MULTIPLE SCLEROSIS AND SELF-ESTEEM: A COMPLEX BILATERAL CORRELATION

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Abstract

Chronic medical conditions, such as multiple sclerosis (MS) prove quite impactful, including self-esteem, which allows them to ensure their own tenacity. There are some contrasts in the correlation between MS and self-esteem that may involve extra variables or mediators, such as medications and depression, that enable specific correlation trajectories. While MS affects self-esteem directly, except when medications are involved and trigger depression influencing self-esteem, the reversal impact of self-esteem on MS is indirect, being assisted by depression, a transitional factor and condition, and it is only contributory in the sense that it does not cause MS to be available prior to the onset of depression. perpetuating the medical condition. Overall, the study shows different trajectories of the correlation between multiple sclerosis and self-esteem and MS persistence determinants like therapies, which allows tracing the impact of the medical condition and its possible extent. To do so, the cognitive model of Beck is applied, which centers on symptoms, including low self-esteem, which underpins depression. The model serves as an inspiration for the consideration of different causative-consecutive connections between multiple sclerosis and self-esteem.

Key words: Multiple Sclerosis, Self-Esteem, Depression.

1. Introduction

When setting in and progressing, medical conditions, such as multiple sclerosis (MS) come to affect different functional aspects in people, including self-esteem, which could help withstand the condition's mental health impact. MS development triggers a cascade of effects and factors that ensure its tenacity in a complex cycle of health decline. There are many reasons to focus on the medical issue and its impact on self-esteem, which can be bilateral. Walton et al. (2020) claimed an aggregate of 2,8 million people to be living burdened by multiple sclerosis globally, which is equivalent to 35,9 patients per 100,000 population. What is alarming is that the prevalence of MS has climbed since 2013, which is manifest, contrary to the persistence of gaps in prevalence estimates. The illness poses a threat, raising the relevance of its study and suggesting that researchers should do better to manage it and stem its spread. As explained by Walton et al. (2020), MS sets in at a highly productive stage of life, with career building and family planning in progress; hence, the illness is expected to take its toll on patients, their families, and society. Given the relevance of MS research, the study aims at a comprehensive and multi-faceted effort to examine the issue and its etiology and causal factors, to which end it utilizes the cognitive model authored by Aaron Beck (1967), who claimed it to consider the subjective symptoms, such as the negative view of the future, world, and self, as the major characteristics of depression (as cited in Clak, Beck, and Alford (1999). The negative view of self correlates with self-esteem, which may relate to depression that is associated with MS. Overall, the study argues that there are different trajectories of the MS and self-esteem correlation, which can be bilateral and which can involve mediators, such as depression and medications.

2. Literature Review

2.1. Theoretical Framework

First, it would be essential to dwell on the cognitive model of Aaron Beck (1964), who asserted that people's psychological, behavioral, and emotional reactions were influenced by the way people perceived their experiences (as cited in Beck, 2010). The interpretation lacks depth regarding the experience ways, which are to be identified in the following definition of the model. Beck (1967) also interpreted the model as such that considered the subjective symptoms, including the negative view of the future, world, and self, as the major characteristics of depression (as cited in Clak, Beck, and Alford (1999). There is no clear explanation of whether all beliefs should contribute to the development of depression. Further chapters show that a negative view of self, such as poor self-esteem, can suffice to induce a state of depression. Other sources provide a more comprehensive overview of the theory, offering a breakdown of the theory elements responsible for the depressive state. Reiterating the same interpretation, Beck et al. (1979) referred to depression as a cognitive disorder and explained a negative view of the future as individuals being pessimistic regarding their ability

to accomplish coveted results. A negative view of the world was said to imply discontent of depressed individuals with their life situation who believe the world to be making unreasonable demands upon them. A negative view of the self implies people considering themselves worthless, deficient, and defective. Beck, it was explained, labeled these convictions, which comprise the feelings of worthlessness and hopelessness, as being the negative cognitive triad and presumed them to be the major characteristic of all depression types. As further explained, other depression aspects, such as affective disturbances, including intense sadness, motivational disturbances in the shape of withdrawal and passivity, and somatic disturbances, such as trouble sleeping, emerge in response to the convictions presented (as cited in Brown, 2014). In the cognitive model of Beck (1976), the cognitive triad is but one of the elements responsible for the formation and maintenance of depression, alongside automatic thoughts, cognitive errors, and schemata, which imply rather enduring, organizing structures guiding situational information processing (as cited in Pössel and Pittard (2016). Beck (1964) showed that the issue key to the model could be addressed by pointing to the possibility of unhelpful conduct and thinking modification and the correction of misperceptions, which ensures improved responses (as cited in Beck, 2010). Overall, the study is keen on one element of the cognitive triad shaping the theory of Aaron Beck, which is self-esteem that is responsible for the development of depression. In addition, the model's issue correction is also on the study agenda, which allows showing the impact of multiple sclerosis on low self-esteem could be mitigated.

