



Impact of Group-Based Laughter Yoga on Perceived Stress and Subjective Happiness Among Middle-Aged Men

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ABSTRACT

Aim of the Study: Middle-aged males in Pakistan face substantial occupational and socioeconomic stress that adversely affects their psychological health. This underscores the need for accessible, non-pharmacological community interventions. The study examined the effectiveness of eight-week group-based Laughter Yoga (LY) intervention in reducing perceived stress and improving overall happiness among middle-aged males.

Methodology: The study employed a quantitative pre-experimental one-group pretest-posttest design. Forty middle-aged males were engaged through convenience sampling at Nasir Park, Lahore. Following eligibility screening and attrition, data from 30 participants were included in the final analysis. The Perceived Stress Scale (PSS-10) and the Oxford Happiness Questionnaire (OHQ-29) were used to collect data. Data were analyzed using descriptive statistics, Wilcoxon signed-rank tests, and Kruskal-Wallis H tests.

Results: Results demonstrated a significant reduction in perceived stress ($Z = -4.705$, $p < .001$, $r = .86$) and a significant increase in overall happiness ($Z = -4.670$, $p < .001$, $r = .85$) after the intervention. Baseline analysis showed a significant demographic difference in overall happiness based on marital status ($p = .035$), with married males reporting the highest happiness levels. However, no significant demographic differences were observed following the intervention.

Conclusion: Laughter Yoga is a promising community-based intervention for reducing perceived stress and enhancing psychosocial well-being among middle-aged males. To promote sustainable psychological resilience, municipal authorities and public institutions should proactively incorporate structured LY sessions in community green spaces and organizational wellness programs.

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1. Introduction

Psychological well-being and perceived stress are two vital aspects that impact the quality of life, daily functioning, and overall health of adults (Van Agteren et al., 2021). These aspects become increasingly vital during the complex transition to middle age (Mughal et al., 2024). Past research has confirmed that these two variables have a strong negative correlation; the higher the stress level, the lower the positive affect and life satisfaction (Sudhakar, 2024). Behavioral sciences define perceived stress as the degree to which individuals assess everyday situations as threatening, unpredictable, or overwhelming compared to their coping resources (Chaabane et al., 2021; Cohen, 1988). On the other hand, subjective happiness is a comparatively stable state of mind characterized by the presence of positive emotions, overall life satisfaction, and a positive evaluation of life experiences (Hills & Argyle, 2002; Sudhakar, 2024).

These variables are especially important in the developmental phase of middle age, which is typically considered to be between the ages of 40 and 65 (Infurna et al., 2020). In this particular middle age period, males face their peak psychosocial, financial, and family responsibilities. Public health data indicate that distress is common in adults living in high-density urban areas, with up to 70% of middle-aged males experiencing moderate to high levels of chronic socioeconomic distress (Magomedova & Fatima, 2025). Without effective coping strategies, it often intensifies physical symptoms like muscle tension, cardiac problems, and extreme fatigue, and can lead to a vicious cycle of increasing mental and physical stress (Bell et al., 2023).

These challenges are particularly pronounced in the South Asian sociocultural context. Traditional patriarchy norms impose clear scripts of hegemonic masculinity, which demand that men be stoic and self-reliant (Gough & Novikova, 2020). Such cultural scripts actively discourage middle-aged males from expressing emotional vulnerability or seeking professional psychological counselling (Karasz et al., 2019). This means that significant psychosocial stress is often internalized. This stress, when left unmanaged, frequently manifests as physical illness or extreme emotional withdrawal, instead of the usual clinical depression (Awan et al., 2025). Additionally, conventional psychological therapies, including psychiatric drugs and cognitive behavioral therapy (CBT), are not easily accessible to the general public. These approaches often carry high costs, significant social stigma, and require strong mental health literacy (Salimpour et al., 2022). These challenges underscore the need for community-based interventions that are accessible, non-pharmacological, and culturally acceptable to actively disrupt the relationship between high perceived stress and reduced happiness.

