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Review Article

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Enhancing caregiver resilience: A narrative review of yoga's transformative impact on alleviating psychological distress in cancer care

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ABSTRACT

Caregiving for cancer patients is a demanding role that often leads to significant psychological distress. This study aims to explore the impact of yoga on caregiver resilience and psychological distress in the context of cancer care. We have found that yoga, as a mind-body practice, effectively mitigates stress, cultivates self-compassion, and equips caregivers with tools for navigating their demanding roles. The results reveal that incorporating yoga enhances caregiver well-being, highlighting its positive correlation with improved patient outcomes. This study underscores the holistic benefits of integrating yoga within a One Health approach to enhance overall caregiving dynamics.

KEYWORDS: Cancer care; Caregivers; Psychological distress; Yoga interventions; Emotional resilience; Caregiver well-being

1. Introduction

Cancer care extends far beyond the confines of medical treatments and hospital walls, encompassing a web of support that frequently remains invisible yet plays an equally critical role in a patient's journey through the form of caregivers. These unsung heroes, whether family members, friends, or professional caregivers, provide invaluable physical, emotional, and psychological support to individuals navigating the challenges of cancer. Caregivers form an intricate network that offers a lifeline to patients facing a daunting diagnosis. They are the pillars of strength who provide companionship during hospital stays, administer medications, and meet daily needs[1]. Yet, their significance extends beyond these practical tasks as they play a crucial role in a patient's cancer journey. Caregivers hold patients' emotional well-being in their hands, offering a steady presence during moments of fear and uncertainty[2].

The emotional toll of cancer also affects caregivers, who often struggle with feelings of helplessness, anxiety, and sorrow as they witness their loved ones battling the disease[3]. The importance of caregivers lies in their ability to provide unwavering emotional support, serving as beacons of hope even when the journey seems bleak. Moreover, caregivers play an integral role in communication within the healthcare system by acting as advocates to ensure that patients' concerns are heard, questions are answered, and treatment plans are understood[2]. Caregivers bridge the gap between medical professionals and patients, fostering a collaborative approach that leads to better-informed decisions[4].

The significance of caregivers in cancer care is not confined to the patient alone and impacts the entire healthcare landscape[5]. Recognizing and supporting caregivers is essential for maintaining the overall well-being of both patients and those who care for them[6]. Ensuring that caregivers receive the necessary resources, information, and emotional assistance is not only a matter of compassion but also a matter of holistic care within the framework of One Health. One Health is a concept that recognizes the interconnectedness of human health with the health of animals and the environment[7]. In the context of cancer care, a One

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Health approach involves understanding the symbiotic relationship between patients, caregivers, and the broader ecosystem of support. Healthcare systems, communities, and societies must actively support caregivers by providing resources, counselling services, and opportunities for respite. Just as patients require comprehensive care, caregivers also need a network that supports their physical and emotional well-being. As we navigate the intricate landscape of cancer care, remember that the journey is not walked alone. The caregivers who stand alongside patients, providing unwavering support and love, form an integral part of the healing journey[4]. Their importance cannot be overstated, and their well-being deserves our utmost attention.

Caregivers devote themselves to providing support for their loved ones through the often-tumultuous journey of cancer diagnosis, treatment, and recovery. This unwavering commitment to others can lead to a variety of emotional and psychological challenges that are vital to acknowledge and address[5]. Caregivers often experience a rollercoaster of emotions, ranging from empathy and compassion to frustration, helplessness, and even guilt[7]. Witnessing the pain and suffering of their loved ones can have a significant emotional toll. They might experience an overwhelming empathy for their loved ones, internalizing their pain and struggles which can lead to emotional exhaustion and challenges[8]. The uncertain nature of cancer can lead to fear and anxiety about the future as well as the demands of caregiving, including coordinating medical appointments, managing medications, and offering emotional support. This can result in chronic stress and burnout which can manifest as physical exhaustion and feelings of being overwhelmed[2,9]. In many circumstances, due to self-neglect, they are highly likely to lose their identity and interest, which can lead to feelings of isolation and emptiness.

