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Review Paper

Mental Health and Quality of Life in Parkinson Patients During the COVID-19 Epidemic: A Systematic Review

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ABSTRACT

Background and Aim: The COVID-19 has had several psychological and physical consequences, which have been more reported in people with chronic diseases, such as Parkinson's Disease (PD). In this regard, this study reviewed all articles, which evaluated the mental health and quality of life of patients with PD during the COVID-19 epidemic.

Methods and Materials/Patients: In this study, the keywords Parkinson's disease, PD, Coronavirus 2019, COVID-19, SARS-CoV-2, mental health, quality of life, depression, stress, and anxiety were searched in the abstract and title of articles published between 2020 (May) and 2022 (April) in reputable international scientific databases of EMBASE, Google Scholar, ScienceDirect, Scopus, and PsycINFO, PubMed, and Clarivate Analytics. The PRISMA checklist was used to review and control the quality of articles. Of the total 369 articles found, 21 articles were selected for review.

Results: According to the studies, patients with PD had anxiety, depression, stress, poor sleep quality, death-related thoughts, fear, and cognitive, behavioral, and motor problems during the pandemic. Femininity, low level of education, and poverty were also among the factors exacerbating psychological disorders in PD patients. Decreased physical and social activity also reduced the quality of life in patients with PD. During home quarantine, many patients became concerned about access to medication and physicians, which exacerbated PD.

Conclusion: According to studies, the outbreak of COVID-19 reduced the mental health and quality of life of patients with PD. Since having high mental health has an important role in increasing the immune system against various diseases, identifying and treating vulnerable groups can increase life expectancy in patients.

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Highlights

• The COVID-19 epidemic has increased anxiety, stress, depression, death thoughts, poor sleep quality, and mental health in people with Parkinson's disease.

• The COVID-19-related anxiety in people with Parkinson's disease and fear of developing COVID-19 caused patients to experience a low quality of life.

• Home quarantine and social isolation due to the outbreak of COVID-19 have led to reduced physical activity and limited access to medication.

• Factors, such as low level of education, female gender, old age, low income level, and the severity of the disease were negatively correlated with mental health and quality of life.

Plain Language Summary

COVID-19 is an acute respiratory infectious disease with the main symptoms of fever, cough, and shortness of breath, which have high transmission and prevalence. With the COVID-19 epidemic and subsequent changes, such as the closure of high-risk jobs, the creation of emergency public health levels, and home quarantine, social and economic relations and the way people lived were severely affected. People with Parkinson's disease are more likely to be affected by high-risk diseases if they develop COVID-19. Patients with Parkinson's disease may be at risk for severe COVID-19 because they are weak. Studies have shown that people with Parkinson's disease have lower mental health and quality of life during the COVID-19 epidemic, which exacerbates the disease.

1. Introduction

According to reports from the World Health Organization, the Coronavirus Disease 2019 (COVID-19) first Spread on December 17, 2019, in Wuhan, China, and was introduced as a global epidemic on March 11, 2020 [1]. Despite paying attention to some cases such as nutritious diets and the production of effective vaccines in this area; Hygiene, such as wearing a mask, social distance, home quarantine, and canceling trips, seems to be the best way to control the prevalence of Covid-19 [2]. While the widespread prevalence of COVID-19, severe restrictions, lack of definitive treatment, and high incidence and mortality rates have led to psychological disorders among the general population of the world [3]. However, studies indicate a higher prevalence of anxiety among people with chronic diseases [4]. In particular, diseases caused by nervous system defects, such as Parkinson's Disease (PD), are highly vulnerable to COVID-19 [5]. This causes a lot of stress on these patients and they experience severe anxiety toward COVID-19 [6].

PD is a chronic progressive neurological disorder that develops in the form of brain cell breakdown and after Alzheimer's disease, it is the second most prevalent disorder of the nervous system [7]. Damage to dopaminergic, noradrenergic, cholinergic, glutamatergic, and serotonergic neurons is a major cause of PD progression. Patients usually present with a range of motor impairments including movement, tremors from muscle injury and stiffness, inability to maintain balance and walking, and non-motor impairments such as olfactory, memory, and gastrointestinal impairments [8].