To meet this need, Laughter Yoga (LY) has been developed as a promising mind-body intervention that is non-pharmacological. Laughter yoga was conceived by Dr. Madan Kataria in 1995 as a structured group activity combining voluntary, simulated laughter exercises with traditional yogic deep breathing (Pranayama) (Kataria et al., 2023). Unlike conventional therapies, LY is based on the "Body-to-Mind" principle which states that the human brain cannot distinguish between real, spontaneous laughter and simulated, voluntary laughter (El-Sayed et al., 2024). Empirical evidence reveals that the intense diaphragmatic breathing and vocalization during LY is an effective inhibitor of the hypothalamic-pituitary-adrenal (HPA) axis. These physiological responses may decrease the release of stress hormones such as cortisol and activate the parasympathetic nervous system to induce deep physiological relaxation (Kramer & Leitao, 2023; Meier et al., 2021). In addition, the group delivery model of LY is based on emotional contagion and mirror neuron activation, which promotes social bonding, child-like playfulness and peer support without the need for cognitive humor or intellectual jokes (Peters & Kashima, 2015).

Although numerous studies have examined the effectiveness of laughter interventions, methodological limitations remain. Most of the existing literature is focused primarily on older adults, geriatric populations, or patients in clinical rehabilitation (Alici & Dönmez, 2020; Bressington et al., 2018). A research gap remains on the use of this intervention among community-dwelling middle-aged males, especially in Pakistan where socioeconomic pressures are particularly high (Bibi et al., 2022).

1.1. Study Objectives

The main purpose of this study was to assess the effectiveness of eight-week group-based Laughter Yoga intervention on the subjective happiness of middle-aged males. Secondly, the study investigated whether this community-based intervention can be effective in substantially decreasing perceived stress in this population.

1.2. Hypotheses

H1-A: The participants will exhibit a statistically significant increase in overall happiness following the eight-week LY intervention as compared with their pre-test baseline. This assumption is based on evidence generated by previous studies demonstrating LY impact on positive affect and endogenous opioid release (El-Sayed et al., 2024; Seraj et al., 2025).

H1-B: Participants will demonstrate a statistically significant decrease in perceived stress following the eight-week LY intervention as compared with their pre-test baseline. This assumption is based on the past research detailing LY ability to regulate autonomic responses and suppress cortisol production (Bressington et al., 2019; Kramer & Leitao, 2023).

1.3. Significance of the Study

The results of this study may help public health and municipal authorities in planning community-based mental health programs. This study highlights the effectiveness of LY, providing evidence for the use of low-cost mind-body interventions in community green spaces to reduce stress and enhance the psychological health of middle-aged men.

2. Materials And Methods

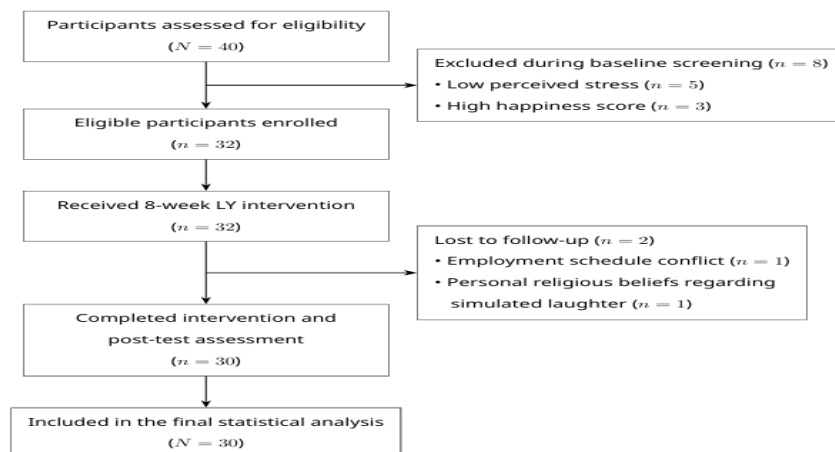
2.1. Study Design

This study used a quantitative, pre-experimental one-group pretest-posttest design. This design enabled the researcher to collect baseline data, then deliver the behavioral intervention and immediately assess the changes in psychological variables in the same group at two different points in time.

2.2. Population and Sample

Data were collected from middle-aged males who regularly visited Nasir Park Lahore in the morning. Convenience sampling was used to engage the initial sample of 40 participants. To prevent statistical floor and ceiling effects, eight people were excluded from the baseline screening. Two of the participants dropped out of the program during the 8-week intervention (6.25%). The complete participant recruitment, screening, and attrition process is detailed in the CONSORT flow diagram.

