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Progressive Muscle Relaxation Training for Reducing Caregiver Stress

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Abstract

Caregiving for individuals with mental illness poses various challenges that can disrupt the well-being of the families providing care. Caregivers are vulnerable to experiencing stress. This research aims to determine the effectiveness of progressive muscle relaxation in reducing stress among caregivers of families with mental illness. The research design employed is a quasi-experiment with a one-group pre-test-post-test design. The participants in the study include 4 family members who care for individuals with mental illness. Participants were selected based on interviews and their willingness to participate. Data collection involved pre-test and post-test phases using the Kingston Caregiver Stress Scale. Data analysis was conducted using the Wilcoxon signed-rank test method. The data analysis results show a significant decrease in stress ($p < 0.05$). These findings indicate that progressive muscle relaxation is effective in reducing stress among caregivers of families with mental illness. Therefore, progressive muscle relaxation can be utilized for managing stress in caregivers of families with mental illness.

Keywords: caregiver, mental illness, progressive muscle relaxation, stress

Abstrak

Merawat individu dengan gangguan mental membawa berbagai tantangan yang dapat mengganggu kesejahteraan keluarga yang memberikan perawatan. Para caregiver rentan mengalami stres. Penelitian ini bertujuan untuk menentukan efektivitas relaksasi otot progresif dalam mengurangi stres di kalangan caregiver keluarga dengan anggota yang mengalami gangguan mental. Desain penelitian yang digunakan adalah quasi-eksperimen dengan desain pre-tes - post-tes satu kelompok. Partisipan dalam penelitian ini termasuk 4 anggota keluarga yang merawat individu dengan gangguan mental. Partisipan dipilih berdasarkan hasil wawancara dan kesediaan mereka untuk berpartisipasi. Pengumpulan data melibatkan tahap pre-tes dan post-tes menggunakan Kingston Caregiver Stress Scale. Analisis data dilakukan menggunakan metode uji Wilcoxon signed-rank. Hasil analisis data menunjukkan penurunan stres yang signifikan ($p < 0,05$). Temuan ini mengindikasikan bahwa relaksasi otot progresif efektif dalam mengurangi stres di kalangan caregiver keluarga dengan anggota yang mengalami gangguan mental. Oleh karena itu, relaksasi otot progresif dapat digunakan untuk mengelola stres pada caregiver keluarga dengan anggota yang mengalami gangguan mental

Kata kunci: *caregiver, gangguan mental, relaksasi otot progresif, stres*

I. Introduction

Family caregivers play a vital role in the lives of individuals with mental illness, offering emotional support, assistance with daily tasks, and serving as advocates within the healthcare system. Given the chronic nature of mental illness, caregivers bear a significant and enduring responsibility (Chadda, 2014). Existing research underscores the profound impact of mental illness on both caregivers and patients (McCann et al., 2015; Lippi, 2016).

Caregivers supporting family members with mental illness face distinct challenges compared to those caring for individuals with other chronic conditions. They often grapple with the fear of potential aggression from their loved ones (Pusey-Murray & Miller, 2013).

Additionally, caregiving can strain family relationships and deplete coping mechanisms, with these strains exacerbated in areas lacking community rehabilitation resources. The literature also highlights other emotional challenges; Jönsson et al. (2011) found that families frequently contend with anxiety and helplessness as they strive for normalcy.

Caring for someone with a mental illness is a profoundly challenging and emotionally taxing role. Caregivers confront pervasive stigma and misunderstandings associated with mental health, leading to feelings of isolation and shame (Akbari et al., 2018; Monnapula-Mazabane & Peters, 2023; Ntsayagae et al., 2019). Emotional turmoil is significant, as caregivers grapple with a range of emotions, including frustration, guilt, sadness, and helplessness (Meshkinyazd et al., 2020; Tamizi et al., 2020).

Inadequate support and resources compound their difficulties, leaving caregivers overwhelmed. Financial burdens, resulting from the costs of treatment and caregiving responsibilities, further strain their resources (Addo et al., 2018; Ofovwe & Osasona, 2022). The time commitment required for caregiving disrupts personal and professional lives, resulting in a loss of personal time and social connections (Cham et al., 2022).

The unpredictable nature of mental illness creates constant uncertainty, increasing the risk of caregiver burnout (Alves et al., 2019; Gérain & Zech, 2019). Communication challenges, navigating the complex healthcare system, and concerns about personal safety add to their burden (Ambikile & Iseselo, 2023; Basheer et al., 2015; Lohrasbi et al., 2023).

