

CURRICULUM VITAE

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Scientist-D (Psychiatry) &
DBT-Wellcome Early Career Fellow
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EDUCATIONAL QUALIFICATIONS:

- **Doctor of Philosophy (PhD)**
Department Clinical Neurosciences & of Psychiatry,
NIMHANS, Bengaluru, India
Year: August 2009 – October 2014
- **Bachelor of medicine and Bachelor of surgery (MBBS)**
University : Rajiv Gandhi University of Health Sciences, Bengaluru, India
College : Sri Devaraj Urs Medical College, Kolar, Karnataka, India
Year : 2008

RESEARCH INTERESTS

1. Neurobiology of Schizophrenia and OCD
2. Neuroimaging in Psychiatry
3. Non-invasive brain stimulation
4. Cognition & psychiatry
5. Metabolic side effects of antipsychotics
6. Clinical trials
7. Integrative Medicine

SKILLS & TECHNIQUES

1. Clinical skills

- Knowledge about neuropsychiatric disorders, clinical evaluation, diagnosis and management.
- Familiarity with various Psychiatric conditions with particular focus on diagnosis and management of Schizophrenia and OCD
- Comprehensive psychiatric evaluation & efficient use of mental state examination & use of structured diagnostic instruments in psychiatry
- Assessment of subjects at risk for psychosis
- Maintenance of a clinical cohort of psychiatry patients in an organized manner

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- Evaluation and management of antipsychotic induced metabolic side effects.

2. Neuroimaging techniques

- Voxel Based Morphometry (VBM)
- fMRI analysis using Statistical Parametric Mapping (SPM)
- fMRI paradigm preparation using E-prime software
- Scanning protocol, data archiving and analysis of functional images
- Analysis of diffusion tensor images using Tract Based Spatial Statistics (TBSS)
- Analysis of Resting State Networks (RSN).

3. Clinical Neurophysiology

- Neurophysiological techniques like Event Related Potentials (ERP)
- ERP analyses software CURRY

4. Molecular Biology & Wet lab skills

- Real Time PCR, Genotyping assays and Gene expression assays
- Protein quantification techniques like ELISA
- Multiple analyte detection technique like Cytometric Bead Array (CBA) using Fluorescent Activated Cell Sorter (FACS)

5. Research & Ethics

- Basic research methodology and statistics
- Ability to independently formulate a research proposal and efficiently drafting a scientific project outline
- Execution of study with prompt and effective subject recruitment and effective communication with the subject conforming to the code of ethical standards
- Efficient coordination with the members of the research team and research project management

6. Novel diagnostic & Therapeutic techniques

Brain stimulation technique: Efficient administration of Transcranial Direct Current Stimulation (tDCS) and High-Definition Transcranial Direct Current Stimulation (HD-tDCS) in psychiatric disorders, clinical evaluation, and selection of patients for tDCS and studying its effects on cognition and psychopathology in psychiatric disorders

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PUBLICATIONS

Original Research

1. **Shivakumar V**, Kalmady SV, Amaresha AC, Jose D, Narayanaswamy JC, Agarwal SM, Joseph B, Venkatasubramanian G, Ravi V, Keshavan MS, Gangadhar BN. Serum vitamin D and hippocampal gray matter volume in schizophrenia. *Psychiatry research*. 2015;233:175-179.
2. **Shivakumar V**, Rajasekaran A, Subbanna M, Kalmady SV, Venugopal D, Agrawal R, Amaresha AC, Agarwal SM, Joseph B, Narayanaswamy JC, Debnath M, Venkatasubramanian G, Gangadhar BN. Leukocyte mitochondrial DNA copy number in schizophrenia. *Asian journal of psychiatry*. 2020;53:102193.
3. **Shivakumar V**, Kalmady SV, Rajasekaran A, Chhabra H, Anekal AC, Narayanaswamy JC, Ravi V, Gangadhar BN, Venkatasubramanian G. Telomere length and its association with hippocampal gray matter volume in antipsychotic-naïve/free schizophrenia patients. *Psychiatry research Neuroimaging*. 2018;282:11-17.
4. **Shivakumar V**, Sreeraj VS, Kalmady SV, Gangadhar BN, Venkatasubramanian G. Pars Triangularis Volume Asymmetry and Schneiderian First Rank Symptoms in Antipsychotic-naïve Schizophrenia. *Clinical psychopharmacology and neuroscience : the official scientific journal of the Korean College of Neuropsychopharmacology*. 2021;19:507-513.
5. **Shivakumar V**, Sreeraj VS, Subbanna M, Kalmady SV, Amaresha AC, Narayanaswamy JC, Debnath M, Venkatasubramanian G. Differential impact of interleukin-6 promoter gene polymorphism on hippocampal volume in antipsychotic-naïve schizophrenia patients. *Indian journal of psychiatry*. 2020;62:36-42.
6. **Shivakumar V**, Debnath M, Venugopal D, Rajasekaran A, Kalmady SV, Subbanna M, Narayanaswamy JC, Amaresha AC, Venkatasubramanian G. Influence of correlation between HLA-G polymorphism and Interleukin-6 (IL6) gene expression on the risk of schizophrenia. *Cytokine*. 2018;107:59-64.
7. Subbanna M*, **Shivakumar V***, Bhalerao G, Varambally S, Venkatasubramanian G, Debnath M. Variants of Th17 pathway-related genes influence brain morphometric changes and the risk of schizophrenia through epistatic interactions. *Psychiatric genetics*. 2022;32:146-155.
8. Sreeraj VS*, **Shivakumar V***, Bhalerao GV, Kalmady SV, Narayanaswamy JC, Venkatasubramanian G. Resting-state functional connectivity correlates of antipsychotic treatment in unmedicated schizophrenia. *Asian journal of psychiatry*. 2023;82:103459.
9. Bose A*, **Shivakumar V***, Narayanaswamy JC, Nawani H, Subramaniam A, Agarwal SM, Chhabra H, Kalmady SV, Venkatasubramanian G. Insight facilitation with add-on tDCS in schizophrenia. *Schizophrenia research*. 2014;156:63-65.
10. **Shivakumar V**, Kalmady SV, Gautham S, Subramaniam A, Venkatasubramanian G, Gangadhar BN. Planum parietale volume in antipsychotic-naïve schizophrenia. *The Journal of neuropsychiatry and clinical neurosciences*. 2013;25:E35-36.
11. **Shivakumar V**, Chhabra H, Subbanna M, Agarwal SM, Bose A, Kalmady SV, Narayanaswamy JC, Debnath M, Venkatasubramanian G. Effect of tDCS on auditory hallucinations in schizophrenia: Influence of catechol-O-methyltransferase (COMT) Val158Met polymorphism. *Asian journal of psychiatry*. 2015;16:75-77.
12. Sanjay TN, **Shivakumar V**, Subbanna M, Biradar SU, Muralidharan K, Venkatasubramanian G. Plasma interleukin-6 in remitted early bipolar I disorder and subjects at high-risk for bipolar disorder. *Asian journal of psychiatry*. 2017;30:212-213.
13. Selvaraj S, **Shivakumar V**, Kavaya PV, Mullapudi T, Bhalerao G, Sreeraj VS, Suhas S, Dinakaran D, Parlikar R, Chhabra H, Narayanaswamy JC, Debnath M, Rao NP, Muralidharan K,