Figure 1
Participant Flow Diagram



Note: Of the 40 participants who were assessed at baseline, 8 were excluded at baseline and 2 withdrew during the intervention, leaving 30 participants for analysis.

A sample of 30 participants ($N = 30$) was used for the final statistical analysis, a sample size that is consistent with established feasibility and pilot studies for Laughter Yoga interventions (Bressington et al., 2019). Regarding age distribution, the largest segment was 46-50 years (33.3%) followed by 51-55 years (30.0%), 40-45 years (23.3%) and 56-60 years (13.3%). The sample included a wide range of occupations representing different socioeconomic backgrounds, including government and private employees (40.0%), self-employed participants (23.3%), unemployed individuals (16.7%), skilled laborers (13.3%), and retirees (6.7%). In terms of self-rated financial status, 43.3% identified their financial status as low, 36.7% as moderate, and 20.0% as comfortable.

2.3. Instruments

Two psychometrically validated standardized instruments were used to collect data.

2.3.1. Perceived Stress Scale (PSS-10)

Cohen (1988) developed the PSS-10. It is a widely used instrument for assessing subjective stress. This 10-item scale measures the degree to which situations are perceived as stressful on a 5-point Likert scale. The total score can be between 0 and 40, with a higher score representing higher perceived stress. The instrument used in this study demonstrated good internal consistency, with a pre-test Cronbach's alpha of 0.784 and a post-test alpha of 0.936.

2.3.2. Oxford Happiness Questionnaire (OHQ-29)

The OHQ-29 was created by Hills and Argyle (2002) as an instrument to assess subjective happiness and well-being. Participants completed 29 statements on a 6-point Likert scale. The instrument demonstrated good reliability with pre-test Cronbach's alpha of 0.916 and post-test of 0.924.

2.4. Procedure and Intervention

The intervention was conducted for a period of 8 weeks, which was based on previous studies that have demonstrated its effectiveness for psychological outcomes (Tabei et al., 2025). The group sessions were conducted five days a week (Monday to Friday) for 45–60 minutes per session in a shaded area at Nasir Park. Each session included a physical warm-up (8–10 minutes), 20 minutes of active LY exercises (e.g., greeting laughter, gradient laughter), 10 minutes of deep abdominal yogic breathing and a guided relaxation cool-down phase. Ethical guidelines were followed, and written informed consent was obtained from all participants before data collection.

2.5. Data Analysis

IBM SPSS Statistics version 22 was used for data analysis. Normality of the data was assessed using the Shapiro-Wilk test. Several study variables were not normally distributed ($p < .001$) and therefore non-parametric statistical tests were used. Wilcoxon signed-rank test was used to assess pre-test and post-test differences within the group. To assess the magnitude of the intervention effects, effect sizes ($r = Z/\sqrt{N}$) were calculated for the Wilcoxon signed-rank test. In addition, Kruskal-Wallis H tests were conducted to examine demographic differences. The significance level was set at $p < .05$.

3. Results

Table 1. Participant Demographic Characteristics

Variables	f (%)
Marital status	
Single	4 (13.3)
Married	18 (60.0)
Divorced/Separated	4 (13.3)
Widowed	4 (13.3)
Highest education level	
No formal schooling	2 (6.7)
Primary	3 (10.0)
Secondary/matric	2 (6.7)
Higher secondary	7 (23.3)
Graduate or above	16 (53.3)

Table 1 presents the marital status and education level of the participants. A majority of the cohort reported being married, comprising 60.0% ($f = 18$) of the sample. The rest of the participants were evenly distributed among the other categories. Single, divorced/separated, and widowed participants each accounted for 13.3% ($f = 4$) of the sample. More than half of the participants held a graduate degree or higher, representing 53.3% ($f = 16$) of the cohort. The next largest group was those with a higher secondary education (23.3%, $f = 7$). Those who had only a primary education represented 10.0% ($f = 3$), while the secondary/matriculation and no formal schooling categories each represented 6.7% ($f = 2$) of the sample.