2.2. Multiple Sclerosis

Price, Lucas, and Lane (2021) described multiple sclerosis as a chronic neurodegenerative and inflammatory condition of the central nervous system (CNS), while Gedik and Idiman (2020) avoided the neurodegenerative characteristics of the condition. Gedik and Idiman (2020) and Lai et al. (2023), in turn, defined MS as an autoimmune illness. Walsh and P.A. Walsh (1989), Chiu et al. (2019), and Gedik and Idiman (2020), by comparison, referred to the condition as a progressive and chronic illness, which sounds overly categorical as the definition points at the inevitable and fast evolution of the condition that may seem to have no remission scenarios. A lack of extra insight into the pace of MS development and conditions of progression, along with a lack of mention of the remission possibility, makes the definition precariously incomplete. Studies often do not comment on the condition's etiology, which could be due to a research agenda that does not focus on its genesis or the struggle of scholars to identify an accurate set of factors. Koriem (2016), however, pointed to factors likely responsible for MS, such as gout, contaminated diet, environmental toxins, stress, smoking, and viral and microbial routes. When it comes to the onset age, it was also defined by A. Walsh and P.A. Walsh (1989) and Price, Lucas, and Lane (2021), as the study pointed to young adulthood, unlike Chiu et al. (2019), who pointed to working-age adults as condition subjects. Gedik and Idiman (2020) were more specific, showing that MS tended to target individuals ages 20 to 40. The study also did well to consider the condition through the prism of gender, noting that women were twice as likely to develop MS as men were. As further clarified by

Price, Lucas, and Lane (2021), the condition is cureless. The description of the condition as progressive Walsh and P.A. Walsh (1989) and Gedik and Idiman (2020) could also be a reference to a lack of a cure, although it is ambiguous and vague. The description of MS as a chronic disease by Chiu et al. (2019) may explain why the researcher argued that it resulted in neurologic disability. Being impactful, the condition naturally affects people in different ways, including via self-esteem.

2.3. The Concept of Self-Esteem

Now, self-esteem needs considering as Aaron Beck's cognitive model element of the negative view of self, which can be an outcome of MS. Murk (2006) identification of self-esteem as a specific perception of or attitude toward one's self (as cited in Choi, 2019), which influences feelings toward oneself and others and interactions (Choi, 2019). The definition, however, lacks specificity regarding the aspect of the self that is assessed by an individual, as compared with the following interpretational attempt by Mikula et al. (2021), who defined self-esteem as emotional and cognitive beliefs held by individuals regarding their own worth. None of the definitions presents self-esteem as a fait accompli or an established attitude toward oneself rather than a process that results in the formation of the stance. The process-oriented definition was provided by Gedik and Idiman (2020), who defined self-esteem as the judgment of personal self-worth, and Esplana, Carabot, and Aguilar-Delavin (2022), who defined self-esteem as an individual assessment of personal worth, which comprises beliefs about oneself. The researchers associated it with emotions such as shame, despair, pride, and triumph without linking the emotions to different self-esteem elements like high, low, and inflated self-esteem, among which the study differentiated. In any case, self-esteem is affected by MS, as further shown, yet this may not be the only way they are correlated.

2.4. Multiple Sclerosis Affects Self-Esteem

2.4.1. MS Affects Self-Esteem

A. MS's impact on self-esteem via symptoms. For there to be a correlation between multiple sclerosis and self-esteem, the condition must have affected elements responsible for the positive assessment of oneself, which it can do through its symptoms, which patients cannot help but notice. A. Walsh and P.A. Walsh (1989) reported the adverse impact of the debilitating symptoms of the condition on the self-esteem of patients, regarded as an essential coping resource for such individuals. Wilski and Tasiemski (2016) and Wilski and Tomczak (2017) explained that lower self-esteem could be down to the overestimation of MS' impact on one's life, which results in its perception as less manageable and more threatening (as cited in Mikula et al., 2021). Taylor and Brown (1994) interpreted the self-esteem factor otherwise, despite conveying a similar idea while positing that an increased sense of self-worth allowed people to respond to negative life events like a chronic illness diagnosis more adaptively (as cited in Gedik and Idiman, 2020). It would be rational to point to illness symptoms in the context of the adaptive capability of higher self-esteem, for they are likely to predate the official diagnosis as a factor that brings discomfort and suspicions over a mismatch between the

emotional and physical well-being before and after the condition's onset, which drives individuals to seek a professional healthcare service and undergo diagnostics. This oversight argument is validated by Beatus et al. (2002), who pointed to the psychological and physical outcomes of the condition's adverse effect on physical autonomy, social life, and work life, which results in self-esteem being affected (as cited in Gedik and Idiman, 2020).