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- Venkatasubramanian G. Neurohemodynamic correlates of BDNF gene expression in schizophrenia patients with working memory deficits: A functional MRI study. *Asian journal of psychiatry*. 2022;77:103261.
14. Subbanna M, **Shivakumar V**, Jose D, Venkataswamy M, Debnath M, Ravi V, Reddy YCJ, Venkatasubramanian G, Narayanaswamy JC. Reduced T cell immunity in unmedicated, comorbidity-free obsessive-compulsive disorder: An immunophenotyping study. *Journal of Psychiatric Research*. 2021;137:521-524.
 15. Subbanna M, **Shivakumar V**, Talukdar PM, Narayanaswamy JC, Venugopal D, Berk M, Varambally S, Venkatasubramanian G, Debnath M. Role of IL-6/RORC/IL-22 axis in driving Th17 pathway mediated immunopathogenesis of schizophrenia. *Cytokine*. 2018;111:112-118.
 16. Subbanna M, **Shivakumar V**, Venugopal D, Narayanaswamy JC, Berk M, Varambally S, Venkatasubramanian G, Debnath M. Impact of antipsychotic medication on IL-6/STAT3 signaling axis in peripheral blood mononuclear cells of drug-naive schizophrenia patients. *Psychiatry and clinical neurosciences*. 2020;74:64-69.
 17. Venugopal D, **Shivakumar V**, Subbanna M, Kalmady SV, Amaresha AC, Agarwal SM, Narayanaswamy JC, Banerjee M, Debnath M, Venkatasubramanian G. Impact of antipsychotic treatment on methylation status of Interleukin-6 [IL-6] gene in Schizophrenia. *Journal of Psychiatric Research*. 2018;104:88-95.
 18. Chhabra H, **Shivakumar V**, Subbanna M, Bose A, Agrawal M, Sreeraj VS, Kalmady SV, Narayanaswamy JC, Debnath M, Venkatasubramanian G. Influence of COMT and NRG-1 gene polymorphisms on the effect of tDCS on Auditory Verbal Hallucinations in Schizophrenia. *Brain Stimulation: Basic, Translational, and Clinical Research in Neuromodulation*. 2017;10:410-411.
 19. Bose A, **Shivakumar V**, Agarwal SM, Kalmady SV, Shenoy S, Sreeraj VS, Narayanaswamy JC, Venkatasubramanian G. Efficacy of fronto-temporal transcranial direct current stimulation for refractory auditory verbal hallucinations in schizophrenia: A randomized, double-blind, sham-controlled study. *Schizophrenia research*. 2018;195:475-480.
 20. Bose A, **Shivakumar V**, Chhabra H, Parlikar R, Sreeraj VS, Dinakaran D, Narayanaswamy JC, Venkatasubramanian G. Feasibility and Clinical Utility of High-definition Transcranial Direct Current Stimulation in the Treatment of Persistent Hallucinations in Schizophrenia. *East Asian archives of psychiatry : official journal of the Hong Kong College of Psychiatrists = Dong Ya jing shen ke xue zhi : Xianggang jing shen ke yi xue yuan qi kan*. 2017;27:162-164.
 21. Agarwal SM, **Shivakumar V**, Kalmady SV, Danivas V, Amaresha AC, Bose A, Narayanaswamy JC, Amorim MA, Venkatasubramanian G. Neural Correlates of a Perspective-taking Task Using in a Realistic Three-dimensional Environment Based Task: A Pilot Functional Magnetic Resonance Imaging Study. *Clinical psychopharmacology and neuroscience : the official scientific journal of the Korean College of Neuropsychopharmacology*. 2017;15:276-281.
 22. Harave VS, **Shivakumar V**, Kalmady SV, Narayanaswamy JC, Varambally S, Venkatasubramanian G. Neurocognitive Impairments in Unaffected First-degree Relatives of Schizophrenia. *Indian journal of psychological medicine*. 2017;39:250-253.
 23. Kalmady SV, **Shivakumar V**, Arasappa R, Subramaniam A, Gautham S, Venkatasubramanian G, Gangadhar BN. Clinical correlates of hippocampus volume and shape in antipsychotic-naive schizophrenia. *Psychiatry research Neuroimaging*. 2017;263:93-102.
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27. Rajasekaran A, **Shivakumar V**, Kalmady SV, Narayanaswamy JC, Subbana M, Venugopal D, Amaresha AC, Venkatasubramanian G, Berk M, Debnath M. The impact of HLA-G 3' UTR variants and sHLA-G on risk and clinical correlates of schizophrenia. *Human Immunology*. 2016;77:1166-1171.
28. Rajasekaran A, **Shivakumar V**, Kalmady SV, Narayanaswamy JC, Subbana M, Venugopal D, Amaresha AC, Venkatasubramanian G, Debnath M. The impact of IL10 polymorphisms and sHLA-G levels on the risk of schizophrenia. *Asian journal of psychiatry*. 2016;23:39-43.
29. Rajasekaran A, **Shivakumar V**, Kalmady SV, Narayanaswamy JC, Venugopal D, Amaresha AC, Venkatasubramanian G, Debnath M. Soluble human leukocyte antigen (sHLA)-G levels may predict early onset of schizophrenia in male patients. *Tissue antigens*. 2015;86:36-37.
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32. Virupaksha HS, Kalmady SV, **Shivakumar V**, Arasappa R, Venkatasubramanian G, Gangadhar BN. Volume and asymmetry abnormalities of insula in antipsychotic-naïve schizophrenia: a 3-tesla magnetic resonance imaging study. *Indian journal of psychological medicine*. 2012;34:133-139.
33. Rao S, Raveendranathan D, **Shivakumar V**, Narayanaswamy JC, Venkatasubramanian G, Reddy YCJ. Hippocampus volume alterations and the clinical correlates in medication naïve obsessive compulsive disorder. *Journal of affective disorders*. 2018;236:1-5.
34. Kalmady SV, Venkatasubramanian G, **Shivakumar V**, Gautham S, Subramaniam A, Jose DA, Maitra A, Ravi V, Gangadhar BN. Relationship between Interleukin-6 gene polymorphism and hippocampal volume in antipsychotic-naïve schizophrenia: evidence for differential susceptibility? *PLoS one*. 2014;9:e96021.
35. Kalmady SV, Venkatasubramanian G, **Shivakumar V**, Jose D, Ravi V, Gangadhar BN. Relationship between Brain-Derived Neurotrophic Factor and Schneiderian First Rank Symptoms in Antipsychotic-Naïve Schizophrenia. *Frontiers in psychiatry*. 2013;4:64.
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37. Balaji R, Subbanna M, **Shivakumar V**, Abdul F, Venkatasubramanian G, Debnath M. Pattern of expression of Toll like receptor (TLR)-3 and -4 genes in drug-naïve and antipsychotic treated patients diagnosed with schizophrenia. *Psychiatry research*. 2020;285:112727.
38. Agarwal SM, Bose A, **Shivakumar V**, Narayanaswamy JC, Chhabra H, Kalmady SV, Varambally S, Nitsche MA, Venkatasubramanian G, Gangadhar BN. Impact of antipsychotic medication on transcranial direct current stimulation (tDCS) effects in schizophrenia patients. *Psychiatry research*. 2016;235:97-103.

