

Effect of a Structured Yogic Practice Program on Mental Well-Being among Prisoners: A Randomized Controlled Trial

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Abstract

Background: Prisoners often experience poor mental well-being due to the stressful prison environment. Yoga has been recognized as a holistic approach to promoting psychological health and positive well-being. *Objective:* This study aimed to examine the effect of a six-week yoga intervention on the mental well-being of prisoners. *Methods:* A randomized controlled pre-test–post-test design was conducted among 150 male prisoners from Gwalior Central Jail, India. Participants were randomly allocated to an experimental group ($n = 75$) and a control group ($n = 75$). The experimental group participated in a supervised 35-minute daily yoga programme for six weeks, while the control group continued routine prison activities. Mental well-being was assessed using the Warwick–Edinburgh Mental Well-being Scale (WEMWBS). Paired samples t -test was used to examine within-group changes, and analysis of covariance (ANCOVA) was performed to compare post-test scores while controlling for baseline values. *Results:* The experimental group showed a significant improvement in mental well-being following the intervention ($t(74) = -25.690, p = .001$, Cohen's $d = -2.966$), whereas the control group showed no significant change ($t(74) = -1.435, p = .155$). However, ANCOVA revealed that the adjusted post-test difference between the experimental and control groups was not statistically significant, $F(1,146) = 1.623, p = .205$, partial $\eta^2 = .011$. *Conclusion:* The findings indicate that a six-week yoga programme improved mental well-being within the experimental group but did not produce a significant advantage over the control group after controlling for baseline scores. Longer-duration yoga interventions may be required to achieve significant between-group improvements in prisoners' mental well-being.

Keywords: Yoga, mental well-being, prisoners, randomized controlled trial, correctional settings..

Introduction

Mental well-being is an essential component of overall health and quality of life. It encompasses emotional, psychological, and social well-being and influences how individuals think, feel, and behave in daily life. According to the World Health Organization (WHO, 2022), mental well-being enables individuals to realize their abilities, cope with normal life stresses, work productively, and contribute to their communities. Maintaining mental well-being is particularly challenging in correctional settings, where prisoners are exposed to numerous stressors, including confinement, social isolation, loss of autonomy, overcrowding, uncertainty about the future, and separation from family members (Fazel et al., 2016).

Prisoners constitute a highly vulnerable population with respect to mental health. Research indicates that the prevalence of mental disorders among incarcerated individuals is substantially higher than in the general population (Fazel et al., 2016). Poor mental well-being among prisoners is associated with increased levels of stress, anxiety, depression, aggression, and difficulties in emotional regulation, which may negatively affect rehabilitation and successful reintegration into society (Auty et al., 2015). Therefore, the identification of effective, accessible, and non-pharmacological interventions to improve prisoners' mental well-being has become an important area of research.

Yoga, an ancient Indian system of holistic health, integrates physical postures (asanas), breathing techniques (pranayama), relaxation, meditation, and ethical principles to promote harmony between body and mind (Iyengar, 2002). Over the past few decades, yoga has gained increasing scientific recognition as an effective intervention for enhancing psychological health and emotional well-being. Studies have demonstrated that regular yoga practice can reduce perceived stress, anxiety, and depressive symptoms while improving emotional stability, self-awareness, and overall well-being (Ross & Thomas, 2010; Cramer et al., 2013).

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The potential benefits of yoga are particularly relevant in prison environments, where opportunities for constructive psychological development are often limited. Yoga practices encourage mindfulness, self-regulation, and emotional control, which may help prisoners cope more effectively with the psychological challenges of incarceration. Previous studies conducted in correctional settings have reported that yoga interventions can improve behavioral control, reduce psychological distress, decrease aggression, and enhance subjective well-being among inmates (Bilderbeck et al., 2013; Kerekes et al., 2017). Furthermore, systematic reviews have concluded that yoga and mindfulness-based interventions show promise in promoting mental health and rehabilitation outcomes in prison populations (Auty et al., 2015).