Lo Buono et al. (2023), in turn, pointed to appearance perception changes as the driver of self-esteem decline, maintaining that chronic illness associated with psychological distress, physical pain, and brain alterations could trigger changes in different self-concept elements and the loss of identity and self, as could changes in the physical dimension, including in terms of balance difficulty, pain, and disability. Wilski et al. (2019) also reported the impact of MS on physical conditions, only for self-esteem to be affected. When body modifications occur, as further explained by Lo Buono et al. (2023), the psychological perception of the body must be changed and adjusted to changing physical conditions. Neves et al. (2017) visualized the factor, drawing attention to self-reported experiences of body image changes, with most focusing on sexuality (as cited in Lo Buono et al., 2023). Pourhaji et al. (2023), who also considered the sexuality aspect of MS scrutiny through the lenses of self-esteem, reported a finding by Calabro et al. (2014), which showed that 50% to 90% of men and 40% to 80% of women reported perceived sexual anxiety amidst MS (as cited in Pourhaji et al., 2023). However, the study did not trace the relative cross-gender contrast in anxiety prevalence to the impact of MS on the sexual organ central to copulation or intimate activity. This critical presumption finds scholarly backing in Rae-Grant et al. (2013), who noted that plenty of MS symptoms interfered with sexual relations, including erectile dysfunction.

While Ghodusi et al. (2016) affirmed the impact of chronic illnesses and complications on body esteem, the study of 395 patients of the MS Society in Tehran identified body esteem as at a favorable level, while self-esteem was at a moderate one. Rather than being inaccurate, the results could reflect the effect of the culture factor, including a greater presence of the beautiful body cult in Western societies, in part as a result of its exposure in the liberalized social landscape, not gripped by religious restrictions and conservatism, and these standards stimulate a beauty discourse and the criticism of deviation from acceptable templates, which could be illness-driven. Then again, being too religious, they are Muslim societies like Iran's that should have an archaic interpretation of mental malaise as a divine curse, which may not cultivate lenient or tolerant treatment, which would allow study participants to rest rather tranquil about their condition and its effects without suffering a heavy esteem blow. Dardas and Simmons (2015) affirmed the difference in beliefs and values between Muslim states and Westerners, with the mentally ill stigmatized. Mental health resources are none too sufficient either (Dardas and Simmons, 2015), which is another reason to doubt the results of the study by Ghodusi et al. (2016) regarding rather moderate progression. The cross-study differences could also be due to the sample composition, which may contain less severe cases with a lesser capability to affect self-esteem and perception. Samonds and Cammermeyer (1989) warned that body image was determined by the severity of physical disability (as cited in Lo

Buono et al., 2023), while Bailey, Dagenais, and Gammage (2021) listed the frequency of relapses, the early onset of the illness, and the status of being widowed, divorced, or single, and older age (as cited in Lo Buono et al., 2023).

The impact of MS on the self-esteem of patients can be explained by the symptoms of the condition, which make their presence known. Some studies tend to lump together symptoms from different categories. Chen et al. (2023) identified the effects of disabling symptoms such as sleep difficulties, pain, anxiety, depression, fatigue, and cognitive dysfunction. A more organized, albeit not comprehensive, effort is that of Fratalia and Hernandez (2013), who identified sensory-motor, cognitive, and neuropsychiatric symptoms like depression, although one of the cases cited shows an MS patient as showing a wide range of such psychiatric symptoms defined as manic, including hyper-religious and spiritual paranoia, work-related paranoia, racing thoughts, verborrhea, tachypsychia, uncharacteristic drug abuse, sexual disinhibition, emotional liability, unexplained laughter, and euphoria. Although comprehensive, the range of psychiatric symptoms could offer more if considered in addition by the researchers. It would be rational to find a causative-consecutive link between some psychiatric symptoms, as euphoria may stem from hyper-religiousness driven by the illusion-giving sect affiliation sought over an MS-induced mental meltdown. This connection may be as usual as the correlation between symptom categories like cognitive and psychiatric manifestations, as the latter may be caused by the former when cognitive struggles on the job trigger psychological issues.

