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Caregivers for older people and the working conditions associated with care

Cuidadores de pessoas idosas e as condições de trabalho associadas ao cuidado

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ABSTRACT
To describe the relationship between musculoskeletal pain and the working conditions of home caregivers for older individuals. A cross-sectional study conducted with caregivers for older individuals from a reference center for older people's health in Salvador. A structured questionnaire and the validated Nordic Musculoskeletal Questionnaire (NMQ) were applied. Among the 45 participants, the majority were women (86.7%), with an average age of 49.4 years. 68.9% were daughters of the individuals being cared for, 88.8% identified as black, 46.7% had completed high school, and 82.2% reported a family income of up to three salaries. In the last twelve months, 95.6% reported musculoskeletal pain, most commonly in the lower back, ankles/feet (62.2%), and knees (57.8%). The majority provided care for over 19 hours per day, 86.7% had been caregivers for more than a year, and 97.8% had not received caregiver training. Musculoskeletal pain is directly related to the working conditions of caregivers, as they provide care alone, without professional support, without prior training, and with no guidance on self-care for their physical health.

Keywords: Working Conditions. Caregivers. Musculoskeletal Pain. Aged.

RESUMO
Descrever a relação entre dor osteomuscular e a condição de trabalho de cuidadores domiciliares de pessoas idosas. Estudo transversal, realizado com cuidadores de pessoas idosas de um centro de referência à saúde do idoso em Salvador. Aplicou-se um formulário estruturado e o instrumento validado *Nordic Musculoskeletal Questionnaire* (NMQ). Dos 45 participantes, a maioria eram mulheres (86,7%), com idade média de 49,4 anos, sendo 68,9% filhas desses idosos, negras (88,8%), ensino médio (46,7%), renda familiar até três salários (82,2%). Nos últimos doze meses, 95,6% referiram dor musculoesquelética, mais presente na lombar, tornozelos/pés (62,2%) e joelhos (57,8%). A maioria cuida acima de 19 horas/dia, 86,7% cuidam a mais de um ano e 97,8% sem curso de cuidador. A dor osteomuscular está diretamente relacionada a condição de trabalho, pois eles cuidam sozinhos, sem suporte profissional, sem treinamento prévio e sem qualquer orientação sobre o autocuidado à sua saúde física.

Palavras-chave: Condições de trabalho. Cuidadores. Dor Musculoesquelética. Idoso.

INTRODUCTION

The World Health Organization (WHO) predicts that by 2050, there will be two billion older individuals worldwide.[1] In Brazil, population projections from the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística* - IBGE) indicate that 25.5% of the Brazilian population will consist of older people by the year 2026.[2] The WHO has established the period between 2021-2030 as the Decade of Healthy Aging: this is a global strategy aimed at building a society for all ages, especially given the consequences of aging, with a progressively growing need for care from professionals and others, such as family members.[3]

In this context, the COVID-19 pandemic has demanded increased protection and health care for the older population, as they are the most vulnerable group to the consequences of the disease and social isolation, according to studies conducted in India and Brazil.[4,5] The COVID-19 scenario has led to negative effects on the health of older individuals and their caregivers, including: family and social disruptions; a decrease in formal and informal support; an increase and accumulation of tasks; heightened stress and pain among caregivers.[6,7]

Whether due to health issues or the natural aging process, the older individual with functional dependence requires support, typically provided by family members, who often become the primary caregivers, following the National Older Population Policy. In this situation, caregivers suppress their emotions and feelings, relinquish their projects, and often maintain emotional dependence on the care recipient, receiving little or no support.[8]

The role of the caregiver is often solitary and comprehensive, which can negatively affect the health of both the caregiver and the care recipient. Therefore, it is essential to understand the health-disease process and how it affects the caregiver's life, for the implementation of actions aimed at promoting health, to minimize harm.

The sociodemographic profile of caregivers for older individuals is a common focus in recent studies.[6,9,10,11] However, research conducted in Spain, the United States of America (USA), and Latin American countries, especially in Peru, is limited to studying the caregiving needs and experienced work overload.[6,9,11] Depression, self-efficacy, and stress are also investigated.[6,12] Thus, there is a gap in research associating musculoskeletal pain with the working conditions of these individuals.

