

## Association between Impulsiveness and Quality of Life among heartfulness meditators: A cross-sectional study

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### ABSTRACT

**Background:** Impulsiveness is an inability to control behavior impulses and thoughts. It consists of immediate and unplanned action and its consequences are associated with worse quality of life. Some evidence suggests that meditation practice may improve the self-regulated behavior control and attentional processes. Therefore, the present study aimed to investigate the self-reported impulsiveness and quality of life among heartfulness meditators (HM) and matched healthy non-meditators.

**Methodology:** The present cross-sectional study has recruited one hundred nine participants (HM meditators; n=54 and non-meditators; n=55). Validated self-reported scales were used to measure the impulsiveness and quality of life (QOL) i.e., Barratt Impulsive scale (BIS-11) and WHOQOL-BREF, respectively.

**Results:** The demographic results showed no significant difference between age, education levels, socioeconomic status, but meditators reported an average of 30 minutes/day practice over a period of 45 months. A significant lower impulsiveness and higher QOL were observed among HM meditators than matched control group. The Pearson's correlation analysis among HM meditators revealed a significant negative correlation between QOL and impulsive behavior.

**Conclusion:** HM meditation may be useful technique to inhibit impulsiveness by enhancing attention, motor and planning capacity that can promote quality of life among meditators.

**Keywords:** heartfulness meditation, impulsivity, quality of life, mental and physical health

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### INTRODUCTION

Heartfulness meditation (HM) is based on Raja Yoga meditation that impacts both psychological and physiological states. Adopting a nonreactive and observant attitude toward one's emotions, self-regulation of attention, internal peace through self-connection, attaining all spheres of existence, and reaching a balanced mind are all common goals of HM practice [1]. Numerous scientific studies of HM has been shown the modulation of the autonomic nervous system in HM practitioners [2-3]. A previous study of HM on the brain showed gamma activation in the occipital region in proficient HM practitioners [4]. These data suggest that HM has a positive impact on the heart and brain. HM practice has also shown therapeutic benefits for cyclic vomiting syndrome, perceived pain, chronic insomnia, burnout, and mental health [1, 5-7]. A recent cross-sectional study found that yoga and HM practices have a positive impact on an individual's health [8]. Impulsivity is “decreased sensitivity to negative consequences of behaviour,” and “rapid, unplanned reactions to stimuli before complete action,” [9]. Impulsive behaviours can be observed in healthy people [10], and patients with neuropsychiatric disorders [11]. Higher levels of impulsivity are associated with gambling disorder [12], Parkinson's disease [13], and attention-deficit/hyperactivity disorder [14]. Meditation studies have shown a beneficial effect on the quality of life [8] and a reduction in impulsiveness [15]. To the best of our knowledge, there is no study to investigate the differences between meditators and

non-meditators on impulsive behaviours. Therefore, the present study is intended to investigate the impulsive behaviours and quality of life in HM meditators and non-meditators.

## METHODOLOGY

### Participants

A cross-sectional study was conducted with 109 participants (49 females) aged 25 to 45 years recruited from HM centers (HM: n=54), nearby (non-meditators: n=55). The inclusion criteria were (a) the participant in the HM group should have more than six months of HM experience, (b) non-meditators had never been exposed to meditation. Exclusion criteria included (a) the presence of any illness, (b) the use of any medication, and (c) a history of smoking or alcohol.

### Demographic information

All participants were asked to provide their demographic information such as their age, gender, occupation, education, meditation experience (in years), frequency of meditation practices, and years of meditation. The characteristics of the participants are given in Table 1.

The study was approved by Institutional Ethics Committee (RES/IEC-SVYASA/164/1/2020) and signed informed consent was obtained from each participant after explaining the purpose of the study and assessments tools.

### Assessment tools

#### Barratt Impulsive scale-11 (BIS-11)

To assess the personality/behavioral construct of impulsiveness, the BIS-11 was used. There are 30 self-reported items divided into three primary scale factors.: 1) attentional impulsivity (BIS-A) with 8 items, 2), Motor impulsivity (BIS-M) with 11 items, 3) non-planning (BIS-NP) with 11 items. Participants respond to each item using a 4-point Likert scale: 1 (rarely/never), 2 (occasionally), 3 (often), and 4 (almost always/always). The total score ranges from 30 to 120, with higher scores indicating more impulsiveness [16].