Although psychiatric symptoms were well defined, cognitive, and sensory-motor ones were not. While considering the cognitive decline in MS patients, Sumowski (2018) reported deficits in cognitive processing speed and episodic memory, apart from extra challenges such as visuospatial analysis, verbal fluency, and executive function. Under-investigated are word-finding and multitasking capabilities. As for the examples of sensory systems affected, Wiener, Welsh, and Blasch (2010) described all of them as affected, including vision difficulties, or more specifically, eye discomfort, double vision, nystagmus, and complete blindness. Decreased tactile sensation and proprioception are among other sensory symptoms. Mild-to-severe numbness in the legs, arms, or face was also said to be one of the most widespread symptoms of MS. Motor symptoms can range from tremors to difficulty walking or gait, which can be driven by factors like spasticity, muscle tightness, and weakness. It was suggested that the motor symptoms cited, such as tremors, could be accompanied by associated symptoms, such as difficulty swallowing, known as dysphagia, and difficulty speaking, known as dysarthria. Koriem (2016), who listed unbalance, miscoordination, movement difficulty, muscle spasm, weak reflexes, and muscle weakness, also provided insight into motor capability decline in terms of specific body elements and functions responsible therefor. Studies, such as this one, however, would be better advised to differentiate between jobs with contrasting requirements and input that could serve as determinants of performance and health decline by MS patients and others, such as peers and supervisors.

B. MS's impact on self-esteem through depression. As for another scenario, MS treatment causes depression, whether it be through medications or directly, while depression

affects self-esteem, which is consonant with Beck's cognitive model showing the interconnectedness between depression and negative self-view. When it comes to the direct route, Bullman (2019) opined that it was hard to think of any disease not related to depression, anxiety, or other mental symptoms, and related it is, as further shown. The neuroscientist estimated that people with MS were three times as likely to experience a major depressive episode, with suicide a likely possibility (Bullman, 2019). Otte et al. (2020) similarly linked MS, regarded as the inflammatory disease of the central nervous system, to depression as its outcome and explained it through a direct release of pro-inflammatory cytokines in the CNS. Rao (1990) did not differ either in terms of the two variables, considering depression as a widespread concomitant of MS and also pointing to the intensity of the mental condition via other studies, such as Dalos et al. (1983), who claimed the improvement of depression during the illness remission phase and its aggravation during the phase of illness activity using clinical reports (as cited in Rao, 1990).

The MS-depression link is causally interpreted, although the respective literature is not devoid of flaws. While Rao (1990) did explain depression as a natural emotional response to a progressive and unpredictable illness, the researcher fell short of delving deeper into the risks of such a course or the nature of the condition. Other studies also provide causal clues that need retrieval, however. Price, Lucas, and Lane (2021) showed that plenty of people with MS would have considerable contact with a variety of healthcare professionals and that the condition was cureless. What the study should have done was put the two facts in a causative-consecutive connection and added such a variable as depression rather than just stress, its predecessor. An apparent interpretational lacuna consists of patients being certain to learn about MS being cureless due to the high frequency of contact with healthcare professionals, which facilitates the development of mental conditions. Chiu et al. (2019) similarly provided essential clues regarding the genesis of depression because of MS presence by referring to multiple studies without tracing their relation to depression and its impact on self-esteem. The study referred to De Judicibus and McCabe (2007), Naci et al. (2010), and Ponzio et al. (2015) reporting there to be a considerable financial burden in the shape of direct medical costs, including treatment and access to healthcare providers and specialists, illness severity, relapse occurrence, and indirect costs, such as the loss of productivity (as cited in Chiu et al., 2019).

When it comes to the medication-assisted, indirect route of MS causing depression that affects self-esteem, Kellerman and Rakel (2020) explained that symptoms, such as decreased pleasure and interest in activities or, more specifically, depression, were associated with exposure to medications. An article by WebMD (2023), reviewed medically, proved more specific, arguing that depression could also be a side effect of such drugs as interferon and steroids, which find confirmation in the scholarly literature. Kellerman and Rakel (2020) identified the role of steroids in depression as their side effect, while Jelinek, Neate, and O'Donoghue (2022), who also pointed to the role of steroids in the development of the mental condition, reported an identical influence of interferon as a medication against MS, as did

Robertson and Moreo (2016), who pointed to the administration of interferon beta-1a associated with the depression side effect, and Lai et al. (2023), who affirmed the use of Interferon is regarded as belonging to a family of proinflammatory cytokines applied in the treatment of MS. Among such medications is IFN-β, which is a polypeptide generated by fibroblasts and has antiproliferative and antiviral activities. The immunomodulatory property of the interferon variation, as further explained, is what allows the treatment of MS. As for the actual way the medications trigger depression in MS patients, Jelinek, Neate, and O'Donoghue (2022) explained that even brief steroid courses could induce mood changes and sleep disruption. Lai et al. (2023), in turn, explained that the hyper-functional hypothalamic-pituitary-adrenal axis, which is associated with the administration of interferon in patients, contributed to anxiety and depressive emotions. Actual suicidal cases and thoughts were reportedly attributed to the administration of interferon in patients (Lai et al., 2023).

