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**Aims.** 1) To compare blood brain barrier (BBB) permeability between AD and controls. 2) To examine the relationship between BBB permeability and cognitive decline in AD. 3) To examine the relationship between BBB permeability and peripheral markers of inflammation.

**Methods.** This pilot study combines the use whole brain DCE-MRI, with measures of peripheral inflammation in serum and urine. This is a clinical cohort study with longitudinal and cross-sectional arms, involving n = 15 AD and n = 17 age and gender matched controls. BBB permeability is measured using DCE-MRI and inflammation is measured by comparing serum cytokine and urine neopterin concentrations. AD participants attend three study visits over 12 months; control participants attend two over one week. Urinary neopterin analysis is being conducted in February 2023. The 12 month follow up visits complete in May 2023. Both neopterin and longitudinal cognitive assessment data will be included in the poster presentation in July.

**Results.** AD and control groups were well matched with no significant differences in demographics and multi-morbidity. We measured blood cytokine profiles for IL-6, IL-8, IL-2, IL-4, IL-1b, IL-10, IL13, IL-12p70-, TNF-alpha and INF-gamma. Only INF-Gamma was significantly different; higher in AD vs Controls (mean  $\pm$  SD; 28.758  $\pm$  90.226 AD, 3.773  $\pm$  2.256 Control, P = 0.03). There were no significant differences in markers of neurodegeneration NfL and pTau-181, or vascular markers VCAM1, ICAM1, CRP and SAA between the groups. Ki is being calculated for overall whole brain, white matter, grey matter and hippocampus regions; an interim analysis showed no significant differences between the tissue categories, but analysis is ongoing.

**Conclusion.** There are currently no prognostic biomarkers that accurately predict decline in AD. We believe this pilot study will add to the literature about the utility and feasibility of DCE-MRI to measure BBB permeability. We hope that combining DCE-MRI with blood and urine biomarkers will further our knowledge of the pathophysiology of AD and help to develop minimally invasive biomarkers for identifying patients with AD, including those who are at risk of faster progression.

Abstracts were reviewed by the RCPsych Academic Faculty rather than by the standard *BJPsych Open* peer review process and should not be quoted as peer-reviewed by *BJPsych Open* in any subsequent publication.

### Factors Affecting Compliance for Patients Post First Episode Psychosis

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**Aims.** Psychosis is a symptom of various health disorders characterised by hallucinations and delusions. Medication and appointment compliance amongst sufferers of psychosis remains a major issue. The aim of this study is to explore factors affecting compliance to inform interventions for improving service quality.

**Methods.** A rapid systematic review was conducted on PubMed. Following screening, these papers were extracted and assessed using the Hawker tool. 161 papers were identified with a search criterion and 33 were screened after removing non-English records, paid articles and pre-2015 papers. Abstracts of 33 papers were screened and 9 studies were looked at in detail.

**Results.** 33 papers were identified after establishing a search criterion, from this 9 progressed to the inclusion stage. After using the Hawker tool, the quality of the papers averaged 32.8/36 and several significant factors were identified. The most significant factors that affect compliance are: insight, type of treatment, early signs of psychosis, ethnicity, income and qualitative factors.

**Conclusion.** Various measures can be suggested to help improve medication and appointment adherence for service users. Improving insight through targeted-informative leaflets on medication available at first contact with the Psychiatrist or GP. More frequent medication reviews for select patient groups identified with a higher risk of non-adherence. Greater income assistance through food and travel vouchers or information on how funding can be accessed. Lastly, staff training on increasing insight for psychosis patients delivered through a 1-day course/e-learning module.

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### TMS-EEG in the Investigation of Excitation-Inhibition Imbalance in Psychosis and Cognition

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**Aims.** Transcranial Magnetic Stimulation (TMS) is an in-vivo, non-invasive, and safe method that probes neurophysiological properties associated with cortical glutamatergic (excitatory) and GABAergic (inhibitory) neurotransmission. The combination of TMS with Electroencephalography (EEG) allows us to measure TMS-evoked cortical responses directly from brain activity and it is uniquely placed to elucidate in-vivo cortical Excitatory/Inhibitory processes. Schizophrenia has been associated with Excitation/Inhibition (E/I) imbalance. Cognitive impairment, which is almost ubiquitous in schizophrenia, has been linked with the E/I abnormalities observed in schizophrenia. Among the TMS-EEG evoked potentials (TEPs), the N100 is thought to reflect activation of inhibitory GABA-B cortical circuits and has been associated with attentional processes in healthy individuals, attention deficit hyperactivity disorder (ADHD) and depression. Our aim was to investigate the cortical processes related to the generation of N100 after motor cortex stimulation and its association with attention measures in patients with schizophrenia and healthy controls.