#### World Health Organization Quality of Life -BREF (WHOQOL-BREF)

The WHOQOL-BREF scale was used to assess the quality of life of recruited participants. It is a self-evaluation tool that measures an individual's perceptions in the context of their culture and value systems, as well as their personal goals, standards, and concerns. The WHOQOL-BREF has 26 items; the first two questions are about global health, and the remaining 24 items are divided into four domains.: (i) physical health (ii) psychological health (iii) social relationship and (iv) the environment. Each item is rated on a 5-point Likert scale with a response scale ranging from 1 to 5. The total scores range from 0 (worst) and 156 (best), with a higher score indicating higher quality of life [17].

**Heartfulness meditation practice:** HM is a popular meditative practice with a worldwide presence. It is the streamlined yoga of the mind to suit the modern lifestyle. In the Heartfulness tradition, there are four primary practices: relaxation, meditation, cleaning (or rejuvenation), and prayer. Relaxation is recommended to relax all parts of the body and prepare one for meditation. Subtle suggestions complemented by the energy flow from Mother Earth is used to remove heaviness and bring lightness to our system. Meditation is done in the morning, preferably before sunrise. One pays attention to the source of light within the heart. Then, one assumes a completely passive role to permit Transmission to draw one's attention to the deeper levels of consciousness within oneself, resulting in a consciousness expansion. Cleaning is done in the evening after the day's work is over to rejuvenate oneself from the effects of impressions created by the activities during the day. Prayer is silently offered before going to bed connecting ourselves with our inner-self to reinforce the goal of our life, impediments in achieving the goal and solution to overcoming these impediments [4, 18-19].

**Table 1: Demographic characteristics of HM meditators and non-meditators**

Characteristics	Meditators (n=54)	Non-meditators (n=55)
Gender (n)		
Male	34	26
Female	20	29
Age (years)		
Male	34.54 ± 6.2	29.43 ± 3.3
Female	32 ± 6.5	30.12 ± 3.2
Meditation experience (In months)	45.46 ± 25.54	-
Duration of practice/day (in minutes)	30	-
Education, n (%)		
Undergraduate	20 (37)	23 (42)
Postgraduate	25 (46)	26 (47)
High education	9 (17)	6 (11)
Socioeconomic Status, n (%)		
Lower	11 (20)	10 (18)
Middle	28 (52)	32 (58)
Higher	15 (28)	13 (24)

**Data analysis**

Statistical analysis was done using JAMOVI 2.2.2 in Windows. The Shapiro-wilk test was used to check normality of WHOQOL-BREF and BIS-11 data. The student's t-test was applied for further analysis. Statistical significance was considered at  $p < 0.05$ . The descriptive statistics including mean values, standard deviations, significant values, and effect size are given in Table 2. The relationship between scores of BIS-11 and WHOQoL was analyzed using Pearson's correlation shown in Figure 1.

**RESULTS**

Results of the independent sample t-test showed a significant difference in the HM group compared to the non-mediator group. The impulsivity of HM practitioners showed significantly lower scores in BIS-11 factors including attention ( $p < 0.05$ ), motor ( $p < 0.05$ ), non-planning ( $p < 0.05$ ), and total impulsivity ( $p < 0.001$ ) compared to non-meditators. WHO quality of life of HM practitioners have shown higher scores in global health ( $p < 0.01$ ), physical health ( $p < 0.05$ ), psychological health ( $p < 0.05$ ), and environment ( $p < 0.05$ ), social relationship ( $p < 0.05$ ) compared to non-meditators shown in Table 2.

The Pearson's correlation of HM practitioners has shown a significant negative correlation between impulsivity and quality of life. Attentional impulsiveness was negatively correlated with global health ( $r = -0.29$ ,  $p < 0.05$ ), physical health ( $r = -0.28$ ,  $p < 0.05$ ). Motor impulsiveness was negatively correlated with global health ( $r = -0.28$ ,  $p < 0.05$ ), physical health ( $r = -0.29$ ,  $p < 0.05$ ). Total impulsiveness was negatively correlated with global health ( $r = -0.3$ ,  $p < 0.05$ ), social relationship ( $r = -0.32$ ,  $p < 0.05$ ) shown in Figure 1.

