Pir, Religious Leader, Molvi, Imam or Religious Cleric) while only 1/5 of the patients approached to psychiatrists for treatment of first psychotic episode. The mean time duration to approach to psychiatrist after first episode psychosis was reported to be 73 ± 38 months (around 6 years).

**Conclusion.** The study showed that most frequent source of health care for psychiatric patients were faith healers (Aamil Baba, Witch Doctor, Pir, Religious Leader, Molvi, Imam or Religious Cleric) as compared with one-third who went to qualified healthcare providers like psychiatrists or physicians. There is a huge delay in proper help seeking among psychiatric patients. Health education aiming at increasing awareness among general population regarding treatment options for psychiatric illness is recommended to improve the quality of life of people living in our locality.



## Determinants of Physical Health Outcomes in Individuals With Schizophrenia, Schizoaffective Disorder, and Bipolar Affective Disorder

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**Aims.** Individuals with schizophrenia, schizoaffective disorder, and bipolar affective disorder have higher rates of cardiometabolic disease and have a reduced life expectancy compared with healthy controls. These mental health conditions are highly heritable and neurodevelopmental copy number variants (CNVs) are known to increase the risk of these disorders. Neurodevelopmental CNVs have also been associated with a range of cardiometabolic disorders. The aim of this research was to examine the relationship between neurodevelopmental CNVs and cardiometabolic disease in individuals with schizophrenia, schizoaffective disorder, and bipolar disorder.

**Methods.** Using data from the UK Biobank, a group of individuals with schizophrenia, schizoaffective disorder and bipolar affective disorder was defined (n = 2,611) based on first-occurrence data. CNVs had previously been called using PennCNV and a set of 53 neurodevelopmental loci annotated. I carried out association analyses between neurodevelopmental CNVs and cardiometabolic disease phenotypes using logistic regression with age and sex as covariates.

**Results.** There was a higher frequency of ischaemic heart disease, hypertension, obesity, and type 2 diabetes mellitus in individuals with schizophrenia, schizoaffective disorder and bipolar disorder than in controls. 2.1% of individuals with these mental health conditions carried a neurodevelopmental CNV. Carrying a neurodevelopmental CNV was significantly associated with type 2 diabetes mellitus (OR = 1.94, 95% CI 1.09–3.57, p = 0.025). However, this result did not survive Bonferroni correction for four tests (p value threshold 0.0125). I did not find any mediators of the neurodevelopmental CNV – type 2 diabetes mellitus association (of obesity, hypertension, cognition, smoking and socioeconomic status).

**Conclusion.** The relationship between neurodevelopmental CNVs and type 2 diabetes mellitus should be examined in independent samples.



## Efficacy of Transcranial Magnetic Stimulation (TMS) on Negative and Cognitive Symptoms in Schizophrenia – a Systematic Review and Meta-Analysis

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**Aims.** Traditional antipsychotic treatment improves positive symptoms in schizophrenia but has little impact on negative and cognitive symptoms. TMS is a non-invasive neuromodulation technique which has been suggested to impact negative and cognitive symptoms of schizophrenia. This systematic review critically appraised the research evaluating the effect of TMS on negative and cognitive symptoms of schizophrenia. Furthermore, we carried out a meta-analysis of randomised controlled trials of the effect of TMS on negative symptoms in schizophrenia.

**Methods.** Systematic review was carried out according to PRISMA guidelines. Cochrane Library, Ovid Medline, Science Direct and PubMed databases were searched for relevant studies using the search terms: "transcranial magnetic stimulation" OR "TMS" OR "repetitive transcranial magnetic stimulation" OR "r-TMS" OR "theta burst stimulation" OR "TBS" AND "negative symptoms" OR "cognitive dysfunction" OR "cognitive impairment" AND "schizophrenia" OR "psychosis". Only randomised controlled trials evaluating the effect of TMS (rTMS or iTBS, intermittent theta burst) on negative and/or cognitive symptoms in schizophrenia were selected. Thirty-three studies were included in the systematic review. The Standardised mean difference (SMD) with 95% confidence interval (CI) was calculated for each study and pooled across studies using an inverse variance random effect model.

**Results.** Sixteen studies demonstrated significant improvement in negative symptoms with a superior effect of TMS compared with sham intervention. Eight studies showed improvement in certain domains of cognition and one study showed a delayed effect on negative symptoms. Studies which showed positive effects on negative symptoms have used similar TMS parameters such as 10 Hz over L-DLPFC (Left dorsolateral prefrontal cortex) except for a few studies. Ten studies reported negative results for negative and/or cognitive symptoms, TMS parameters and duration of treatment used varied among these studies. Overall, SMD for SANS (Scale for Assessment of Negative Symptoms) was 0.89 (95%CI: 0.46–1.32, P < 0.00001) and for PANSS-N (Positive and Negative Syndrome scale-negative) was 0.67 (95%CI: 0.22–1.12, P < 0.00001), both in favour of TMS. The heterogeneity of the included studies was high, $I^2$- 85% for SANS and 92% for the PANSS-N subscale with a small to moderate risk of publication bias.

**Conclusion.** High-frequency rTMS is more effective than sham in improving negative and cognitive symptoms in schizophrenia. Our results suggest the need for well-designed randomised controlled trials with larger sample sizes and standard harmonised cognitive assessments to assess the effect of TMS on negative and cognitive symptoms to provide sufficient evidence for inclusion in routine clinical practice.