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Article

Association between Spirituality and Depression in Elderly People with Parkinson's Disease in Brazil: Cross-Sectional Study

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Abstract: Parkinson's disease affects a significant number of elderly people around the world, and it is characterized by a variety of motor and non-motor symptoms. Among non-motor symptoms, depression has shown a high prevalence. Nonetheless, complementary therapies have been sought with a view to improving the mental health and quality of life of this population, where spirituality has proven to be a method capable of contributing to the improvement of depression. Accordingly, the objective is to analyze the relationship between spirituality and depression in elderly people with Parkinson's disease. This is a cross-sectional study, carried out with 35 elderly people living in a municipality in the state of Santa Catarina/Brazil, diagnosed with Parkinson's disease. It was possible to measure that the higher the general, religious and existential domains of the Spiritual Well-Being Scale, which involve feelings of completeness and satisfaction with life, peace with oneself and the world, and the higher the organizational domain of the Duke University Religion Index, which mainly involves the social component (participation in religious meetings), the lower will be the depression levels in people with Parkinson's disease. Accordingly, it is concluded that spirituality can, in some way, contribute to the reduction of depression levels in elderly people with Parkinson's disease.

Keywords: aged; Parkinson disease; spirituality; depression

1. Introduction

The aging process is accompanied by several progressive changes that occur biologically at cellular, tissue and visceral levels. In the biological context, the nervous system ends up having the greatest impairment in the aging process, since it is responsible for processing information that aims to maintain the individual's interaction with the environment. Thus, with the increase in the population's life expectancy, there is a progressive increase in chronic-degenerative pathologies among elderly people (people aged 60 and over) [1].

Among chronic degenerative and disabling diseases, Parkinson's disease stands out, being the second most common degenerative disease of the central nervous system, and the first related to movement disorders in the elderly population. Currently, it affects around 1% of the world's elderly population, with a tendency to reach more than eight million people by the year 2030 [2,3].

Parkinson's disease is a neurodegenerative pathology that affects the gray matter in the brain, causing the death of dopaminergic neurons in the substantia nigra. In most cases, this pathology is idiopathic (unknown cause). The outcome of this dopamine deficiency ultimately leads to an involuntary movement disorder, characterized by a variety of motor and non-motor symptoms [4].

In this context, the motor symptoms manifested by people with Parkinson's disease involve resting tremor, bradykinesia, rigidity and postural instability. In turn, the classic non-motor symptoms involve hypomimia, difficulty speaking and inability to move. In addition to these classic non-motor symptoms, almost 90% of people with Parkinson's disease experience other symptoms that often end up disabling them, such as: apathy, psychosis, pain syndromes, sleep disorders, anxiety and depression [5].

In this context, depression has been identified in the literature as a disease that has a significant relationship with people with Parkinson's, whether it manifests itself before or after the disease. It is pointed out that individuals suffering from depression, or even those who have previously been affected by it, are more likely to develop Parkinson's disease, when compared to those who have never had depression. This suggests that depression may be an early symptom or shares common etiological factors with Parkinson's disease [6]. Nonetheless, it is also clear that people with Parkinson's disease have a 40 to 50% risk of developing depression over time [7].

In this sense, complementary therapies have been sought with a view to improving the mental health and quality of life of this population, and spirituality has proven to be a method capable of contributing to the improvement of the quality of life of people with Parkinson's disease, as well as those with depression. Although there is no universal consensus on the definition of spirituality, it is understood that its concept is related to the way of finding direction, transcendence, meaning, purpose and connectivity in life [8,9].

In the literature, studies related to Parkinson's disease and spirituality are still incipient, but it is clear that most people with the disease relied on their faith to discover a deeper meaning of themselves, having positive effects on the process of experiencing Parkinson's disease [10]. Furthermore, spirituality enhances the development of resilience, which is conceptualized as the ability to create strength, in order to face difficult situations. In Parkinson's disease, there is therefore a need to develop resilience to move forward, have healthy habits, motivation, even knowing that the future is uncertain [9].

Finally, spirituality has been described as a way of dealing with the problems that chronic illnesses bring with them, especially those of an emotional and psychological nature. It is clear that spirituality and religiosity are important pillars for the psychological well-being of the general population, especially the elderly citizens, resulting in a reduction in comorbidities and problems related to depressive symptoms [11].