**DISCUSSION**

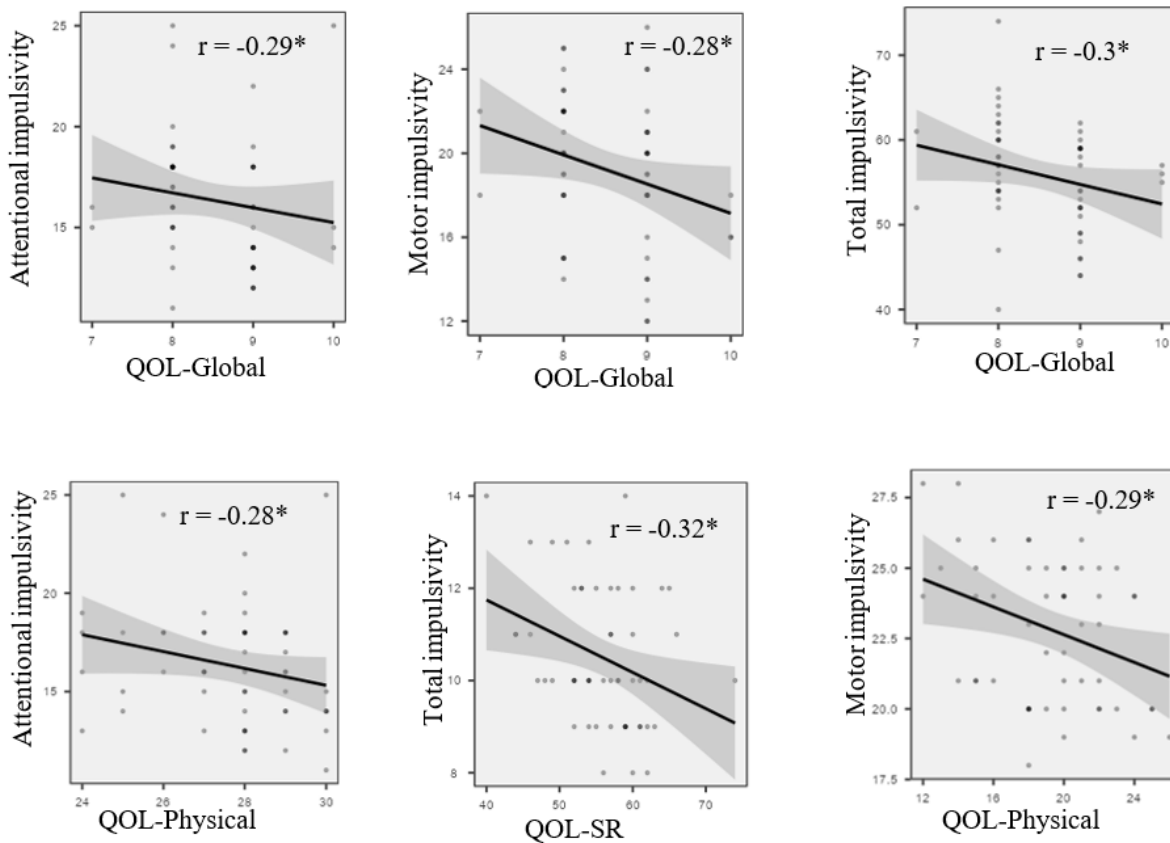
The practice of meditation has been used for centuries to reduce psychological stress, cope with illness, and boost health and well-being. In the present study, we investigated impulsivity and WHO quality of life among HM meditators and non-meditators. We found that HM meditators had a higher score in global health, indicating that HM improves not only mental health but also overall health resilience. In terms of physical health, HM practitioners reported physically healthier than non-meditators.