Caregivers could encounter challenges in effectively managing their emotions, potentially resulting in the adoption of detrimental coping strategies like comfort eating, excessive drinking, or withdrawing from social engagements[10]. The constant emotional strain can contribute to the development of depression and anxiety, which can have a negative impact on their mental well-being[11–14]. Ignoring caregivers' emotional struggles not only impacts their quality of life but also affects their ability to provide adequate care for their loved ones[15].

In recent years, there has been a noticeable and encouraging trend of growing interest in complementary approaches, such as yoga, aimed at enhancing the well-being of caregivers within the broader framework of One Health. As the demands of caregiving continue to be recognized as emotionally and psychologically taxing, caregivers and healthcare professionals alike are exploring new avenues to support caregivers' health and resilience. Among these, yoga stands out as a powerful tool that addresses not only the physical but also the mental and emotional needs of those who selflessly care for others[16].

2. Methodology

In this narrative review, the selection criteria for studies on yoga interventions for caregivers involved a systematic search across reputable databases such as PubMed, PsycINFO, ScienceDirect, and Google Scholar. The inclusion criteria specifically targeted studies that explored the effects of yoga on caregivers' psychological well-being within the context of cancer care, as well as yoga interventions for caregivers of other disorders and related symptoms. Systematically employing keywords such as "caregivers," "psychological distress," "yoga," "cancer care," and "interventions," the chosen studies were thematically organized. This thematic organization focuses on stress reduction, anxiety alleviation, emotional well-being, coping strategies, and psychological resilience, offering a comprehensive understanding of the impact of yoga on various aspects of caregivers' psychological health. The narrative review structure facilitates the analysis of common mechanisms underlying the impact of yoga on caregivers' psychological well-being, ensuring a nuanced exploration of outcomes such as stress reduction, anxiety alleviation, emotional well-being, coping strategies, and psychological resilience. The subsequent discussion will explore the implications of these findings for future research and practical applications, shedding light on the potential integration of yoga interventions in cancer care settings.

3. The role of caregivers in cancer care

Caregivers are crucial in oncology patient management, offering essential assistance, emotional solace, and practical support throughout the challenging journey of dealing with cancer. Their pivotal role encompasses physical care, emotional support, and advocacy. Understanding their significance highlights the need for comprehensive support systems to enhance their well-being as they navigate challenging caregiving journeys.

While it's widely recognized that informal caregiving can lead to adverse consequences, various terms such as caregiver strain, burden, stress, psychological distress, well-being, depression, health impact, and the expenses associated with care have been employed

to describe burnout. These various facets collectively underscore the intricate interplay between caregiving and its effects on caregivers' physical, emotional, and financial dimensions, urging the need for tailored interventions to support their well-being[17]. While acknowledging the vital role these family caregivers play, the full extent of their difficulties might not be comprehensively understood or appreciated[18].

In caregiving, the primary focus is often placed on the patient, inadvertently sidelining the needs and challenges of family members and primary caregivers. Caregivers of cancer patients often learn of the diagnosis before the patients themselves, a situation not confined to a specific region. This situation can lead to psychological challenges, including acute stress and a range of emotions such as fear and anger. Balancing caregiving responsibilities with personal lives can lead to stress, anxiety, and even depression. Remarkably, caregivers may experience distress levels similar to those of patients, especially during the diagnosis phase. These emotions could potentially last for an extended period, possibly even years[11]. Robust psychological support plays a pivotal role in alleviating anxiety and depression among individuals in the advanced stages of the disease[19]. Prolonged exposure to high levels of stress can diminish the caregiving capacity of individuals, consequently affecting both their physical health and social well-being[15]. The consequences of prolonged stress are far-reaching and encompass a wide range of symptoms, including chronic anxiety, persistent insomnia, profound feelings of isolation, difficulties in maintaining concentration, eventual burnout, a profound sense of despondency, and pronounced mood instability[20].