Accordingly, it is clear that spirituality can contribute in terms of minimizing depressive symptoms in elderly people with Parkinson's, contributing, in addition to their health condition, in terms of improving the quality of life of this population. Therefore, this research has as its guiding question: could spirituality minimize depression levels in elderly people with Parkinson's disease? Based on this, the objective is to analyze the relationship between spirituality and depression in elderly people with Parkinson's disease.

2. Materials and Methods

This is a cross-sectional study, carried out between August and October 2020, with elderly people with Parkinson's disease from a municipality in the state of Santa Catarina, Brazil.

A total of 35 elderly people were included, aged 60 or over, diagnosed with Parkinson's disease, and who were registered with the Health Department's Pharmaceutical Assistance Directorate, in order to withdraw from drug treatment. Nonetheless, people who showed any commitment to answering the research instrument were excluded.

This research was approved by the institutional ethics committee, through opinion n^o 3.771.632/2019, and followed the ethical precepts set out in Resolution n^o 466/12 of the National Health Council of Brazil. All elderly people in the research received information regarding the research and gave their written informed consent. Furthermore, details that could reveal the participants' identities were omitted.

The first contact with the elderly individuals occurred by telephone, when they were informed about the research; and, if they agreed to participate, a scheduling was made for data collection at home. It is underlined that a considerable number of elderly people were excluded when making telephone contact, since, during the call, either the number was indicated as non-existent or it was directed to voicemail, being considered excluded after five unsuccessful attempts. Furthermore, another portion of elderly people did not agree to participate in the research, mainly because they were afraid of receiving the researchers due to the pandemic condition experienced worldwide during the collection period. Nonetheless, it is noted that, for data collection at home, all procedures

and protocols recommended by the Brazilian Ministry of Health were followed, in order to minimize the risk of infection by Covid-19.

In the elderly person's home, researchers applied an instrument containing:

Sociodemographic, economic and clinical questionnaire: age (entire years); gender; race; education; place of residence; marital status; number of children; per capita income; profession; and clinical conditions of people with Parkinson's disease (diagnosis time; whether they are under drug treatment; name of the drug; treatment time; any adverse effects related to the drug; history of Parkinson's disease in the family).

Pinto Pais-Ribeiro Spirituality Scale: designed and validated in Brazil, which has five items that permeate two dimensions (beliefs and hope/optimism). The answers to each item are Likert-type, with four alternatives, varying from "I do not agree" (one point) to "I fully agree" (four points). The dimension "beliefs" consists of two items that refer to a vertical dimension of spirituality. In turn, the dimension "hope/optimism" consists of three items and represents a horizontal dimension of spirituality. Each dimension is measured by evaluating the average of the items that comprise it. It is also underlined that the higher the average measurement of the scores that make up the scale and its dimensions, the higher will be agreement with the evaluated dimension.

Spiritual Well-Being Scale: adapted and validated for Brazil, which includes 20 items that generally evaluate spiritual well-being (feeling of completeness and satisfaction with life, feeling of peace with oneself and the world, approach to what is considered absolute or to nature itself). Furthermore, the scale is divided into two evaluative dimensions: religious well-being (has been associated as an internal strength, including challenge, commitment and control, and hope); and existential well-being (related to purpose in life and satisfaction with his/her own existence). Answers are on a Likert-type scale containing six options that vary from "fully agree" to "fully disagree", with item scores varying from one to six points. Each dimension (religious well-being and existential well-being) can vary from 10 to 60 points, just as the measurement of general spiritual well-being, which involves the sum of all items, can vary from 20 to 120 points, where the higher the measurement of outcomes, the better the dimension or general condition of spirituality is evaluated.

Duke University Religion Index: the scale was validated and adapted for Brazil, which has five items that cover three dimensions of religiosity: organizational – related to a social component, as well as participation in religious activities (one item); non-organizational – encompasses religious habits and behaviors that may occur outside the environment and context of a religious institution or organization (one item); and intrinsic religiosity – takes on a meaning where all aspects of life are understood in terms of it (three items). The answers to each item are on a Likert-type scale, where the measurement of the organizational and non-organizational dimensions can vary from one to six points, and the dimension "intrinsic religiosity" can vary from three to 15 points, where the higher the measurement of each dimension, the better will be its evaluation.