Table 2: Mean and SD of impulsiveness and quality of life outcome measures of participants

Groups/ Variables	HM meditators	Non- meditators	t-value	Effect size (Cohen's d)	95% Confidence interval	
					Lower	Upper
BIS-Attention	16.26±3.11*	17.6±2.58	2.25	0.43	0.813	0.04
BIS-Motor	19.2±3.43*	20.8±3.62	2.31	0.44	0.825	0.06
BIS-Non-planning	20.3±3.2*	21.8±3.59	2.31	0.44	0.824	0.05
BIS-Total	55.9±6.23***	60.2±5.1	3.94	0.75	1.15	0.35
WHOQOL-Global health	8.52±0.6**	8.13±0.75	2.89	0.55	0.161	0.94
WHOQOL-Physical	27.63±1.71*	26.71±2.54	2.22	0.42	0.039	0.81
WHOQOL-Psychological	22.83±2.59*	21.55±3.78	2.07	0.39	0.012	0.78
WHOQOL-Social	10.5±1.51*	9.96±1.26	2.01	0.38	0.009	0.77

Note: \*p<0.05, \*\*p<0.01, and \*\*\*p<0.001. \*Compares with non-meditators  
BIS- Barratt Impulsive Score, WHOQOL- World Health Organization Quality of Life.

Figure 1: The Pearson's correlation between quality of life and impulsivity among HM meditators.



Note: \*p<0.05, QOL- Quality of Life, and SR- Social Relationships.

Previous research has shown that meditation improves physical health by improving immune function, regulating hormonal discharge, reducing cellular inflammation, and promoting telomere length [1, 20]. The HM practitioners stated higher psychological scores than non-meditators, signifying psychologically balanced, builds resilience, increased calmness, enhanced coping ability, and reduced stress, and psychological distress [21-23]. Regular meditation practice improves physical and psychological assets, including energy, motivation, and strength. The WHO stated, “high-quality social connections are essential

to our mental and physical health and our well-being” [24]. Social isolation has a negative consequence on physical and mental health including sleep, and quality of life [25-27]. The present study has observed higher social relationship and environment scores in HM practitioners, implying meditators exhibit significantly higher levels of social cooperation quality [28]. Previous meditation research found that activating human altruism through meditation improves feelings of connection and satisfaction with relationships [29].

Further, the BIS has shown lower impulsiveness in HM meditators than in non-meditators. The attentional impulsiveness of HM practitioners was found to be lower than that of non-meditators, implying that meditation reduces attentional impulsivity while inducing attentional processes [15]. On other hand, meditation increases awareness, decreases cognitive vulnerability to reactive modes of mind, and improves the skill of responding to mental processes that contribute to maladaptive behavior [30]. Lower BIS-11 motor, and non-planning subscale scores were found to be associated with the medial orbitofrontal cortex and the paracingulate gyrus. There is an association between mindfulness and these brain areas in meditators that are negatively related to impulsive behavior [15]. Meditation studies have found enhanced grey matter, the left hippocampus, the anterior insula, and cortical thickness, indicating positive changes in cognitive function, attention, fact retention, mindful actions, and self-awareness [31-32]. Therefore, HM meditation could be used as a group of convoluted emotional and attentional regulatory training practices.

In the current study, it was found that BIS scores were negatively correlated with quality of life in HM meditators, indicating that HM practices reduce impulsive behavior and improve quality of life in HM practitioners. Lower impulsivity was linked to better overall health, physical and psychological well-being, and rewarding social relationships [33]. Attentional, motor and total impulsivity were found to be negatively correlated with global health, indicating that meditation practices improve physical and mental resilience to adversity. We have also observed the attentional, motor and total impulsivity negatively correlated with physical health and social relationships. This evidence encourage the use of meditation in daily behavior related to intentionally planning and inhibiting impulse to improve self-control which leads to a better quality of life.

There are a few limitations of the present study (i) one point assessment from the same location, (ii) broad age range, (iii) small sample size, and (iv) the data was cross-sectional in nature; therefore, causal relation cannot be inferred (v) there are a few other unknown sources of bias, such as heterogeneity in time for HM practice, personal life events, and a lack of clinical history.

Nonetheless, future research can assess impulsivity in long-term meditators using self-report measures other than the BIS-11 or neuroimaging tools such as electroencephalogram (EEG), functional magnetic resonance imaging (fMRI), or positron emission tomography (PET) or a variety of behavioral tasks to assess different dimensions of impulsivity.