**Methods.** TEPs were recorded following application of 150 TMS pulses at 90% of resting motor threshold on two brain sites, i.e., left primary motor cortex (M1) and dorsolateral prefrontal cortex (DLPFC) in stable patients with schizophrenia (n = 9) and healthy controls (n = 9). Region of Interest (ROI) analysis was performed to calculate the regional average of the N100 peak amplitude in

M1 and DLPFC based on previous literature. Attention was assessed with a Continuous Performance Task (CPT).

**Results.** We found a significant negative correlation between the amplitude of N100 from M1 and CPT score in the patient group ( $\rho = -0.73$ ,  $p = 0.026$ ). The N100 component from DLPFC in patients did not correlate with the CPT score ( $\rho = -0.034$ ,  $p = 0.93$ ), which may suggest regional specificity of M1 inhibitory processes in attention in patients with schizophrenia.

**Conclusion.** N100 is considered to be related to cortical inhibitory processes influenced by cortico-striato-thalamo-cortical loops, with greater cortical inhibitory activity producing a larger N100 amplitude. Our preliminary results suggest association of the GABA-B-ergic TEP N100 with attentional processes in M1 and may represent cortical inhibition beyond motor inhibition in patients with schizophrenia. Overall, TMS-EEG offers the potential to investigate the state and dynamics of E/I imbalance in schizophrenia and cognition.

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## Mental Health and Contraception- Are We Doing Enough? a Study Exploring the Current Practice of Providing Contraceptive Advice by Mental Health Professionals

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**Aims.** Contraception is of increased importance for women with mental health conditions. These women are more likely to experience unplanned pregnancies and are at a higher risk of sexually transmitted diseases. NICE (National Institute for Health and Care Excellence) guidelines recommend discussing the use of contraception with women of childbearing potential with mental health problems. Professionals should discuss how pregnancy and childbirth can impact a mental health problem and how a mental health problem and its treatment might affect the woman, the foetus or the baby. It is, therefore, important for professionals to feel confident when advising these women. In this study, we aim to examine the knowledge, practices and attitudes of mental health professionals in providing contraceptive advice to service users of childbearing potential.

**Methods.** An observational quantitative cross-sectional design study was utilised using a 12-item self-report questionnaire. Mental health professionals meeting the inclusion criteria, employed by Surrey and Borders Partnership NHS Foundation, were invited to complete the anonymised survey electronically. Responses were entered into the survey software (Qualtrics) and quantitative data analysis was conducted.

The study was approved by the North West Manchester Ethics Committee.

This is the first arm of the study, and the second arm focuses on service user experience and is currently in progress.

**Results.** 76 professionals responded, including 24 consultants, 17 trainee doctors, 16 nurses, 8 non-trainee doctors, 7 psychologists, 3 social workers and 1 pharmacist. Of the 76 responses, 31% said they felt extremely/very familiar with the NICE guidelines. 38% of respondents said they were somewhat familiar, and 30% said they were not so/not at all familiar. Regarding confidence in discussing

contraception and family planning 8% responded extremely/very, 28% responded somewhat and 64% responded not so/not at all. 68% said they would like to receive further training. A third of the professionals surveyed said they were not familiar with the NICE guidance. Two-thirds of respondents do not feel confident offering counselling around contraception, planning and spacing pregnancies. Over two-thirds would like further training

**Conclusion.** The survey showed a lack of confidence in offering reproductive advice and the need for training to improve knowledge. We aim to develop training in contraception advice to improve the care provided for female service users.

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## Gestational Factors in Mother – Infant Bonding Impairment Among Women With High Risk Pregnancies

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**Aims.** The present study aimed to study maternal bonding impairment among postpartum women at 6–8 weeks postpartum. We compared the severity of bonding impairment among women with high and low risk pregnancies. We also explored gestational factors related to maternal bonding impairment in these women.

**Methods.** Hundred women at six – eight weeks postpartum, without any significant physical or mental illness, were assessed for bonding failure using the Postpartum Bonding questionnaire. Their antenatal and postnatal records were reviewed to determine various gestational factors and subsequently classify them as high risk or low risk pregnancies. Unpaired t test and multiple regression analysis were used as appropriate for statistical analysis.

**Results.** 7% of the mothers had significant impairment in bonding with their infants. The most prevalent type of bonding impairment was infant focused anxiety (1%) and incipient abuse (1%). Maternal bonding failure ( $d = 0.74$ ) and rejection of infant ( $d = 0.45$ ) were significantly higher in women with high risk pregnancies ( $P < 0.01$ ). Not having a term delivery was the most significant factor associated with impaired maternal bonding ( $\beta = -0.26$ ,  $P = 0.02$ ). Other factors in the model were maternal BMI, mode of delivery, having an emergency caesarean section, presence of congenital malformations in the baby and history of NICU admission. Overall adjusted R-squared for the model was low (0.07), indicating only 7% of variation can be accounted by the gestational factors in the model.

**Conclusion.** Women with high risk pregnancies have higher chances of an impaired bond with their infants. Preterm / post term delivery is the most important risk factor.

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## Effectiveness of rTMS on Suicidal Thoughts in Patients With Depression

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