The impact of caregiver distress reverberates deeply within the realm of cancer care, affecting not only the caregivers themselves but also the patients they support. It is well documented that the caregivers also experience the various stages of grief. As the caregivers' distress goes unaddressed, it further exacerbates their health challenges, creating a complex interplay between the well-being of the patients and that of the caregivers[13]. The emotional and physical toll may diminish the ability to provide optimal care to patients. This can exacerbate the patient's distress, compounding the challenges of their illness. Additionally, caregiver distress can strain family dynamics, leading to feelings of helplessness and isolation[21]. Caregiver burden includes the difficulties associated with fulfilling the role of a caregiver, along with its consequential effects on the mental and physical well-being of caregivers. Recognizing the intricate interplay between caregiver and patient well-being highlights the urgent need for comprehensive support systems that address the holistic needs of both parties.

4. Yoga as a holistic approach to caregiver well–being

Yoga presents a comprehensive range of potential advantages that can significantly enhance the mental and emotional well-being of caregivers, by combining gentle physical postures, controlled breathing, and mindfulness practices in a holistic approach to address the unique emotional challenges frequently encountered by caregivers. By integrating these elements, yoga becomes a powerful tool for reducing stress, enabling caregivers to manage the intense pressures of their responsibilities more effectively[16]. Furthermore, yoga promotes emotional resilience, offering caregivers with the means to cope with the emotional fluctuations intrinsic to their role[22]. Through mindfulness and present-moment awareness cultivated by yoga, caregivers can detach from worries about the past or future, easing anxiety and fostering mental clarity. The practice also encourages emotion regulation, equipping caregivers with strategies to manage and navigate intense feelings[23,24]. The regular practice of yoga offers crucial breaks from caregiving responsibilities, enhancing caregivers' self-image and emotional well-being. Yoga fosters a profound physical-emotional connection, helping caregivers understand how emotions manifest in their bodies and providing them with tools to address these emotions through physical practice[25]. Participation in yoga classes can also facilitate a sense of community and support, creating a space for caregivers to share experiences and alleviate feelings of isolation[26].

Beyond stress reduction, yoga serves as a dedicated pathway to self-care and mindfulness, offering profound benefits in managing psychological distress. Emphasizing holistic well-being, yoga encourages individuals to turn inward, nurturing a deep connection between the mind and body. Through self-awareness and mindfulness, practitioners gain insights into their emotional landscape, understanding the sources of distress. Conscious breathing and meditation techniques provide tools to navigate distressing emotions, allowing practitioners to observe them without judgment and gradually release their hold[27].

Furthermore, yoga embodies self-care as a powerful antidote to psychological challenges. The practice fosters compassion towards oneself, emphasizing that tending to personal well-being is essential. Engaging in yoga postures and stretches not only alleviates physical tension but symbolizes a tangible commitment to self-nurturing. This practice extends beyond the yoga mat, influencing daily choices that prioritize emotional and mental health. Consistent moments of mindfulness and self-care through yoga enhance the ability to manage psychological distress, build resilience, and foster inner peace[28]. Yoga practices have the potential to effectively address

the unique needs of caregivers, offering them a holistic approach to managing their physical, emotional, and psychological well-being in the face of their demanding roles[29].

The impact of yoga on alleviating psychological distress among caregivers is profound and multi-faceted. It not only provides practical strategies for stress reduction and emotional resilience but also serves as a transformative pathway to self-care and mindfulness. These findings bear significant implications within the One Health context, where the interconnectedness of human health and well-being is paramount. The holistic approach of yoga aligns with the principles of One Health, recognizing the symbiotic relationship between mental, emotional, and physical health. By integrating yoga into caregiver support programs, healthcare systems can contribute to a more comprehensive and interconnected approach to well-being, acknowledging the inseparable nature of human health within the broader context of caregiving.