Hamilton Depression Rating Scale: the scale was validated and adapted for Brazil, and aims to identify the severity of depressive symptoms, not their existence. It consists of 17 items. The score for each of the items can vary from a minimum value (zero) to two or four, depending on the item in question. The measurement of the severity of depressive symptoms can vary from zero to 52 points, and the presence of depressive symptoms must be determined from the sum of eight points, and the higher this score, the higher will be the severity of the depressive symptoms.

After collection, the data were entered into the Epiinfo 7.0 software, in a double and independent way, and then analyses were carried out using the PASW Statistics® software (Predictive Analytics Software, from SPSS Inc., Chicago – USA), version 20.0 for Windows. Regarding the analyses, data adherence to normality distribution was verified using the Kolmogorav-Smirnov test. For quantitative variables, descriptive statistical analysis (average and standard deviation) was used. For qualitative (or categorical) variables, absolute (n) and relative (%) frequencies were distributed. Subsequently, correlation analysis was carried out between the variables involving spirituality and depression using the Spearman Rank Correlation test, in order to identify the strength between the variables.

3. Results

Of the 35 elderly people with Parkinson's disease, 51.4% were female, 51.4% were over 70 years old, an average of 70.8 years \pm 8.26, varying from 60 to 91 years of age, 71.4% were white, 77.1% studied until elementary school, with the average years of study being 4.97 \pm 3.73. Furthermore, 60% lived with a spouse or partner, 85.7% had two to seven children, 94.3% were not employed, with an average income of R\$2,165.00 \pm R\$ 1,225.00, which varied from R\$ 1,045.00 to R\$ 5,000.00 (Table 1).

Table 1. Sociodemographic and economic characterization of elderly people with Parkinson's disease. Chapecó, SC, Brazil, 2020, n=35.

	Variable	n	%
Gender	Male	17	48.6
	Female	18	51.4
Age	60 to 70 years	17	48.6
	Over 70 years	18	51.4
Race	White	25	71.4
	Another race	10	28.6
Education	Illiterate	2	5.7
	Elementary school	3	77.1
	High school	5	14.3
	Graduated or more	1	2.9
Marital status	Living with spouse or partner	21	60.0
	Separated, divorced or widowed	14	40.0
Number of children	No children	2	5.7
	2 to 7 children	30	85.7
	7 children or more	3	8.3
Employed	No	33	94.3
	Yes, but without a work permit	2	5.7

Source: Authors, 2024.

Regarding the clinical conditions involving the disease and drug therapy of elderly people with Parkinson's disease, it is underlined that 70.6% had no family history of the disease, 60% had been diagnosed with the disease between one and six years old, and 68, 6% were in the period up to six years, 71.4% had no adverse effects from the drugs prescribed for Parkinson's disease and 90.9% had tremors even taking the drug (Table 2).

Table 2. Characterization related to the clinical and drug aspects of elderly people with Parkinson's disease. Chapecó, SC, Brazil, 2020, n=35.

	Variable	n	%
Diagnosis	1 to 6 years	21	60.0
	7 to 13 years	7	20.0
	14 to 20 years	7	20.0
Age	1 to 6 years	24	68.6
	7 to 13 years	7	20.0
	14 to 20 years	4	11.4
Adverse effects of drugs	Yes	10	28.6
	No	25	71.4
Tremors	Yes	30	90.9
	No	3	9.1

Source: Authors, 2024.

Regarding the evaluation of the Pinto Pais-Ribeiro Spirituality Scale, the domain “beliefs” showed a high average score (3.7 points \pm 0.53) and the domain “hope/optimism” showed a moderate average (2.9 points \pm 0.7). In turn, the domain “general spiritual” (94.6 points \pm 10.3), the domain “religious” (52.4 points \pm 4.4) and the domain “existential” (42.1 points \pm 8.4) showed high measurement in the spiritual well-being scale. Finally, the averages for the domains “organizational” (3.9 points \pm 1.63) and “non-organizational” (4.9 points \pm 0.88) were high in the Duke University Religion Index; however, the score was considered low (4.6 points \pm 1.81) in the domain “intrinsic religiosity”.