## CONCLUSION

The current study provides evidence that the HM practice lowers impulsiveness in individuals and brings improvement in overall quality of life. HM meditation may be an effective tool for reducing impulsivity in healthy adults and can be considered as a therapeutic tool. However, future studies are required to investigate the efficacy of HM meditation on individuals.

## REFERENCES

1. Thimmapuram J, Pargament R, Sibliss K, Grim R, Risques R, Toorens E. Effect of heartfulness meditation on burnout, emotional wellness, and telomere length in health care professionals. *J Commun Hosp Intern Med Persp* 2017;7(1):21-7.
2. Arya NK, Singh K, Malik A, Mehrotra R. Effect of Heartfulness cleaning and meditation on heart rate variability. *Indian Heart J* 2018;70:S50-5.
3. Léonard A, Clément S, Kuo CD, Manto M. Changes in heart rate variability during heartfulness meditation: A power spectral analysis including the residual spectrum. *Front Cardiovasc Med* 2019;6:62.
4. Sylapan BS, Nair AK, Jayanna K, Mallipeddi S, Sathyanarayana S, Kutty BM. Meditation, well-being and cognition in heartfulness meditators—A pilot study. *Consc Cogn* 2020;86:103032.

5. Desai K, Gupta P, Parikh P, Desai A. Impact of virtual heartfulness meditation program on stress, quality of sleep, and psychological wellbeing during the covid-19 pandemic: A mixed-method study. *Int J Environ Res Pub Health* 2021;18(21):11114.
6. Gurram P, Narayanan V, Chandran S, Ramakrishnan K, Subramanian A, Kalakumari AP. Effect of heartfulness meditation on anxiety and perceived pain in patients undergoing impacted third molar surgery. *J Oral Maxillofac Surg* 2021;79(10):2060.
7. Venkatesan T, Porcelli A, Matapurkar A, Suresh Kumar VC, Szabo A, Yin Z, Wieloch L. An integrative healthcare model with heartfulness meditation and care coordination improves outcomes in cyclic vomiting syndrome. *Neurogastroenterol Motility* 2021;33(11):e14132.
8. Thimmapuram J, Patel K, Madhusudhan DK, Deshpande S, Boudierlique E, Nicolai V, Rao R. Health-related quality of life outcomes with regular yoga and heartfulness meditation practice: results from a multinational, cross-sectional study. *JMIR Format Res* 2022;6(5):e37876.
9. Moeller FG, Barratt ES, Dougherty DM, Schmitz JM, Swann AC. Psychiatric aspects of impulsivity. *Am J Psychiatry* 2001;158(11):1783-93.
10. Chamorro J, Bernardi S, Potenza MN, Grant JE, Marsh R, Wang S, Blanco C. Impulsivity in the general population: a national study. *J Psychiatr Res* 2012;46(8):994-1001.
11. Trost S, Diekhof EK, Zvonik K, Lewandowski M, Usher J, Keil M, Zilles D, Falkai P, Dechent P, Gruber O. Disturbed anterior prefrontal control of the mesolimbic reward system and increased impulsivity in bipolar disorder. *Neuropsychopharmacology* 2014;39(8):1914-23.
12. Lee JY, Park SM, Kim YJ, Kim DJ, Choi SW, Kwon JS, Choi JS. Resting-state EEG activity related to impulsivity in gambling disorder. *J Behav Addict* 2017;6(3):387-95.
13. Ruitenberg MF, Wu T, Averbek BB, Chou KL, Koppelmans V, Seidler RD. Impulsivity in Parkinson's disease is associated with alterations in affective and sensorimotor striatal networks. *Front Neurol* 2018;9:279.
14. Miller DJ, Derefinko KJ, Lynam DR, Milich R, Fillmore MT. Impulsivity and attention deficit-hyperactivity disorder: subtype classification using the UPPS impulsive behavior scale. *J Psychopathol Behav Assess* 2010;32:323-32.
15. Korponay C, Dentico D, Kral TR, Ly M, Kruis A, Davis K, Goldman R, Lutz A, Davidson RJ. The effect of mindfulness meditation on impulsivity and its neurobiological correlates in healthy adults. *Scientific Reports* 2019;9(1):11963.
