

nurses, physical and occupational therapists, and patients' family members.

This case report suggests a beneficial effect of atomoxetine. However, to confirm the efficacy, additional controlled studies with larger samples are necessary. The development of a rating scale for abulic symptoms, to quantify the efficacy of pharmacological interventions, is also needed.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Informed Consent

Written informed consent has been taken from the patient's son for the patient information and images to be published.

ORCID iDs

Shreyashi Jha  <https://orcid.org/0000-0001-5993-8421>

Mona Tiwari  <https://orcid.org/0000-0003-4296-2542>

Shreyashi Jha¹ and Mona Tiwari¹

¹Institute of Neurosciences Kolkata, West Bengal, India.

Address for correspondence:

Shreyashi Jha, Institute of Neurosciences Kolkata, 185, Acharya Jagadish Chandra Bose Rd, Elgin, Kolkata, West Bengal 700017, India.
E-mail: shreyashi.jha11@gmail.com

Submitted: 16 Jun. 2023

Accepted: 28 Aug. 2023

Published Online: 06 Dec. 2023

References

1. D'Souza G, Kakoullis A, Hegde N, et al. Recognition and management of abulia in the elderly. *Prog Neurol Psychiatry* 2010; 14: 24–28.
2. Ikemoto S, Yang C, Tan A. Basal ganglia circuit loops, dopamine and motivation: a review and enquiry. *Behav Brain Res* 2015; 290: 17–31.
3. Strub RL. Frontal lobe syndrome in a patient with bilateral globus pallidus lesions. *Arch Neurol* 1989; 46: 1024–1027.
4. Arnts H, van Erp WS, Lavrijsen JCM, et al. On the pathophysiology and treatment

of akinetic mutism. *Neurosci Biobehav Rev* 2020; 112: 270–278.

5. Vijayaraghavan L, Krishnamoorthy ES, Brown RG, et al. Abulia: a delphi survey of British neurologists and psychiatrists. *Mov Disord* 2002; 17: 1052–1057.
6. Kim SH, Park KH, Sung YH, et al. Dementia mimicking a sudden cognitive and behavioral change induced by left globus pallidus infarction: review of two cases. *J Neurol Sci* 2008; 272: 178–182.
7. Habib M. Athymhormia and disorders of motivation in Basal Ganglia disease. *J Neuropsychiatry Clin Neurosci* 2004; 16: 509–524.
8. Miller JM, Vorel SR, Tranguich AJ, et al. Anhedonia after a selective bilateral lesion of the globus pallidus. *Am J Psychiatry* 2006; 163(5): 786–788.
9. Koide R, Bando M. Patient with globus pallidus infarction presenting with reversible dementia. *J Neuropsychiatry Clin Neurosci* 2013; 25: E41–E42.
10. Kim YW, Shin JC, An YS. Treatment of chronic akinetic mutism with atomoxetine: subtraction analysis of brain f-18 fluorodeoxyglucose positron emission tomographic images before and after medication: a case report. *Clin Neuropharmacol* 2010; 33: 209–211.

HOW TO CITE THIS ARTICLE: Jha S and Tiwari M. Reversal of Abulia with Atomoxetine in Unilateral Basal Ganglia Infarct: A Case Report. *Indian J Psychol Med.* 2024;46(2):185–187.



Copyright © The Author(s) 2023

Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution- NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the Sage and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

ACCESS THIS ARTICLE ONLINE

Website: journals.sagepub.com/home/szj
DOI: 10.1177/02537176231201559

Indian Music: A Future in Dementia Care Indian Music and Dementia

Dear Editor,

Behavioral and Psychological Symptoms of Dementia (BPSD), like anxiety and agitation, leads to social isolation.¹ They are often managed by pharmacological interventions due to easy availability. However, prolonged use of drugs might worsen the symptoms or produce adverse side effects.^{2,3} Therefore, alternative non-pharmacological therapies are being researched.⁴ Here, we briefly review the use of Music Therapy (MT), which is efficacious in BPSD.⁵ According

to the World Federation of Music Therapy (1996), MT aims to meet the physical, emotional, psychological, social, and cognitive needs of individuals with the aid of music and/or elements of music such as rhythm, sound, melody, and harmony, under the guidance of a qualified music therapist.⁶ We discuss Indian Classical Music (ICM) because of its geographical relevance, socio-cultural relativity, and easy availability.

