



THE EFFECT OF YOGA ON PRISONERS: AN OVERVIEW

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Abstract

There are evidences that yogic practices are beneficial for the overall mental and physical health of prisoners. However, there is a lack of an overview study focused on the effects of yogic practices on mental and physical health of prisoners. Thus, the aimed of the present overview study is to clarify the effects of yogic practices on mental and physical health of prisoners. I have reviewed total 300 research articles out of which 112 was selected for my study. Existing evidence concludes that yogic practices significantly impact on mental and physical health of prisoners. The studies was taken from Google scholar and PubMed.

Keyword Yoga; Yoga and Prisoner; Prisoner Mental health and Physical health; Prison Environment

1. Introduction

According to the most recent World Prison Population List, issued in December 2021, there may be more than 11.5 million inmates worldwide. Prison suicide rates worldwide are around three times higher in men and nine times higher in women than those in the general population (1), (2). Prisoners experience significant mental stress on a daily basis, as indicated by their rate of psychiatric morbidity. (3), (4). According to The Times Of India article Overcrowding, protracted incarceration of pre-trial convicts, unsatisfactory living

circumstances, a lack of treatment programmes and staff, and charges of inhuman treatment by prison staff have all drawn the attention of critics throughout the years.(5),(6). These kinds of factors mainly responsible for mental and physical related problems in the prisoners.(7),(8),(9),(10),(11),(12). There are many health issues with the Prisoners but there are some issues from which most of the prisoners suffer.

Most common health problems for the Prisoners are: Depression and anxiety (13),(14), Sleep(15),(16) Antisocial behaviour and aggression(17),(Gibbon et al., 2020).(19), (20) etc. These all are one of the few mental health related issues from which the Prisoners all around the world are suffering.(4). Other than mental disorders there are many other physical and psychological problems such as violence(23),(24), sleep problems(25), (15), self-harm(26),(27),migraine headaches, profound fatigue, gastro-intestinal problems, poor appetite and weight loss, cardiovascular problems(28),(29).

Healthcare administrators and concerned government officials have taken notice of this phenomenon(30),(31),(32),(33),(34),(35),(36) who are now seeking solutions to these problems.

Given these presumptions, research suggests that yoga and other mind-body meditation practises offer some novel approaches that are scientifically proven to be efficient ways to improve the physical health, reduce stress, and improve mental health in inmates.(37),(38),(39).

Many studies worldwide proved that Inmates from many different countries are often reported to have high levels of psychiatric illness (40),(4) and there is a need of an alternative medicine to overcome these mental as well as physical health issues. So, the purpose of this study is to compile all of the available information on yoga as a method for managing and preventing overall ill-health in prisoners.

2. Methodology

PUBMED and Google scholar database were used for finding the researches. The selected Articles were published upto the year from 2002 to 2023. Keyword were selected through expert's Opinion and literature review. Using Boolean logic, the following combination of Keyword was used in the search database "yoga" or "prisoner mental health and physical health" or "prison environment" or "yoga and prisoner".

2.1. Mental Problems in Prisoners

Inmates from many different countries had often reported to have high levels of psychiatric illness. (40). The prison environment does play a key effect in the development of stress and psychological issues among jail inmates (41). Mental disorder are more common in prisoners than in the general population.(42) .Self-harm is a serious issue in the prison setting since inmates frequently engage in self-harm.(43).

2.2. Physical Problems in Prisoners

Modifiable risk factors for chronic diseases are encouraged by the prison environment (measured by length of incarceration), including poor diet and less sanitization(44). Compared to the normal population, prisoners are more likely to contract infectious diseases. (42).

- **Effect of yoga on Anxiety and Depression**

Many studies on yoga have shown that it significantly reduces melancholy and anxiety. (45),(46),(47),(48). Yoga lowered anxiety and depression in those with several conditions, including Parkinsons disease(49), cancer patient (50);(51), Breast cancer(52), rheumatoid arthritis(53), covid19 patients(54) as comparing with stretching and resistance training exercises.Yoga has successfully reduced the Depression and anxiety in children and adolescents(55), college students (56) as well as older adults(57),(58).

- **Effect of yoga on Sleep**

Yoga eliminates sleep-related issues like insomnia(59) and improves the sleep quality(60),(61),(62). Sleep problem is most common symptoms in any physical or mental problem and it can be improved by doing yoga such as during pregnancy(63), in Epilepsy disorder(64), in Cancer (65), Chronic respiratory disease (66), among Type 2 Diabetes patients(67) etc. Yoga enhances older person's quality of life and sleep patterns.(57).

- **Effect of yoga on Antisocial behaviour and aggression**

An individual suffering from antisocial personality disorder, generally referred to as sociopathy, consistently disregards right and wrong and appears careless with the needs and feelings of others. Individuals with antisocial personality disorder frequently manipulate, treat people brutally, or show a heartless indifference to their suffering. They don't feel sorry for themselves or regret what they did. Yoga can help among inmates (68), (69), (70), workers in workplace (71), (72), among adolescents (73) etc in removing Antisocial behaviour and reducing Aggression.