The evaluation of the depression scale showed an average of 10.8 points \pm 5.6. Furthermore, it was possible to identify that, among elderly people with Parkinson’s disease, 20.6% had no depression symptoms, 67.6% had mild depression, 8.8% had moderate depression and had 2.9% severe depression.

By correlating the domains of spirituality with depression, it was possible to identify that the domain “general spirituality” ($r=-0.570$, $p=0.000$), the domain “religious” ($r=-0.435$, $p=0.010$) and the domain “existential” ($r=-0.494$, $p=0.003$) showed a moderate and indirect significant correlation with depression regarding the Spiritual Well-being Scale. This means that the higher the domains “general”, “religious” and “existential” of elderly people with Parkinson’s disease, the lower will be the depression levels. It was also possible to identify that the domain “organizational” showed a significant and indirect correlation with depression ($r=-0.414$, $p=0.014$) in the Duke University Religion Index. Thus, the higher the levels of the domain “organizational” in elderly people with Parkinson’s disease in the Duke University Religion Index, the lower will be the depression levels (Table 3).

Table 3. Correlation between spirituality and depression scales in people with Parkinson’s disease. Chapecó, SC, Brazil, 2020, $n=35$.

Scales and domains	Depression	
	r	p
Pinto Pais-Ribeiro Spirituality Scale – Domain “Beliefs”	- 0.179	0.311
Pinto Pais-Ribeiro Spirituality Scale – Domain “Hope/optimism”	- 0.251	0.151
Spiritual Well-Being Scale – Domain “General”	- 0.570	0.000
Spiritual Well-Being Scale – Domain “Religious”	- 0.435	0.010
Spiritual Well-Being Scale – Domain “Existential”	- 0.494	0.003
Duke University Religion Index – Domain “Organizational”	- 0.417	0.014
Duke University Religion Index – Domain “Non-organizational”	0.071	0.690
Duke University Religion Index – Domain “Intrinsic Religiosity”	0.118	0.507

Source: Authors, 2024.

4. Discussion

Spirituality in the health context has proven to be relevant, thus impacting the improvement of some diseases, especially those of a psychological and emotional nature. Among elderly people with Parkinson’s disease, there has been an improvement in their health statuses, as well as a reduction in evils resulting from the disease. Among the problems that Parkinson’s disease can exacerbate, depression stands out, where spirituality has proven to be effective, thus contributing significantly to the reduction of this condition.

Depression in people with Parkinson’s disease is considered prevalent. Furthermore, it is considered higher than in other chronic diseases, such as diabetes or osteoarthritis [12]. Accordingly, it can be seen that the monoamine theory postulates that the etiology of depression occurs due to a deficit in terms of monoamine neurotransmission, that is, of the neurotransmitters named norepinephrine dopamine and serotonin. Although the main pathological characteristic of Parkinson’s disease is the progressive loss of dopaminergic neurons in the substantia nigra pars compacta, there are dysfunctions involving systems other than dopaminergic, such as the noradrenergic and serotonergic systems [13].

Taking into account that people with Parkinson's disease end up having a higher risk of developing depressive symptoms, it is clear that, in addition, the sociodemographic and clinical conditions of this population further increase the risk of manifesting depression symptoms. It was found that elderly people with Parkinson's disease, but who maintained a social bond or lived with other people, had lower depression levels [14], showing the positive relationship between the two phenomena, that is, the more evident the feeling of loneliness and less social interaction, the higher the report of depressive symptoms, as well as the higher psychological distress levels [12].

It was also identified that elderly people with Parkinson's disease who were not smokers had lower depression levels, which is in line with ample scientific evidence indicating that tobacco use is associated with a higher risk of developing mental disorders, including depression [15,16]. Furthermore, it is observed that depressed elderly people are more likely to start and maintain the habit of smoking, which may be explained by the lack of self-preservation behaviors arising from depression, as well as by the release of endogenous substances that induce pleasure caused by the use of tobacco [17].

It is also noted that elderly people with Parkinson's disease who manifested tremors had higher depression rates, which may be related to self-image, since the experience of stigma is present in the lives of people with Parkinson's disease [18]. Stigma emerges from the interaction between the individual with Parkinson's disease and the "outside world", so that these people may feel ashamed or embarrassed when they perceive other people's reactions to their symptoms, such as tremor. People with Parkinson's disease think that their symptoms reveal social incompetence and a deviation from social standards, in such a way that they often try to disguise the symptoms and, later, when they can no longer hide them, withdraw from social life [19]. Furthermore, neurosurgeries, such as deep brain stimulation, focused on attenuating motor changes, reduce people's self-perceived stigma, suggesting a relationship between motor symptoms and stigma [20].