5. Efficacy, mechanisms and implementation of yoga

The culmination of a systematic analysis of research sheds light on the pivotal role of yoga practice in addressing the challenges faced by caregivers. Amidst the stress-laden landscape of caregiving, the potential side effects of pharmacologic interventions on caregiver health amplify the need for alternative solutions. Research consistently demonstrates that embracing yoga not only alleviates the caregiving burden and improves mental well-being but also stands as a cost-effective, non-pharmacological approach. These findings underscore the transformative potential of yoga in mitigating caregiver stress and promoting holistic well-being, thus offering caregivers a comprehensive and accessible tool for managing their responsibilities[30].

Yoga serves as a transformative intervention for caregivers, nurturing resilience within the framework of One Health. This ancient practice deploys a range of mechanisms that synergistically contribute to reducing stress, regulating emotions , and promoting overall well-being[31,32].

At its core, yoga's transformative effect on caregivers' resilience emanates from its emphasis on stress reduction and relaxation techniques, aligning seamlessly with the principles of One Health. The practice intricately weaves controlled breathing into its fabric, prompting caregivers to engage in deliberate and mindful breathwork. This intentional practice triggers the body's relaxation response, manifesting in reduced heart rate, lowered blood pressure, and an encompassing sense of calm[33]. The mind-body connection fostered by yoga redirects caregivers' focus from stressors to the present moment, creating a meditative state that mitigates the impact of stress.

Yoga's influence extends to neurological and biochemical processes, significantly impacting caregivers' resilience. The practice induces the release of gamma-aminobutyric acid (GABA), a neurotransmitter recognized for curbing anxiety and promoting relaxation[34–36]. Through consistent practice, caregivers nurture positive neuroplasticity, enhancing the brain's adaptive capacity to manage stress. Yoga's regulation of cortisol, the body's stress hormone, further contributes to restoring hormonal balance and alleviating the physiological toll of chronic stress. By engaging in yoga's stress reduction and relaxation techniques, caregivers not only address immediate distress but also cultivate enduring emotional resilience.

Yoga's efficacy in alleviating caregiver distress transcends the physical realm, delving into the profound connection between the mind and body. Through intentional postures, controlled breathing, and mindful movement, caregivers establish a harmonious relationship between bodily sensations and mental states[11,37]. This synchronization facilitates a temporary disengagement from caregiving demands and associated stressors, allowing immersion in the present moment. As a fertile ground for cultivating self-compassion and resilience, yoga equips caregivers with valuable tools to navigate life's challenges with grace and strength. The practice encourages self-compassion, urging individuals to approach themselves with kindness and acceptance, embracing imperfections and limitations[38].

In essence, the transformative power of yoga for caregivers resonates not only in its immediate impact on distress but in its sustained ability to fortify resilience, embodying a holistic approach consistent with the principles of One Health.

Integrating yoga into caregiver support initiatives introduces a transformative dimension, aligning with caregivers' multifaceted needs. Caring for caregivers involves introducing gentle yoga practices that offer a comprehensive toolkit to address the physical, emotional, and mental challenges they face. Regarding physical well-being, the spotlight is on gentle asanas which play a pivotal role by gently stretching and releasing tension in tired muscles, promoting relaxation and flexibility. Venturing beyond the physical, mindfulness techniques yield profound advantages by creating a mental sanctuary, where caregivers can shed emotional stress, gain clarity, and nurture inner calm. A focus on breath awareness helps caregivers reclaim control over stress levels, cultivating a serene mindset amidst trials. Collectively, gentle yoga practices constitute

a potent form of self-care for caregivers by allowing them to carve out moments of relief within their demanding roles. This journey is about nurturing their well-being alongside that of their loved ones.

Removing barriers to caregiver engagement with yoga is essential for accessibility. Challenges include time constraints, financial limits, lack of awareness, and physical restrictions. Solutions involve flexible scheduling, affordable options, awareness campaigns, and adapted practices. Proactive efforts empower caregivers, enhancing their well-being amidst caregiving responsibilities. Certified yoga therapists with expertise in adapting poses and techniques play a pivotal role in guiding caregivers through sessions that prioritize safety and inclusivity. Pre-screening for health concerns, offering modifications, and using clear and inclusive language in instructions are essential practices.