In light of the above, this study aims to describe the relationship between musculoskeletal pain and the working conditions of home caregivers for older individuals during the COVID-19 pandemic. This knowledge is important to bring visibility to caregivers in their homes - as they are essential for the continuity of care - and to encourage care actions, especially for musculoskeletal protection.

METHODS

The study is part of a doctoral thesis that aimed to test the effectiveness of educational technology in reducing musculoskeletal symptoms in home caregivers for older individuals.[13] It is a cross-sectional research, and its presentation follows the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.[14]

Participants were caregivers for older individuals affiliated with a Reference Center for Older People's Health, in Salvador, Bahia, who met the inclusion criteria: being 18 years of age or older; being a home caregiver; having been a caregiver for at least 12 months; and having access to a smartphone or tablet.

Recruitment took place in the waiting room at two moments, before and after the onset of the pandemic. It occurred between December

2019 and February 2020, with an interruption because of the COVID-19 pandemic. It resumed between May and June 2021, as the number of interested participants was still limited based on the sample calculation. Convenience sampling was employed, and recruitment happened in the waiting room while caregivers awaited the care recipients' appointments. At this time, the project was presented in person, questions were clarified, and all present individuals were invited to participate in the research.

Interested individuals provided their phone numbers and were later contacted by the team. The research proposal was individually presented, including its objectives and relevance. For those interested, the Informed Consent Form was sent through the WhatsApp® messaging app using Google Forms for signature.

Data collection was conducted remotely between September and October 2021 through video calls on WhatsApp®. A form containing sociodemographic variables (sex, age, race, marital status, religion, education, housing, degree of kinship, and family income), clinical information, and work conditions was administered. The questions included: Do you engage in physical exercise or leisure activities? Do you have any comorbidities? How long and how many hours per day do you provide care for the older individual? Have you taken a caregiver course? Have you received guidance from any healthcare professional?

At this point, the Nordic Musculoskeletal Questionnaire (NMQ), a validated instrument in its translated version to Portuguese, was also applied.[15] The questionnaire allowed to identify body segments where caregivers experienced pain, tingling, or numbness in the last 12 months and the last seven days. It also captured any deviations from routine activities and aimed to verify whether there were consultations with healthcare professionals. The questionnaire comprised four questions and an image of the human body with nine anatomical segments, enabling visualization and identification of the discomfort's location.[15] This instrument is widely used in community studies both nationally and internationally.[16,17]

To minimize response bias, the team received prior training to use clear and objective language with the target audience. The sample size calculation was based on a previous study, considering pain as the outcome.[18] The t-test was employed, taking into account a confidence level of 95%, statistical power of 80%, and a 10% loss of elements, so 32 participants were required for the study.

Jamovi®, an open-source software, was used for the analysis. Descriptive statistics were employed for the analysis of sociodemographic, clinical, and work condition data. Continuous variable data utilized measures of central tendency and dispersion, expressed as means and standard deviations, whereas dichotomous or categorical variable data were presented as frequencies and percentages.

The study adhered to the guidelines outlined in Resolutions 466/12, 580/18, and the requirements in the circular letter of virtual research No. 2/2021. The study is linked to the project "Educational Innovations for the Prevention/Reduction of Caregiver Burden", approved by the Ethics and Research Committee (CEP) of the School of Nursing at the Federal University of Bahia (EEUFBA) under approval number 4,447,759.

To ensure anonymity, caregivers were identified by the letter C followed by an increasing numeral.

RESULTS

Forty-five caregivers participated in the study, with 86.7% being female and an average age of 49.4 years. Of the participants, 88.8% self-identified as Black, 46.7% were married, and 53.3% reported being Catholic. Additionally,

46.7% completed high school, and 55.9% resided in peripheral neighborhoods. Concerning the relationship with the older individuals under their care, 68.9% were daughters, and 82.2% had a family income of less than three minimum wages. Regarding the older individuals, the majority (68%) had neurological diagnoses.