Balancing their loved one's needs with their own well-being and managing legal and financial responsibilities can be overwhelming. Caregiving for family members with mental illness generates significant stress for caregivers. Caregivers of mental illness patients exhibit higher rates of mental health difficulties than the general population, experiencing elevated levels of caregiver stress (Cham et al., 2022).

Addressing caregiver stress is crucial due to its far-reaching implications. Prolonged caregiver stress can lead to health issues such as high blood pressure, heart disease, depression, and anxiety (Chadda, 2014; Chang et al., 2010), compromising both the caregiver's well-being and their ability to provide effective care (Mento et al., 2019; Radu et al., 2022). Stressed caregivers may become less patient and attentive, negatively impacting the mental health of the person they care for (Schulz & Sherwood, 2008). Additionally, unmanaged stress can strain family relationships, causing conflicts and emotional distance (Fulkerson et al., 2019; Schulz & Sherwood, 2008). Addressing caregiver stress not only prioritizes their health and resilience but also enhances care quality and maintains healthier family dynamics. Managing stress can also help caregivers connect with valuable community resources, preventing caregiver burnout

and ensuring an overall better quality of life for both the caregiver and their loved one with mental illness (Coulombe et al., 2018; Goh et al., 2024).

Several effective interventions can alleviate stress in caregivers. Psychosocial support programs have demonstrated success in reducing perceived stress among family caregivers (Hajisadeghian et al., 2021). Psychoeducational interventions have proven effective in decreasing psychological distress among informal caregivers of individuals with severe mental illness (Hansen et al., 2022). Mindfulness-based stress reduction has been shown to assist caregivers in managing chronic stress (Whitebird et al., 2013). Furthermore, progressive muscle relaxation (PMR) has been found to reduce caregiver burden and depression levels in those tending to older patients (Baykal & Bilgic, 2024; Chen et al., 2009). These interventions play a crucial role in promoting caregivers' well-being and enhancing their caregiving abilities.

PMR, a well-established relaxation technique, offers significant benefits for reducing stress in caregivers of individuals with mental illness (Baykal & Bilgic, 2024; Wang et al., 2021). Caregiving can be emotionally and physically taxing, often involving constant demands and challenging emotions. PMR provides caregivers with a structured method to alleviate stress, enabling them to manage the emotional toll of their role more effectively. By systematically tensing and relaxing muscle groups, PMR helps caregivers release physical tension, thereby reducing muscle pain and discomfort associated with stress (Segal & Feliciano, 2017). Additionally, it aids in emotional regulation, allowing caregivers to recognize and manage their emotions, including frustration and guilt. This relaxation technique can enhance sleep quality, improve coping skills, build resilience, promote self-care, sharpen focus and attention, and ultimately contribute to caregivers' overall well-being (Aksu et al., 2018; Liu et al., 2020; Xiao et al., 2020).

The research gap in this study arises from the need to address the significant stress experienced by caregivers of individuals with mental illness. While the literature acknowledges the immense emotional and physical burden on these caregivers, there is a gap in understanding the potential effectiveness of specific stress reduction interventions, such as Progressive Muscle Relaxation (PMR), in this particular context. Although various interventions have been explored, their applicability and impact on caregivers dealing with mental health disorders remain relatively unexplored (Wang et al., 2021; Yilmaz et al., 2018). Therefore, there is a research gap in understanding how PMR, a well-established relaxation technique, can specifically benefit caregivers in this challenging role.

The novelty of this study lies in its focus on PMR as an intervention tailored to alleviate the stress experienced by caregivers of individuals with mental illness. While PMR has been

studied in other contexts, its application to this specific caregiving scenario is relatively uncharted territory. The study aims to investigate whether PMR can effectively reduce the unique stressors faced by these caregivers, such as stigma, emotional distress, and the complex caregiving responsibilities associated with mental health disorders. By applying PMR in this novel context, the research seeks to provide valuable insights into an unexplored area of caregiver stress reduction.

The significance of this study is multifaceted. Firstly, it addresses a critical issue concerning the well-being of caregivers who support individuals with mental illness, a population often overlooked in research and healthcare. Secondly, by exploring the potential effectiveness of PMR in this context, the study offers practical insights into a low-cost, non-pharmacological intervention that could significantly improve the quality of life for caregivers. Furthermore, the study's findings can inform healthcare professionals and support organizations in tailoring interventions to meet the specific needs of this caregiver population.

This study aims to determine the effectiveness of PMR on caregiver stress in families dealing with mental illness. The hypothesis posits that PMR can reduce caregiver stress in these families.