The emergence of music as a form of therapy dates back to the late twentieth century when it was found that agitated patients with Alzheimer's Dementia calm down on hearing music they enjoyed before the diagnosis.⁷ Listening to music for short periods positively affects the

cognitive functioning of people with dementia.⁸ Lin et al. exposed dementia patients to MT for six weeks and found significant improvement in aggressive behaviour.⁹ Sung et al. found that MT helped to reduce levels of anxiety in individuals with dementia.¹⁰ In another study, pre-recorded or live music was given as an intervention to two groups of older adults with moderate to severe dementia. Live music was much more beneficial and improved their positive engagement, socializing skills, and mood.^{11,12}

An imbalanced Autonomic Nervous System (ANS) activity, that is, elevated sympathetic and reduced parasympathetic activity and hyperactive Hypothalamic-Pituitary-Adrenal (HPA) axis with elevation

in cortisol levels has been noticed in cases of anxiety and depression associated with dementia (BPSD symptoms).^{13,14} High cortisol levels have also been found in individuals with mild cognitive impairment and dementia.¹⁵ Research suggests that MT increases parasympathetic activity and reduces cortisol levels, which in turn provides a relaxing effect. Further, the rhythmic movement with the music decreases sympathetic activity producing a calming effect.¹⁶

Music has also found a niche in Reminiscence Therapy (RT), which involves discussion of past events and people with the aid of certain prompts like past photographs, voice recordings, familiar items, etc. Music Reminiscence therapy (MRT) has combined the positive implications of both RT and MT, where patients are made to hear familiar music from the past or childhood with the idea that they can re-experience their memories.¹⁷ So, with the emergence of MRT, a better direction has been identified in providing care to such individuals. Due to its emotional impact, music from the past or childhood stimulates strong memory associations. This is particularly beneficial to patients with Alzheimer's dementia, especially during phases of sadness due to the inability to communicate or sundowning.¹⁸

Irregular sleep patterns and depression are major problems in patients with late-stage dementia.¹⁸ A study that used ICM found that raagas like "Bahar," "Bihag," "Mishra Pilu," and "Malay Marutam" caused sustained improvement in the sleep quality of patients with depressive disorder.¹⁸ However, the reduction in depressive symptoms was not significant. This could be because these raagas enabled a state of relaxation that might have induced sleep. A study on healthy individuals found that a raaga named "Desi Todi" decreased blood pressure, symptoms of anxiety, and stress while enhancing feelings of satisfaction, hope, and optimism.¹⁹ The above findings indicate that BPSD (sleep irregularities, anxiety) can be managed with the aid of ICM.²⁰ However, literature about using different forms of Indian Music is scarce and further studies are required.

MT sessions have also been found to improve the quality of life of caregivers by helping them deal better with caregiver burden and stress-related illnesses and

improving the quality of the relationship between the caregiver and care receiver.²¹ MT, despite its limitations like subjectivity (e.g., preferred and familiar genres of music might be more beneficial in individuals who are exposed to similar kinds of music during an MT session) and cultural and geographical relevance (e.g., an Indian would relate more to ICM than western classical) is a non-invasive technique without side effects.^{18,22,23} Future studies should focus on the implications of music, especially Indian music, on the holistic psychological and physical well-being of dementia patients. The "TALA Sound" project, for example, found that Indian Carnatic music had a calming effect on older adults with or without cognitive impairment.²⁴

Music, especially ICM, plays an important role in relation to dementia. In addition, MRT also provides us with a promising non-pharmacological alternative treatment. It is cost-effective and can be done by social workers, nurses, and even family members or caregivers without any necessary training in music.¹⁷ Hence, the scope of ICM as a means of psychotherapy is extensive but the research is still in a nascent stage and further studies are desired.