Considering the association between Parkinson's disease and depression, it is also investigated whether spirituality would be a way of coping with this condition. There are still few studies in the scientific literature that link Parkinson's disease and depression; however, spirituality has already been proved to be effective in terms of improving other chronic diseases. Therefore, it should be emphasized that, similar to the results of this study, which found that improvement in spirituality levels ends up contributing in terms of reducing the severity of the depressive clinical picture, studies have identified that higher spiritual well-being levels among people with cancer were related to lower depression rates [21]. Similarly, the literature points out that spirituality has contributed to the reduction of depression levels in people with multiple sclerosis [22] and heart failure [23]. Furthermore, people with cancer [23] and diabetics [24] who manifested better measurements regarding religiosity had lower depression levels.

Given the above, we should explore the possible mechanism by which spirituality and religiosity help in terms of coping with depression. In order to clarify this question, one should perceive that faith, in most cases, increases after the discovery and initiation of treatment of serious diseases. Thus, these results indicate that people with highly serious illnesses develop spirituality as a support mechanism and as a way of giving meaning to their existence [25].

Furthermore, religion is present as a pillar of support in difficulty times, being perceived in many studies as a stimulating factor, motivation in different aspects and assistance in terms of coping with diseases [26,27], which can contribute to the life context of elderly people with Parkinson's disease. In this context, religiosity, unlike spirituality, has a social component, where the person can find a support network, of friends, others who share the same faith; in addition, people can get involved in social projects, thus helping in terms of improving their health conditions and reducing depressive symptoms, due to the fact of having a social and supportive bond [28], which are required for the lives of people with Parkinson's disease.

Although religiosity and spirituality contribute in terms of reducing the depression severity in elderly people with Parkinson's disease, there is therefore a need to pay attention when the individual manifests high distress and suffering levels caused especially by chronic depression, since the search

for comfort can inordinately accentuate a behavior that, instead of contributing, ends up worsening the depressive clinical picture [29].

Finally, it is highlighted that this study had limitations, mainly related to the low acceptance to participate in the research, since it was held during the pandemic period. Therefore, the results of the study do not allow generalization, but they show that spirituality can contribute to the improvement of depressive symptoms in people with Parkinson's disease, allowing a better quality of life and better coping with the disease.

5. Conclusions

It is concluded that spirituality, when involving aspects of completeness, purpose and satisfaction, internal strength, hope, participation and social interaction with the religious environment, end up contributing to the reduction in the depression severity levels in elderly people with Parkinson's disease.

In this sense, it is pointed out that spirituality has shown a potential impact on the health conditions of elderly people with Parkinson's disease, providing a change of concept in relation to their life and their illness. Furthermore, it is clear that spirituality has contributed significantly to the improvement of psychological and emotional disorders, which ends up helping this population to achieve a better quality of life.

Finally, it is underlined that there is a need for health professionals, both in Brazil and in other countries, to bring the development of spiritual interventions into their health care practice. These interventions aim to enhance care that allows elderly people to develop a resilient mentality in the face of their illness, as well as giving their strength, comfort and well-being to better live with the disease, thus improving their health and life conditions. Furthermore, it is emphasized that there is a need for further studies with a view to exploring in greater depth the relationship between spirituality and depression in people with Parkinson's disease.

