life as a result of the isolation of individuals (Armitage & Nellums., 2020). There are many aspects that are still unknown about COVID-19 and there are no specific treatment strategies (Ahadi et al., 2020). We may not have been prepared for this situation (Banerjee & Rai., 2020). Approximately 44 million people have been infected worldwide and the number of deaths has reached more than 1,100,000 (Brownlee et al., 2020). Due to the lack of therapeutic interventions for COVID-19 in conjunction with its rapid rate of transmission this led to recommend individuals including patients with Multiple Sclerosis (MS) to avoid exposure to the virus. This is conducted through restrictive measures based on social distancing (Brownlee et al., 2020).
Two studies have shown that psychological stress may arise as a result of physical and Social Isolation (SI). Stay-at-home orders to reduce the spread of COVID-19 have created a unique situation, as most of the world's population was confined to their homes (Brooks et al., 2020; Smith & Lim., 2020). It is necessary to take into account the stressors of quarantine in order to ensure that the quarantine experience is as acceptable as possible for individuals (Brooks et al., 2020).

In general, SI is one of the serious factors that negatively affect the health of patients (Steptoe et al., 2013). Assuming a caring role for a sick person can lead to SI (Petersen et al., 2016). Patients with MS suffer from many physical and mental disorders and incurable disability such as muscle weakness, balance disorder, double vision and cognitive function (Mott & Sandruff., 2015), as well as restrictions on their social relationships, all of which lead to lower the quality of life among patients with MS (José Sá., 2008). Therefore, when patients with MS carry out their daily activities over time they may need a caregiver either from a family member or a close friend (Vasileiou et al., 2017).

Isolation can be avoided through the use of low-cost interventions (Steptoe et al., 2013). SI is also associated with an unhealthy lifestyle; the most common is having lower Physical Activities (PA’s) (Leigh-Hunt et al., 2017). A study reported that there are 50.8% of patients with MS whose duration of PA’s has decreased during the COVID-19 pandemic. Moreover, 31.7% of patients with MS indicated that their level of physical fitness decreased during this period (Kalron et al., 2021).

Another study reported that patients with MS in Spain remained physically active and had an average sense of cohesion during the period of compulsory isolation. This was due to the use of appropriate coping strategies from a social health resource that can enhance the health of patients with MS (Reguera- Garcia et al., 2020). PA’s have a positive impact on the mental and physical quality of life of patients, as they are characterized by their low cost and are a form of treatment and prevention method used for the care of patients with MS (Hasanpour - Dehkordi et al., 2016; Mandelbaum et al., 2016).

MS does not increase the risk of infection with Covid-19 (Willis & Robertson., 2020); especially in light of the Covid-19 pandemic which has exposed many individuals to SI as a result of social distancing (Hwang et al., 2020). Isolation at home is likely to lead to a significant decrease in participation in PA’s (Hubbard et al., 2015); which may lead to a decrease in the fitness of patients with MS (Wilski et al., 2019). SI can have a negative impact on health (Steptoe et al., 2013). Although patients with MS are advised to avoid various PA’s as they may exacerbate disease progression; these exercises improved their lives and energy (Zaenker et al., 2018).

There are studies that have studied the impact of the Covid-19 pandemic on patients with MS from several aspects, which showed that the COVID-19 pandemic has a negative impact on the health of patients with MS (Willis & Robertson., 2020; Brownlee et al., 2020; Chiaravalloti et al., 2021). Another study examined the impact of the COVID-19 pandemic on the level of physical fitness in patients with MS; this study revealed that PA’s has a positive effect on patients' health (Kalron et al., 2021). Therefore, the aim of this study was to identify the role of PA’s in reducing SI among patients with MS in light of the COVID-19 pandemic in Jordan.

II. MATERIAL AND METHODS

A descriptive quantitative design was used in this study. A total of (N=20) patients with MS were randomly selected by using convenience sampling from the Health Insurance Center in the capital Amman, Jordan. A self-reported questionnaire was used in this study, the demographic data form and the Arabic Social Isolation Scale. The demographic data form consisted of questions about: gender and PA’s.

The Arabic Social Isolation Scale consisted of 20 items. The response scale of the Arabic Social Isolation Scale consists of five responses; (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree. The 20 items were added to reveal a total Social Isolation Score.