Healthcare providers play a crucial role in advocating and facilitating yoga for caregivers. Recognizing caregivers' unique challenges, healthcare professionals can educate them about yoga's stress-reducing benefits, tailoring recommendations to individual needs. They can refer caregivers to appropriate yoga experts and guide safe practice, ensuring physical and emotional well-being. Encouraging integration into daily routines, healthcare providers promote self-care, validating caregivers' needs and enhancing overall well-being in the caregiving journey. This collaborative approach reflects a comprehensive caregiving strategy that addresses the holistic needs of both caregivers and recipients.

Developing inclusive yoga resources for caregivers is crucial for ensuring universal access. These resources should span diverse options, from videos to adapted poses, catering to varying abilities and schedules. Inclusive language, cultural diversity, and virtual classes foster engagement. Flexible resources empower caregivers to effortlessly integrate yoga into their lives, nurturing their well-being on their terms.

6. Future directions and recommendations

Exploring novel research avenues regarding yoga's impact on caregiver well-being presents an exciting opportunity. Researchers can delve into how yoga interventions affect various aspects of well-being, examining sustained practice's enduring effects on stress, resilience, and quality of life. Comparative studies can highlight yoga's unique benefits for caregivers. Customizing programs based on caregiver profiles, encompassing variables like age, gender, and cultural context, could enhance understanding of how yoga cultivates resilience and self-compassion. This knowledge can shape effective interventions that empower caregivers in their demanding roles.

Promoting heightened awareness and improved resources for caregiver support via yoga acknowledges its transformative impact. Advocates aim to educate healthcare providers, policymakers, and organizations about yoga's benefits in reducing stress and enhancing resilience. By highlighting positive outcomes in support programs, attitudes and policies can shift towards prioritizing caregiver well-being. This also involves creating accessible and tailored yoga resources for caregivers. This advocacy emphasizes holistic caregiving, recognizing the importance of self-care in sustaining caregivers' overall health.

7. Conclusions

In conclusion, this review reveals yoga's capacity to alleviate psychological distress in cancer caregivers. Stress reduction, emotional regulation, and community support are facets of yoga's multi-faceted benefits. Encouraging caregivers to embrace yoga fosters self-care and resilience, making it a vital tool amidst caregiving complexities. In an era of growing caregiving challenges, this review underscores yoga's value as a potent means to enhance well-being and alleviate psychological distress among caregivers.

Conflict of interest statement

The authors declare that there is no conflict of interest.

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Authors' contributions

In the collaborative efforts of this narrative review, Mr. Shivarama AKB played a pivotal role in conceptualizing, conducting literature review, and writing the manuscript. Mr. Mohana M contributed substantially to the literature review and manuscript writing, providing valuable insights during critical review and data synthesis. Dr. Sheelam PK played a crucial role in manuscript editing, offering supervision, overseeing project administration, and providing final approval. Each author's unique contributions have enriched the overall quality of this narrative review.

References

[1] Sherman DW. A review of the complex role of family caregivers as health team members and second-order patients. *Healthcare* 2019; **7**(2): 63.

[2] Hua AY, Wells JL, Brown CL, Levenson RW. Emotional and cognitive empathy in caregivers of persons with neurodegenerative disease: Relationships with caregiver mental health. *Clin Psychol Sci* 2021; **9**(3): 449-466.

[3] Howard AF, Lynch K, Beck S, Torrejón MJ, Avery J, Thorne S, et al. At the heart of it all: Emotions of consequence for the conceptualization of caregiver-reported outcomes in the context of colorectal cancer. *Current Oncology* 2021; **28**(5): 4184-4202.

[4] Huang SCC, Morgan A, Peck V, Khoury L. Improving communications with patients and families in geriatric care. The how, when, and what. *J Patient Exp* 2021; **8**: 23743735211034047.