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40. Hariprasad VR, Varambally S, **Shivakumar V**, Kalmady SV, Venkatasubramanian G, Gangadhar BN. Yoga increases the volume of the hippocampus in elderly subjects. *Indian journal of psychiatry*. 2013;55:S394-396.
41. Jose D, Dinakaran D, **Shivakumar V**, Subbanna M, Reddy YCJ, Venkatasubramanian G, Narayanaswamy JC. Plasma IL-6 levels in unmedicated, comorbidity free obsessive-compulsive disorder. *International journal of psychiatry in clinical practice*. 2021;25:437-440.
42. Kalmady SV, Agarwal SM, **Shivakumar V**, Jose D, Venkatasubramanian G, Reddy YC. Revisiting Geschwind's hypothesis on brain lateralisation: a functional MRI study of digit ratio (2D:4D) and sex interaction effects on spatial working memory. *Laterality*. 2013;18:625-640.
43. Narayanaswamy JC, Jose D, Agarwal SM, Kalmady SV, Baruah U, **Shivakumar V**, Prasad C, Viswanath B, Rao NP, Venkatasubramanian G, Janardhan Reddy YC. Neuro-hemodynamic endophenotypes of emotional interference in OCD: fMRI study using emotion counting stroop task. *Asian journal of psychiatry*. 2019;39:35-41.
44. Narayanaswamy JC, Jose D, **Shivakumar V**, Shrinivasa B, Kaur M, Kalmady SV, Venkatasubramanian G, Reddy YCJ. Plasma insulin-like growth factor-1 levels and response to selective serotonin reuptake inhibitor treatment: A prospective study of medication-naïve OCD patients. *Asian journal of psychiatry*. 2017;28:65-66.
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46. Sreeraj VS, Bose A, Chhabra H, **Shivakumar V**, Agarwal SM, Narayanaswamy JC, Rao NP, Kesavan M, Varambally S, Venkatasubramanian G. Working memory performance with online-tDCS in schizophrenia: A randomized, double-blinded, sham-controlled, partial cross-over proof-of-concept study. *Asian journal of psychiatry*. 2020;50:101946.
47. Subramaniam A, Agarwal SM, Kalmady S, **Shivakumar V**, Chhabra H, Bose A, Damodharan D, Narayanaswamy JC, Hutton SB, Venkatasubramanian G. Effect of Transcranial Direct Current Stimulation on Prefrontal Inhibition in Schizophrenia Patients with Persistent Auditory Hallucinations: A Study on Antisaccade Task Performance. *Indian journal of psychological medicine*. 2015;37:419-422.
48. Paul AK, Bose A, Kalmady SV, **Shivakumar V**, Sreeraj VS, Parlikar R, Narayanaswamy JC, Dursun SM, Greenshaw AJ, Greiner R, Venkatasubramanian G. Superior temporal gyrus functional connectivity predicts transcranial direct current stimulation response in Schizophrenia: A machine learning study. *Frontiers in psychiatry*. 2022;13:923938.
49. Pruthi N, Ashok M, **Kumar VS**, Jhavar K, Sampath S, Devi BI. Magnitude of pedestrian head injuries & fatalities in Bangalore, south India: a retrospective study from an apex neurotrauma center. *The Indian journal of medical research*. 2012;136:1039-1043.
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51. Kalmady SV, Agrawal R, Venugopal D, **Shivakumar V**, Amaresha AC, Agarwal SM, Subbanna M, Rajasekaran A, Narayanaswamy JC, Debnath M, Venkatasubramanian G. CHRFBAM7A gene expression in schizophrenia: clinical correlates and the effect of antipsychotic treatment. *Journal of neural transmission* (Vienna, Austria : 1996). 2018;125:741-748.
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- Clinical correlates of saccadic eye movement in antipsychotic-naive schizophrenia. *Psychiatry research*. 2018;259:154-159.
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Review Articles