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References

1. Couto, A. M.; Soares, S. M. Fatores associados à síndrome de fragilidade em idosos com doença de Parkinson. *Rev. Bras. Enferm.* **2022**, *75*, 1-8. [<https://doi.org/10.1590/0034-7167-2022-0096pt>]
2. Tysnes, O. B.; Storstein, A. Epidemiology of Parkinson's disease. *Journal of Neural Transmission*, **2017**, *124*, 901-5. [<https://doi.org/10.1007/s00702-017-1686-y>]
3. Cabreira, V.; Massano, J. Doença de Parkinson: revisão clínica e atualização. *Acta Med. Port.*, **2019**, *32*, 661-670. [<https://doi.org/10.20344/amp.11978>]
4. Armando, V.; Grego, A.; Fabbrini, G.; Inghilleri, M.; Rizzo, M.I.; Gallo, A.; Vicentes, M. Parkinson's disease: Autoimmunity and neuroinflammation. *Autoimmunity Reviews*, **2016**, *15*, 1005-11. [<https://doi.org/10.1016/j.autrev.2016.07.022>]
5. Lohle, M.; Storch, A.; Reichmann, H. Beyond tremor and rigidity: Non-motor features of Parkinson's Disease. *Journal of Neural Transmission*, **2009**, *116*, 1483-92. [<https://doi.org/10.1007/s00702-009-0274-1>]

6. Fang, F.; Xu, Q.; Park, Y.; Huang, X.; Hollenbeck, A.; Blair, A.; Schatzkin A. Depression and the subsequent risk of Parkinson's disease in the NIH-AARP Diet and Health Study. *Movement Disorders*, **2010**, *25*, 1157–62. [<https://doi.org/10.1002/mds.23092>]
7. Hemmerle, A. N.; Herman, J. P.; Seroogy, K. B. Stress, depression and Parkinson's disease. *Experimental Neurology*, **2012**, *233*, 79–86. [<https://doi.org/10.1016/j.expneurol.2011.09.035>]
8. Halstead, M. T.; Hull, M. Struggling with paradoxes: The process of spiritual development in women with cancer. *Oncology Nursing Forum*, **2001**, *28*, 1534–44.
9. Reynolds, D. Spirituality as a coping mechanism for individuals with Parkinson's Disease. *Journal of Christian Nursing*, **2017**, *34*, 190-4. [<https://doi.org/10.1097/CNJ.0000000000000392>]
10. Hermanns, M. Weathering the storm: Living with Parkinson's disease. *Journal of Christian Nursing*, **2011**, *28*, 76–82. [<https://doi.org/10.1097/cnj.0b013e31820b8d9f>]
11. Abdala, G. A. Religiosidade e qualidade de vida relacionada à saúde de idosos: estudo populacional das cidades de São Paulo. Tese (Doutorado) – Escola de Enfermagem da Universidade de São Paulo, São Paulo, SP. **2013**.
12. Garcia, A. C. C.; Couto, I. A.; Neto, L. G.; Peixoto, M. C. Doença de Parkinson e transtorno depressivo: uma revisão bibliográfica. *Brazilian Journal of Health Review*, **2021**, *5*, 18921-30. [<https://doi.org/10.34119/bjhrv4n5-036>]
13. Pérez-Caballero, L.; Sánchez, S. T.; Alberca, C. R. L.; Saiz, F. G.; Mico, J. A.; Berrocoso, E. Monoaminergic system and depression. *Cell and Tissue Research*, **2019**, *377*, 107–13. [<https://doi.org/10.1007/s00441-018-2978-8>]
14. Oliveira, L. M.; Abrantes, G. G.; Ribeiro, G. S.; Cunha, N. M.; Pontes, M. L. F.; Vasconcelos, S. C. Solidão na senescência e sua relação com sintomas depressivos: revisão integrativa. *Rev. Bras. Geriatr. Gerontol.*, **2019**, *22*, 1-8. [<https://doi.org/10.1590/1981-22562019022.190241>]
15. Amorim, T. A.; Lucchese, R.; Silva Neta, E. M.; Santos, J.S.; Vera, I.; Paula, N. I.; Monteiro, L.H. B. Determinantes de saúde mental e abuso de substâncias psicoativas associadas ao tabagismo. Estudo de caso controle. *Ciência & Saúde Coletiva*, **2019**, *24*, 4141-52. [<https://doi.org/10.1590/1413-812320182411.02752018>]
16. Goodwin, V. A.; Richards, S. H.; Henley, W.; Ewings, P.; Taylor, A. H.; Campbell, J. L. An exercise intervention to prevent falls in people with Parkinson's disease: a pragmatic randomised controlled trial. *J. Neurol. Neurosurg Psychiatry*, **2011**, *82*, 1232-8. [<https://doi.org/10.1136/jnnp-2011-300919>]
17. Lill, C.; Klein, J. Epidemiologie und Ursachen der Parkinson-Erkrankung. *Der. Nervenarzt*, **2017**, *88*, 345-55. [<https://doi.org/10.1007/s00115-017-0288-0>]
18. Marques, N. G. S.; Oliveira, I. A. S.; Alves, M. N.; Leão, S. S.; Souza, S. D. B.; Lopes, G. S. Doença de Parkinson: os principais danos provocados no indivíduo. *Research, Society and Development*, **2020**, *9*, 1-13. [<http://dx.doi.org/10.33448/rsd-v9i10.10023>]
19. Ma, H. I.; Saint-Hilaire, M.; Thomas, C. A.; Tickle-Degnen, L. Stigma as a key determinant of health-related quality of life in Parkinson's disease. *Qual. Life Res.*, **2016**, *25*, 3037–45. [<http://dx.doi.org/10.1007/s11136-016-1329-z>]
20. Cruz, A. N.; Beber, B. C.; Olchik, M. R.; Chaves, M. L. F.; Rieder, C. R. M.; Dornelles, S. Aspectos de comunicação oral em pacientes com doença de Parkinson submetidos à Estimulação Cerebral Profunda. *CoDAS*, **2016**, *28*, 480-5. [<https://doi.org/10.1590/2317-1782/20162015169>]
21. Rabow, M.; Knish, S. Spiritual well-being among outpatients with cancer receiving concurrent oncologic and palliative care. *Support Care Cancer*, **2014**, *23*, 919-23. [<https://doi.org/10.1007/s00520-014-2428-4>]
22. Nsamenang, S. A.; Hirsch, J. K.; Topciu, R.; Goodman, A. D.; Duberstein, P. R. The interrelations between spiritual well-being, pain interference and depressive symptoms in patients with multiple sclerosis. *J. Behav. Med.*, **2016**, *39*, 355–63. [<http://dx.doi.org/10.1007/s10865-016-9712-3>]
23. Bekelman, D. B.; Dy, S. M.; Becker, D.M.; Wittstein, I.; Hendricks, D. E.; Yamashita, T. E.; Gottlieb, S. H. Spiritual Well-Being and Depression in Patients with Heart Failure. *J. Gen. Intern. Med.*, **2007**, *22*, 470–7. [<http://dx.doi.org/10.1007/s11606-006-0044-9>]
24. Kiani, F.; Hesabi, N. The Relationship Between the Religious Beliefs of the Diabetic Patients and Depression in a Diabetes Clinic in Iran. *J. Relig. Health*, **2016**, *56*, 1311-6. [<http://dx.doi.org/10.1007/s10943-016-0222-y>]
25. Miranda, S. L.; Lanna, M. A. L.; Chieppe, W. Espiritualidade, Depressão e Qualidade de Vida no Enfrentamento do Câncer: Estudo Exploratório. *Psicologia Ciência e Profissão*, **2015**, *35*, 870-85. [<https://doi.org/10.1590/1982-3703002342013>]