16. Ireland JL, Archer J. Impulsivity among adult prisoners: A confirmatory factor analysis study of the Barratt Impulsivity Scale. *Personal Individ Diff* 2008;45(4):286-92.
17. Andrade EM, Geha LM, Duran P, Suwvan R, Machado F, Do Rosario MC. Quality of life in caregivers of ADHD children and diabetes patients. *Front Psychiatry* 2016;7:127.
18. Patel KD. *Designing Destiny: Heartfulness Practices to Find Your Purpose and Fulfill Your Potential*. Hay House; 2021.
19. Patel KD, Pollock J, Soni V, Doty JR. *The Heartfulness Way: Heart-Based Meditations for Spiritual Transformation*. New Harbinger Publications; 2018.
20. Daube WC, Jakobsche CE. Biochemical effects of meditation: a literature review. *Scholarly Undergraduate Research Journal at Clark* 2015;1(1):10.
21. Iyer RB, Iyer BN. The impact of heartfulness-based elective on middle school students. *Am J Health Behav* 2019;43(4):812-23.
22. Lengacher CA, Kip KE, Barta M, Post-White J, Jacobsen PB, Groer M, Shelton MM. A Pilot Study Evaluating the Effect of Mindfulness-Based Stress Reduction on Psychological Status, Physical Status, Salivary Cortisol, and Interleukin-6 Among Advanced-Stage Cancer Patients and Their Caregivers. *J Holistic Nurs* 2012;30(3):170-85.
23. Rubia K. The neurobiology of Meditation and its clinical effectiveness in psychiatric disorders. *Biological Psychology* 2009;82(1):1-11.
24. World Health Organization. Social Isolation and Loneliness. Retrieved May 3, 2022, from <https://www.who.int/teams/social-determinants-of-health/demographic-change-and-healthy-ageing/social-isolation-and-loneliness>
25. Kamath R, Shah H, Vaidyanathan S. A comparative study of Quality of Life and factors affecting it in children diagnosed with Attention – deficit/hyperactivity disorder versus Bronchial asthma. *Indian Journal of Mental Health* 2019;6(2):170-6.
26. Saini GK, Haseeb SB, Taghi-Zada Z, Ng JY. The effects of meditation on individuals facing loneliness: a scoping review. *BMC Psychol* 2021;9(1):88.
27. Thimmapuram J, Pargament R, Tredici SD, Bell T, Yommer D, Daoud D, Powell F, Madhusudhan DK. Sleep Patterns of Resident Physicians and the Effect of Heartfulness Meditation. *Ann Neurosci* 2021;28(1-2):47-54.
28. Pandya SP. Older adult caregivers of their spouses with acquired late-life disability: examining the effectiveness of an internet-based meditation program in mitigating stress and promoting wellbeing. *Soc Work Ment Health* 2020;18(1):12-38.
29. Iwamoto SK, Alexander M, Torres M, Irwin MR, Christakis NA, Nishi A. Mindfulness Meditation Activates Altruism. *Scientific Reports* 2020;10(1):6511.
30. Bishop SR, Lau M, Shapiro S, Carlson L, Anderson ND, Carmody J, Segal ZV, Abbey S, Speca M, Velting D, Devins G. Mindfulness: A proposed operational definition. *Clinical psychology: Science Pract* 2004;11(3):230.

31. Kang DH, Jo HJ, Jung WH, Kim SH, Jung YH, Choi CH, Lee US, An SC, Jang JH, Kwon JS. The effect of meditation on brain structure: cortical thickness mapping and diffusion tensor imaging. *Soc Cogn Affect Neurosci* 2013;8(1):27-33.
32. Lazar SW, Kerr CE, Wasserman RH, Gray JR, Greve DN, Treadway MT, McGarvey M, Quinn BT, Dusek JA, Benson H, Rauch SL. Meditation experience is associated with increased cortical thickness. *Neuroreport* 2005;16(17):1893.
33. Do S, Coumans JM, Börnhorst C, Pohlabein H, Reisch LA, Danner UN, Russo P, Veidebaum T, Tornaritis M, Molnar D, Hunsberger M. Associations Between Psychosocial Well-Being, Stressful Life Events and Emotion-Driven Impulsiveness in European Adolescents. *J Youth Adolesc* 2022;1:1-2.

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