78. **Shivakumar V**, Dinakaran D, Narayanaswamy JC, Venkatasubramanian G. Noninvasive brain stimulation in obsessive-compulsive disorder. *Indian journal of psychiatry*. 2019;61:S66-S76.
79. **Shivakumar V**, Kalmady SV, Venkatasubramanian G, Ravi V, Gangadhar BN. Do schizophrenia patients age early? *Asian journal of psychiatry*. 2014;10:3-9.
80. Sreeraj VS, **Shivakumar V**, Rao NP, Venkatasubramanian G. A critical appraisal of long acting injectable antipsychotics: Translating research to clinics. *Asian journal of psychiatry*. 2017;28:57-64.
81. Sreeraj VS, **Shivakumar V**, Rao NP, Venkatasubramanian G. Response to the letter: "Efficacy and tolerability of long acting injectable antipsychotics (LAI) over oral formulations". *Asian journal of psychiatry*. 2017.
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87. Chhabra H, Thimmashetty VH, **Shivakumar V**, Venkatasubramanian G, Narayanaswamy JC. Effect of transcranial direct current stimulation on in-vivo assessed neuro-metabolites through magnetic resonance spectroscopy: a systematic review. *Acta neuropsychiatrica*. 2021:1-12.
88. Nayok SB, Sreeraj VS, **Shivakumar V**, Venkatasubramanian G. Understanding the interoception in schizophrenia through the window of Vagus Nerve Stimulation. *Neuroscience and biobehavioral reviews*. 2022;141:104844.
89. Parlikar R, Vanteemar SS, **Shivakumar V**, Narayanaswamy CJ, Rao PN, Ganesan V. High definition transcranial direct current stimulation (HD-tDCS): A systematic review on the treatment of neuropsychiatric disorders. *Asian journal of psychiatry*. 2021;56:102542.
90. Varambally S, Venkatasubramanian G, Govindaraj R, **Shivakumar V**, Mullapudi T, Christopher R, Debnath M, Philip M, Bharath RD, Gangadhar BN. Yoga and schizophrenia-a comprehensive assessment of neuroplasticity: Protocol for a single blind randomized controlled study of yoga in schizophrenia. *Medicine*. 2019;98:e17399.
91. Bhargav H, Holla B, Ramakrishna KK, Shivakumar V, Gokulakrishnan K, Varambally S, Gangadhar BN. Yoga and Integrative Healthcare: Lessons from the National Institute of Mental Health and Neurosciences (NIMHANS) in India. *International journal of yoga*. 2022;15:150-157.