Table 2. Frequency Distribution of Perceived Stress Scale (Pre-Test vs. Post-Test)

Variables	Pre-Test f (%)	Post-Test f (%)
Perceived Stress Scale (PSS)		
Low stress	0 (0.0)	22 (73.3)
Moderate stress	22 (73.3)	6 (20.0)
High perceived stress	8 (26.7)	2 (6.7)
Oxford Happiness Questionnaire (OHQ)		
1-2: Not happy	2 (6.7)	0 (0.0)
2-3: Somewhat unhappy	14 (46.7)	3 (10.0)
3-4: Not particularly happy or unhappy	14 (46.7)	3 (10.0)
4: Somewhat happy or moderately happy; satisfied	0 (0.0)	4 (13.3)
4-5: Rather happy; pretty happy	0 (0.0)	20 (66.7)

Table 2 shows a marked shift in stress and happiness categories following the eight-week LY intervention. At baseline, none of the participants reported low stress; a high proportion (73.3%) reported moderate stress. Following the intervention, 73.3% of the participants were classified in the low stress category, with only 6.7% remaining in the high stress group. A similar pattern was observed in subjective happiness. In the pre-test, 46.7% of the participants rated themselves as "somewhat unhappy" and none of the participants were in the highest happiness categories. After the intervention, none of the participants were in the "not happy" category and 80.0% of the sample were in the top two categories ("moderately happy" or "rather happy").

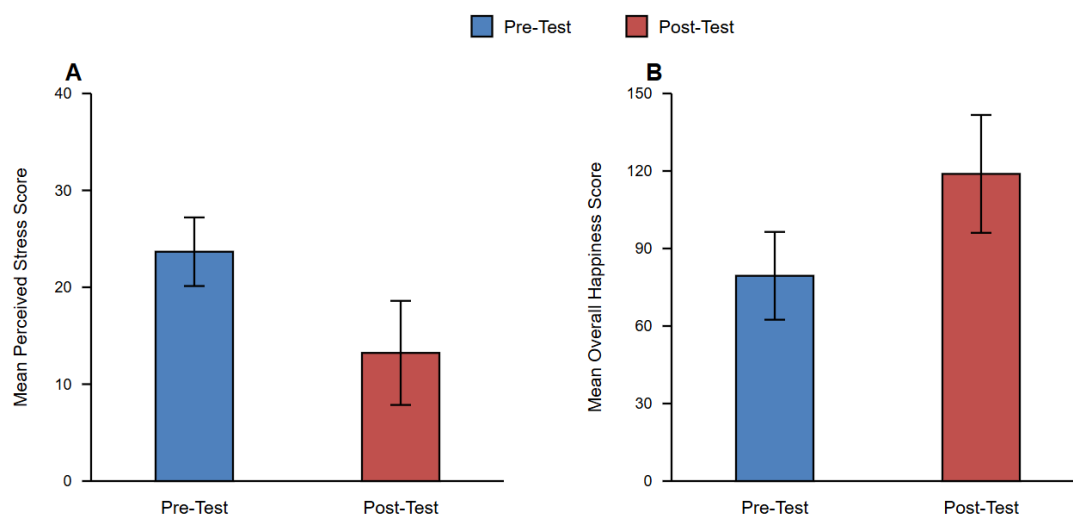
Table 3. Descriptive Statistics and Wilcoxon Signed-Rank Test Results

Variable	Pre-Test M (SD)	Post-Test M (SD)	Z-Score	p-value	Effect Size (r)
Perceived Stress (PSS-10)	23.67 (3.54)	13.23 (5.37)	-4.705	< 0.001*	0.86
Overall Happiness (OHQ-29)	79.43 (16.99)	118.87 (22.81)	-4.670	< 0.001*	0.85

p < .05 indicates statistical significance. M = Mean, SD = Standard Deviation.

Table 3 presents the inferential analysis of the intervention effects. The mean perceived stress score decreased from the pre-test baseline (M = 23.67, SD = 3.54) to the post-test assessment (M = 13.23, SD = 5.37). This decrease was statistically significant (Wilcoxon signed-rank test, Z = -4.705, p < .001) and yielded a large effect size (r = .86). Likewise, there was a statistically significant increase in overall happiness scores from a mean of 79.43 to 118.87 after the intervention (Z = -4.670, p < .001). This result also yielded a large effect size (r = .85). Overall, the findings indicate that participation in group LY effectively lowered perceived stress and increased happiness among middle-aged males.