26. Amaro, E. A. A Influência da espiritualidade, religiosidade, ansiedade e depressão na motivação dos acadêmicos de uma universidade federal. Dissertação (Mestrado em Atenção à Saúde) - Universidade Federal do triângulo Mineiro, Uberaba, MG. **2018**.
27. Moutinho, I. L. D.; Maddalena, N. C. P.; Roland, R. K.; Lucchetti, A. L. G.; Tibiriçá, S. H. C.; Ezequiel, O. S.; et al. Depressão, estresse e ansiedade em estudantes de medicina: uma comparação transversal entre estudantes de diferentes semestres. *Revista da Associação Médica Brasileira*, **2017**, 63, 21-8. [<https://doi.org/10.1590/1806-9282.63.01.21>]
28. Koenig, H.; Bussing, A. The Duke University Religion Index (DUREL): A Five-Item Measure for Use in Epidemiological Studies. *Religions*, **2010**, 1, 78-85. [<https://doi.org/10.3390/rel1010078>]
29. Azorin, J.M.; Kaladjian, A.; Fakra, E.; Adida, M.; Belzeaux, R.; Hantouche, E.; Lancrenon, S. Religious involvement in major depression: Protective or risky behavior? The relevance of bipolar spectrum. *Journal of Affective Disorders*, **2013**, 150, 753–9. [<https://doi.org/10.1016/j.jad.2013.02.034>]

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