Concerning physical exercise, 53.3% of caregivers did not engage in any, and 24.4% stopped exercising after starting care for the older individuals. However, 51.1% reported finding time for leisure activities. As for pre-existing comorbidities, most caregivers reported having diabetes (80%) and hypertension (73.3%).

Table 1 presents results related to the Nordic Musculoskeletal Questionnaire (NMQ), which shows that caregivers reported musculoskeletal pain in the last 12 months, with the lumbar region (62.2%), ankles/feet (62.2%), and knees (57.8%) being the most frequently mentioned areas.

Table 1. Musculoskeletal pain, impairment in performing activities, and consultations with healthcare professionals by anatomical region, reported by caregivers for older adults using a reference center for older people's health - Salvador, Bahia, Brazil. 2021

Anatomical region	Yes or No	Musculoskeletal pain in the last 12 months		Impairment in performing activities in the last 12 months		Consultations with healthcare professionals in the last 12 months		Musculoskeletal pain in the last 7 days	
		n=45	f (%)	n=45	f (%)	n=45	f (%)	n=45	f (%)
Neck/ Cervical region	Y	22	48.9	8	17.8	6	13.3	21	46.7
	N	23	51.1	37	82.2	39	86.7	24	53.3
Shoulder	Y	22	48.9	9	20	7	15.6	18	40
	N	23	51.1	36	80	38	84.4	27	60
Dorsal region	Y	21	46.7	6	13.3	8	17.8	16	35.6
	N	24	53.3	39	86.7	37	82.2	29	64.4
Elbow	Y	10	22.2	3	6.7	2	4.4	6	13.3
	N	35	77.8	42	93.3	43	95.6	39	86.7
Wrist/hand	Y	25	55.6	5	11.1	8	17.8	20	44.4
	N	20	44.4	49	88.9	37	82.2	25	55.6
Lumbar region	Y	28	62.2	10	22.2	9	20	22	48.9
	N	17	37.8	35	77.8	36	80	23	51.1
Hip/thigh	Y	21	46.7	8	17.8	6	13.3	13	28.9
	N	24	53.3	37	82.2	39	86.7	32	71.1
Knee	Y	26	57.8	6	13.3	9	20	17	37.8
	N	19	42.2	39	86.7	36	80	28	62.2
Ankle/foot	Y	28	62.2	4	8.9	7	15.6	19	42.2
	N	17	37.8	41	91.1	38	84.4	26	57.8

Source: developed by the authors.

Regarding the working conditions of caregivers for older individuals, it was observed that 62.2% lived with the care recipient, 86.7% had been taking care of the older individual for over a year, 51.1% provided care for more than 19 hours per day, 97.8% had not taken a caregiver

training course, 64.4% received guidance from a professional for specific care, and 68.9% had caregiving support, as shown in Table 2.

Table 2 - Working conditions of caregivers for older individuals attending a reference center for older people's health - Salvador, Bahia, Brazil. 2021

Working Conditions	n=45	f (%)
Resides at home with the elderly		
Yes	28	62.2
No	17	37.8
Duration of care		
One year	6	13.3
Over one year	39	86.7
Caregiving support		
Yes	31	68.9
No	14	31.1
Hours per day in caregiving		
0 > 7	11	24.4
7 ≥ 13	7	15.6
13 ≥ 19	4	8.9
19 ≥ 24	23	51.1
Completed caregiver training course		
Yes	1	2.2
No	44	97.8
Professional guidance		
Yes	29	64.4
No	16	35.6

Source: developed by the authors.

DISCUSSION

Caregivers were predominantly female, with an average age of 49.4 years, self-declared as Black, completed high school, lived with a family income between one and three minimum wages, were daughters, and resided in peripheral neighborhoods of the city of Salvador. Most caregivers reported comorbidities and mentioned musculoskeletal pain in the lumbar spine, knees, and ankles/feet in the last 12 months.

Regarding working conditions, caregiving occurred for over 19 hours/day, for over a year without interruption, and without specific training, although 64.4% received guidance from a multi-professional team at the reference center. However, they did not receive guidance on selfcare.