- **Effect of yoga on Violence**

In the World Report, the World Health Organization (WHO) makes this point quite apparent on Violence and Health: "Violence is a global scourge that tears apart the fabric of communities and threatens the lives, health and happiness of us all." Yoga reduce the violence in youth (80),(81), convicted extremist offenders (82), interpersonal violence (83). Thus, yoga helps in overcoming from violence behaviour in the people (84).

- **Effect of yoga on Migraine Headache**

Yoga can play a significant role in improving migraine problem and its related symptoms (85),(86),(87). Yoga helps in getting ease from headache in Migraine(88),(89),(88), in some researches yoga can be best option as a adjuvant therapy with other pharmacological therapy (90),(91),(92),(93).

- **Effect of yoga on profound fatigue**

A generalised sense of exhaustion or lack of energy is referred to as fatigue. Fatigue is something which comes mostly as a symptom in any one or more diseases or as a side effect of any medication such as chemotherapy (94),(95), (96). Yoga directly impact on the root cause of the fatigue and which further responsible for overcome fatigue such as the cancer(97),(51),(65), Chronic respiratory disease(66), Multiple sclerosis (98) etc.

- **Effect of yoga on Gastro intestinal disorder**

All the disorders which are related to GI Tract i.e., related to Oesophagus, Stomach, Intestine and Rectum. It includes diseases like Irritable bowel syndrome, Diarrhea, Ulcerative Colitis

etc. Yoga directly effects on -Irritable bowel syndrome (99), inflammatory bowel disease (100),(101), Abdominal pain in gastrointestinal disorder (102), Ulcerative colitis (103),(104).

Effect of yoga on Prisoners

Compared to the general community, prisoners' levels of mental health issues, substance misuse, and poor physical health are much higher in prison environments.(105),(44),(41). Yet there are many researches which proved that Yoga could be a solution to all those problems(107),,(109),(37).Yoga helps convicts become more mature, enhancing skills like their capacity to take responsibility, feel more meaningful, and be more accepting of themselves. It also helps decrease aggression and antisocial behaviour in prisoners.,(110), (69),(111).Prisoners who participated in a yoga programme in the facility reported an improvement in their psychological wellbeing, (111),(112),(39),overall Mental health status i.e.,(stress, depression, anxiety, psychiatric disorders etc) (113),(37), (114),(115),(116),(117),(38),(68) and moreover the rate of recidivism also decreased in the prisoners after releasing from prison (118), (119).

3. LITERATURE REVIEW

Author, Year	Type of study	Topic	Conclusion
S Willy-Gravley, JBeauchemin, P Pirie, A Gomes, EKlein,2019	Experimental study	Yoga Practice May Increase the Character Maturity of Male Prison Inmates	Substantial impact on traits related to self-direction, including maturity, a sense of purpose, and a decline in aggressive antisocial conduct.
S Willy Gravley, JBeauchemin,P Pirie, A Gomes, E Klein ,2021	Experimental study	A Randomized Controlled Trial of Yoga with Incarcerated Females: Impacts on Emotion Regulation, Body Dissociation, and Warnings of Substance Relapse	Yoga can help female prisoners who are struggling with their mental health and drug addiction.
KM Auty, A Cope, A Liebling, 2017	Systematic Review and Meta-Analysis	A Systematic Review and Meta-Analysis of Yoga and Mindfulness Meditation in Prison	Positive effects of yoga and meditation on psychological well-being and behavioural functioning
S Kovalsky, BHasisi, N Haviv, E Elisha, 2020	Experimental study	Can Yoga Overcome Criminality? The Impact of Yoga on Recidivism in Israeli Prisons	Yoga may have an impact on recidivism, according to study findings, which are corroborated by the fact that prisoners who practised yoga while they were in jail had reduced recidivism rates

			after being released.
MRamanathan, AB Bhavanani, M Trakroo, 2017	Experimental study	Effect of a 12-week yoga therapy program on mental health status in elderly women inmates of a hospice	Yoga helps convicts feel more purposeful and hopeful by reducing negative thinking and improving mental health.
H Harner, AL Hanlon, M Garfinkel., 2010	Experimental study	Effect of Iyengar Yoga on Mental Health of Incarcerated Women	The symptoms of depression and anxiety in convicts significantly decreased.
P Sureka, S Govil, D Dash, C Dash, M Kumar, V Singhal, 2014	Experimental study	Effect of SudarshanKriya on male prisoners with non-psychotic psychiatric disorders: A randomized control trial	An individual's anxiety, depression, positive wellbeing, general health, and overall positive general wellbeing are all improved by engaging in SudarshanKriya and related activities.
M Kaur, DR Kumar, 2016	REVIEW PAPER	EFFECT OF YOGA AND MEDITATION ON STRESS MANAGEMENT OF FEMALE PRISONERS IN DELHI	Improved mood, lessened stress, lessened psychological anguish, greater attention, and enhanced decision-making are all benefits of yoga and meditation.
VS Nanduri, R Ram, YPV Ashram, 2021	Experimental study	Effects of Yoga PranaVidya intervention on psychological wellbeing and criminal attitude of under-trial prisoners	Following the session, there was a noticeably favourable improvement in psychological health and a decrease in criminal attitude indicators.
L Bartels, LN Oxman, A Hopkins, 2019	Experimental study	"I Would Just Feel Really Relaxed and at Peace": Findings from a Pilot Prison Yoga Program in Australia	Improvements in the levels of anxiety, sadness, self-esteem, goal-direction, negative affect, and non-acceptance are signs that prisoners have benefited from the programme.
G Hopkin, S Evans-Lacko, A Forrester, J Shaw, G Thornicroft, 2018	Systematic Review	Interventions at the Transition from Prison to the Community for Prisoners with Mental Illness: A Systematic Review	Several studies have shown that yoga is beneficial for prisoners' physical, mental, and emotional well-being.
AC Bilderbeck, M Farias, IA Brazil, S Jakobowitz, C Wikholm, 2013	Experimental study	Participation in a 10-week course of yoga improves behavioural control and decreases psychological distress in a prison population	Within prison populations, yoga may be useful in enhancing subjective wellness, mental health, and executive performance.
AC Bilderbeck, IA Brazil, M Farias, 2015	Experimental study	Preliminary Evidence That Yoga Practice Progressively Improves Mood and Decreases Stress in a Sample of UK Prisoners	Prisoners who practise yoga report much lower levels of overall stress.