Case Reports

92. **Shivakumar V**, Agarwal SM, Bose A, Kandasamy A, Rao NP, Narayanaswamy JC, Venkatasubramanian G. Safety of Transcranial Direct Current Stimulation in Alcohol-Induced Psychotic Disorder with Comorbid Psoriasis. *Indian journal of psychological medicine*. 2016;38:71-73.
93. **Shivakumar V**, Bose A, Rakesh G, Nawani H, Subramaniam A, Agarwal SM, Kalmady SV, Narayanaswamy JC, Venkatasubramanian G. Rapid improvement of auditory verbal hallucinations in schizophrenia after add-on treatment with transcranial direct-current stimulation. *The journal of ECT*. 2013;29:e43-44.
94. **Shivakumar V**, Jayaram N, Rao NP, Venkatasubramanian G. Successful use of add - on topiramate for antipsychotic - induced weight gain. *Indian journal of psychological medicine*. 2012;34:85-86.
95. **Shivakumar V**, Narayanaswamy JC, Agarwal SM, Bose A, Subramaniam A, Venkatasubramanian G. Targeted, intermittent booster tDCS: a novel add-on application for maintenance treatment in a schizophrenia patient with refractory auditory verbal hallucinations. *Asian journal of psychiatry*. 2014;11:79-80.
96. **Shivakumar V**, Venkatasubramanian G. Successful use of adjuvant raloxifene treatment in clozapine-resistant schizophrenia. *Indian journal of psychiatry*. 2012;54:394.

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97. Jhamnani K, **Shivakumar V**, Kalmady S, Rao NP, Venkatasubramanian G. Successful use of add-on minocycline for treatment of persistent negative symptoms in schizophrenia. *The Journal of neuropsychiatry and clinical neurosciences*. 2013;25:E06-07.
98. Meherwan Mehta U, Agarwal SM, Kalmady SV, **Shivakumar V**, Kumar CN, Venkatasubramanian G, Thirthalli J, Gangadhar BN, Pascual-Leone A, Keshavan MS. Enhancing putative mirror neuron activity with magnetic stimulation: a single-case functional neuroimaging study. *Biological psychiatry*. 2013;74:e1-2.
99. Narayanaswamy JC, **Shivakumar V**, Bose A, Agarwal SM, Venkatasubramanian G, Gangadhar BN. Sustained improvement of negative symptoms in schizophrenia with add-on tDCS: a case report. *Clinical schizophrenia & related psychoses*. 2014;8:135-136.
100. Nawani H, Bose A, Agarwal SM, **Shivakumar V**, Chhabra H, Subramaniam A, Kalmady S, Narayanaswamy JC, Venkatasubramanian G. Modulation of corollary discharge dysfunction in schizophrenia by tDCS: preliminary evidence. *Brain stimulation*. 2014;7:486-488.
101. Nawani H, Kalmady SV, Bose A, **Shivakumar V**, Rakesh G, Subramaniam A, Narayanaswamy JC, Venkatasubramanian G. Neural basis of tDCS effects on auditory verbal hallucinations in schizophrenia: a case report evidence for cortical neuroplasticity modulation. *The journal of ECT*. 2014;30:e2-4.
102. Nayok SB, Bose A, Bagali KB, Maity K, Sreeraj VS, **Shivakumar V**, Venkatasubramanian G. Accelerated tDCS improves corollary discharge deficit & prediction error signalling in schizophrenia: A case report. *Brain stimulation*. 2022;15:1218-1220.
103. Parlikar R, Sreeraj VS, Chhabra H, Thimmashetty VH, Parameshwaran S, Selvaraj S, **Shivakumar V**, Narayanaswamy JC, Rao NP, Venkatasubramanian G. Add-on HD-tDCS for obsessive-compulsive disorder with comorbid bipolar affective disorder: A case series. *Asian journal of psychiatry*. 2019;43:87-90.
104. Rakesh G, **Shivakumar V**, Subramaniam A, Nawani H, Amaresha AC, Narayanaswamy JC, Venkatasubramanian G. Monotherapy with tDCS for Schizophrenia: a case report. *Brain stimulation*. 2013;6:708-709.
105. Raveendranathan D, **Shivakumar V**, Jayaram N, Rao NP, Venkatasubramanian G. Beneficial effects of add-on raloxifene in schizophrenia. *Archives of women's mental health*. 2012;15:147-148.
106. Shenoy S, Bose A, Chhabra H, Dinakaran D, Agarwal SM, **Shivakumar V**, Narayanaswamy JC, Sivakumar PT, Venkatasubramanian G. Transcranial direct current stimulation (tDCS) for auditory verbal hallucinations in schizophrenia during pregnancy: a case report. *Brain stimulation*. 2015;8:163-164.
107. Soman A, Chikkanna U, Ramakrishna KK, Bhargav H, **Venkataram S**, Jasti NL, Sharma S, Ganapathy VS, Varambally S. Integrative Medicine Enhances Motor and Sensory Recovery in Guillain-Barre Syndrome - A Case Study. *International journal of yoga*. 2022;15:80-84.
108. Sreeraj VS, Dinakaran D, Parlikar R, Chhabra H, Selvaraj S, **Shivakumar V**, Bose A, Narayanaswamy JC, Venkatasubramanian G. High-definition transcranial direct current stimulation (HD-tDCS) for persistent auditory hallucinations in schizophrenia. *Asian journal of psychiatry*. 2018;37:46-50.
109. Sreeraj VS, Masali M, **Shivakumar V**, Bose A, Venkatasubramanian G. Clinical Utility of Add-On Transcranial Direct Current Stimulation for Binge Eating Disorder with Obesity in Schizophrenia. *Indian journal of psychological medicine*. 2018;40:487-490.
110. Sreeraj VS, Shanbhag V, Nawani H, **Shivakumar V**, Damodharan D, Bose A, Narayanaswamy JC, Venkatasubramanian G. Feasibility of Online Neuromodulation Using Transcranial