II. Methods

The independent variable in this study is progressive muscle relaxation training. This is the variable provided to the subject group in the experiment. The dependent variable in this study is caregiver stress. This variable is measured to assess the impact of progressive muscle relaxation training.

This study is a quasi-experiment with a one-group pretest-posttest design. This design was chosen due to the limited number of eligible participants and ethical considerations that made it inappropriate to withhold intervention from a control group. It also allows for preliminary evaluation of the intervention’s effectiveness before conducting larger, controlled studies.

Participants were recruited based on recommendations from mental health community health workers in Village S in Yogyakarta. Of the eight identified caregivers, only four agreed to participate due to various constraints such as time limitations, caregiving duties, and concerns about privacy and emotional readiness. Participation in the intervention was entirely voluntary, and ethical considerations required that no coercion be applied. All four participants met the inclusion criteria, namely being the primary caregiver of a family member with a mental disorder.

Table I. *Demographic data*

The Participant's Initials	Age	Sex	Occupation	Caregiver of
WI	48	Women	Temporary worker	Dementia
SI	40	Women	Laborer	Schizophrenia
SO	27	Men	Laborer	Depression
KO	28	Men	Freelancer	Depression

The instrument used in this study is the Kingston Caregiver Stress Scale (KCSS). KCSS is an assessment tool used to measure the level of stress experienced by caregivers who are taking care of individuals requiring special care, such as the sick, elderly, or individuals with special needs. The response alternatives in KCSS consist of 5 answer choices, with 1 indicating not feeling stressed, 2 for occasionally stressed, 3 for sometimes stressed, 4 for stressed, and 5 for feeling very stressed. KCSS is used in various countries to assess stress in families of individuals with mental disorders. The test-retest reliability of KCSS falls into the category of good (Jacob et al., 2021). The internal consistency of KCSS is $\alpha = 0.88$, suggesting a high level of internal reliability.

The intervention took place during five sessions at the Kepala Dusun house and was successfully completed in 2022 by all participant. The initial assessment began on June 24th, and the program concluded on February 12th, 2022. Prior to implementing the intervention, a pretest was administered, and after the intervention sessions were completed, a post-test was conducted.

The sessions commenced with building rapport and establishing an intervention contract, providing psycho-education on stress and relaxation, and training in progressive muscle relaxation. Participants were also taught how to practice progressive muscle relaxation, "letting go," and differential relaxation. Participants were encouraged to share their experiences and discuss the techniques taught in each session.

Data analysis was conducted using Jamovi, a free and open-source statistical software. The Wilcoxon signed-rank test was applied to compare pretest and posttest scores, enabling the assessment of differences in caregiver stress levels before and after the intervention.

III. Results and Discussion

3.1 Results

Based on the data collection process, four participants completed the study from start to finish. The changes in pretest and posttest scores for caregiver stress are presented in Figure 1. From these scores, it can be observed that there was a reduction in stress levels among

participants in the group following the intervention.

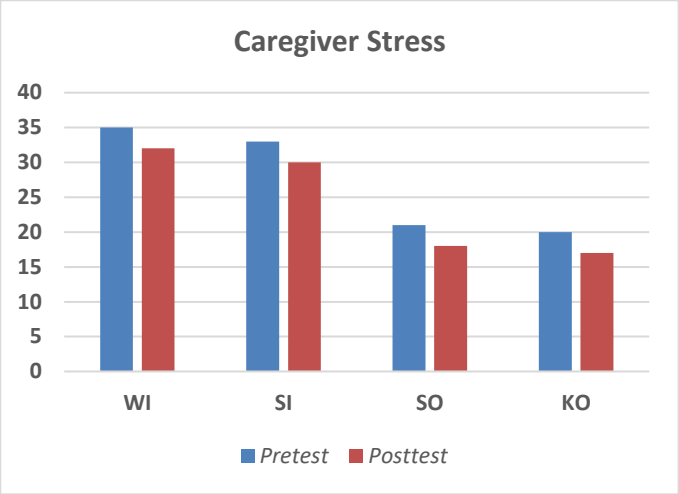

Figure 1. Changes in caregiver stress scores before and after intervention
Participant codes (WI, SI, SO, KO) refer to caregiver profiles as described in Table 1.

Based on the descriptive statistics in Table 2, for the Pretest, with an average caregiver stress score of 27.25, it indicates that, on average, caregivers experienced a certain level of stress before the intervention. However, after the intervention, as demonstrated by the Post-test with an average caregiver stress score of 21.25, there was a decrease in the average stress levels among caregivers. This suggests that, as a group, caregivers experienced a reduction in stress following the intervention or treatment, as measured by the Kingston Caregiver Stress Scales.