Figure 2. Mean Perceived Stress and Overall Happiness Scores Before and After Intervention



Note: N = 30. Panel A shows the mean scores of the Perceived Stress Scale (PSS). Panel B shows the mean scores of the Oxford Happiness Questionnaire (OHQ). Baseline (pre-test) and post-test (after 8 weeks of intervention) assessments were conducted. Error bars are shown as ± 1 SD.

3.1. Demographic Influences on Outcomes

Kruskal-Wallis H tests showed no significant difference in perceived stress by any demographic variable (p > .05). For overall happiness, a significant baseline difference was found for marital status ($\chi^2 = 8.620$, p = .035), with married participants reporting higher baseline happiness. After the intervention, however, these differences were not statistically significant, and there were no significant differences in post-test happiness scores by marital status (p = .537) or any other demographic variable.

4. Discussion

This study aimed to investigate the effect of an eight-week group Laughter Yoga (LY) intervention on perceived stress and overall happiness in middle-aged males. Results of the Wilcoxon signed rank test indicated that the perceived stress was significantly lower and overall happiness was significantly higher after the intervention. Further, non-parametric analysis showed that there was a strong baseline advantage in happiness for married participants, but that this significant relationship was fully neutralized at the post-intervention stage. This finding suggests that group LY may reduce the impact of socioeconomic stress in midlife and may provide similar psychological benefits regardless of marital status. These results also suggest that participation in LY may promote emotional regulation and social support, which may contribute to improved psychosocial well-being in adults.

The findings related to the significant decrease in perceived stress are consistent with previous studies (Bressington et al., 2019; Çelik & Kılınç, 2022; El-Sayed et al., 2024). Previous studies suggest that structured behavioral interventions could prove to be very effective in reducing autonomic hyperarousal as a coping response to emotional exhaustion, occupational stress, and excessive demands in daily life. They also propose that LY rhythmic, diaphragmatic breathing has a similar effect to moderate aerobic exercise, which may suppress the hypothalamic-pituitary-adrenal (HPA) axis (Meier et al., 2021; Yim, 2016). These findings suggest that LY may reduce the continuous secretion of stress hormones such as cortisol, while enhance parasympathetic activity (Kramer & Leita, 2023; Sharma et al., 2024)). A possible explanation for these findings is the intervention's 'Body-to-Mind' strategy, which intentionally avoids the use of cognitive humor to directly trigger a physical relaxation response (Kataria et al., 2023).

The results on overall happiness also showed that adults who regularly engaged in the LY program showed a significant improvement in subjective well-being. These findings align with previous empirical studies that have shown LY to be a powerful facilitator of positive emotions (Mora-Ripoll, 2010; Seraj et al., 2025). Previous studies suggest that adults who engage in communal mind-body practices may be better able to regulate negative psychological states as a result of the rapid release of endogenous opioids, dopamine, and serotonin during sustained laughter (Lyle, 2023; Pannu et al., 2024). Furthermore, it has been noted that these biochemical effects are greatly compounded in group delivery models via emotional contagion, where simulated laughter is automatically converted to genuine, contagious joy when people make continuous eye contact (Peters & Kashima, 2015; Rachmad, 2023). These shared positive emotions may broaden thought-action repertoires and build lasting social resources (Fredrickson, 2001). From these results, it can be proposed that community-based LY may improve the psychological well-being of adults by actively breaking down social inhibitions and providing peer support.

Finally, there were new findings in the demographic analysis. The baseline data showed that the married participants had significantly higher initial happiness, which was consistent with the sociological literature that spousal support is an important psychological buffer against midlife stress (Ma & Gu, 2023). However, following the intervention, these differences were completely eliminated. This finding suggests that the potential negative relationship between lacking spousal support (being single, divorced, or widowed) and reduced midlife happiness may be offset by involvement in group LY. These results are of critical importance because they demonstrate the potential of community-based LY as a substitute social support network, which may provide additional social support for vulnerable populations. However, further RCTs with larger and more diverse samples are required in this area to support the current results.

4.1. Limitations of the Study

There are several limitations that need to be noted. The one-group pretest-posttest design does not have a control group, which limits causal inferences. Also, the sample size ($N = 30$) was small and consisted of urban middle-aged males, which may limit the generalizability of the findings to other groups, including females or rural populations. Lastly, the eight-week timeframe only reflects the short-term psychological changes. Future studies should focus on randomized controlled trials with larger and more heterogeneous samples and longer follow-up periods to confirm these results.