[5] Wittenberg E, Buller H, Ferrell B, Koczywas M, Borneman T. Understanding family caregiver communication to provide family-centered cancer care. *Semin Oncol Nurs* 2017; **3**3(9): 507-516.

[6] Litzelman K. Caregiver well-being and the quality of cancer care. *Semin Oncol Nurs* 2019; **35**(4): 348-353.

[7] Committee on Family Caregiving for Older Adults; Board on Health Care Services; Health and Medicine Division; National Academies of Sciences, Engineering, and Medicine. *Families Caring for an Aging America*. Schulz R, Eden J, editors. Washington (DC): National Academies Press (US); **2016** Nov 8. PMID: 27905704.

[8] Bruhn JG. *The emotional roller coaster of caregiving*. [Online] Availlable from: https://doi.org/10.1007/978-3-319-29803-0_3. [Accessed on 20 May 2023].

[9] Irfan B, Irfan O, Ansari A, Qidwai W, Nanji K. Impact of caregiving on various aspects of the lives of caregivers. *Cureus* 2017; **9**(5): e1213.

[10]Lindt N, Van Berkel J, Mulder BC. Determinants of overburdening among informal carers: A systematic review. *BMC Geriatr* 2020; **20**(1): 304.

[11]Butow P, Lebel S, Shaw J, Humphris G. Editorial: Uncertainty, anxiety, and fear of cancer recurrence. *Front Psychol* 2021;**12**: 811602.

[12]Halevi Hochwald I, Arieli D, Radomyslsky Z, Danon Y, Nissanholtz-Gannot R. Emotion work and feeling rules: Coping strategies of family caregivers of people with end stage dementia in Israel—A qualitative study. *Dementia* 2022; **21**:1154-1172.

[13]George ES, Kecmanovic M, Meade T, Kolt GS. Psychological distress among carers and the moderating effects of social support. *BMC Psychiatry* 2020; **20**(1): 154.

[14]Zarit SH, Savla J. *Caregivers and stress. Stress: concepts, cognition, emotion, and behavior*. San Diego: Academic Press; **2016**.

[15]Kist Bakof K, Morais Machado L, Rocha Iensen G, Iwersen Faria S, Silva Rodrigues I, Passaglia Schuch A, et al. Stress and its contribution to the development of depression symptoms are reduced in caregivers of elderly with higher educational level. *Stress* 2021; **24**(6): 676-685

[16]Broxson J, Feliciano L. Understanding the Impacts of Caregiver Stress. *Prof Case Manag* 2020; **25**(4): 213-219.

[17]Gérain P, Zech E. Informal Caregiver burnout? Development of a theoretical framework to understand the impact of caregiving. *Front Psychol* 2019; **10**: 1748.

[18]Woodyard C. Exploring the therapeutic effects of yoga and its ability to increase quality of life. *Int J Yoga* 2011; **4**(2): 49-54.

[19]Cousins R, Davies ADM, Turnbull CJ, Playfer JR. Assessing caregiving distress: A conceptual analysis and a brief scale. *Br J Clin Psychol* 2002; **41**(Pt4): 387-403.

[20]Lukhmana S, Bhasin SK, Chhabra P, Bhatia MS. Family caregivers' burden: A hospital based study in 2010 among cancer patients from Delhi. *Indian J Cancer* 2015; **52**(1): 146-151.

[21]Li S, Liu H, Zhu X. The effect of psychotherapy on anxiety, depression, and quality of life in patients with diabetic retinopathy: A protocol for systematic review and network meta-Analysis. *Medicine (Baltimore)* 2021; **100**(50): e28386.

[22]Rohith KP, Patel A. The burden of cancer caregivers: Time to acknowledge and start caring for the carers. *Cancer Res Stat Treat* 2022; **5**(2): 309-311.