Table II. *Descriptive statistic*

	N	Mean	Std. Deviation	Min	Max
Pretest	4	27.25	7.848	20	35
Post-test	4	21.25	7.848	14	29

The Wilcoxon signed-rank test revealed a statistically significant reduction in caregiver stress scores from pretest to posttest, $Z = -2.00$, $p = 0.046$. This indicates that the decrease in scores is unlikely due to chance, suggesting that the intervention had a meaningful effect. The negative *Z*-value shows that posttest scores were generally lower than pretest scores, reflecting a positive impact of the intervention in reducing caregiver stress.

The findings of this study indicate a significant reduction in caregiver stress levels among families providing care to individuals with mental health disorders (specifically dementia, schizophrenia, and depression) following the implementation of Progressive Muscle Relaxation (PMR) training. The pretest scores, with an average of 27.25, suggest that caregivers experienced a notable level of stress prior to the intervention. After the PMR intervention, the posttest scores showed a reduced average of 21.25, indicating a decrease in

caregiver stress levels. These results reflect a group-level improvement following the intervention. However, as this study employed a one-group pretest-posttest design without a control group, the observed changes cannot be attributed solely to the PMR intervention; other factors such as time effects or participant expectations may also have influenced the outcomes. Therefore, the findings should be interpreted as preliminary and exploratory.

3.2 Discussion

The results of this study revealed a reduction in caregiver stress levels following the implementation of progressive muscle relaxation training. These findings align with prior research that has explored the effectiveness of relaxation techniques in reducing caregiver stress. For instance, studies by Çapacı et al. (2022) and Wang et al. (2021) demonstrated that interventions focused on progressive muscle relaxation can lead to decreased caregiver stress levels. In this study, PMR, a widely recognized relaxation technique, was employed as the intervention. The positive impact of PMR on reducing caregiver stress is consistent with the existing body of literature.PMR has demonstrated its effectiveness not only in reducing the perceived sense of stress but also in producing significant physiological benefits. Previous research studies conducted by Battaglini et al. (2022) and Toussaint et al. (2021) have shed light on the remarkable impact of PMR on various physiological parameters. One of the notable effects is the reduction in heart rate, indicating a calming influence on the cardiovascular system. Additionally, PMR leads to a decrease in respiratory rate (De La Plaza San Frutos et al., 2023), promoting deeper and more relaxed breathing patterns (Pathan et al., 2023). High blood pressure, often a response to stress, is also positively affected by PMR, as it contributes to a lowering of blood pressure levels (Sheu et al., 2003). Furthermore, PMR effectively targets and reduces physiological tension, including muscle tightness and bodily discomfort, helping individuals achieve a profound state of relaxation. Collectively, these physiological changes translate into a deep state of relaxation, showcasing PMR as a comprehensive and valuable tool for stress reduction. This evidence underscores the significance of incorporating PMR into caregiver support programs, as it not only alleviates subjective caregiver stress but also fosters tangible improvements in the body's physiological responses to stress, ultimately enhancing overall well-being.

In this study, participants were taught about "Letting Go" PMR. "Letting go" PMR is a nuanced approach to the traditional PMR technique, designed to enhance relaxation and stress reduction by incorporating a significant mental component. In the standard PMR practice, individuals systematically tense and then release specific muscle groups to promote physical

relaxation. "Letting go" PMR goes a step further by infusing a mental dimension into the process. It begins with the familiar progressive muscle tensing and subsequent relaxation, allowing individuals to become aware of muscle tension and then consciously let go of that tension. However, the distinctive aspect of "letting go" PMR lies in the mental aspect—participants are encouraged to mentally release stress, worries, and tension associated with each muscle group. They visualize these mental burdens leaving their bodies, fostering a profound sense of psychological relief (Alhawatmeh et al., 2022). This technique prioritizes mindfulness and awareness, urging individuals to remain fully present throughout the practice, focusing on the physical and mental sensations of relaxation and letting go. By combining physical relaxation with the mental act of releasing stress, "letting go" PMR offers a holistic approach to relaxation and stress management, making it a valuable tool for enhancing overall well-being and promoting mental tranquility. When participants practice this technique, they can release the psychological burdens that arise in caring for family members with mental illness.