The predominance of women in this role relates to the traditional sociocultural role of females in caregiving. Studies reveal women take on the caregiving position or assist in this function from an early age.[7,11,19] In contrast, research conducted in China with 195 caregivers for people with rheumatoid arthritis found 55.4% to be male.[12] Therefore, assuming the caregiver

position for someone in need of care may also be related to cultural or social influence.

This results from the characteristics attributed to the work of caregivers, which, in many places, including Brazil, exhibit sex, class, and race inequalities, with the representation of individuals with low income and education dedicating almost exclusively their time to this function.[20,21] Additionally, the lower the caregiver's level of education, the greater their burden.[12] This situation can lead to the precariousness of self-care and care for those requiring assistance, limiting access to health and leisure.

In this study, most caregivers, besides self-declaring as black, lived in peripheral neighborhoods with precarious incomes. Considering the time spent on caregiving (between 19 and 24 hours daily), without self-care training, resilience regarding pain is a possibility, putting them at risk of illness, deficits in self-care, and increased tasks, which influences the quality of care offered.[9]

Thus, in this study, amid a difficult and overloaded routine, the support received by most caregivers could explain the reduced perception of pain. Saikai et al.,[22] in a study aiming to verify the profile of musculoskeletal disorders in caregivers for those requiring assistance, also used the Nordic questionnaire and found caregivers with an average age of 52.9 years, working approximately 15.8 hours per day and experiencing pain, especially in the spine (65.2%), upper limbs (60.8%), and lower limbs (47.8%).

In this study, musculoskeletal disorders showed a significant association with alterations found in the Nordic questionnaire ($p=0.013$), resulting in greater physical suffering in older caregivers. Furthermore, the authors observed that, regardless of socioeconomic conditions, when caregiving had the support of other people, caregivers did not report pain. Thus, support during caregiving, whether from the healthcare team or family, is a relevant factor in reducing caregiver burden and, consequently, a lower sensation of musculoskeletal pain.

The average age of these caregivers was consistent with other studies.[11,12,16] This means that middleaged individuals (especially women) transitioning into old age, which requires attention, represent the studied group. The increase in the average age of caregivers for those requiring assistance should be a cause for concern, particularly for providing a better quality of life, and preventing physical and mental illness, as caregivers accompany the overall aging of the population.

As found in this study and others, there is a significant family bond between the person receiving care and the caregiver, with a predominance of the adult children performing this role.[11,20] The family bond can exacerbate musculoskeletal pain, caused by somatization due to the involved emotions, intense concern, and excessive care of the loved one.[23]

Another factor that can influence this situation is the severity of the disease, which can lead to limitation or even disability, thus increasing the degree of dependency. In this study, 68% of the older individuals under care had a neurological diagnosis, a finding supported by Tsukamoto et al.,[24] where stroke was among the most prevalent pathologies in dependent individuals. Souza et al.[20] also showed that, besides stroke (35.6%), dementia (20%) was also among the predominant disabling diseases, highlighting that 66.67% of the older people were dependent.

In this sense, authors also warn about the caregiver family's workload, leading to a reduction in time for rest or leisure activities, affecting the absence of free time for themselves.[11] Despite the importance of physical and leisure activities in promoting health, quality of life, and reducing musculoskeletal symptoms,[10] this overload generates negative tension not only in physical health but also in mental health.[25] Faced with generally solitary and uninterrupted work, often

provoking various feelings as a close relative, it can lead to illness, withdrawal from the social and affective network, and even unemployment.[26] People who provide care and feel overwhelmed are more likely to develop depression and, consequently, worse health conditions when compared to those with a lighter workload.[12]

Confronted with the daily physical and emotional burden of caregivers, physical symptoms can occur, especially musculoskeletal ones. In this study, even with complaints of pain in the last 12 months, most caregivers did not stop performing their activities related to caring for the older individuals, nor did they seek healthcare services. Sheth et al.[6] conducted a study with 321 caregivers during the COVID-19 pandemic, providing care for over 40 hours per week, and warned of a significant increase in pain in these caregivers. Another study with 50 formal and informal caregivers reported lumbar spine pain.[27]

The present study, conducted during the COVID-19 pandemic, depicted caregivers in a situation of social isolation, increased stress, and reduced access to healthcare services, making self-care and care for the older people even more challenging. Additionally, during the pandemic, caregivers for older individuals with dementia experienced a high physical burden, reduced rest, and disorganization of family life, leading to an increase in stress and musculoskeletal complaints when comparing the two lockdowns.[7,11] Furthermore, this burden was associated with older age and the duration of care provision.