Y Danielly, C Silverthorne, 2017	Experimental study	Psychological Benefits of Yoga for Female Inmates	Yoga reduces some undesirable behaviours and perhaps even mental health issues, which helps both convicts and prison employees.
A Sfindla, P Malmström, S Torstensson, N Kerekes,2018	Experimental study	Yoga Practice Reduces the Psychological Distress Levels of Prison Inmates	Obsessive-compulsive disorder, paranoid thoughts, and somatization symptoms are all decreased by yoga in jail inmates.

4. Result

Many research was examined, and the findings indicated that Yoga had a favourable impact on the prisoners' physical and mental health. Research studies support the value of yoga in improving jail conditions.

5. Conclusion

Many studies have found that prisoners are more likely than the general population to experience issues with their mental and physical health, thus it was decided to assess the value of yoga for inmates. An increasing corpus of research indicates that prisoner therapies for physical and mental health issues can be very quickly successful. Not just as a therapy but it also reduces the rate of Recidivism in Inmates.

6. REFERENCE

1. Fazel S, Hayes AJ, Bartellas K, Clerici M, Trestman R. Mental health of prisoners: prevalence, adverse outcomes, and interventions. *Lancet Psychiatry*. 2016 Sep 1;3(9):871–81.
2. Fazel S, Ramesh T, Hawton K. Suicide in prisons: an international study of prevalence and contributory factors. *Lancet Psychiatry*. 2017 Dec;4(12):946–52.
3. Ayirolimeethal A, Ragesh G, Ramanujam JM, George B. Psychiatric morbidity among prisoners. *Indian J Psychiatry*. 2014;56(2):150–3.
4. Fazel S, Danesh J. Serious mental disorder in 23000 prisoners: a systematic review of 62 surveys. *Lancet Lond Engl*. 2002 Feb 16;359(9306):545–50.

5. shubham kashyap. Major problems of prison system in India. The Times of India [Internet]. 2022 Jan 1 [cited 2022 Dec 10]; Available from: <https://timesofindia.indiatimes.com/readersblog/shubham-kashyap/major-problems-of-prison-system-in-india-40079/>
6. Edit TOI. Bail, the rule: Far too many undertrials are kept in jail for too long. The Times of India [Internet]. 2022 Sep 3 [cited 2023 Jun 7]; Available from: <https://timesofindia.indiatimes.com/blogs/toi-editorials/bail-the-rule-far-too-many-undertrials-are-kept-in-jail-for-too-long/>
7. Nurse J, Woodcock P, Ormsby J. Influence of environmental factors on mental health within prisons: focus group study. *BMJ*. 2003 Aug 28;327(7413):480.
8. Albertie A, Bourey C, Stephenson R, Bautista-Arredondo S. Connectivity, prison environment and mental health among first-time male inmates in Mexico City. *Glob Public Health*. 2017 Feb 1;12(2):170–84.
9. Walker J, Illingworth C, Canning A, Garner E, Woolley J, Taylor P, et al. Changes in mental state associated with prison environments: a systematic review. *Acta Psychiatr Scand*. 2014;129(6):427–36.
10. Jordan M. The prison setting as a place of enforced residence, its mental health effects, and the mental healthcare implications. *Health Place*. 2011 Sep 1;17(5):1061–6.
11. De Viggiani N. Unhealthy prisons: exploring structural determinants of prison health. *Sociol Health Illn*. 2007;29(1):115–35.
12. Stürup-Toft S, O’Moore EJ, Plugge EH. Looking behind the bars: emerging health issues for people in prison. *Br Med Bull*. 2018 Mar 1;125(1):15–23.
13. Prost SG, Golembeski C, Periyakoil VS, Arias J, Knittel AK, Ballin J, et al. Standardized outcome measures of mental health in research with older adults who are incarcerated. *Int J Prison Health*. 2022 Apr 5;ahead-of-print(ahead-of-print).