Before participants are taught to perform PMR, they receive psychoeducation. Psychoeducation was included as an essential component of the intervention to enhance participants' understanding of stress and support the effectiveness of relaxation techniques. This decision was based on the rationale that caregivers of individuals with mental illness often experience high levels of emotional burden but may lack adequate knowledge about stress and coping strategies. Providing psychoeducation prior to relaxation training can improve caregivers' engagement, readiness, and ability to apply the techniques meaningfully (Beinart et al., 2012). It also serves to normalize their emotional experiences and reduce stigma related to caregiver stress (Iyidobi et al., 2022). By offering a structured overview of stress—including its sources, symptoms, and impact—psychoeducation empowers caregivers to recognize early warning signs and make timely interventions for themselves and their families.

Furthermore, psychoeducation imparts practical stress reduction strategies that caregivers can readily integrate into their daily lives. These strategies include relaxation techniques like PMR. By acquiring these valuable tools, caregivers can proactively address the inherent stressors in caregiving, resulting in improved emotional resilience and enhanced coping abilities. Overall, psychoeducation acts as a crucial foundation for caregivers, empowering them to navigate the challenges of caregiving more effectively while prioritizing their own well-being and that of their loved ones with mental illness. This result in line with previous study (Beinart et al., 2012; Iyidobi et al., 2022).

This study demonstrates the potential of PMR in reducing caregiver stress; however, several limitations should be addressed in future research.

First, the small sample size (only four participants) limits the generalizability of the findings. Future studies should include larger and more diverse samples to enhance external validity and explore how individual characteristics, such as age, gender, and caregiving experience, influence the effectiveness of PMR.

Second, the one-group pretest-posttest design, lacking a control group, restricts the ability to attribute the reduction in stress exclusively to the intervention. Employing a randomized controlled trial (RCT) design in subsequent research would provide stronger evidence of causality by comparing experimental and control groups, while accounting for potential confounding factors.

Third, the study measured outcomes only in the short term, without follow-up assessments to examine the sustainability of PMR's effects. Future studies should incorporate longitudinal designs to evaluate whether the benefits persist over time and to understand how caregivers maintain the practice of PMR in their daily routines.

Additionally, the study included caregivers of individuals with varying conditions (e.g., dementia, schizophrenia, and depression), which might have influenced the variability in responses to the intervention. Future research could stratify participants by the type of caregiving context to explore PMR’s effectiveness in more specific caregiving scenarios.

The study was also conducted in a single rural community, which may have unique cultural and social support dynamics. Broader research involving participants from diverse geographic and cultural backgrounds is needed to determine the wider applicability of the findings.

Finally, incorporating technology, such as online platforms or mobile applications, could enhance the accessibility and scalability of PMR interventions. This approach could allow caregivers with limited time or access to in-person sessions to benefit from the intervention while reaching a broader population.

IV. Conclusion and Recommendation

The study highlights the potential effectiveness of Progressive Muscle Relaxation (PMR) as a stress reduction intervention for caregivers of individuals with mental illness. This has significant implications for caregiver support programs and mental health services. Integrating PMR into caregiver support initiatives can provide a practical and accessible tool for reducing caregiver stress. Mental health support organizations and caregiver programs should consider integrating PMR training as part of their offerings to help caregivers manage stress effectively. On the other side, tailored interventions, taking into account the specific

needs of caregivers dealing with different mental health conditions, can be explored to maximize effectiveness.

The study had a small sample size, which may limit the generalizability of the findings. Future research with larger and more diverse participant groups could provide a more comprehensive understanding of the effectiveness of PMR. The absence of a control group in the study design makes it challenging to attribute the reduction in caregiver stress solely to the PMR intervention. A control group would have helped establish a clearer causal relationship. The study measured the immediate impact of PMR, but long-term effects and sustainability of the intervention were not assessed. Future research could explore the durability of stress reduction effects over time.

References

Addo, R., Agyemang, S. A., Tozan, Y., & Nonvignon, J. (2018). Economic burden of caregiving for persons with severe mental illness in sub-Saharan Africa: A systematic review. *PloS one*, *13*(8), e0199830. https://doi.org/10.1371/journal.pone.0199830

Akbari, M., Alavi, M., Irajpour, A., & Maghsoudi, J. (2018). Challenges of Family Caregivers of Patients with Mental Disorders in Iran: A Narrative Review. *Iranian journal of nursing and midwifery research*, *23*(5), 329–337. https://doi.org/10.4103/ijnmr.IJNMR_122_17

Aksu, N.T., Erdogan, A. & Ozgur, N. Effects of progressive muscle relaxation training on sleep and quality of life in patients with pulmonary resection. *Sleep Breath* **22**, 695–702 (2018). https://doi.org/10.1007/s11325-017-1614-2