About the continuity of care, there is a higher level of stress in the first semester, still considered an adaptation period, when the caregiver also needs support regarding their selfcare.[12] It is worth noting that taking care of others while experiencing musculoskeletal pain due to working conditions can compromise the health and quality of life of caregivers.[17]

However, the physical and emotional repercussions can be mitigated with the support of a multi-professional team, especially professionals from the Unified Health System (SUS) in primary care.[28] Through this network, guidance on correct postures and exercise can prevent or alleviate musculoskeletal distress.[23] Thus, healthcare professionals should focus on the needs of caregivers, so that they enable the promotion of more humane care.[19]

Despite the existence of comorbidities declared by the participants in this study, the risk of morbidity and mortality in primary caregivers is high and requires prevention.[29] The participants represent a portion of Brazilians who neglect and are unaware of their health status, especially related to chronic and preventable diseases.[30] With respect to this group, a few health promotion actions such as physical exercise, healthy eating, and correction of ergonomically incorrect postures were observed.

Notwithstanding the advances in home care for the older population, there are no public policies specifically aimed at caregivers. A study signals the invisibility of caregivers for the older people and demonstrates that, although state support is of great importance for their aging process, they have not been receiving it.[19]

This study has limitations, such as the sample size, as it occurred during the pandemic, and data collection was altered to the remote modality, making it challenging to generate interest among participants who were not accustomed to the virtual model and the new technologies required during the pandemic.

The lack of professional support for home caregivers resulted in painful complaints in the lower back, knees, and ankles/feet, especially in the last 12 months when they were experiencing a period of social isolation because of the COVID-19 pandemic.

Regarding practical implications, this study contributes to a better understanding of the causal relationship between musculoskeletal pain and the working conditions of home caregivers for the older individuals. Recognizing that support and care guidance, based on scientific evidence, favor a more attentive approach by responsible

authorities to create public policies that can improve the quality of life of this population.

The study strengthens the need for actions focused on promoting the health of caregivers for the older individuals and emphasizes that healthcare professionals should be able to provide comprehensive care, including caregiver support, by encouraging self-care to ensure the physical health of the caregiver.

CONCLUSION

Musculoskeletal pain is directly related to the working conditions of caregivers for the older people who provide care alone for an extended period, continuously, without prior training, and with no guidance on physical health self-care.

The study will contribute to the formulation of new public health policies aimed at promoting health and preventing musculoskeletal illnesses in caregivers for older individuals, thereby reducing costs for health services.

It is also suggested to promote the importance of educational actions to ensure the physical health quality of caregivers.

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REFERENCES

1. World Health Organization. Ageing and health. Geneva: World Health Organization; e Geneva: WHO [Internet]. 2021 [acesso 2023 jan 20]. Disponível em: https://www.who.int/news-room/fact-sheets/detail/ageing-and-health.

2. Instituto Brasileiro de Geografia e Estatística (IBGE). Projeção da População 2018**:** número de habitantes do país deve parar de crescer em 2047. Editoria: Estatísticas Sociais [Internet]. 2018 [acesso 2023 jan 22].Disponível em: https://www.ibge.gov.br/estatisticas/sociais/populacao/9109-projecao-da-populacao.html

3. World Health Organization. Decade of Healthy Aging 2021 – 2030. Geneva: WHO; [Internet]. 2021[acesso 2023 jan 22]. Disponível em: https://www.euro.who.int/en/health-topics/Life-stages/healthy-ageing/news/news/2021/01/decade-of-healthy-ageing-2021-2030.

4. Lewnard JA, Mahmud A, Narayan T, Wahl B, Selvavinayagam TS, Mohan CB, et al. All-cause mortality during the COVID-19 pandemic in Chennai, India: an observational study. Lancet Infect. Dis. 2021; 22(4):463-72. doi: https://doi.org/10.1016/S1473-3099(21)00746-5.