A lack of treatment does not allow people with multiple sclerosis to fare better. Rao (1990) showed how a lack of MS treatment, or, rather, its inadequacy, could cause depression. It was shown that stress could be avoided, at least to some extent, by healthcare professionals, who were criticized for failing to acknowledge the presence of affective and cognitive issues in MS patients. Other studies affirmed healthcare failures, including Chiu et al. (2019), whose study involving 3,003 MS interviewees throughout the US identified that 10% reported the commitment of insufficient attention and time to the comprehension of patients questions and needs, consulting, and communication, and Price, Lucas, and Lane (2021), who pointed to there being an insufficient amount of communication and transparency, which holds especially true for the roles played by medical professionals and the approach to care.

Rao (1990) went on to clarify why it was that healthcare failure could induce depression, which affects self-esteem, noting that the failure obstructed the process of patients' adjustment to the illness, generating extra stress for the patients, their families, and friends (Rao, 1990). Such stress is believed by Richter-Levin and Xu (2018) to result in major depressive disorder, although the chief mechanism was described as such that went elusive. This extra-patient stress claim Rao (1990) did not leave unexplained, noting that the social outcomes of stress on a young parent could be considerable and visualizing it as the failure to perform at home, which makes itself recognized in the inability to keep up with household tasks, may result in unfortunate acting out in children. The causal discourse on depression-stimulating stress factors in MS patients was further continued.

Although having slight neurological impairment MS patients, it was acknowledged by Rao (1990), may lose a job in a major blow to self-esteem as an exclamation point affirming incompetence and enhancing depression key to self-esteem decline, and the finding mirrors the observation by Lunde (2014) and Marck (2019). Rao (1990) went on to disclose the data on MS labor as if to prove healthcare providers responsible for the loss of jobs by some patients by showing the compatibility of the condition and work activity via a study by Slater and Yearwood (1980), who estimated that the best part of MS patients were employed due to them experiencing mild to moderate neurological disability (as cited in Rao, 1990). The results of a study involving 1276 MS patients of working age, which was performed by Marck (2019),

showed that 35,9% were employed on a full-time basis, while another 25,6% were part-timer, which gives the 60%-plus majority cited earlier. On the one hand, the study showed that employment rates among MS patients kept declining a decade into the condition, at the time that the aggregate retirement and unemployment figure stood at 75%, which rather resembles the finding by Lunde (2014) of close to half of all MS patients being employed within almost two decades of the condition onset, which is, however, more optimistic. On the other hand, the data are not worth taking for granted by estimating the share of those unemployed in the MS cohort, among which can be those who are hard-pressed to secure a job over the diagnosis and healthcare failure and those who struggle over an unfavorable market situation. Even if interviewed regarding the unemployment reason, people could still misinterpret them, blaming employers rather than their MS, or conversely, the MS factor and its healthcare cause may not be identified, distorting a data set. However, Rao (1990) pointed out that it was not service providers who were blamed for their performance failures; it was patients who were.

Whether direct or assisted by medications, depression affects self-esteem, as identified in many studies. The study by Choi et al. (2019), which involved 113 college students ages 19 and 35, found that levels of self-esteem were in direct proportion to depression development. Other studies, which pointed to the dualism of the cross-variable influence, affirmed the esteem-depression vector. While Butler, Hokanson, and Flynn (1994) et al. pointed out that low self-esteem was an important factor responsible for people's vulnerability to depression development under stressful events while using the vulnerability model (as cited in Mu et al., 2019), Lewinsohn and Kwon (1993) claimed that depression episodes tended to leave self-esteem scarred even following a depression episode remission, using the postulates of the scar model (as cited in Mu et al., 2019). Thus interpreted, low self-esteem is an outcome of depression rather than its causal driver, as further explained by Mu et al. (2019), who considered different trajectories underpinning the correlation, including depression adversely changing how people process self-relevant information. When depressed, individuals are likelier to retrieve, encode, and attend to negative information about themselves. Orth and Robins (2013) replicated the same postulates, including the vulnerability and scar models, adding that they were not mutually exclusive owing to it being possible for both processes to operate simultaneously in the sense that low self-esteem drives depression, while the latter erodes self-esteem, which corresponds to the reciprocal relational model. Orth et al. (2008), Orth et al. (2009), and Shahar and Henrich (2010) are among the studies to have tested reciprocal relation, scar, and vulnerability models in a variety of longitudinal studies, of which many applied advanced statistical methodology and large samples, which enhanced the validity of conclusions (as cited in Orth and Robins, 2013).