Alhawatmeh, H., Albataineh, R., & Abuhammad, S. (2022). Differential effects of guided imagery and progressive muscle relaxation on physical and emotional symptoms in nursing students taking initial clinical training: A randomized clinical trial. *Heliyon*, *8*(10), e11147. https://doi.org/10.1016/j.heliyon.2022.e11147

Alves, L. C. S., Monteiro, D. Q., Bento, S. R., Hayashi, V. D., Pelegrini, L. N. C., & Vale, F. A. C. (2019). Burnout syndrome in informal caregivers of older adults with dementia: A systematic review. *Dementia & neuropsychologia*, *13*(4), 415–421. https://doi.org/10.1590/1980-57642018dn13-040008

Ambikile, J. S., & Iseselo, M. K. (2023). Challenges to the provision of home care and support for people with severe mental illness: Experiences and perspectives of patients,

caregivers, and healthcare providers in Dar es Salaam, Tanzania. *PLOS Global Public Health*, *3*(1), e0001518. https://doi.org/10.1371/journal.pgph.0001518

Basheer, S., Anurag, K., Garg, R., Kumar, R., & Vashisht, S. (2015). Quality of life of caregivers of mentally ill patients in a tertiary care hospital. *Industrial psychiatry journal*, *24*(2), 144–149. https://doi.org/10.4103/0972-6748.181721

Battaglini, M. P., Pessôa Filho, D. M., Calais, S. L., Miyazaki, M. C. O. S., Neiva, C. M., Espada, M. C., de Moraes, M. G., & Verardi, C. E. L. (2022). Analysis of Progressive Muscle Relaxation on Psychophysiological Variables in Basketball Athletes. *International journal of environmental research and public health*, *19*(24), 17065. https://doi.org/10.3390/ijerph192417065

Baykal, D., & Bilgic, B. (2024). The effects of progressive muscle relaxation exercise on dementia caregivers. *Geriatric nursing (New York, N.Y.)*, *59*, 491–497. https://doi.org/10.1016/j.gerinurse.2024.07.035

Beinart, N., Weinman, J., Wade, D., & Brady, R. (2012). Caregiver burden and psychoeducational interventions in Alzheimer's disease: a review. *Dementia and geriatric cognitive disorders extra*, *2*(1), 638–648. https://doi.org/10.1159/000345777

Çapacı, S., Aşiret, G. D., & Kapucu, S. (2022). Effect of progressive muscle relaxation on caregiver satisfaction, caregiver burden and depression levels of the caregivers of older patients: A randomized control trial. *European Journal of Integrative Medicine*, *50*, 102114. https://doi.org/10.1016/j.eujim.2022.102114

Chadda R. K. (2014). Caring for the family caregivers of persons with mental illness. *Indian journal of psychiatry*, *56*(3), 221–227. https://doi.org/10.4103/0019-5545.140616

Cham, C. Q., Ibrahim, N., Siau, C. S., Kalaman, C. R., Ho, M. C., Yahya, A. N., Visvalingam, U., Roslan, S., Abd Rahman, F. N., & Lee, K. W. (2022). Caregiver Burden among Caregivers of Patients with Mental Illness: A Systematic Review and Meta-Analysis. *Healthcare (Basel, Switzerland)*, *10*(12), 2423. https://doi.org/10.3390/healthcare10122423

Chang, H. Y., Chiou, C. J., & Chen, N. S. (2010). Impact of mental health and caregiver burden on family caregivers' physical health. *Archives of gerontology and geriatrics*, *50*(3), 267–271. https://doi.org/10.1016/j.archger.2009.04.006

Chen, W. C., Chu, H., Lu, R. B., Chou, Y. H., Chen, C. H., Chang, Y. C., O'Brien, A., & Chou,

K. H. (2009). Efficacy of progressive muscle relaxation training in reducing anxiety in patients with acute schizophrenia. *Journal of Clinical Nursing*, *18*(15), 2187–2196. https://doi.org/10.1111/j.1365-2702.2008.02773.x

Coulombe, S., Krzesni, D. A., Jones, S., & Boyd, M. H. (2018). Supporting family caregivers of people living with mental health, addiction, and other issues: narrative review of Canadian and international intervention studies. *Journal of Psychosocial Rehabilitation and Mental Health*, *5*(2), 183–197. https://doi.org/10.1007/s40737-018-0125-1

de la Plaza San Frutos, M., Abuín Porras, V., Blanco Morales, M., Arrabé, M. G., Estrada Barranco, C., & Rubio Alonso, M. (2023). Telemedicine in pulmonary rehabilitation - benefits of a telerehabilitation program in post-COVID-19 patients: a controlled quasi-experimental study. *Therapeutic advances in respiratory disease*, *17*, 17534666231167354. https://doi.org/10.1177/17534666231167354