5. Wachholz PA, Moreira VG, Oliveira D, Watanabe HAW, Villas Boas PJF. Ocorrência de infecção e mortalidade por Covid-19 em residenciais para idosos no Brasil. Scielo preprints [Internet]. 2020 [acesso 2023 jan 28]. Disponível em: https://preprints.scielo.org/index.php/scielo/preprint/view/1032/1479.

6. Sheth K, Loring K, Stewart A, Parodi J, Ritter PL. Effects of COVID-19 on informal caregivers and the development and validation of a scale in english and spanish to measure the impact of COVID-19 on caregivers. J Appl Gerontol [Internet]. 2021[acesso 2023 jan 28]; 40(3):235-43. Disponível em: https://pubmed.ncbi.nlm.nih.gov/33143545/

7. Tsapanou A, Zoi P, Kalligerou F, Blekou P, Sakka P. The effect of prolonged Lockdown due to COVID-19 on Greek demented patients of different stages and their caregivers. J Alzheimers Dis. 2021; 83:907-13. doi: https://doi.org/10.3233/jad-210702.

8. Gutierrez DMD, Sousa GS, Figueredo AEB, Ribeiro NMS, Diniz SX, Nobre GASS. Vivências subjetivas de familiares que cuidam de idosos dependentes. Ciênc. Saúde Colet. 2021; 26(01):47-56. doi: https://doi.org/10.1590/1413-81232020261.30402020.

9. Jesus ITM, Orlandi AAS, Zazzeta MS. Burden, Profile and care: caregivers of socially vulnerable elderly persons. Rev. Bras. Geriatr. Gerontol. 2018; 21:194-204. doi: https://doi.org/10.1590/1981-22562018021.170155.

10. Neves EDW, Neves J, Galhardi CM, Baciuk EP, Ferreira LR. Perfil Sociodemográfico, sobrecarga de cuidadores e PPS de pacientes assistidos por um programa de medicina preventiva. Temas em Saúde [Internet]. 2019[acesso 2023 jan 30]; 19(6):533-53. Disponível em: https://temasemsaude.com/wp-content/uploads/2020/01/19628.pdf.

11. Martinez-Santos AE, Fuente VN, Facal D, Trillo LV, Gandoy MC, Rodriguez RG. Care tasks and impact of caring in primary family caregivers: A cross-sectional study from a nursing perspective. Appl Nurs Res. 2021; 62:151505. doi: https://doi.org/10.1016/j.apnr.2021.151505.

12. Ru J, Ma J, Niu H, Chen Y, Li L, Liu Y, et al. Burden and depression in caregivers of patients with rheumatoid arthritis in China. Int J Rheum Dis. 2019; 22(4):608-13. doi: https://doi.org/10.1111/1756-185X.13397.

13. Gomes NP. Eficácia de uma tecnologia educativa na redução de sintomas musculoesqueléticos em cuidadores domiciliares de pessoas idosas: estudo piloto de ensaio clínico randomizado [tese]. Salvador: Universidade Federal da Bahia, Escola de Enfermagem; 2022. 166 p.

14. Elm EV, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Ann Intern Med. 2007; 147(8):573-7. doi: https://doi.org/10.7326/0003-4819-147-8-200710160-00010.

15. Barros ENC, Alexandre NMC. Cross-cultural adaptation of the Nordic musculoskeletal questionnaire. Int Nurs Rev. 2003; 50(2):101-8. doi: https://doi.org/10.1046/j.1466-7657.2003.00188.x

16. Hsieh PL, Lee CY, Yang YS, Lin LY, Huang RY. Association between work content and musculoskeletal disorders among home caregivers: a cross-section study. Ind health. 2021. doi: https://doi.org/10.2486/indhealth.2021-0160.

17. Maia Junior L, Sá SPC, Christovam BP, Domingos AM, Correia DMS, Maia HMSF. Osteomuscular disorders in care of elderly household people: Prevalence and its associated factors. Research, Society and Development. 2021; 10(10):e13101018449. doi: http://dx.doi.org/10.33448/rsd-v10i10.18449.