14. Muziki J d'Amour, Uwera T, Niyonsenga J, Nshimiyimana A, Sebatukura SG, Mutabaruka J. A qualitative analysis of negative feelings among incarcerated filicide mothers in Rwanda. *BMC Psychiatry*. 2022 Jun 27;22(1):432.
15. Getachew Y, Azale T, Necho M. Poor sleep quality and associated factors among prisoners of the Diredawa correctional facility in eastern Ethiopia. *Ann Gen Psychiatry*. 2020 Jun 20;19(1):40.
16. Abdu Z, Hajure M. Prevalence and Associated Factors of Poor Quality of Sleep among Prisoners in Mettu Town Prison, Oromia, South West Ethiopia, 2019. *Open Public Health J [Internet]*. 2020 Mar 20 [cited 2022 May 14];13(1). Available from: <https://openpublichealthjournal.com/VOLUME/13/PAGE/94/ABSTRACT/>
17. Sen P, Exworthy T, Forrester A. Mental health care for foreign national prisoners in England and Wales. *J Ment Health Abingdon Engl*. 2014 Dec;23(6):333–9.
18. Simon Gibbon, Khalifa NR. Psychological interventions for antisocial personality disorder - PubMed [Internet]. [cited 2023 Feb 24]. Available from: <https://pubmed.ncbi.nlm.nih.gov/32880104/>
19. Staton-Tindall M, Harp KLH, Minieri A, Oser C, Webster JM, Havens J, et al. An exploratory study of mental health and HIV risk behavior among drug-using rural women in jail. *Psychiatr Rehabil J*. 2015 Mar;38(1):45–54.
20. Yi Y, Turney K, Wildeman C. Mental Health Among Jail and Prison Inmates. *Am J Mens Health*. 2017 Jul;11(4):900–9.
21. Nevárez-Sida A, Constantino-Casas P, Castro-Ríos A. Socioeconomic factors associated with drug consumption in prison population in Mexico. *BMC Public Health*. 2012 Jan 13;12:33.
22. Azbel L, Wegman MP, Polonsky M, Bachiredy C, Meyer J, Shumskaya N, et al. Drug injection within prison in Kyrgyzstan: elevated HIV risk and implications for scaling up opioid agonist treatments. *Int J Prison Health*. 2018 Sep 10;14(3):175–87.

23. Hilinski-Rosick CM, Freiburger TL. Sexual Violence Among Male Inmates. *J Interpers Violence*. 2021 Mar;36(5–6):NP3285–303.
24. Macdonald M. Women prisoners, mental health, violence and abuse. *Int J Law Psychiatry*. 2013;36(3–4):293–303.
25. Geng F, Wang J, Wen C, Shao Y, Wu J, Fan F. Prevalence and correlates of sleep problems among Chinese prisoners. *Soc Psychiatry Psychiatr Epidemiol*. 2021 Apr;56(4):671–8.
26. Carli V, Mandelli L, Poštuvan V, Roy A, Bevilacqua L, Cesaro C, et al. Self-harm in prisoners. *CNS Spectr*. 2011 Mar;16(3):75–81.
27. Favril L, Yu R, Hawton K, Fazel S. Risk factors for self-harm in prison: a systematic review and meta-analysis. *Lancet Psychiatry*. 2020 Aug;7(8):682–91.
28. Pękala-Wojciechowska A, Kacprzak A, Pękala K, Chomczyńska M, Chomczyński P, Marczak M, et al. Mental and Physical Health Problems as Conditions of Ex-Prisoner Re-Entry. *Int J Environ Res Public Health*. 2021 Jul 18;18(14):7642.
29. Gatherer A, Møller L, Europe WHORO for. *Health in Prisons: A WHO Guide to the Essentials in Prison Health*. WHO Regional Office Europe; 2007. 198 p.
30. Fovet T, Lancelevée C, Eck M, Scouflaire T, Bécache E, Dandelot D, et al. [Mental health care in French correctional facilities during the Covid-19 pandemic]. *L'Encephale*. 2020 Jun;46(3S):S60–5.
31. Shrestha G, Mulmi R, Yadav DK, Baral D, Yadav BK, Chakravartty A, et al. Health needs and risky behaviours among inmates in the largest prison of eastern Nepal. *Int J Prison Health*. 2018 Dec 17;14(4):254–67.
32. Nakatani Y. [Treatment of offenders with mental disorders: focusing on prison psychiatry]. *Seishin Shinkeigaku Zasshi*. 2011;113(5):458–67.
33. Brinkley-Rubinstein L, Peterson M, Clarke J, Macmadu A, Truong A, Pognon K, et al. The benefits and implementation challenges of the first state-wide comprehensive