About 5% to 10% of PD cases are inherited due to mutations or protein accumulation [9]. This disease not only affects the health and physical functions of these patients but also poses serious threats to their areas of general health and mood [10, 11]. Studies have shown that in addition to multiple respiratory symptoms in patients with COVID-19, neurological manifestations occur in about 80% of cases in the hospital at any stage of the disease [12]. Muscle damage or anosmia, encephalitis, and stroke are some of the neurological complications of this condition that lead to death [13]. In addition to the neurological implications of COVID-19, it is debatable whether pre-existing neurological disorders may worsen under these conditions [14].

Many studies on COVID-19 have shown that patients with PD have high-risk factors that can lead to severe COVID-19 [15, 16]. According to studies, patients with

PD who are hospitalized for coronavirus 2019 may die 40% of the time [17]. Researchers looked at data on PD treatment in a hospital in one study. The results showed that COVID-19 was more common in people with PD than in people who did not have PD; Especially people over the age of 65 or those with severe PD.

Research findings show that PD patients after developing COVID-19 are exposed to high-risk diseases. Patients with PD may be at risk for severe COVID-19 because they are weak. The risk increases with age and the development of advanced PD. Lung function may be impaired due to PD and respiratory muscle weakness [16-18]. These factors can lead to poor mental health and quality of life for PD patients during home quarantine or hospitalization [19, 20]. Shalash & et al. [21] in their study examined PD patients in terms of physical activity, mental health, and quality of life during the COVID-19 epidemic. The finding showed a high prevalence of anxiety, depression, and stress in patients with PD. During the COVID-19 epidemic, there was a negative correlation between patients' quality of life and psychological health. Many patients were also concerned about the treatment process and access to their medications. Findings of Xia et al. [22] in the field of mental health dimensions and sleep quality of PD patients also showed that 68.9% of PD patients experienced sleep disturbances during the outbreak of COVID-19, On the other hand, patients with PD scored high on depression, anxiety and stress, which reduced their quality of life.

Overall, according to studies, it was found that during the COVID-19 epidemic, patients with PD, in addition to physical care, also need to receive psychological support [23]. These people are vulnerable groups who need extra support and care, so they experience a lot of stress [24]. Since having high mental health has an important role in increasing the immune system against various diseases, identifying and treating vulnerable groups can increase life expectancy in patients. To this end, in addition to all medical care, the mental health of patients with PD should be improved by providing telemental health services [25]. According to the mentioned cases, in this study, we investigated and reviewed all of the articles which evaluated the mental health and quality of life of patients with PD during the COVID-19 epidemic.

2. Methods and Materials/Patients

Search strategy

In the present review study, the Prisma checklist was used to review studies on the mental health and quality of life in PD patients during the COVID-19 epidemic [26]. Articles were searched in research databases, such as EMBASE, Google Scholar, ScienceDirect, Scopus, PsycINFO PubMed, and Clarivate Analytics. Researchers in this study, using the specified keywords, searched and extracted valid English articles published between 2020 (May) and 2022 (April) in reliable electronic sources, and by reviewing the full texts of these articles, the data were reported in a categorized manner.

Keywords

The following combinations of keywords were used in searching: (Parkinson's disease) OR (PD) (title/abstract) AND (Quality of Life) (abstract/title) AND (Coronavirus 2019) OR (COVID-19) OR (SARS-CoV-2) (abstract/title) AND (Mental Health) OR (Depression) OR (Stress) OR (Anxiety) (abstract/title).

Inclusion and exclusion criteria

Research articles were specifically selected according to the exclusion and inclusion criteria. Criteria for entering the research were being related to the purpose of this research, the existence of a structured research framework and publication in a valid journal, and exclusion criteria were articles, which their full text was not available, articles that were letters to the editor, or not having an abstract.