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- Alternating Current Stimulation in Schizophrenia. Indian journal of psychological medicine. 2017;39:92-95.
111. Sreeraj VS, **Shivakumar V**, Bose A, Abhiram PN, Agarwal SM, Chhabra H, Narayanaswamy JC, Venkatasubramanian G. A Functional Domain Based Approach in Neurocognitive Rehabilitation with Transcranial Direct Current Stimulation: A Case Report. *Clinical psychopharmacology and neuroscience : the official scientific journal of the Korean College of Neuropsychopharmacology*. 2019;17:125-129.
112. Sreeraj VS, **Shivakumar V**, Sowmya S, Bose A, Nawani H, Narayanaswamy JC, Venkatasubramanian G. Online Theta Frequency Transcranial Alternating Current Stimulation for Cognitive Remediation in Schizophrenia: A Case Report and Review of Literature. *The journal of ECT*. 2018.
113. Sreeraj VS, **Shivakumar V**, Sowmya S, Bose A, Nawani H, Narayanaswamy JC, Venkatasubramanian G. Online Theta Frequency Transcranial Alternating Current Stimulation for Cognitive Remediation in Schizophrenia: A Case Report and Review of Literature. *The journal of ECT*. 2019;35:139-143.
114. Taylor ST, Chhabra H, Sreeraj VS, **Shivakumar V**, Kalmady SV, Venkatasubramanian G. Neural Effects of Transcranial Direct Current Stimulation in Schizophrenia: A Case Study using Functional Near-infrared Spectroscopy. *Indian journal of psychological medicine*. 2017;39:691-694.
115. Thamby A, Seshachala K, Sharma L, Thimmashetty VH, Balachander S, **Shivakumar V**, Hazari N, Chhabra H, Arumugham SS, Ts J, K M, Venkatasubramanian G, Reddy YCJ, Narayanaswamy JC. Transcranial direct current stimulation for treatment-resistant obsessive-compulsive disorder- A large case series. *Asian journal of psychiatry*. 2021;60:102625.
116. Thimmashetty VH, Parlikar R, Selvaraj S, Sreeraj VS, **Shivakumar V**, Narayanaswamy JC, Venkatasubramanian G. Target specific effects of direct current stimulation in schizo-obsessive disorder: A case report. *Brain stimulation*. 2020;13:858-860.

Book Chapters

1. **Shivakumar, V**, Venkatasubramanian, G. Interfaces of Psychiatry: Interface with Biology. 2017. Book Chapter, *Different Strokes: Volume III*, Edition: First Edition, Chapter: 1, Publisher: Publication Committee, Indian Psychiatric Society, pp.7-18.
2. **Shivakumar, V**, Bose A, Venkatasubramanian G. Genetic basis of auditory verbal hallucinations in schizophrenia. 2018. Book Chapter, *Hallucinations in Psychoses and Affective Disorders: A Clinical and Biological Approach*, Publisher: Springer Nature, pp. 133-147
3. Rao NP, **Shivakumar V**, Gangadhar BN. Yoga and Outcome of Schizophrenia. In: Shrivastava A, De Sousa A, editors. *Schizophrenia Treatment Outcomes: An Evidence-Based Approach to Recovery*. Cham: Springer International Publishing; 2020. p. 269-73.
4. Venugopal, S., **Shivakumar, V.**, Holla, B., Varambally, S., Gangadhar, B.N. (2022). Yoga and Neuroimaging Current Status of Evidence. In: Basu-Ray, I., Mehta, D. (eds) *The Principles and Practice of Yoga in Cardiovascular Medicine*. Springer, Singapore. https://doi.org/10.1007/978-981-16-6913-2_13
5. Gowda, S.M., **Shivakumar, V.**, Narayanaswamy, J.C., Venkatasubramanian, G. (2020). Transcranial Direct Current Stimulation for Obsessive–Compulsive Disorder. In: Dell'Osso, B., Di Lorenzo, G. (eds) *Non Invasive Brain Stimulation in Psychiatry and Clinical Neurosciences*. Springer, Cham. https://doi.org/10.1007/978-3-030-43356-7_18

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Conference Proceedings

1. Abayomi O, Amato D, Bailey C, Bitanhirwe B, Bowen L, Burshtein S, Cullen A, Fusté M, Herrmann AP, Khodaie B, Kilian S, Lang QA, Manning EE, Massuda R, Nurjono M, Sadiq S, Sanchez-Gutierrez T, Sheinbaum T, **Shivakumar V**, Simon N, Spiteri-Staines A, Sirijit S, Toftdahl NG, Wadehra S, Wang Y, Wigton R, Wright S, Yagoda S, Zaytseva Y, O'Shea A, DeLisi LE. The 4th Schizophrenia International Research Society Conference, 5-9 April 2014, Florence, Italy: a summary of topics and trends. Schizophrenia research. 2014;159:e1-22.