- medication for addictions program in a unified jail and prison setting. *Drug Alcohol Depend.* 2019 Dec 1;205:107514.
34. Lim AG, Stone J, Hajarizadeh B, Byrne M, Chambers GM, Martin NK, et al. Evaluating the Prevention Benefit of HCV Treatment: Modeling the SToP-C Treatment as Prevention Study in Prisons. *Hepatology* Baltim Md. 2021 Nov;74(5):2366–79.
 35. Omagari M, Shimane T, Matsumoto T. Survey design and outcome measures to evaluate the effectiveness of relapse prevention guidance for drug-dependent inmates in Japan: A review. *Nihon Arukoru Yakubutsu Igakkai Zasshi.* 2016 Oct;51(5):335–47.
 36. Rogan M. Human rights approaches to suicide in prison: implications for policy, practice and research. *Health Justice.* 2018 Sep 14;6(1):15.
 37. Sureka P, Govil S, Dash D, Dash C, Kumar M, Singhal V. Effect of Sudarshan Kriya on male prisoners with non psychotic psychiatric disorders: A randomized control trial. *Asian J Psychiatry.* 2014 Dec 1;12:43–9.
 38. Bilderbeck AC, Brazil IA, Farias M. Preliminary Evidence That Yoga Practice Progressively Improves Mood and Decreases Stress in a Sample of UK Prisoners. *Evid Based Complement Alternat Med.* 2015 Jul 30;2015:e819183.
 39. Sfindla A, Malmström P, Torstensson S, Kerekes N. Yoga Practice Reduces the Psychological Distress Levels of Prison Inmates. *Front Psychiatry.* 2018 Sep 3;9:407.
 40. Fazel S, Seewald K. Severe mental illness in 33 588 prisoners worldwide: systematic review and meta-regression analysis. *Br J Psychiatry.* 2012 May;200(5):364–73.
 41. H R, Perwez SK, T-N-V-R-L S, H R. A Critical Review on Role of Prison Environment on Stress and Psychiatric Problems among Prisoners. *Mediterr J Soc Sci.* 2015;6(1S1):218–23.
 42. Fazel S, Baillargeon J. The health of prisoners. *The Lancet.* 2011 Mar 12;377(9769):956–65.

43. Owens D, Horrocks J, House A. Fatal and non-fatal repetition of self-harm: Systematic review. *Br J Psychiatry*. 2002 Sep;181(3):193–9.
44. Silverman-Retana O, Servan-Mori E, Bertozzi SM, Orozco-Nuñez E, Bautista-Arredondo S, Lopez-Ridaura R. Prison environment and non-communicable chronic disease modifiable risk factors: length of incarceration trend analysis in Mexico City. *J Epidemiol Community Health*. 2018 Apr;72(4):342–8.
45. Riegler A, Bumb JM, Wisch C, Schuster R, Reinhard I, Hoffmann S, et al. Does the Augmentation of Trauma Informed Hatha Yoga Increase the Effect of Dialectical Behavior Therapy for Substance Use Disorders on Psychopathological Strain of Patients with Borderline Personality Disorder and Comorbid Substance Use Disorder? Results of a Quasi-Experimental Study. *Eur Addict Res*. 2023;29(1):1–8.
46. Nugent NR, Brick L, Armev MF, Tyrka AR, Ridout KK, Uebelacker LA. Benefits of Yoga on IL-6: Findings from a Randomized Controlled Trial of Yoga for Depression. *Behav Med Wash DC*. 2021;47(1):21–30.
47. Cramer H, Lauche R, Anheyer D, Pilkington K, de Manincor M, Dobos G, et al. Yoga for anxiety: A systematic review and meta-analysis of randomized controlled trials. *Depress Anxiety*. 2018 Sep;35(9):830–43.
48. Saeed SA, Antonacci DJ, Bloch RM. Exercise, yoga, and meditation for depressive and anxiety disorders. *Am Fam Physician*. 2010 Apr 15;81(8):981–6.
49. Kwok JYY, Kwan JCY, Auyeung M, Mok VCT, Lau CKY, Choi KC, et al. Effects of Mindfulness Yoga vs Stretching and Resistance Training Exercises on Anxiety and Depression for People With Parkinson Disease: A Randomized Clinical Trial. *JAMA Neurol*. 2019 Jul 1;76(7):755–63.
50. Hardoerfer K, Jentschke E. Effect of Yoga Therapy on Symptoms of Anxiety in Cancer Patients. *Oncol Res Treat*. 2018;41(9):526–32.
51. Lundt A, Jentschke E. Long-Term Changes of Symptoms of Anxiety, Depression, and Fatigue in Cancer Patients 6 Months After the End of Yoga Therapy. *Integr Cancer Ther*. 2019;18:1534735418822096.