Quality assessment

All articles were evaluated by the authors after extraction from the desired databases. The content of these 24 articles was analyzed individually by five researchers of this study. Each researcher analyzed the content of each article separately and entered the data in the content analysis form. The value and quality of the title and abstract of articles were assessed using the Prisma checklist, which included the following items: matching the structure of the article with the type of research, research purpose, the research community, sample selection process, data collection tools, data analysis using statistical tests related to the objectives, meeting the inclusion and exclusion criteria, observance of ethics in the research, presentation of findings by the objectives of the research, and discussion of the findings based on the results. The quality of the articles in this study was evaluated based on the criteria developed by Gifford et al. [27].

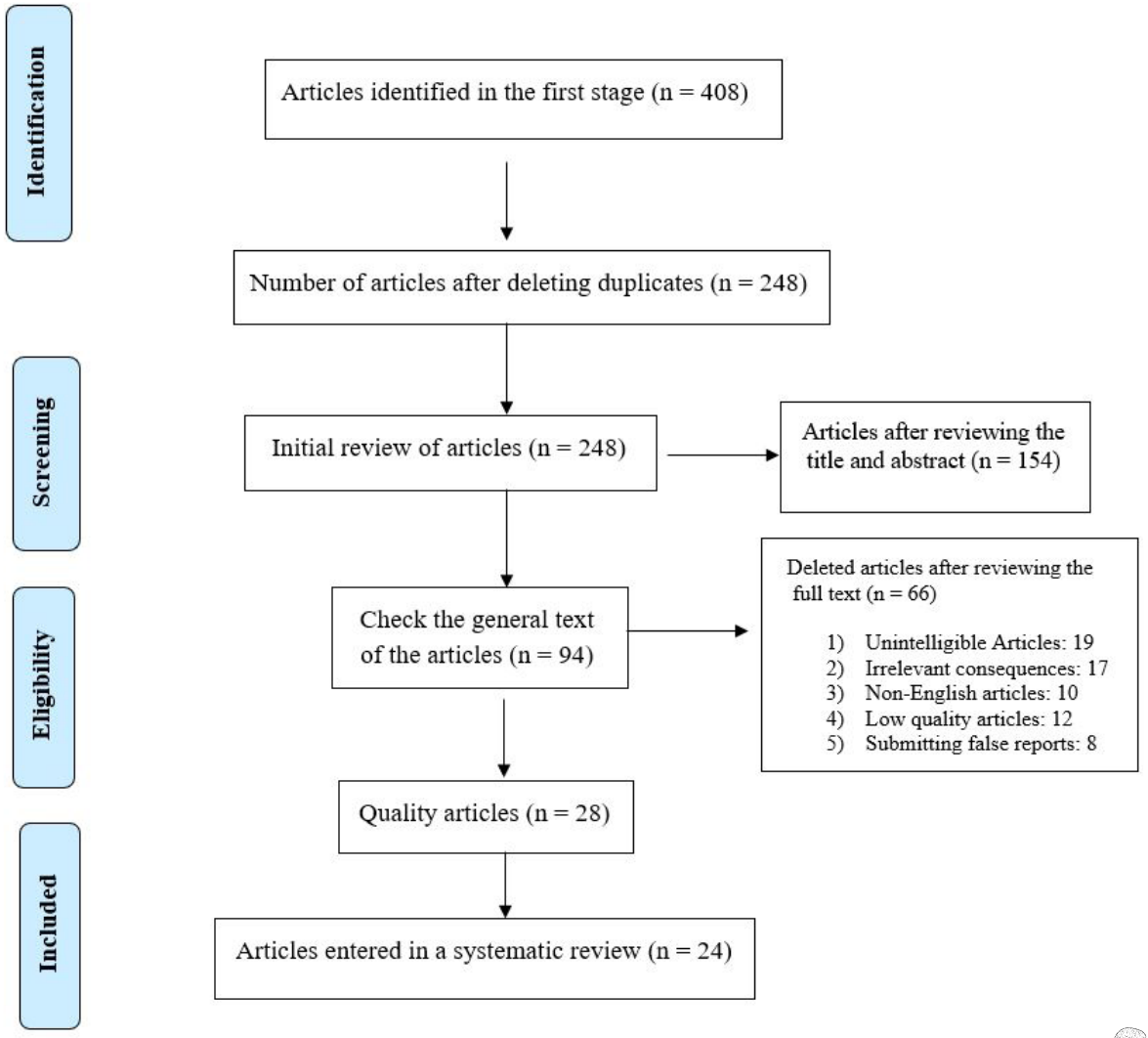

Figure 1. PRISMA flow chart outlining research results

Data extraction

Abstracts of published articles were reviewed and duplicates were removed from the study in several stages, and finally, 24 final articles were selected for comprehensive review and data extraction (Figure 1).