PhD thesis

Accelerated Aging & Schizophrenia: Clinical & Neuroimmunometabolic Correlates

Journal Reviews

Scientific reviewer for Journal of Affective Disorders, Psychiatry Research, ESPEN, Schizophrenia Research, Schizophrenia Bulletin, Frontiers in Psychiatry & Asian Journal of Psychiatry

Grants/Research Projects

Principal investigator

1. “Cognitive Dysfunction and Sleep Dysregulation as Endophenotypes of Psychosis: A Study of Neurophysiological, Neuroimaging and Neuroimmune Correlates”. Wellcome Trust-DBT India Alliance ‘Early career fellowship’ (2019-2024)
2. Efficacy, Safety, tolerability, and Neurobiological correlates of Ayurveda treatment as Adjunct to Established Maintenance Doses of Standard care, on negative and cognitive symptoms in Schizophrenia: A prospective randomized controlled trial (Project approved and funding awaited)
3. “Clinical, Neurocognitive & Neuroimaging Correlates of transcranial Direct Current Stimulation (tDCS) in Schizophrenia”. Awarded by Indian Council of Medical Research (ICMR), Govt. of India under ‘Fellowships to young scientists in newer research areas’ scheme (2015-2018)

Co-investigator

1. “Identifying biomarkers of clinical response to High-Definition transcranial direct current stimulation in treatment resistant schizophrenia: A multimodal brain imaging study with translational implications (Swarnajayanti award project, DST, Govt. of India, 2015-2020)

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2. “Design and development of non-invasive multimodal neuromodulatory device: studies on feasibility, safety and defense applications” (2018-2021)
3. “Genome India: Cataloguing the Genetic Variation in Indians”. Project under the Department of Biotechnology (2020-2023)
4. Evaluating The Efficacy of Ayurvedic Intervention as Add on To Conventional Treatment and Explore the Interaction of Epigenetics, Neuro/Gut Biomarkers and Neuroimaging in Pediatric ADHD. Project under the CCRAS (2021-2024)
5. Ayurveda therapies as on Add-on to optimized conventional management of Parkinson’s disease: Assessment of Clinical, Neurophysiological, Neuroimmune and Neuroimaging parameters. Project under the CCRAS (2021-2024)
6. Cognitive Neuroscience of Behavioural Addiction: Exploring the Role of Reward and Compulsivity Circuits. Project under the Department of Science and Technology (2021-2024)

Conference Presentations (First author)

1. ‘The 16th Biennial Winter workshop in psychosis-2011’, Innsbruck, Austria. Presented poster, titled, ‘Pars Triangularis Volume Abnormalities in Antipsychotic-naïve Schizophrenia’
2. ‘8th International Congress of the International Neuropsychiatry Association-2011’, Chennai, India. Presented poster titled, ‘Planum Parietale Volume in Antipsychotic-naïve Schizophrenia’
3. ‘4th Schizophrenia International Research Society conference - 2014’, Florence, Italy. Presented poster titled, Association of Vitamin-D with Hippocampal Gray Matter Volume in Antipsychotic - naïve Schizophrenia Patients
4. 1st International Brain Stimulation Conference, 2 - 4 March, 2015, Singapore. Presented poster titled, Effect of tDCS on Persistent Auditory Hallucinations in Schizophrenia: Influence of Catechol-O-methyltransferase Val158Met Genotype’
5. Society of Biological Psychiatry, 70th Annual Scientific Convention and Program, May 14-16, 2015, Toronto, Ontario, Canada. Presented poster titled, Telomere Length and its association with hippocampal gray matter volume in Antipsychotic-Naïve Schizophrenia
6. Society of Biological Psychiatry, 73rd Annual Scientific Convention and Program, May 10-12, 2018 in New York City, NY at the New York Hilton-Midtown. Presented poster titled, Leukocyte Mitochondrial DNA Copy Number in Schizophrenia.

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Workshops/ Symposia/ CME and other courses attended

1. Workshop on Research Methodology & Statistics, NIMHANS, 2010
2. National conference on "Ageing and its Effects on Hearing Speech, Language and Communication" 19th to 21th September 2012. Bangalore
3. Science & Communication Workshop- Wellcome DBT, 2013
4. International EEG Workshop-St. Johns Hospital, 2013
5. Hands-on Workshop on Flow Cytometry Applications held at the Advanced Flow Cytometry Lab, Neurobiology Research Centre (NRC), NIMHANS from 16th to 18th June 2014

Invited speaker at conferences and symposia

1. Invited speaker at National conference on "Ageing and its Effects on Hearing Speech, Language and Communication" 19th to 21th September 2012. Bangalore, India. Lecture on "Ageing and Schizophrenia".
2. Invited speaker at Global excellence in Mental Sciences organized by Mental Health Society, 25th September 2016 Goa, India. Debate on "Genetic research in schizophrenia- the real hope for future"
3. Invited speaker to organize workshop on Transcranial Direct Current Stimulation (tDCS) in Clinical Practice. Organized by Indian Society of Biological Psychiatry 12th February 2017, Mumbai, India
4. Invited speaker at 2nd J&K Medical Science Congress and 1st Annual Conference of Metabolic Syndrome Prediabetes Polycystic Ovary Syndrome Society (MP PCOS CON 2017), 10-13 May 2017, Srinagar, India. Lecture on "Brain Stimulation in Psychiatry"
5. Invited speaker to organize workshop on "Clinical Applications of Transcranial Direct Current Stimulation (tDCS) in Psychiatry. Organized by Mental Health Centre, 11th June 2017, Trivandrum, India
6. Invited speaker at Continued Medical Education (CME) organized by Deccan Psychiatrists Association (DPA), 16-17th December 2017 Sangli, India. "Emerging therapy: tDCS"
7. Invited speaker to organize workshop on "transcranial direct current stimulation in psychiatry" at 3rd Global conference of Biological Psychiatry 2018 (GCBP 2018) organized by Indian Association of Biological Psychiatry, 23rd-26th August 2018, Mumbai.