The Arabic Social Isolation Scale was valid and used in a study (Mubarak., 2008). To ensure validity of the tool, it was judged and reviewed by a (N=5) of academic professors specialist in the subject of study. Cronbach's alpha was used to estimate the reliability of the sample of study. The Cronbach’s alpha for the Arabic Social Isolation Scale was (0.976). A pilot study was conducted on (N=10) patients with MS to ensure content validity.
III. RESULTS

A total of (N=20) patients with MS participated in the study. All the participants were categorized under the first stage of MS the Relapsing-Remitting Multiple Sclerosis (RRMS) stage. There were 12 females and 8 males in this study. Out of the 12 females only 5 participated in PA’s. In addition, 4 out of 8 males participated in PA’s. Finally, the mean score of SI among patients with MS was 84.15±2.621. It is present in table (1).

Table (1): The Number of participants, Mean and Standard deviation for the SI.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>N</th>
<th>M±SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Isolation (SI)</td>
<td>20</td>
<td>84.15±2.621</td>
</tr>
</tbody>
</table>

Note. N= Number of participants; M= Mean, SD= Standard Deviation.

Independent t-test was conducted to compare the SI scores for females and males. There was no significant difference in score for females and males p=.841. It is present in table (2).

Table (2): Independent t-test for the SI according to gender variable for MS patients.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Group</th>
<th>N</th>
<th>M±SD</th>
<th>df</th>
<th>t</th>
<th>Sig (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Isolation (SI)</td>
<td>Female</td>
<td>12</td>
<td>84.25±2.179</td>
<td>18</td>
<td>.204</td>
<td>.841</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>8</td>
<td>84.00±3.338</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N= Number of participants; M= Mean, SD= Standard Deviation, df= degree of freedom, t= t-value, Sig (2tailed) = level of statistically significance at the level of (α ≤ 0.05).

Finally, independent t-test was conducted to compare the SI scores for participants in PA’s and non-participants in PA’s. There was a significant difference in scores for participants and non-participants in PA’s p=.020. It is present in table (3).

Table (3): Independent t-test for the SI according to PA’s variable for MS patients.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Group</th>
<th>N</th>
<th>M±SD</th>
<th>df</th>
<th>t</th>
<th>Sig (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Isolation (SI)</td>
<td>Participants in physical activities (PA’s)</td>
<td>9</td>
<td>85.56±1.236</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-participants in physical activities (PA’s)</td>
<td>11</td>
<td>83.00±2.933</td>
<td>13.990</td>
<td>2.620</td>
<td>.020</td>
</tr>
</tbody>
</table>

Note. N= Number of participants; M= Mean, SD= Standard Deviation, df= degree of freedom, t= t-value, Sig (2tailed) = level of statistically significance at the level of (α ≤ 0.05).

IV. DISCUSSION

SI is a factor that negatively affects an individual's psychological and social health (Brooks et al., 2020; Usher et al., 2020; Smith et al., 2020). Although the effects of SI have been reported in much of the literature, little is known about the effects of SI during the COVID-19 pandemic (Smith & Lim, 2020; Usher et al., 2020). The result of this study revealed that patients with MS suffered from SI. The researchers attribute the result of this study to several reasons, including the social distancing measures followed and the closure of gym’s and recreational centers as a result of home quarantine to limit the spread of Covid-19, fears of infection, and the nature of MS disease. The COVID-19 pandemic has negatively affected the mental health and psychological and physical well-being with little impact on the financial well-being of patients with MS, as they had higher degrees of depression, fatigue, anxiety, sleep disturbances and lower quality of life (Motolese et al., 2020; Chiaravalloti et al., 2021).
The epidemic has also caused major disruptions to health and social care services provided to patients with MS, which negatively affected their health as a result of the interruption of regular psychological support and concerns about the safety of the caregiver personally (Manacorda et al., 2020). One of the main concerns of patients with MS was to get infected with COVID-19 (Moss et al., 2020). In addition, having MS disease results in many physical disorders such as muscle weakness and balance disorder, where different aids are used to help them perform their various activities (Mitchell et al., 2005). The result of this study agreed with a study that showed that patients with MS suffer from complex and multiple forms of SI in terms of its definition, causes and impact. In addition, functional decline can lead to reduced interaction with others and society (Freeman et al., 2020).