52. Liu W, Liu J, Ma L, Chen J. Effect of mindfulness yoga on anxiety and depression in early breast cancer patients received adjuvant chemotherapy: a randomized clinical trial. *J Cancer Res Clin Oncol*. 2022 Sep;148(9):2549–60.
53. Gautam S, Tolahunase M, Kumar U, Dada R. Impact of yoga based mind-body intervention on systemic inflammatory markers and co-morbid depression in active Rheumatoid arthritis patients: A randomized controlled trial. *Restor Neurol Neurosci*. 2019;37(1):41–59.
54. Sharma N, Sahni PS, Sharma US, Kumar J, Garg R. Effect of Yoga on the Stress, Anxiety, and Depression of COVID-19-Positive Patients: A Quasi-Randomized Controlled Study. *Int J Yoga Ther*. 2022 Jan 1;32(2022):Article 8.
55. James-Palmer A, Anderson EZ, Zucker L, Kofman Y, Daneault JF. Yoga as an Intervention for the Reduction of Symptoms of Anxiety and Depression in Children and Adolescents: A Systematic Review. *Front Pediatr*. 2020;8:78.
56. Falsafi N. A Randomized Controlled Trial of Mindfulness Versus Yoga: Effects on Depression and/or Anxiety in College Students. *J Am Psychiatr Nurses Assoc*. 2016 Nov;22(6):483–97.
57. Halpern J, Cohen M, Kennedy G, Reece J, Cahan C, Baharav A. Yoga for improving sleep quality and quality of life for older adults. *Altern Ther Health Med*. 2014;20(3):37–46.
58. Klainin-Yobas P, Oo WN, Suzanne Yew PY, Lau Y. Effects of relaxation interventions on depression and anxiety among older adults: a systematic review. *Aging Ment Health*. 2015;19(12):1043–55.
59. Wang WL, Chen KH, Pan YC, Yang SN, Chan YY. The effect of yoga on sleep quality and insomnia in women with sleep problems: a systematic review and meta-analysis. *BMC Psychiatry*. 2020 May 1;20(1):195.
60. Datta K, Tripathi M, Verma M, Masiwal D, Mallick HN. Yoga nidra practice shows improvement in sleep in patients with chronic insomnia: A randomized controlled trial. *Natl Med J India*. 2021;34(3):143–50.

61. Panjwani U, Dudani S, Wadhwa M. Sleep, Cognition, and Yoga. *Int J Yoga*. 2021;14(2):100–8.
62. Sharpe E, Lacombe A, Butler MP, Hanes D, Bradley R. A Closer Look at Yoga Nidra: Sleep Lab Protocol. *Int J Yoga Ther*. 2021 Jan 1;31(1):Article_20.
63. Bacaro V, Benz F, Pappaccogli A, De Bartolo P, Johann AF, Palagini L, et al. Interventions for sleep problems during pregnancy: A systematic review. *Sleep Med Rev*. 2020 Apr;50:101234.
64. Peng W, Ding J, Wang X. The Management and Alternative Therapies for Comorbid Sleep Disorders in Epilepsy. *Curr Neuropharmacol*. 2021;19(8):1264–72.
65. Lin PJ, Kleckner IR, Loh KP, Inglis JE, Peppone LJ, Janelins MC, et al. Influence of Yoga on Cancer-Related Fatigue and on Mediation Relationships Between Changes in Sleep and Cancer-Related Fatigue: A Nationwide, Multicenter Randomized Controlled Trial of Yoga in Cancer Survivors. *Integr Cancer Ther*. 2019;18:1534735419855134.
66. Özer Z, Bahçecioğlu Turan G, Aksoy M. The effects of yoga on dyspnea, sleep and fatigue in chronic respiratory diseases. *Complement Ther Clin Pract*. 2021 May;43:101306.
67. Viswanathan V, Sivakumar S, Sai Prathiba A, Devarajan A, George L, Kumpatla S. Effect of yoga intervention on biochemical, oxidative stress markers, inflammatory markers and sleep quality among subjects with type 2 diabetes in South India: Results from the SATYAM project. *Diabetes Res Clin Pract*. 2021 Feb;172:108644.
68. Kerekes N, Fielding C, Apelqvist S. Yoga in Correctional Settings: A Randomized Controlled Study. *Front Psychiatry*. 2017 Oct 16;8:204.
69. Kerekes N, Brändström S, Nilsson T. Imprisoning Yoga: Yoga Practice May Increase the Character Maturity of Male Prison Inmates. *Front Psychiatry* [Internet]. 2019 [cited 2023 Feb 19];10. Available from: <https://www.frontiersin.org/articles/10.3389/fpsy.2019.00406>

70. Kaur M, Kumar DR. EFFECT OF YOGA AND MEDITATION ON STRESS MANAGEMENT OF FEMALE PRISONERS IN DELHI – A REVIEW PAPER. :7.
71. Dwivedi U, Kumari S, Akhilesh KB, Nagendra HR. Well-being at workplace through mindfulness: Influence of Yoga practice on positive affect and aggression. *Ayu*. 2015;36(4):375–9.
72. Dwivedi U, Kumari S, Nagendra HR. Effect of yoga practices in reducing counterproductive work behavior and its predictors. *Indian J Psychiatry*. 2016;58(2):216–9.
73. A.G G, Subramanya P, Mahadevan B, Mahadevan B. Effect of Yoga on Adolescents' Beliefs about Aggression and Alternatives. *Int J Med Public Health*. 2017;7(3):166–71.
74. Compton WM, Thomas YF, Stinson FS, Grant BF. Prevalence, correlates, disability, and comorbidity of DSM-IV drug abuse and dependence in the United States: results from the national epidemiologic survey on alcohol and related conditions. *Arch Gen Psychiatry*. 2007 May;64(5):566–76.
75. Simmons S, Suárez L. Substance Abuse and Trauma. *Child Adolesc Psychiatr Clin N Am*. 2016 Oct;25(4):723–34.
76. Fronk GE, Sant'Ana SJ, Kaye JT, Curtin JJ. Stress Allostasis in Substance Use Disorders: Promise, Progress, and Emerging Priorities in Clinical Research. *Annu Rev Clin Psychol*. 2020 May 7;16:401–30.
77. Pastor V, Antonelli MC, Pallarés ME. Unravelling the Link Between Prenatal Stress, Dopamine and Substance Use Disorder. *Neurotox Res*. 2017 Jan;31(1):169–86.
78. Gaihre A, Rajesh SK. Effect of Add-On Yoga on Cognitive Functions among Substance Abusers in a Residential Therapeutic Center: Randomized Comparative Study. *Ann Neurosci*. 2018 Apr;25(1):38–45.
79. Walia N, Matas J, Turner A, Gonzalez S, Zoorob R. Yoga for Substance Use: A Systematic Review. *J Am Board Fam Med JABFM*. 2021;34(5):964–73.