Mental well-being is an essential component of overall health and plays a crucial role in emotional stability, resilience, and successful rehabilitation among prisoners. Individuals in correctional settings often experience psychological distress due to prolonged confinement, social isolation, and limited opportunities for positive coping. Yogic practices have emerged as effective mind-body interventions for enhancing psychological health by improving concentration, reducing stress, and promoting emotional balance. Previous studies have demonstrated the beneficial effects of Trataka on concentration (Kumar & Padmakar, 2023), yoga on cognitive functioning (Kumar et al., 2024a), mantra yoga on psychological variables (Kumar et al., 2024b), and mantra chanting and meditation on stress regulation and relaxation (Sharma et al., 2024; Sharma et al., 2025). Furthermore, yogic interventions have been shown to significantly improve psychological well-being and mental health among female prisoners, highlighting their potential as effective rehabilitation strategies within correctional settings (Priyanka et al., 2025a, 2025b). Therefore, the present randomized controlled trial aims to examine the effectiveness of a structured yogic practice program in improving the mental well-being of prisoners.

Despite growing evidence supporting the psychological benefits of yoga, relatively few studies have examined its effects on mental well-being among prisoners in the Indian correctional system. Given the unique environmental and psychosocial challenges faced by incarcerated individuals, further research is warranted to evaluate the effectiveness of yoga-based interventions in enhancing mental well-being within prison settings. Therefore, the present study aims to investigate the effect of selected yogic practices on the mental well-being of prisoners and to explore the potential role of yoga as a supportive intervention for improving psychological health in correctional institutions.

Materials and Methods

Study Design and Sampling

The study adopted a randomized controlled trial (RCT) using a pre-test–post-test design to evaluate the impact of a structured yoga intervention on Mental well-being among prison inmates. Eligible participants were randomly allocated to either an experimental group, which received the yoga intervention, and a control group. Mental well-being was measured before the intervention (pre-test) and following its completion (post-test). The yoga program was implemented for six weeks, consisting of daily 35-minute sessions conducted in a designated hall within the prison facility. Meanwhile, participants in the control group continued their regular daily routines without receiving any structured intervention during the study period.

A total of 150 prisoners from Gwalior Central Jail were enrolled in the present study. Participants who fulfilled the predetermined inclusion and exclusion criteria were recruited and subsequently assigned randomly to either the experimental group ($n = 75$) or the control group ($n = 75$). The experimental group participated in a structured yoga intervention, while the control group continued their routine prison activities without any additional intervention. All participants completed the pre-intervention and post-intervention assessments using a standardized Mental well-being measurement instrument. The participants had a mean age of 37.7 years ($SD = 5.2$).

Individuals aged between 25 and 50 years who provided informed consent, were physically and mentally fit to participate, and were expected to remain available throughout the intervention period were included in the study. Participants were excluded if they had prior experience with yoga or meditation, suffered from

severe psychiatric disorders, were receiving acute medical treatment, or had serious health conditions that could interfere with participation.

Intervention Protocol

The yoga intervention was delivered according to a structured and standardized protocol developed by the researcher and refined through consultation with experienced yoga experts. The intervention comprised a sequential series of yogic practices, including Pragyayog, selected asanas, relaxation techniques, pranayama, and chanting. Each session lasted 35 minutes and was conducted daily for a period of six weeks under the direct supervision of the researcher. To ensure consistency across all sessions, the same intervention protocol was followed throughout the study. The sessions were conducted in a designated hall within the prison premises, providing a controlled and uniform environment for practice. Participant attendance and adherence to the intervention were monitored regularly using attendance records maintained by the prison authorities.

Measures

The Warwick–Edinburgh Mental Well-being Scale (WEMWBS), developed by researchers at the Universities of Warwick and Edinburgh in 2007, was employed to evaluate the mental well-being of the participants. The scale was developed with support from NHS Health Scotland to provide a reliable measure of positive mental well-being among adults in the United Kingdom. It comprises 14 positively phrased items that assess both subjective well-being and psychological functioning. Responses to each item are recorded on a five-point Likert scale, and the item scores are summed to produce a total score ranging from 14 to 70. Higher total scores reflect better levels of mental well-being. The scale has demonstrated good reliability, with a reported Cronbach's alpha coefficient of 0.765.