Education / Training programs

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1. Module coordinator in 15-day online training course on “Mental Health and Biostatistics”, IIT Guwahati (30th May 2022 till 15th June 2022)
2. Resource person in conducting ‘Non-invasive brain stimulation workshop’ at NIMHANS since 2016. Conducted 5 workshops till date.
3. I have been training PhD and MD students in the field of neuroimaging, molecular biology and neuromodulation techniques in neuropsychiatry. I have also trained short-term trainees in their dissertation work at the Translational Psychiatry lab.

Awards

1. **‘Early Career Fellowship’**, Wellcome Trust-DBT India Alliance
2. **‘Young scientist in newer research areas’**, Department of Health Research, Government of India
3. **ASHA Award** for the best paper in Biological psychiatry conferred by Indian Association of Biological Psychiatry (IABP) at the Annual National Conference of IABP, Agra, September-2019
4. **Indian Council of Medical Research (ICMR), Government of India, international travel grant 2011**. Shivakumar V, Venkatasubramanian G, Kalmady S, Kothari S, Rao NP, Behere RV, Gangadhar BN. Pars Triangularis Volume Abnormalities in Antipsychotic-naïve Schizophrenia. The 16th Biennial Winter workshop in psychosis-2011 - January 2011, Innsbruck, Austria.
5. **Schizophrenia International Research Society travel grant 2014**. Shivakumar V, Sunil V. Kalmady, Amaresha C. Anekal, Janardhanan C. Narayanaswamy, Boban Joseph, Ganesan Venkatasubramanian, Vasanthapuram Ravi, Bangalore N. Gangadhar.
6. **Department of Science & Technology (DST), Government of India, international travel grant 2014**. 1st International Brain Stimulation Conference, 2 - 4 March, 2015, Singapore. Presented poster titled, Effect of tDCS on Persistent Auditory Hallucinations in Schizophrenia: Influence of Catechol-O-methyltransferase Val158Met Genotype
7. **Department of Biotechnology (DBT), Government of India, international travel grant 2014**. Society of Biological Psychiatry, 70th Annual Scientific Convention and Program, May 14-16, 2015, Toronto, Ontario, Canada. Presented poster titled, Telomere Length and its association with hippocampal gray matter volume in Antipsychotic-Naive Schizophrenia
8. ENIGMA Consortium international travel grant, 2016 to attend 10Kin1day Connectome event, an ENIGMA-DCL-NCU connectome event, 28th-30th October 2016, Utrecht, The Netherlands.

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Awards as co-author

1. **Dr. D.S. Raju Award** for the best postgraduate research for the year 2012. Agarwal SM, Jose D, Baruah U, **Shivakumar V**, Kalmady SV, Venkatasubramanian G, Mataix-Cols D, Janardhan Reddy YC. Neurohemodynamic Correlates of Washing Symptoms in Obsessive-Compulsive Disorder: A Pilot fMRI Study Using Symptom Provocation Paradigm. Annual Conference of Indian Psychiatry Society - South Zone 2012, Madurai.
2. **Dr. H S Subramanya Memorial Award** for the best postgraduate research for the year 2012. Agarwal SM, Jose D, Baruah U, **Shivakumar V**, Kalmady SV, Venkatasubramanian G, Mataix-Cols D, Janardhan Reddy YC. Neurohemodynamic Correlates of Washing Symptoms in Obsessive-Compulsive Disorder: A Pilot fMRI Study Using Symptom Provocation Paradigm
3. **Dr. H S Subramanya Memorial Award 2011** for the best postgraduate research. Virupaksha H S, Sunil V Kalmady, **Shivakumar V**, Rashmi Arasappa, Ganesan Venkatasubramanian, Bangalore N. Gangadhar. Volume & Asymmetry Abnormalities of Insula in Antipsychotic-naïve Schizophrenia: A 3-Tesla MRI Study. Annual Conference of Indian Psychiatry Society - Karnataka Chapter, Mysore
4. **Dr. D.S. Raju Award** for the best postgraduate research for the year 2011. Virupaksha H S, Sunil V Kalmady, **Shivakumar V**, Rashmi Arasappa, Ganesan Venkatasubramanian, Bangalore N. Gangadhar. Volume & Asymmetry Abnormalities of Insula in Antipsychotic-naïve Schizophrenia: A 3-Tesla MRI Study. Annual Conference of Indian Psychiatry Society - South Zone, Hyderabad.
5. **Samuel Gershon Award** for the best paper by junior investigators at the International Conference on Bipolar Disorder, Miami, USA, June 2013.
6. **Lilly fellowship in bipolar disorder** (selected for best study on bipolar disorder) at the International Conference on Bipolar Disorder, Miami, USA, June 2013.
7. **ASHA Award** for the best paper in Biological psychiatry conferred by Indian Association of Biological Psychiatry (IABP) at the 1st Global Conference of Biological psychiatry, New Delhi, October-2014