2.4.2. Self-Esteem Affects MS Through Depression

At the same time, it is also self-esteem that affects multiple sclerosis, albeit indirectly, which agrees with Beck's cognitive model of negative self-view and depression connectedness, as further shown. More specifically, MS affects self-esteem, which triggers depression that aggravates the medical condition, and this presumption is provable scholarly. Gedik and

Idiman (2020) found depressed individuals to have low self-esteem, as opposed to those who have no depression. While the study found the comorbidity of low self-esteem and depression, it fell short of articulating a clear causative-consecutive link between the two variables, unlike the following one. Klein, Kotov, and Bufferd (2011) clearly stated that low self-esteem resulted in people's vulnerability to depression, as assumed by the vulnerability model (as cited in Park and Yang, 2017). Abramson, Seligman, and Teasdale (1978) explained that people scoring low on self-esteem felt dejected, lonely, and sad, which is the presumed reason for plenty of depression theories to play a key role in the origin of depressive disorders (as cited in Orth and Robins, 2013). The characteristics mentioned coincide with those listed in the depression definition provided by Delaney (2017), which described depression as a mood disorder that leads to a persistent feeling of sadness and a loss of interest. Steiger et al. (2014) produced some much-needed empirical evidence, personalizing the correlation at work by reporting that adolescents with low self-esteem would have grown more depressed before reaching the mid-30s (as cited in Park and Yang, 2017). Importantly, depression goes on to affect medical conditions, such as multiple sclerosis. Kellerman and Rakel (2020) pointed to the far-reaching consequences of depression, which is said to aggravate plenty of medical conditions, multiple sclerosis included. While the finding leaves a causal void in the discourse, Jelinek (2017) filled it by explaining that depression aggravated the physical illness by shifting the immune balance toward a Th1 response, while depression treatment was found to correct the immune disturbance, slowing down the progression of the illness.

3. Methodology

The study utilizes the qualitative research method due to its utility as it allows gaining a comprehensive insight into the issue of multiple sclerosis and its impact on self-esteem, including expert and scholarly views, and addressing the ways of the variables' correlation and reasons therefor. Moreover, the study did not require the production of primary data, drawing from existing empirical data sets. The study also made use of the literature review method, enabling the collection of secondary data and their synthesis. Additionally, the study can be said to have employed the method of case study, which narrowed down the scope of research to a specific medical condition, such as MS. The method of analysis was instrumental in extracting inferences from findings and producing recommendations in the context of critical literature assessment. While the research did not involve human subjects, it did observe ethical standards by resorting to quality academic literature, the careful transfer of findings and analysis, and the acknowledgment of the words cited via the application of the APA format.

4. Discussion

4.1. MS Damage to Self-Esteem

The concept of self-esteem boils down to self-assessment and the resultant belief in oneself in terms of abilities. Self-esteem is put to the test by multiple sclerosis, regarded as an inflammatory and autoimmune condition of the CNS. By sending self-esteem tumbling and causing a negative view of self, a key element of Beck's cognitive model, multiple sclerosis seems to trigger its own complex tenacity mechanism. If people are low on self-esteem, their doubts may put them on a collision course with fellow employees and even managers, who may condemn their evasive, dodgy approach to performance. In this mode, such individuals may assume, in response to the loss of confidence in their competence and the resultant fear of exposure, As stated otherwise, all this avoidant conduct does is invite criticism, which communicates doubts and negative assessments from peers, which heaps more misery on what already low self-esteem as people receive further proof of their fears of low worth. Hence, far from improving self-perception, the outcome of a medical condition, such as low self-esteem, ensures its own tenacity by adjusting the behavior of such people. The avoidance of challenges also gets esteem-corrective or compensatory mechanisms blocked, which is a professional activity that could contribute to the build-up of self-esteem and moderate the respective detriment inflicted by multiple sclerosis.

4.2. MS and Self-Esteem Correlation Scenarios

One of the chief correlations between MS and self-esteem is that the medical condition affects the self-perception of individuals. Seeing that MS affects what is believed to be the major mechanism of coping with such a condition, an individual's self-esteem, the illness ensures its own persistence and continued impact on the coping mechanism. The problem is that people overestimate MS' impact on their lives, which makes such people believe themselves to fare poorly, which is a negative self-assessment or self-esteem. The overestimation and resultant self-belief downfall can be attributed to the fear of uncertainty and a lack of understanding of the illness, including its controllability, given early intervention. First, all MS individuals have improvised monitoring via relapse frequency, which can be a barometer of disease progression. If high, it can alert an individual to an aggravation in the condition, increasing the intensity of concerns. The same is true of the symptoms accompanying relapse events. Relating to cognition, mobility or motoric functions, and even sensory systems, symptoms are those that affect key functions responsible for work and even pastime activities when capital is accumulated and relations are built, and they cannot pass unnoticed.