18. Kamioka H, Okuizumi H, Okada S, Takahashi R, Handa S, Kitayuguchi J, et al. Effectiveness of intervention for low back pain in female caregivers in nursing homes: a pilot trial based on multicenter randomization. Environ Health Prev Med. 2011; 16;97-105. doi: https://doi.org/10.1007/s12199-010-0170-1.

19. Domingues GGC, Corradi-Webster CM, Ruzzi-Pereira A. Occupational performance of users careers at Child and Youth Psychosocial Care Center. Saud Pesq; 2021: 14(4): 743-753. doi: https://doi.org/10.17765/2176-9206.2021v14n4e8097.

20. Souza ID, Pereira JA, Silva EM. Between State, society and family: the care of female caregivers. Rev Bras Enferm. 2018; 71(Suppl6):2720-27. doi: https://doi.org/10.1590/0034-7167-2018-0111.

21. Zhang M, Chang YP, Liu YJ, Gao L, Porock D. Burden and Strain among Familial Caregivers of Patients with Dementia in China. Issues Ment Health Nurs. 2018; 39(5):427-32. doi: https://doi.org/10.1080/01612840.2017.1418034

22. Saikai GMPN, Nardi SMT, Saikai W, Pereira DD, Millin RC, Paschoal VD. Exaustão emocional e física de cuidadores familiares. Rev Fun Care Online.2020; 12:1296-1302. doi: http://dx.doi.org/10.9789/2175-5361.rpcfo.v12.9684.

23. Gomes NP, Pedreira LC, Gomes NP, Fonseca EOS, Reis LA, Santos AA. Health-related consequences of caring for dependent relatives in older adult caregivers. Rev Esc Enferm USP. 2019; 53:e03446. doi: https://doi.org/10.1590/S1980-220X2018002303446.

24. Tsukamoto HF, Almeida AF de, Bortolloti LF, Ribeiro EA, Egydio FR, Salvador GA, et al. A problemática do cuidador familiar: Os desafios de cuidar no domicílio. Saud Pesq [Internet]. 2010 [acesso 2023 jan 28].; 3(1): 53-58. Disponível em: https://periodicos.unicesumar.edu.br/index.php/saudpesq/article/view/1315.

25. Rangel RL, Santos LB, Santana ES, Marinho MS, Chaves RN, Reis LA. Avaliação da Sobrecarga do Cuidador Familiar de Idosos com Dependência Funcional. Rev. Aten. Saúde. 2019; 17(60):11-8. doi: https://doi.org/10.13037/ras.vol17n60.5564.

26. Ceccon RF, Vieira LJES, Brasil CCP, Soares KG, Portes VM, Garcia Júnior CASG, et al. Envelhecimento e dependência no Brasil: características sociodemográficas e assistenciais de idosos e cuidadores. Cien Saude Colet. 2021; 26(01):25. doi: https://doi.org/10.1590/1413-81232020261.30352020.

27. Diniz MAA, Melo BRS, Neri KH, Gratão ACM, Gaioli CCLO, Casemiro FG, et al. Estudo comparativo entre cuidadores formais e informais de idosos. Cien Saude Colet. 2016: 23(11): 3789-98. doi: https://doi.org/10.1590/1413-812320182311.16932016.

28. Giovanella L, Martufi V, Mendoza DCR, Mendonça MHM, Bousquat A, Aquino R, Medina MG. A contribuição da atenção primária à saúde na rede SUS de enfrentamento à Covid-19. Saúde debate. 2020; 44 (spe4):161-76. doi: https://doi.org/10.1590/0103-11042020E410.

29. Biderman A, Carmel S, Amar S, Bachner YG. Care for caregivers- a mission for primary care. BMC Fam Pract. 2021; 22(1): 227. doi: https://doi.org/10.1186/s12875-021-01579-6.

30. França MASA, Nery NG, Antunes JLF, Freire MCM. Tempo máximo para o início do tratamento do câncer de boca no Brasil após a publicação da legislação de 2012: tendência no período 2013-2019. Cad. Saúde Pública. 2021; 37(10):e00293220. doi: https://doi.org/10.1590/0102-311X00293220.