Fulkerson, J. A., Telke, S., Larson, N., Berge, J., Sherwood, N. E., & Neumark-Sztainer, D. (2019). A healthful home food environment: Is it possible amidst household chaos and parental stress?. *Appetite*, *142*, 104391. https://doi.org/10.1016/j.appet.2019.104391

Gérain, P., & Zech, E. (2019). Informal Caregiver Burnout? Development of a Theoretical Framework to Understand the Impact of Caregiving. *Frontiers in psychology*, *10*, 1748. https://doi.org/10.3389/fpsyg.2019.01748Goh, Y. S., Ow Yong, J. Q. Y., Ng, C. K. V., Li, Z., Hu, Y., Tam, W. W., & Ho, S. H. C. (2024). Caregivers' experiences in helping individuals with severe and enduring mental health challenges integrate into the community: A qualitative descriptive study in Singapore. *Journal of psychiatric and mental health nursing*, *31*(6), 1120–1132. https://doi.org/10.1111/jpm.13071

Hajisadeghian, R., Ghezelbash, S., & Mehrabi, T. (2021). The Effects of a Psychosocial Support Program on Perceived Stress of Family Caregivers of Patients with Mental Disorders. *Iranian journal of nursing and midwifery research*, *26*(1), 47–53. https://doi.org/10.4103/ijnmr.IJNMR_36_20

Hansen, N. H., Bjerrekær, L., Pallesen, K. J., Juul, L., & Fjorback, L. O. (2022). The effect of mental health interventions on psychological distress for informal caregivers of people with mental illness: A systematic review and meta-analysis. *Frontiers in psychiatry*, *13*, 949066. https://doi.org/10.3389/fpsyt.2022.949066

Iacob, C. I., Avram, E., & Burtăverde, V. (2021). Psychometric properties of the Kingston Caregiver Stress Scale in Romanian caregivers of children and adults with disabilities.

Research in Developmental Disabilities, *112*, 103921. https://doi.org/10.1016/j.ridd.2021.103921

Iyidobi, T. O., Onu, J. U., Iteke, O., Unaogu, N. N., & Uwakwe, R. (2022). The effect of structured psychoeducation on caregiver burden in carers of patients with schizophrenia in Nigeria: A 12-week follow-up investigation. *The South African journal of psychiatry : SAJP : the journal of the Society of Psychiatrists of South Africa*, *28*, 1703. https://doi.org/10.4102/sajpsychiatry.v28i0.1703

Jönsson, P. D., Skärsäter, I., Wijk, H., & Danielson, E. (2011). Experience of living with a family member with bipolar disorder. *International journal of mental health nursing*, *20*(1), 29–37. https://doi.org/10.1111/j.1447-0349.2010.00704.x

Lippi G. (2016). Schizophrenia in a member of the family: Burden, expressed emotion and addressing the needs of the whole family. *The South African journal of psychiatry : SAJP : the journal of the Society of Psychiatrists of South Africa*, *22*(1), 922. https://doi.org/10.4102/sajpsychiatry.v22i1.922

Liu, K., Chen, Y., Wu, D., Lin, R., Wang, Z., & Pan, L. (2020). Effects of progressive muscle relaxation on anxiety and sleep quality in patients with COVID-19. *Complementary therapies in clinical practice*, *39*, 101132. https://doi.org/10.1016/j.ctcp.2020.101132

Lohrasbi, F., Alavi, M., Akbari, M., & Maghsoudi, J. (2023). Promoting Psychosocial Health of Family Caregivers of Patients with Chronic Mental Disorders: A Review of Challenges and Strategies. *Chonnam medical journal*, *59*(1), 31–47. https://doi.org/10.4068/cmj.2023.59.1.31

McCann, T. V., Bamberg, J., & McCann, F. (2015). Family carers' experience of caring for an older parent with severe and persistent mental illness. *International journal of mental health nursing*, *24*(3), 203–212. https://doi.org/10.1111/inm.12135

Mento, C., Rizzo, A., & Settineri, S. (2019). Caregivers Help-Seeking Related to Physical and Mental Burden. *Clinical neuropsychiatry*, *16*(3), 135–139.