[23]Kirk DL, Kabdebo I, Whitehead L. Prevalence of distress and its associated factors among caregivers of people diagnosed with cancer: A cross-sectional study. *J Clin Nurs* 2022; **31**(23-24): 3402-3413.

[24]Phillips R, Durkin M, Engward H, Cable G, Iancu M. The impact of caring for family members with mental illnesses on the caregiver: a scoping review. *Health Promot Int* 2023; **38**(3): daac049.

[25]Sahni PS, Singh K, Sharma N, Garg R. Yoga an effective strategy for self-management of stress-related problems and wellbeing during COVID19 lockdown: A cross-sectional study. *PLoS One* 2021; **16**(2): e0245214.

[26]Herbert C. Can yoga boost access to the bodily and emotional self? Changes in heart rate variability and in affective evaluation before, during and after a single session of yoga exercise with and without instructions of controlled breathing and mindful body awareness in young healthy women. *Front Psychol* 2021; **12**: 731645.

[27]Janjhua Y, Chaudhary R, Sharma N, Kumar K. A study on effect of yoga on emotional regulation, self-esteem, and feelings of adolescents. *J Family Med Prim Care* 2020; **9**(7): 3381-3386.

[28]Wang S, Liu Y. *Analysis of the intervention of yoga on emotion regulation based on big data*. In: J Jansen, B Liang, Ye J. (eds) International conference on cognitive based information processing and application (CIPA 2021). Lecture notes on data engineering and communications technologies, vol 84. Springer, Singpore. **2022**; 402-409.

[29]Mocanu E, Mohr C, Pouyan N, Thuillard S, Dan-Glauser ES. Reasons, years and frequency of yoga practice: Effect on emotion response reactivity. *Front Hum Neurosci* 2018; **12**: 264.

[30]Tischler D, O'Leary M. Quality of life, participation, and individualized support in a community-based yoga class: A case series. *Pediatr Phys Ther* 2022; **34**(4):556-562.

[31]Park CL, Finkelstein-Fox L, Sacco SJ, Braun TD, Lazar S. How does yoga reduce stress? A clinical trial testing psychological mechanisms. *Stress Health* 2021; **37**(1): 116-126.

[32]Bilderbeck AC, Farias M, Brazil IA, Jakobowitz S, Wikholm C. Participation in a 10-week course of yoga improves behavioural control and decreases psychological distress in a prison population. *J Psychiatr Res* 2013; **47**(10): 1438-1445.

[33]Gandhi S, Palled VK, Sahu M, Jagannathan A, Khanna M, Jose A. Effectiveness of caregivers' yoga module on psychological distress and mental well-being among caregivers of patients admitted to neurological rehabilitation wards of a tertiary care institute, Bengaluru, Karnataka, India. *J Neurosci Rural Pract* 2019; **10**(4): 657-665.

[34]Shohani M, Badfar G, Nasirkandy MP, Kaikhavani S, Rahmati S, Modmeli Y, et al. The effect of yoga on stress, anxiety, and depression in women. *Int J Prev Med* 2018; **9**: 21.

[35]Pascoe MC, Thompson DR, Ski CF. Yoga, mindfulness-based stress reduction and stress-related physiological measures: A meta-analysis. *Psychoneuroendocrinology* 2017; **86**: 152-168.

[36]Sengupta P. Health impacts of yoga and pranayama: A State-of-the-art review. *Int J Prev Med* 2012; **3**(7): 444-458.

[37]Streeter CC, Gerbarg PL, Saper RB, Ciraulo DA, Brown RP. Effects of yoga on the autonomic nervous system, gamma-aminobutyric-acid, and allostasis in epilepsy, depression, and post-traumatic stress disorder. *Med Hypotheses* 2012; **78**(5): 571-579.

[38]Streeter CC, Theodore HW, Owen L, Rein T, Karri SK, Yakhkind A, et al. Effects of yoga versus walking on mood, anxiety, and brain GABA levels: A randomized controlled MRS study. *J Altern Complement Med* 2010; **16**(11): 1145-1152.

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