Acknowledgement

The authors thank the Director, Centre for Brain Research (CBR), Bangalore for his valuable support and encouragement. We also thank the faculty members and administrative team at CBR for their support.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Aishwarya Ghosh  <https://orcid.org/0009-0009-6204-1039>

Aishwarya Ghosh¹, Shubham Jain² and Thomas Gregor Issac¹

¹Centre for Brain Research, Indian Institute of Science, Bangalore, Karnataka, India.

Address for correspondence:

Thomas Gregor Issac, Centre for Brain Research, Indian Institute of Science, Bangalore, Karnataka 560012, India.
E-mail: thomasgregor@iisc.ac.in

Submitted: 15 May 2023

Accepted: 30 Aug. 2023

Published Online: 06 Dec. 2023

References

- Cerejeira J, Lagarto L, Mukaetova-Ladinska EB. Behavioral and psychological symptoms of dementia. *Front Neurol*; MAY. Epub ahead of print 2012. DOI: 10.3389/fneur.2012.00073.
- Jones RW. Drug treatment for people with dementia. *Clin Med* 2011; 11: 67.
- Raglio A. Effects of music and music therapy on mood in neurological patients. *World J Psychiatry* 2015; 5: 68.
- Berg-Weger M, Stewart DB. *Non-pharmacologic interventions for persons with dementia*.
- Shirsat A, Jha RK, Verma P. Music therapy in the treatment of dementia: a review article. *Cureus*. Epub ahead of print 31 March 2023. DOI: 10.7759/cureus.36954.
- Gómez-Romero M, Jiménez-Palomares M, Rodríguez-Mansilla J, et al. *NEUROLOGÍA benefits of music therapy on behaviour disorders in subjects diagnosed with dementia: a systematic review* PALABRAS CLAVE, <http://www.elsevier.com/open-access/userlicense/1.0/> (2017).
- Barinaga M. New lead to brain neuron regeneration. *Science* 1998; 282: 1018–1019.
- Moreno-Morales C, Calero R, Moreno-Morales P, et al. Music therapy in the treatment of dementia: a systematic review and meta-analysis. *Front Med* 2020; 7: 1–11.
- Lin Y, Chu H, Yang CY, et al. Effectiveness of group music intervention against agitated behavior in elderly persons with dementia. *Int J Geriatr Psychiatry* 2011; 26: 670–678.
- Sung HC, Chang AM, Lee WL. A preferred music listening intervention to reduce anxiety in older adults with dementia in nursing homes. *J Clin Nurs* 2010; 19: 1056–1064.
- Wall Michelle, Duffy Anita. *The effects of music therapy for older people with dementia*.
- Holmes C, Knights A, Dean C, et al. Keep music live: music and the alleviation of apathy in dementia subjects. *Int Psychogeriatr* 2006; 18: 623–630.
- Alvares GA, Quintana DS, Hickie IB, et al. Autonomic nervous system dysfunction in psychiatric disorders and the impact of psychotropic medications: a systematic review and meta-analysis. *J Psychiatry Neurosci* 2016; 41: 89–104.
- Pariante CM, Lightman SL. The HPA axis in major depression: classical theories and new developments. *Trends Neurosci* 2008; 31: 464–468.