Meshkinyazd, A., Heydari, A., & Fayyazi Bordbar, M. (2020). Lived Experiences of Caregivers of Patients with Borderline Personality Disorder: A Phenomenological Study. *International journal of community based nursing and midwifery*, *8*(2), 177–188. https://doi.org/10.30476/IJCBNM.2020.83358.1154

Monnapula-Mazabane, P., & Petersen, I. (2023). Mental health stigma experiences among

caregivers and service users in South Africa: a qualitative investigation. *Current psychology (New Brunswick, N.J.)*, *42*(11), 9427–9439. https://doi.org/10.1007/s12144-021-02236-y

Ntsayagae, E. I., Poggenpoel, M., & Myburgh, C. (2019). Experiences of family caregivers of persons living with mental illness: A meta-synthesis. *Curationis*, *42*(1), e1–e9. https://doi.org/10.4102/curationis.v42i1.1900

Ofovwe, C. E., & Osasona, S. O. (2022). Burden of caregiving among caregivers of patients with severe mental illnesses in Benin City, Nigeria. *African health sciences*, *22*(2), 657–667. https://doi.org/10.4314/ahs.v22i2.75

Pathan, F. K. M., Pandian, J. S., Shaikh, A. I., Ahsan, M., Nuhmani, S., Iqbal, A., & Alghadir, A. H. (2023). Effect of slow breathing exercise and progressive muscle relaxation technique in the individual with essential hypertension: A randomized controlled trial. *Medicine*, *102*(47), e35792. https://doi.org/10.1097/MD.0000000000035792

Pusey-Murray, A., & Miller, P. (2013). 'I need help': caregivers' experiences of caring for their relatives with mental illness in Jamaica. *Mental health in family medicine*, *10*(2), 113–121.

Radu, M., Ciucă, A., Crișan, C. A., Pintea, S., Predescu, E., Șipos, R., Moldovan, R., & Băban, A. (2022). The impact of psychiatric disorders on caregivers: An integrative predictive model of burden, stigma, and well-being. *Perspectives in psychiatric care*, *58*(4), 2372–2382. https://doi.org/10.1111/ppc.13071

Segal, D.L., Feliciano, L. (2017). Relaxation Training. In: Kreutzer, J., DeLuca, J., Caplan, B. (eds) Encyclopedia of Clinical Neuropsychology. Springer, Cham. https://doi.org/10.1007/978-3-319-56782-2_425-2

Sheu, S., Irvin, B. L., Lin, H. S., & Mar, C. L. (2003). Effects of progressive muscle relaxation on blood pressure and psychosocial status for clients with essential hypertension in Taiwan. *Holistic nursing practice*, *17*(1), 41–47. https://doi.org/10.1097/00004650-200301000-00009

Tamizi, Z., Fallahi-Khoshknab, M., Dalvandi, A., Mohammadi-Shahboulaghi, F., Mohammadi, E., & Bakhshi, E. (2020). Caregiving burden in family caregivers of patients with schizophrenia: A qualitative study. *Journal of education and health promotion*, *9*, 12. https://doi.org/10.4103/jehp.jehp_356_19

Toussaint, L., Nguyen, Q. A., Roettger, C., Dixon, K., Offenbächer, M., Kohls, N., Hirsch, J., & Sirois, F. (2021). Effectiveness of Progressive Muscle Relaxation, Deep Breathing, and Guided Imagery in Promoting Psychological and Physiological States of Relaxation. *Evidence-based complementary and alternative medicine : eCAM*, *2021*, 5924040. https://doi.org/10.1155/2021/5924040

Wang, J., Liu, J., Li, L., Man, J., Yue, S., & Liu, Z. (2021). Effect of education and muscle relaxation program on anxiety, depression and care burden in caregivers of acute stroke survivors. *Medicine*, *100*(4), e24154. https://doi.org/10.1097/md.0000000000024154

Whitebird, R. R., Kreitzer, M., Crain, A. L., Lewis, B. A., Hanson, L. R., & Enstad, C. J. (2013). Mindfulness-based stress reduction for family caregivers: a randomized controlled trial. *The Gerontologist*, *53*(4), 676–686. https://doi.org/10.1093/geront/gns126

Xiao, C. X., Lin, Y. J., Lin, R. Q., Liu, A. N., Zhong, G. Q., & Lan, C. F. (2020). Effects of progressive muscle relaxation training on negative emotions and sleep quality in COVID-19 patients: A clinical observational study. *Medicine*, *99*(47), e23185. https://doi.org/10.1097/MD.0000000000023185