However, even monitoring is unlikely to spare fear buildup due to what symptoms during relapse periods give people to understand. Older age could be a dual and debatable factor when older people experience a decrease in self-esteem. On the one hand, people are less active; expectations to meet are lower; they may be retired, having gained some capital. On the other hand, it must be that older age brings other health conditions, creating comorbidity. However, it is not they who should be expected to fear the most, seeing that the

condition occurs in a young cluster spanning the period when people are at their most active. Since they are busy engaging in multiple activities and since there is a professional and social expectation of top performance associated with the age period, there must be external pressure over poor performance, and they are likely to even notice a contrast unwarned, which can set them suspecting health issues and the loss of productivity and the capability to pursue activities from which they derive pleasure and which allow them to build a safety net. For MS patients to find their opportunities limited, it cannot make for high self-esteem. There are further reasons for them to be afraid. Another fear is traceable to social settings' desertion due to mental condition stigmatization. More importantly, while young, people have yet to build relations or families, and appearance is an essential factor and determinant of the success of their respective endeavors; hence, appearance perception changes are inherent in the MS, constituting an essential source of concern. Key to such tasks is also the sexual capability in modern global society, which seems quite hedonist or pleasure-oriented, sexually liberal, and sexualized, unlike more Puritan historical incarnations thereof. Hence, the greater impact of MS on men in the way of sexual anxiety is likely due to the impact of the condition on the major element in heterosexual intimate intercourse, which is not to be hidden or simulated. Furthermore, be it over the impact of the condition on sexual health or other factors, the single status at the time of the condition's onset, especially in the young group of MS residents, must create a panic over a perceived lack of support and concern lest the status be perpetuated over the debilitating impact of MS, while the relationship status keeps a flickering hope of an MS individual not being abandoned. Overall, there still seems to be an atavistic, instinctive mentality of the survival of the fittest despite the growing inclusivity of many societies and the system of subsidization of disability, yet fears related to social relations are genuine.

However, one would be wrong to consider the impact of MS universal and immediate. Apparently, much depends on the nature of symptoms rather than just their intensity, as they may not interfere with the capabilities required by a task as an individual may be sedentary at work, while symptoms may affect motor functions. As individuals may experience the onset of symptoms not related to work, they may mistake them for fatigue or other factors, at least in the denial phase, which should be expected to spare their self-esteem and other mental health outcomes. Furthermore, the different nature of many tasks may show there could be variability in symptom persistence and their impact on self-esteem due to contrasting job demands, as some can be physical, requiring manual labor, while others need mental input with minimum movement. Some allow sufficient time for the execution of tasks, while others require fast performance with little-to-no room for recurrent efforts, as is the case with the conveyor jobs. Moreover, some may be working isolated; hence, MS employees should be caught underperforming while in a group without their office space being walled off from others. Following this logic, some job holders may be likelier to learn about their condition through underperformance faster than others or have it identified by others who are likely to draw attention to job blunders.

Another way in which MS affects self-esteem is through depression, which likely interferes with self-assessment, disabling its accuracy since self-relevant information is a priori perceived negatively. The link is rational, as Beck's cognitive model understands the negative view of self as a main feature of depression, which underscores the connectedness of the variables. In the context of this trajectory, the mental condition can be induced directly or via medications. The discharge of pro-inflammatory cytokines in the central nervous system found in Otte et al. (2020) is a direct scenario, which seems more of a physiological or biological outcome of MS emergence. However, there may be said to be an emotional response advocated by Rao (1990). It may be said to be natural as the illness's emotional burden is obvious, with symptoms rendering people sad, despondent, and devoid of interest in life and optimism. People can enter this emotional state by monitoring their condition and noticing changes; however, what can get them depressed can be frequent contact with healthcare professionals, which results in consultations and health screening that allow accurate medical verdicts, unlike self-diagnostics, which can prove lenient enough to spare emotional meltdown. The financial factor is also a considerable reason for depression development, which may peak as a result of symptom aggravation and healthcare facility visits when it becomes increasingly likely that treatment will be expensive, limiting income opportunities if not blocking them in the long term.