15. Ouanes S, Popp J. High cortisol and the risk of dementia and Alzheimer's disease: a review of the literature. *Front Aging Neurosci* 2019; 11: 435469.
16. McPherson T, Berger D, Alagapan S, et al. Active and passive rhythmic music therapy interventions differentially modulate sympathetic autonomic nervous system activity. *J Music Ther* 2019; 56: 240–264.
17. De Mol Van Otterloo N, Ct K. *Music and dementia care: future possibilities*. 2017.
18. Deshmukh AD, Sarvaiya AA, Seethalakshmi R, et al. Effect of Indian classical music on quality of sleep in depressed patients: a randomized controlled trial. *Nord J Music Ther* 2009; 18: 70–78.
19. Gupta U, Gupta BS. Gender differences in psychophysiological responses to music listening. *Music Med* 2016; 8: 53–64.
20. Hegde S. Music therapy for mental disorder and mental health: the untapped potential of Indian classical music. *BJPsych Int* 2017; 14: 31–33.
21. Ann Clair A. *The effects of music therapy on interactions between family caregivers and their care receivers with late stage dementia downloaded from*, <http://jmt.oxfordjournals.org/>. 2015.
22. Wang C, Li G, Zheng L, et al. Effects of music intervention on sleep quality of older adults: a systematic review and meta-analysis. *Complement Ther Med* 59. Epub ahead of print 1 June 2021. DOI: 10.1016/J.CTIM.2021.102719.
23. Caponnetto P, Lamattina G, Quattropani MC. Music therapy and psychological-clinical impact in surgery: a systematic review. *Health Psychol Res* 10. Epub ahead of print 12 October 2022. DOI: 10.52965/001C.38615.
24. Perera L, Jouvelot P. *Tala sound*. <https://hal.science/hal-02475656v2>.

HOW TO CITE THIS ARTICLE: Ghosh A, Jain S and Issac TG. Indian Music: A Future in Dementia Care Indian Music and Dementia. *Indian J Psychol Med*. 2024;46(2):187–189.



Copyright © The Author(s) 2023

Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution- NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the Sage and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

ACCESS THIS ARTICLE ONLINE

Website: journals.sagepub.com/home/szj

DOI: 10.1177/02537176231201562

Breaking the Binary: Unveiling Gender-specific Norms in Internet Addiction

To the editor,

Internet addiction (IA) is an emerging behavioral addiction. Evidence supports several gender-specific variations in the purpose of Internet use^{1–4}. Males often show higher severity of IA than females⁴, though some contrary findings are also present, which explains that the relation between gender and IA is conflicting¹.

A study on Chinese adolescents² found that IA leads to depression in females, whereas the relationship is reversed in males. A recent study on the Lesbians, Gay, Bisexual, Transgender, and Queer (LGBTQ) population of seven European countries revealed no difference in the pattern of Internet use, gaming, or gambling between heterosexual and homosexual men; however, there were variations in these behaviors among women with heterosexual or homosexual orientations⁵. Evidence supports the fact that the LGBTQ population primarily uses the Internet for information and social support⁶. Con-

sidering the enormous stress the LGBTQ community goes through and their inadequate social support, their tendency to seek social support and approval is expected to be high. It may further increase their chances of getting addicted to the Internet (social media, gaming, and other Internet resources)⁷. A systematic review revealed that pornography use is more prevalent in LGBTQ adolescents than in their heterosexual counterparts⁸. They use Internet pornography not only for sexual arousal and gratification but also to learn about sexuality and sexual identity⁸. Another study reported that, among LGBTQ communities, high internalized stigma and low perceived social support increase the risk of pathological social media use⁹.

When the cut-off scores for IA were estimated among the Nigerian population using Young's Internet Addiction Test, the norms were set at ≥ 38.5 and ≥ 40.8 for males and females, respectively¹⁰. The Smartphone Addiction Scale-Short Version has different cut-off scores for smartphone addiction, which are based on gender (≥ 31 for males and ≥ 33 for females)^{11,12}. However, research on IA has mainly focused on differences between males and females, leaving a gap

in knowledge about the LGBTQ community. To better understand how IA affects LGBTQ individuals, it is crucial to establish a cut-off score for this population. Without this, researching IA among gender minorities would be difficult.

Acknowledgement

The authors declared no acknowledgments with respect to the research, authorship and/or publication of this article.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Prior Presentation

The authors declared no prior presentation for the research, authorship, and/or publication of this article.

ORCID iDs

Sujita Kumar Kar  <https://orcid.org/0000-0003-1107-3021>

Sm Yasir Arafat  <https://orcid.org/0000-0003-0521-5708>