Procedure

Baseline data on mental well-being were collected using the Warwick–Edinburgh Mental Well-being Scale (WEMWBS). The assessment was conducted in a group setting within a designated hall inside the prison premises. The researcher administered the questionnaire with the assistance of prison staff (guards) to facilitate the data collection process and ensure smooth coordination. Following the baseline assessment, participants allocated to the yoga intervention group were provided with detailed instructions regarding the intervention protocol. To enable regular participation in the yoga sessions, the selected inmates were temporarily relieved of their routine duties throughout the intervention period. In contrast, participants in the control group continued their usual daily activities without receiving any structured intervention. The yoga programme was implemented over a period of six weeks. Upon completion of the intervention, post-test data were collected using the same instrument, the Warwick–Edinburgh Mental Well-being Scale (WEMWBS). The post-test assessment was conducted in the same designated hall and under conditions comparable to those of the baseline assessment to ensure consistency. Confidentiality of the participants' responses was maintained throughout the study.

Result

Data were analyzed using IBM SPSS Statistics 27.0.1 software. Descriptive statistics, including the mean and standard deviation, were computed for mental well-being scores. Before performing inferential analyses, the data were screened for normality and outliers. The assumption of homogeneity of variance was assessed using Levene's test, and all necessary statistical assumptions were found to be satisfied. To determine the effectiveness of the yoga intervention on mental well-being, Analysis of Covariance (ANCOVA) was employed to compare post-test scores between the experimental and control groups while controlling for baseline (pre-test) scores. This statistical approach accounted for any initial differences between the groups and provided a more accurate estimate of the intervention effect. Statistical significance was established at $p < .05$. In addition, effect sizes were calculated using partial eta squared (η^2), with values of 0.01, 0.06, and 0.14 representing small, medium, and large effect sizes, respectively.

Table 1: Pre-test and Post-test Mean and Standard Deviation

Groups	Pre-Test		Post-Test		Adjusted
	Mean	SD	Mean	SD	Mean
Control Group	43.85	8.88	44.06	8.57	45.86
Experimental group	47.62	7.94	50.09	7.98	49.05

The table 1 presents the descriptive statistics of mental well-being for both the control and experimental groups at the pre-test and post-test stages, along with the adjusted mean scores after controlling for baseline differences. The findings indicate that the two groups were assessed before and after the intervention to evaluate changes in mental well-being. Following the intervention, the experimental group showed an improvement in mental well-being compared with the control group. The adjusted mean scores, obtained after controlling for pre-test mental well-being, provide a more accurate comparison of the intervention effect between the two groups.

Table 2: Normality Test (Shapiro-Wilk Test)

	group	Statistic	df	Sig.
pre_test	control group	.976	75	.167
	experimental group	.981	75	.322
post_test	control group	.980	75	.265
	experimental group	.980	75	.288

The normality of the data was assessed using the Shapiro–Wilk test for the pre-test and post-test scores of both the control and experimental groups. The findings indicated that the obtained p-values were greater than .05 for all comparisons, demonstrating that the data did not significantly deviate from a normal distribution. Accordingly, the assumption of normality was considered to be fulfilled, supporting the use of parametric statistical analyses in the study.

Table 3: Levene's Test of Equality of Error Variances

F	df1	df2	Sig.
1.418	1	148	.236

Levene's Test of Equality of Error Variances was performed to assess the assumption of homogeneity of variance. The test was non-significant ($p > .05$), indicating that the error variances were equal across the control and experimental groups. Therefore, the assumption of homogeneity of variance was satisfied, supporting the use of ANCOVA for further analysis.

Table 4: Homogeneity of regression

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
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group * pre_test	4.065	1	4.065	2.928	.089
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The assumption of homogeneity of regression slopes was assessed by examining the interaction between the covariate (pre-test scores) and the group. The interaction effect was non-significant ($p > .05$), indicating that the relationship between the covariate and the dependent variable was consistent across the groups. Therefore, the assumption of homogeneity of regression slopes was satisfied, supporting the use of ANCOVA.