3. Results

In this review study, 24 qualified research articles were analyzed. Table 1 presents the results obtained from research articles on the mental health and quality of life in patients with PD during the COVID-19 epidemic (Table 1).

Out of 408 articles related to the mental health and quality of life in PD patients during the COVID-19 epidemic, 24 articles were reviewed at the end and a sample of 12,128 people was reviewed according to the criteria of the Prisma checklist. According to the studies, patients with PD had anxiety, depression, stress, poor sleep quality, death-related thoughts, fear, and cognitive, behavioral, and motor problems during the COVID-19 epidemic. Female gender, low education level, and poverty were also among the factors exacerbating psychological disorders in PD patients. Decreased physical and social activity also reduced health-related quality of life in patients with PD. On the other hand, during home quarantine, many patients became concerned about access to medication and physicians, which exacerbated PD.

4. Discussion

This study aimed to evaluate the mental health and quality of life of patients with PD during the COVID-19 epidemic. The finding of evaluated studies showed that during the COVID-19 epidemic, patients with PD had lower mental health and quality of life. Social isolation,

Table 1. Summary of published articles on mental health and quality of life in patients with Parkinson's disease during the COVID-19

No.	Authors	Purpose	Country	Design	Sample Size of PD Patients	Results
1	Montanaro et al. (2022) [5]	Evaluation of anxiety, depression, and worry in patients with PD during the COVID-19 epidemic	Italy	Cross-sectional	160	According to the results, 35% of patients had depression and 39% had anxiety. Twenty-five percent of patients were afraid of developing COVID-19, 35% were afraid of discontinuing treatment, and 47% had anxiety and fear of exacerbation of PD during the outbreak of COVID-19.
2	Van der Heide et al. (2020) [6]	The impact of the COVID-19 epidemic on psychological distress, physical activity, and symptom severity in PD	Netherlands	Cross-sectional	358	46.6% of PD patients had low physical activity during the COVID-19 epidemic. Patients suffering from COVID-19 suffered from severe psychological problems. Decreased physical activity of patients led to increased depression, tremors, and exacerbation of symptoms in patients.
3	Janiri et al. (2020) [10]	Evaluation of psychological symptoms in patients with PD during the COVID-19 outbreak	Italy	Cross-sectional	134	75.4% of patients had psychiatric symptoms. But 22.8% of patients reported psychological problems during the outbreak of COVID-19. Also, 82.6% had depression and 52.2% had poor sleep quality. Female gender and age were factors causing psychological problems in patients.
4	Salari et al. (2020) [11]	The role of the COVID-19 epidemic in increasing anxiety levels in patients with PD	Iran	Cross-sectional	137	25.5% of PD patients had high anxiety. Sixty percent of the patients had significant anxiety disorders due to fear of developing COVID-19, which decreased their mental health. Many patients were also concerned about the treatment process and access to the drugs they needed.
5	Brown et al. (2020) [14]	The effect of the COVID-19 epidemic on people with PD	USA	Cross-sectional	5429	The health status of 63% of patients worsened during the outbreak of COVID-19. Factors, such as health care (64%), social activities (57%), sports activities (21%), motor symptoms (43%), and non-motor (52%) were not in good condition during the COVID-19epidemic.
6	Fründt et al. (2022) [19]	Impact of COVID-19 epidemic on care situation of people with PD	Germany	Cross-sectional	1269	A significant number of patients had psychological problems that exacerbated the disease. Restrictions on access to physicians and medication also reduced the quality of life in patients with PD.
7	Baschi et al. (2020) [20]	Effects of the outbreak of COVID-19 on the severity of cognitive, behavioral, and motor symptoms in patients with PD	Italy	Cross-sectional	65	Studies have shown an increase in cognitive (37.5%), behavioral (26%), and motor (35.4%) problems in patients with PD during the outbreak of COVID-19. Also, 26% were stressful because of the fear of the disease, which reduced patients' quality of life and mental health.
8	Shalash et al. (2020) [21]	Evaluation of physical activity, psychological health, and quality of life of patients with PD during the outbreak of COVID-19	Egypt	Cross-sectional	38	The finding showed a high prevalence of depression, anxiety, and stress in patients with PD. The level of physical activity of patients during the COVID-19epidemic was negatively correlated with psychological health and quality of life. Many patients were also concerned about the treatment process and access to their medications.
9	Xia et al. (2020) [22]	The role of COVID-19 on sleep quality and mental health of patients with PD	China	Cross-sectional	119	68.9% of PD patients experienced difficulties in sleeping during the outbreak of COVID-19, which was directly correlated with exacerbation of symptoms and anxiety. On the other hand, patients with PD scored high on depression, anxiety, and stress, which reduced their quality of life.