4.2. Practical implications

The results emphasize the need for municipal authorities to support the implementation of structured Laughter Yoga programs in public green spaces, to support adults in coping with socioeconomic pressure and stress, which could contribute to the prevention of long-term occupational burnout among adults. Further, promoting short 15–20-minute LY sessions in corporate wellness policies may also be a viable way to enhance the psychological well-being, emotional balance and productivity of the working population.

5. Conclusion

This study evaluated the effects of 8-weeks group-based LY intervention on perceived stress and overall happiness in middle aged males. The results of the study indicated that the perceived stress was significantly reduced and the subjective happiness was significantly increased after the intervention. In addition, the intervention showed similar effects across marital status

groups, thus eliminating baseline differences. These findings suggest that group-based LY may improve psychological well-being by reducing perceived stress and enhancing happiness in middle-aged males.

References

- Alici, N. K., & Dönmez, A. A. (2020). A systematic review of the effect of laughter yoga on physical function and psychosocial outcomes in older adults. *Complementary therapies in clinical practice*, 41, 101252.
- Awan, H., Corp, N., Kingstone, T., & Chew-Graham, C. A. (2025). Social determinants of distress in South Asian men with long-term conditions: a qualitative study in primary care. *The British Journal of General Practice*, 75(755), e397.
- Bell, O. J., Flynn, D., Clifford, T., West, D., Stevenson, E., & Avery, L. (2023). Identifying behavioural barriers and facilitators to engaging men in a community-based lifestyle intervention to improve physical and mental health and well-being. *International Journal of Behavioral Nutrition and Physical Activity*, 20(1), 25.
- Bibi, R., Yan, Z., & Yue, G. (2022). Effectiveness of laughter augmented Tai Chi exercises on physical and psychosocial aspects of Active Aging in community-dwelling older adults: A Systematic Review.
- Bressington, D., Mui, J., Yu, C., Leung, S. F., Cheung, K., Wu, C. S. T., Bollard, M., & Chien, W. T. (2019). Feasibility of a group-based laughter yoga intervention as an adjunctive treatment for residual symptoms of depression, anxiety and stress in people with depression. *Journal of Affective Disorders*, 248, 42-51.
- Bressington, D., Yu, C., Wong, W., Ng, T. C., & Chien, W. T. (2018). The effects of group-based Laughter Yoga interventions on mental health in adults: A systematic review. *Journal of psychiatric and mental health nursing*, 25(8), 517-527.
- Çelik, A. S., & Kılınç, T. (2022). The effect of laughter yoga on perceived stress, burnout, and life satisfaction in nurses during the pandemic: A randomized controlled trial. *Complementary therapies in clinical practice*, 49, 101637.
- Chaabane, S., Chaabna, K., Bhagat, S., Abraham, A., Doraiswamy, S., Mamtani, R., & Cheema, S. (2021). Perceived stress, stressors, and coping strategies among nursing students in the Middle East and North Africa: an overview of systematic reviews. *Systematic reviews*, 10(1), 136.
- Cohen, S. (1988). Perceived stress in a probability sample of the United States.
- El-Sayed, M. M., Hafez, S. A., Nashwan, A. J., Khedr, M. A., & El-Ashry, A. M. (2024). Feasibility of a group-based laughter yoga therapy on anxiety and happiness among community-dwelling older adults: a quasi-experimental study. *International Journal of Africa Nursing Sciences*, 20, 100675.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American psychologist*, 56(3), 218.
- Gough, B., & Novikova, I. (2020). *Mental health, men and culture: how do sociocultural constructions of masculinities relate to men's mental health help-seeking behaviour in the WHO European Region?* WHO.
- Hills, P., & Argyle, M. (2002). The Oxford Happiness Questionnaire: a compact scale for the measurement of psychological well-being. *Personality and Individual Differences*, 33(7), 1073-1082.
- Infurna, F. J., Gerstorf, D., & Lachman, M. E. (2020). Midlife in the 2020s: Opportunities and challenges. *American psychologist*, 75(4), 470.
- Karasz, A., Gany, F., Escobar, J., Flores, C., Prasad, L., Inman, A., Kalasapudi, V., Kosi, R., Murthy, M., & Leng, J. (2019). Mental health and stress among South Asians. *Journal of immigrant and minority health*, 21(Suppl 1), 7-14.
- Kataria, M., Ben-Moshe, R., & Gonot-Schoupinisky, F. (2023). Laughter and mental health: a case study of Dr Madan Kataria. *Mental Health and Social Inclusion*, 27(3), 220-229.
- Kramer, C. K., & Leita, C. B. (2023). Laughter as medicine: A systematic review and meta-analysis of interventional studies evaluating the impact of spontaneous laughter on cortisol levels. *PloS one*, 18(5), e0286260.
- Lyle, L. (2023). Impact of laughter on health, happiness and wellbeing. In *Understanding Happiness: An Explorative View* (pp. 175-202). Springer.
- Ma, L., & Gu, D. (2023). The role of marriage in the life satisfaction and mortality association at older ages: Age and sex differences. *Aging & mental health*, 27(3), 612-620.
- Magomedova, A., & Fatima, G. (2025). Mental health and well-being in the modern era: a comprehensive review of challenges and interventions. *Cureus*, 17(1).
- Meier, M., Wirz, L., Dickinson, P., & Pruessner, J. C. (2021). Laughter yoga reduces the cortisol response to acute stress in healthy individuals. *Stress*, 24(1), 44-52.
- Mora-Ripoll, R. (2010). The therapeutic value of laughter in medicine. *Alternative Therapies in Health & Medicine*, 16(6).