80. A.G GS, Subramanya P, Mahadevan B. Effect of Yoga on Adolescents' Attitude towards Violence. *J Hum Values*. 2017 May 1;23(2):81–91.
81. Barr N, Petering R, Onasch-Vera L, Thompson N, Polsky R. MYPATH: A novel mindfulness and yoga-based peer leader intervention to prevent violence among youth experiencing homelessness. *J Community Psychol*. 2022 May;50(4):1952–65.
82. Kanchibhotla D, Kulkarni S, Singh S. Effectiveness of a Comprehensive Yoga Program on Convicted Extremist Offenders. *Int J Yoga*. 2020;13(1):50–4.
83. Kappas Mazzio A, Mendoza N, Lindsay Brown M, Sinha D, Messing J, Wilson S, et al. Yoga as a complementary approach to healing for adult victims and survivors of interpersonal violence. *Complement Ther Clin Pract*. 2021 Aug;44:101427.
84. Setty A.G. G, Pailoor S, B. M. Effect of Yoga on Human Aggression and Violent Behavior - A Review of the Indian Yoga Scriptures and Scientific Studies. *Soc Educ Hist*. 2016 Feb 22;5(1):83.
85. Millstine D, Chen CY, Bauer B. Complementary and integrative medicine in the management of headache. *BMJ*. 2017 May 16;357:j1805.
86. Wells RE, Beuthin J, Granetzke L. Complementary and Integrative Medicine for Episodic Migraine: an Update of Evidence from the Last 3 Years. *Curr Pain Headache Rep*. 2019 Feb 21;23(2):10.
87. Büssing A, Ostermann T, Lüdtke R, Michalsen A. Effects of yoga interventions on pain and pain-associated disability: a meta-analysis. *J Pain*. 2012 Jan;13(1):1–9.
88. Wu Q, Liu P, Liao C, Tan L. Effectiveness of yoga therapy for migraine: A meta-analysis of randomized controlled studies. *J Clin Neurosci Off J Neurosurg Soc Australas*. 2022 May;99:147–51.
89. Mehta JN, Parikh S, Desai SD, Solanki RC, G Pathak A. Study of Additive Effect of Yoga and Physical Therapies to Standard Pharmacologic Treatment in Migraine. *J Neurosci Rural Pract*. 2021 Jan;12(1):60–6.

90. Kumar A, Bhatia R, Sharma G, Dhanlika D, Vishnubhatla S, Singh RK, et al. Effect of yoga as add-on therapy in migraine (CONTAIN): A randomized clinical trial. *Neurology*. 2020 May 26;94(21):e2203–12.
91. Nayar D, Mahapatro M, Nayar P. Role of Yoga as an Adjunct in the Management of Migraine Headache-Current Status and Future Indications. *Int J Yoga*. 2022;15(1):12–8.
92. Kumari S, Dhar M, Pathania M, Kumar N, Kulshrestha P, Singh A. Yoga as an Adjuvant therapy in management of migraine- An open label randomised trial. *J Fam Med Prim Care*. 2022 Sep;11(9):5410–6.
93. Kisan R, Sujan M, Adoor M, Rao R, Nalini A, Kutty BM, et al. Effect of Yoga on migraine: A comprehensive study using clinical profile and cardiac autonomic functions. *Int J Yoga*. 2014 Jul;7(2):126–32.
94. Friedemann Paul KP. Fatigue as a symptom or comorbidity of neurological diseases - PubMed [Internet]. [cited 2023 Mar 5]. Available from: <https://pubmed.ncbi.nlm.nih.gov/29027539/>
95. Krystyna Pierzchała, Klaudiusz Kumor. [The problem of fatigue in neurological disorders] - PubMed [Internet]. [cited 2023 Mar 5]. Available from: <https://pubmed.ncbi.nlm.nih.gov/17338130/>
96. Fox RS, Ancoli-Israel S, Roesch SC, Merz EL, Mills SD, Wells KJ, et al. Sleep disturbance and cancer-related fatigue symptom cluster in breast cancer patients undergoing chemotherapy. *Support Care Cancer Off J Multinatl Assoc Support Care Cancer*. 2020 Feb;28(2):845–55.
97. Taso CJ, Lin HS, Lin WL, Chen SM, Huang WT, Chen SW. The effect of yoga exercise on improving depression, anxiety, and fatigue in women with breast cancer: a randomized controlled trial. *J Nurs Res JNR*. 2014 Sep;22(3):155–64.
98. Shohani M, Kazemi F, Rahmati S, Azami M. The effect of yoga on the quality of life and fatigue in patients with multiple sclerosis: A systematic review and meta-analysis of randomized clinical trials. *Complement Ther Clin Pract*. 2020 May 1;39:101087.