No.	Authors	Purpose	Country	Design	Sample Size of PD Patients	Results
10	Dommershuijsen et al. (2021) [23]	Evaluation of the level of psychological health of PD patients during home quarantine caused by COVID-19	Netherland	Cross-sectional	844	Patients with PD had anxiety and stress during the COVID-19epidemic, which led to a decrease in their mental and physical health. In this regard, psychological interventions, such as mindfulness and self-compassion are suggested to increase patients' mental health and quality of life.
11	Feeney et al. (2021) [24]	Evaluation of the effects of home quarantine caused by the COVID-19 epidemic on the severity of symptoms in patients with PD	USA	Cross-sectional	1342	The rate of mood changes was 66%, which was a significant increase compared to the pre-epidemic era. Also, people with good incomes and university education were more likely to use distance mental health services. In addition, 46% of patients were satisfied with the remote health service and wanted to use it forever.
12	Haas et al. (2022) [25]	Association between mental health and physical activity levels in people with PD during the COVID-19 epidemic	Brazil	Cross-sectional	156	Patients with PD had high levels of anxiety, stress, fear of death, and depression during the outbreak of COVID-19. Home quarantine also reduced patients' physical activity and social interactions.
13	Luis-Martínez et al. (2021) [28]	Impact of social and mobility restrictions on PD during the COVID-19 epidemic	Italy	Cross-sectional	12	After two months of home quarantine, the mental health and physical activity of patients with PD decreased significantly. In contrast, many patients were overweight, which exacerbated the disease.
14	Prasad et al. (2020) [29]	The effects of home quarantine and social distance of COVID-19 on the lives of patients with PD	India	Cross-sectional	100	Patients with PD had high stress and anxiety levels during the COVID-19 epidemic. Fear of COVID-19 reduced access to medication and physicians and reduced patients' mental health.
15	Hero et al. (2022) [30]	The role of the COVID-19 epidemic on the physical and mental health of patients with PD	Croatia	Cross-sectional	87	During the COVID-19, patients with PD had poor physical and mental health. Patients who were alone also experienced more depression and anxiety. Factors, such as low education level, disease severity, and female gender reduced mental and physical health.
16	Del Prete et al. (2021) [31]	Prevalence of COVID-19 and severity of symptoms in patients with PD	Italy	Cross-sectional	740	Out of 740 patients, seven cases developed COVID-19. Patients with PD had more problems than patients with high blood pressure and diabetes, which exacerbated the disease. Also, many patients experienced a lot of stress due to fear of COVID-19.
17	Balci et al. (2021) [32]	The effects of the COVID-19 epidemic on depression, physical activity, and anxiety levels in patients with PD	Turkey	Cross-sectional	45	The physical activity of patients with PD was low during the COVID-19 epidemic. Decreased physical activity and social interactions caused depression and anxiety in patients, which also affected their treatment process.
18	Suzuki et al. (2021) [33]	The impact of the COVID-19 epidemic on the quality of life of patients with PD	Japan	Cross-sectional	100	Exacerbation of symptoms, intensification of stress levels, and declining course of physical activity was observed in 29, 37, and 44% of patients with PD, respectively. Many patients also had difficulty receiving medical care and access to medication.
19	Thomsen et al. (2021) [34]	Evaluation of the challenges of PD patients and their caregivers during the outbreak of COVID-19	Denmark/ Sweden	Cross-sectional	67	The finding showed a high prevalence of depression, anxiety, and stress in patients with PD. Also, the quality of life-related health and quality of sleep of patients during the outbreak of COVID-19significantly reduced, which led to an exacerbation of the disease in them.