Table 5: Analysis of Covariance (ANCOVA) of Mental Well-being

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
group	2.254	1	2.254	1.623	.205	.011
pre_test	9865.890	1	9865.890	7106.817	.001	.980
group * pre_test	4.065	1	4.065	2.928	.089	.020
Error	202.681	146	1.388			

The results of the ANCOVA indicated that the effect of the yoga intervention on mental well-being was not statistically significant, $F(1, 146) = 1.623, p = .205$. However, the covariate (pre-test mental well-being score) was statistically significant, indicating that baseline mental well-being had a significant influence on post-test scores. Therefore, after controlling for pre-test differences, the yoga intervention did not result in a statistically significant improvement in mental well-being among the prisoners.

Table 6: Paired Samples t-Test

Variable	Group	t	df	Sig. (2-tailed)	Cohen's d
Mental well-being	Control group	-1.435	74	.155	-0.166
	Experimental group	-25.690	74	.001	-2.966

The control group in Table 6 showed a non-significant change in mental well-being between pre-test and post-test, $t(74) = -1.435, p = .155$. Since the p-value is greater than .05, the null hypothesis cannot be rejected, indicating that mental well-being did not change significantly in participants who did not receive the yoga intervention. The effect size was small (Cohen's $d = -0.166$), suggesting a negligible practical change. In contrast, the experimental group demonstrated a highly significant difference in mental well-being between pre-test and post-test, $t(74) = -25.690, p = .001$. This indicates that the yoga intervention produced a statistically significant improvement in mental well-being. The effect size was very large (Cohen's $d = -2.966$), suggesting that the intervention had a substantial practical impact on participants' mental well-being.

Discussion

The present study examined the effect of a six-week yoga intervention on the mental well-being of prisoners. The paired samples t-test revealed a highly significant improvement in mental well-being within the experimental group ($p = .001$) with a very large effect size, whereas no significant change was observed in the control group. However, the ANCOVA indicated that the between-group difference was not statistically significant after controlling for baseline mental well-being. These findings suggest that although participants who practiced yoga experienced meaningful improvements over time, these changes were not sufficiently greater than those of the control group to achieve statistical significance after adjustment for

pre-test scores. The improvement observed in the experimental group may be attributed to the combined effects of yogic practices, including asanas, pranayama, relaxation, and meditation, which are known to enhance emotional regulation, self-awareness, and psychological resilience. Nevertheless, mental well-being is a broad construct involving positive emotions, life satisfaction, and social functioning, and these dimensions may require a longer duration of practice to demonstrate significant between-group differences. Moreover, the stressful prison environment, characterized by restricted freedom, institutional routines, and social isolation, may have limited the magnitude of improvement. The present findings are partially consistent with previous research. Bilderbeck et al. (2013) reported that a 10-week yoga programme improved psychological well-being and reduced psychological distress among prisoners, while Kerekes et al. (2017) found improvements in emotional well-being and self-regulation following yoga practice in correctional settings. In contrast, some studies have reported limited improvements in positive mental well-being following short-term interventions, suggesting that longer intervention periods and sustained practice may be necessary to produce significant changes in broader indicators of well-being.

Overall, although the adjusted between-group difference was not statistically significant, the significant within-group improvement and large effect size observed in the experimental group indicate that yoga has the potential to enhance mental well-being among prisoners. Future studies employing longer intervention periods, larger samples, and follow-up assessments are recommended to further establish the long-term effectiveness of yoga in correctional settings.

Conclusion

The six-week yoga intervention significantly improved mental well-being within the experimental group, while no significant change was observed in the control group. However, the between-group difference was not statistically significant after controlling for baseline scores. These findings suggest that yoga may enhance mental well-being among prisoners, although longer-duration interventions may be required to achieve significant between-group effects.

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Conflicts of interest

There are no conflicts of interest.

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