If not direct, the depression development route involves medications as a mediator. Steroids and interferon, although essential for MS treatment, have a depression side effect. However, it is not that a lack of healthcare, which administers depression-inducing drugs or otherwise drives the mental disorder, helps MS patients. Its insufficiency reported by Chiu et al. (2019) and other researchers is none the more helpful, as patients seem to receive no counseling regarding their adjustment to the condition or proper perception of the changes, which can spare low self-esteem and depression development and enhance condition persistence. Nor do patients get to receive an accurate, diagnosis-customized treatment roadmap composed of therapies, whether medication-based or otherwise, which could stall the progression of MS and its cross-stage evolution when symptoms are harsher or less manageable. Not learning adjustment ways, people suffering from the condition become increasingly stressed, which may affect family relations quality and trigger depression in a blow to self-esteem. Worse, a lack of proper healthcare is likely to increase the odds of job loss, and rightfully so, for the illness is left untreated, progressing faster, and disrupting functional capability. Increasing access to healthcare could delay the incapacitation of MS patients. The longer employees have the condition, the fewer of them will keep working decades into it. The problem is that healthcare providers do not carry the blame, which should perpetuate the problem with healthcare access and MS spread, along with its impact on depression and low self-esteem, although they are not worth always criticizing because patients may not seek intervention, even less follow medical guidelines. It was further found that self-esteem can affect multiple sclerosis, yet it does so indirectly as well, which involves a mediator causally linked to MS. Researchers such as Park and Yang (2017) advocate the

esteem and depression correlation, and scenarios are not hard to simulate. Thus, for example, a lack of attention to children as a result of MS results in low self-esteem when a patient engaging in self-assessment, which is what self-esteem is about, finds himself performing poorly in terms of parental duties. Esteem-based self-assessment seems to expedite the onset of depression, unlocking it. The depression-MS route involving the shift of the immune balance toward a Th1 response reported by Jelinek (2017) is a biological mechanism, and it does not trigger the medical condition, enhancing its persistence instead.

5. Recommendations

The following are recommendations for how to reduce the incidence of multiple sclerosis, to improve diagnostics, and to optimize treatment.

1) Addressing risk factors. The government will be better suited doubling down on efforts to avert multiple sclerosis. To do so, they may impose heavier excise or tax on tobacco to discourage consumption, addressing one of the causal factors of MS development. Marck et al. (2020) confirmed the role of tobacco smoking in multiple sclerosis development as one of the risk factors. It would also be prudent for the government to invest in sports infrastructure and ensure people's access thereto and its inclusivity. At the same time, the authorities should design healthier diet menus at schools, impose portion caps on sugary drinks to balance the calorie-ounce correlation in beverages, raise the price of sugar-rich foods, or otherwise improve the weight situation. In doing so, another MS risk factor can be addressed, such as excessive weight. Gianfrancesco and Barcellos (2016) affirmed that obese and overweight people could be at a particularly high risk for MS development, as compared with normal-weight peers.

2) Harnessing social media for diagnostics promotion. Seeing that the condition is inevitably developed by some people who are loath to take precautions, social media should be used by the health services or ministries of countries to promote diagnostics.

3) Using celebrities to remove MS stigma. Healthcare ministries would fare better employing celebrities diagnosed with MS who can reverse the stigma of seeking psychological and general healthcare assistance through screening promotional messages.

4) Developing MS drugs with zero mental health side effects. Pharmaceutical companies will be better advised to design drugs, which would not cause depression, thereby aggravating the disease. Clinical trials should test the feasibility of new products.

6. Conclusion

While the MS and self-esteem route is direct and logical, being enabled by symptoms that interfere with functional capabilities noticeable by people with the condition and fellow coworkers, which cannot but damage self-perception, many routes are quite complex when MS affects self-esteem through depression or when self-esteem affects MS via depression, which shows the two major variables are mutually influenceable, changing their nature from dependent to independent in different correlation contexts. The difference, however, is that MS is a more independent variable, for self-esteem cannot trigger the medical condition

through depression as it does not go further than aggravating it, while multiple sclerosis launches the self-esteem struggles and even depression, ensuring its own tenacity as it makes the mental health disorders enhance their persistence. Additional findings imply that correlations often involve mediators, such as medications, as is the case with MS' impact on depression, or transitional conditions, such as depression, which also link different variables involved in the link between multiple sclerosis and self-esteem. Furthermore, some of the correlation routes are biological in nature, including the shift of the immune balance toward a Th1 response allowing depression to aggravate MS, while others involve the mental healthcare mechanism when low self-esteem renders people more dejected and pessimistic. As further evidenced, while timely intervention can block some of the correlations affecting MS, medication therapy may prove controversial. Although it alleviates multiple sclerosis symptoms, it can stimulate depression via steroids and interferon-class drugs.

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