No.	Authors	Purpose	Country	Design	Sample Size of PD Patients	Results
20	Saluja et al. (2021) [35]	Effects of the COVID-19 epidemic on the quality of life and exacerbation of symptoms in patients with PD	India	Cross-sectional	64	The disease status worsened in 40.6% of PD patients during the outbreak of COVID-19. Lack of daily activities and difficulty walking were observed in 57 and 53% of patients, respectively. Sleep-related disorders were also common, which reduced patients' mental health.
21	Krzysztoń et al. (2022) [36]	Secondary impact of COVID-19 epidemic on people with PD	Poland	Cross-sectional	47	55% of patients with PD had low physical activity during the COVID-19 epidemic. Also, 36% had a fear of COVID-19, 80% had difficulty accessing medication, and 83% had a poor quality of life. Decreased physical and social activity caused psychological disorders in patients.
22	Hermanowicz et al. (2022) [37]	The effect of COVID-19 home quarantine on the health of PD patients	USA	Cross-sectional	719	58% of patients with PD had low social support during the COVID-19 outbreak, which led to increased sadness, stress, depression, and anxiety. Decreased physical activity also aggravated the symptoms of the disease in individuals.
23	Seritan et al. (2022) [38]	Evaluation of mindfulness-based cognitive therapy for a patient with PD during the COVID-19 epidemic	USA	Cross-sectional	22	During the COVID-19 epidemic, patients with PD suffered from high levels of anxiety and depression. Patients who received cognitive-behavioral therapy based on mindfulness had better mental health.
24	Goel et al. (2022) [39]	Evaluation of the quality of life-related health of PD patients during the outbreak of COVID-19	India	Cross-sectional	31	90.3% of PD patients reported worsening symptoms during the COVID-19 epidemic, 26% had difficulty obtaining medication, and 83.8% had limited access to a physician, which reduced the quality of health-related life in patients.

PD: Parkinson's Disease

staying at home, and very limited and difficult access to health services caused many patients to experience high levels of anxiety and stress [32]. Also, reduced physical activity, lack of social communication, and loneliness significantly reduced the quality of life of patients with PD [39].

at the beginning of the COVID-19epidemic, many media and social networks reported news and messages regarding the greater vulnerability of the elderly and people with PD. COVID-19 was broadcast, which caused great fear and anxiety in these people [11]. This caused these patients to spend two very difficult years with depression, fear, and stress, which led to further weakening of their immune system. In general, since COVID-19 is an unknown disease and no definitive cure has yet been found for it, patients with or suspected of COVID-19 are often frightened and anxious about the subsequent consequences of this deadly virus [6]. Meanwhile, people with chronic diseases are at greater risk for COVID-19 because they have a lower level of physical defense against the disease [4]. Elderly with PD in particular experience a great deal of anxiety that affects their mental health and may lead to mental and physical disorders. Since most patients with PD are older, the incidence and mortality rate can be expected to be higher in these patients [16]. When anxiety and stress are out of their normal range, they damage a person's body to the point that the patient may have a severe heart attack [35]. For this reason, it can be said that in addition to the weak immune system, the high psychological distress that people with chronic diseases experience during the outbreak of COVID-19 increases the number of hospital admissions, the incidence of more severe COVID-19, and mortality [21].