- Mughal, F. N., Sher, K., Sabir, M. M., Mehdi, F., Arooj, A., Jauhar, A. A., Amer, R., & Ashfaq, M. (2024). Influence Of Economic Stress on Psychological Well-Being, Occupational Stress, And Job Satisfaction: A Comparative Study Among Government And Private Teachers Of Colleges Of Pakistan. *Kurdish Studies*, 12(3), 332-341.
- Pannu, A., Goyal, R. K., & Kumari, P. (2024). An Evidence-Based Comprehensive Review of Laughter Therapy in Depression Management. *Current Psychiatry Research and Reviews*.
- Peters, K., & Kashima, Y. (2015). A multimodal theory of affect diffusion. *Psychological Bulletin*, 141(5), 966.
- Rachmad, Y. E. (2023). Emotional Contagion Theory. In: Islamabad Margalla Kitab Ishaat.
- Salimpour, M., Dehghan, M., Ahmadi, A., Azzizadeh Forouzi, M., Roy, C., Zakeri, M. A., & Mangolian Shahrabaki, P. (2022). Effectiveness of cognitive-behavioral therapy on perceived stress among patients undergoing percutaneous coronary intervention: A randomized controlled trial. *Perspectives in Psychiatric Care*, 58(4), 2962-2969.
- Seraj, Z., Sanagoo, A., Behnampour, N., & Jouybari, L. (2025). Investigating the effect of laughter yoga on happiness and life expectancy in an elderly population. *Journal of Education and Health Promotion*, 14(1), 343.
- Sharma, A., Singh, M., & Gusain, V. S. (2024). The philosophical basis and significance of laughter Yoga: Examining its association to mindfulness, positive psychology, and overall well-being. *IJAR*, 10(3), 36-38.
- Sudhakar, K. (2024). THE SCIENCE OF HAPPINESS: EXPLORING THE ROLE OF POSITIVE PSYCHOLOGY IN LIFE SATISFACTION. *UNIFIED VISIONS*, 141.
- Tabei, M., Ravari, A., Kataria, M., Mirzaei, T., & Kamiab, Z. (2025). The effect of laughter yoga and music intervention on depression, anxiety, and stress in the Rafsanjan-Iran aged: a randomized clinical trial study. *Aging & mental health*, 29(2), 274-281.
- Van Agteren, J., Iasiello, M., Lo, L., Bartholomaeus, J., Kopsaftis, Z., Carey, M., & Kyrios, M. (2021). A systematic review and meta-analysis of psychological interventions to improve mental wellbeing. *Nature human behaviour*, 5(5), 631-652.
- Yim, J. (2016). Therapeutic benefits of laughter in mental health: a theoretical review. *The Tohoku journal of experimental medicine*, 239(3), 243-249.