SI is associated with mental health, but it is not clear to what extent SI may affect mental health and whether these effects depend on gender (Liu et al., 2020). The result of this study revealed that there was no significant difference in SI scores between males and females among patients with MS. The researchers attribute the result of this study to the mysterious and chronic nature of the disease and the negative effects resulting from the COVID-19 pandemic on both genders of patients with MS. Despite the increased risk of MS disease among females (Lopez-Alava et al., 2017). However, MS disease causes several psychological and social symptoms, which negatively affect the emotional and social health of patients due to the lack of treatment and the chronic nature of the disease (Salehpoor et al., 2014).

In addition, the SI resulting from the social distancing required to limit the spread of COVID-19 is a problem to the patients with MS of both genders, as the experience of SI is associated with work-related stress and the risk of perceived personal risk for COVID-19 (Chiaravalloti et al., 2021). Patients with MS of both genders also reported that the epidemic caused major disruptions in health and social care, interruption of usual psychological support, and fears of disease progression for them and the infection of caregivers with COVID-19, which affected their health and well-being (Manacorda et al., 2020). Thus, social and psychological factors such as social support and coping strategies may have a positive impact on the health of patients with MS (Lopez-Alava et al., 2017).

The result of this study agreed with two studies concerned with the health of patients with MS of both genders from several psychological and social aspects during the COVID-19 pandemic (Freeman et al., 2020; Chiaravalloti et al., 2021). While, the result of this study did not agree with what was observed among university students during the COVID-19 pandemic (Liu et al., 2020).

SI is an important component of health during the COVID-19 pandemic. Measuring the degree of SI is important for assessing wellness, as it can affect health and immune function, as these effects are expected to persist as the epidemic continues. Furthermore, quarantine results in a significant decrease in levels of PA’s. Thus, reducing SI is essential, as individuals need a strong immune function to fight the COVID-19 virus (Chiaravalloti et al., 2021; Arries & Maposa., 2013).

The result of this study revealed that there was a significant difference in SI scores between participants and non-participants in PA’s among patients with MS. Researchers believe that despite the compulsory closure of halls, sports centers and parks as part of the measures followed for social distancing to limit the spread of Covid-19 throughout the world, practicing PA’s at home is easy to implement and works to resist the negative effects resulting from social separation and disease symptoms. The practice of PA’s during the epidemic period still has a social benefit, as the result of this study agreed with a study that indicated that sharing PA’s through different social networks can enhance all kinds of social relationships (Zuo et al., 2021). This study also agreed with another study that showed that the practice of PA’s by individuals with physical disabilities through the Internet has direct significant effects on informational and emotional support and positive social interaction (Kim et al., 2021).

As for patients with MS, a study reported that 38.3% of patients continued or even performed more PA’s via the Internet during the epidemic period, and 68.3% of patients reported that their level of fitness was maintained or improved compared to the period before the epidemic (Kalron et al., 2021). The result of this study did not agree with another study that showed no association between SI and maintaining the continuity of PA’s among adults in the United States during the COVID-19 pandemic (Hailey et al., 2021).

On the one hand, the World Health Organization has recommended several recommendations for individuals during social distancing; the most important is to stay in contact with others through various social media and to maintain regular PA’s (World Health Organization., 2020). On the other hand, providing primary health care
through remote consultations and training is a safe and effective way to provide mental health support to patients, as these various means provide visual information and a useful therapeutic presence (Donaghy et al., 2019).

In this context, remotely supervised home interventions have proven to be effective in restoring and improving the fitness levels of patients (Batalik et al., 2020). Through communication technologies to rehabilitate patients with MS, it was found that 62% of patients with MS were interested in receiving PA’s programs and 69% of patients with MS were interested in receiving personalized advice about MS disease and PA’s (Flachenecker et al., 2020).

While Covid-19 prevents personal meetings, it is possible through remote communication to perform simple PA’s and advise the patient (Beaney et al., 2020). Practicing PA’s have many positive effects on the health of patients with MS, as it relieves symptoms and have effects in modifying the disease (Motl, 2020). The fact that patients with MS regularly engage in PA’s during the COVID-19 pandemic is a critical issue that must be recognized in protecting their health (Kalron et al., 2021).

V. CONCLUSION

Patients with MS suffer from SI during COVID-19 pandemic. Moreover, there were no significant differences between SI and gender among patients with MS. In addition, practicing PA’s have a positive effect on the SI among patients with MS.

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