On the other hand, during the spread of COVID-19, the number of casualties increased and strict measures were taken to curb the spread of the disease in different parts of the world. One of the measures taken to control COVID-19 was home quarantine, which in turn can have a variety of consequences, including increased anxiety and stress for people with PD [29]. The reduction of social communication and non-referral to physicians due to severe limitations, reduced the physical and mental health of patients [11]. People who are under home quarantine may experience feelings of fatigue, loneliness, depression, and anxiety because they have more limited contact with the community and others [19]. On the other hand, due to the constraints and the lack of vacancies in the hospitals,

the treatment sessions of many patients were interrupted, which in turn, exacerbated the symptoms and mental health problems of patients with PD [24].

Brown et al. [14] investigated the effects of the COVID-19 epidemic on the lives of patients with PD. Their finding showed that the physical-mental health of 63% of patients worsened during the outbreak of COVID-19. Health care (64%), social activities (57%), sports activities (21%), motor symptoms (43%), and non-motor (52%) were not in good condition during the COVID-19. Krzysztoń et al. [36] also examined the dimensions of the prevalence of COVID-19 epidemics in the lives of people with PD. They showed that 55% of PD patients had low physical activity during the COVID-19 epidemic, 36% had a fear of COVID-19, 80% had difficulty accessing medication, and 83% had a poor quality of life. Decreased physical and social activity caused psychological disorders in patients.

In general, PD not only severely affects patients' functional abilities, but also seriously affects emotional, psychological, social, and emotional aspects of the quality of life in PD patients [32]. Quality of life is a comprehensive concept that encompasses all physical, psychological, cognitive, social, cultural, and economic aspects of a person's life. In the physical dimension, the most important aspect is the performance status of the individual [33]. Perception of quality of life is influenced by a person's ability at different ages to continue to function and perform daily activities, such as taking care of themselves and going to work. In the psychological dimension, mental health is an important component of quality of life, and having a positive outlook is effective in improving the quality of life [22]. Since having good mental health and quality of life play an important role in increasing the immune system of people with PD, it is necessary to take measures to identify and treat patients with psychological problems [5].

5. Conclusion

The finding of the reviewed articles showed an increase in anxiety, depression, stress, fear, death thoughts, sleep problems, and psychological distress during the COVID-19 epidemic in patients with PD. The treatment and physiotherapy process of many patients was hampered by home quarantine and social isolation, which exacerbated the symptoms of the disease. On the other hand, decreased social interaction and fear of COVID-19 reduced the quality of life of PD patients. Given that two years have passed since the COVID-19 epidemic and because the deadly virus is still mutating, it is necessary to take measures in addition to medical care to increase the mental health and quality of life of patients with PD. Many patients were unable to complete their treatment due to limitations and had difficulty receiving medication. Fear of COVID-19 infection and death also lowered the patients' immune systems, which may have long-term far-reaching psychological and physical consequences. For this purpose, it is suggested that physicians and specialists use telemedicine to promote the psychosocial health of these patients so that we can expect the least psychological disorders in these patients.

One of the limitations of the present review study is the unavailability of the full text of some articles, which led to the non-inclusion of these articles in the review process. Also, due to the filtering of some scientific databases, researchers could not access them. Due to the fact that many patients with PD experienced severe psychological damage, such as depression and anxiety during the COVID-19 epidemic, in the post-corona period, special attention should be paid to improving the mental health of these patients.

Ethical Considerations

Compliance with ethical guidelines

There is no animal or human research reported in this study and there was no need for the approval of any ethical board.

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Authors' contributions

Conception and design: Farzin Bagheri Sheykhangafshe and Maryam Saeedi; Data collection: All authors; Data analysis and interpretation: All authors; Drafting the article: Alireza Alesadi Sani, Arina Kiani and Vahid Savabi Niri; Critically revising the article: All authors; Reviewing the submitted version of the manuscript: Farzin Bagheri Sheykhangafshe, Arina Kiani and Maryam Saeedi; Approving the final version of the manuscript: Farzin Bagheri Sheykhangafshe.

Conflict of interest

There is no conflict of interest concerning this study.

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