99. D'Silva A, MacQueen G, Nasser Y, Taylor LM, Vallance JK, Raman M. Yoga as a Therapy for Irritable Bowel Syndrome. *Dig Dis Sci.* 2020 Sep;65(9):2503–14.
100. Wilke E, Reindl W, Thomann PA, Ebert MP, Wuestenberg T, Thomann AK. Effects of yoga in inflammatory bowel diseases and on frequent IBD-associated extraintestinal symptoms like fatigue and depression. *Complement Ther Clin Pract.* 2021 Nov;45:101465.
101. Sharma P, Poojary G, Dwivedi SN, Deepak KK. Effect of Yoga-Based Intervention in Patients with Inflammatory Bowel Disease. *Int J Yoga Ther.* 2015;25(1):101–12.
102. Kortering JJ, Ockeloen LE, Hilbink M, Benninga MA, Deckers-Kocken JM. Yoga Therapy for Abdominal Pain-Related Functional Gastrointestinal Disorders in Children: A Randomized Controlled Trial. *J Pediatr Gastroenterol Nutr.* 2016 Nov;63(5):481–7.
103. Deepa Y, Mooventhan A, Lilly N, Manavalan N. Effect of yoga and naturopathy on disease activity and symptom burdens in a patient with active ulcerative colitis: a case report. *J Complement Integr Med.* 2021 Apr 1;18(4):869–72.
104. Narasingharao K, Pradhan B, Navaneetham J. Sleep Disorder, Gastrointestinal Problems and Behaviour Problems Seen in Autism Spectrum Disorder Children and Yoga as Therapy: A Descriptive Review. *J Clin Diagn Res JCDR.* 2016 Nov;10(11):VE01–3.
105. Harris F, Hek G, Condon L. Health needs of prisoners in England and Wales: the implications for prison healthcare of gender, age and ethnicity. *Health Soc Care Community.* 2007 Jan;15(1):56–66.
106. Calles-Rubiales N, Ibáñez del Prado C. Influence of prisoners' mental health on the relational climate of prisons. *Rev Esp Sanid Penit.* 2020;22(3):116–25.
107. Derlic D. A Systematic Review of Literature: Alternative Offender Rehabilitation-Prison Yoga, Mindfulness, and Meditation. *J Correct Health Care Off J Natl Comm Correct Health Care.* 2020 Oct;26(4):361–75.
108. Liebling A. The Meaning and Effects of Yoga in Prison.

109. Bartels L, Oxman LN, Hopkins A. "I Would Just Feel Really Relaxed and at Peace": Findings From a Pilot Prison Yoga Program in Australia. *Int J Offender Ther Comp Criminol.* 2019;63(15–16):2531–49.
110. Willy-Gravley S, Beauchemin J, Pirie P, Gomes A, Klein E. A Randomized Controlled Trial of Yoga with Incarcerated Females: Impacts on Emotion Regulation, Body Dissociation, and Warnings of Substance Relapse. *Soc Work Res.* 2021 Mar 1;45(1):20–9.
111. Auty KM, Cope A, Liebling A. A Systematic Review and Meta-Analysis of Yoga and Mindfulness Meditation in Prison: Effects on Psychological Well-Being and Behavioural Functioning. *Int J Offender Ther Comp Criminol.* 2017 May 1;61(6):689–710.
112. Danielly Y, Silverthorne C. Psychological Benefits of Yoga for Female Inmates. *Int J Yoga Ther.* 2017 Nov 1;27(1):9–14.
113. Ramanathan M, Bhavanani AB, Trakroo M. Effect of a 12-week yoga therapy program on mental health status in elderly women inmates of a hospice. *Int J Yoga.* 2017;10(1):24–8.
114. Harner H, Hanlon AL, Garfinkel M. Effect of Iyengar Yoga on Mental Health of Incarcerated Women: A Feasibility Study. *Nurs Res.* 2010 Dec;59(6):389–99.
115. Kaur M, Kumar DR. EFFECT OF YOGA AND MEDITATION ON STRESS MANAGEMENT OF FEMALE PRISONERS IN DELHI – A REVIEW PAPER. 2016;
116. Hopkin G, Evans-Lacko S, Forrester A, Shaw J, Thornicroft G. Interventions at the Transition from Prison to the Community for Prisoners with Mental Illness: A Systematic Review. *Adm Policy Ment Health Ment Health Serv Res.* 2018 Jul 1;45(4):623–34.
117. 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 Oct 1;47(10):1438–45.

118. Kovalsky S, Hasisi B, Haviv N, Elisha E. Can Yoga Overcome Criminality? The Impact of Yoga on Recidivism in Israeli Prisons. *Int J Offender Ther Comp Criminol.* 2020;64:1461.
119. Nanduri VS, Ram R, Ashram YPV. Effects of Yoga Prana Vidya intervention on psychological wellbeing and criminal attitude of under-trial prisoners. 2021;9.