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Magnetic resonance imaging in first-episode psychosis

The paper by Falkenberg and colleagues[1] on the clinical use of magnetic resonance imaging (MRI) in first-episode psychosis (FEP) is of great interest, but several critical notes need to be made.

First, a stated aim of this study was to investigate whether MRI assessment of people with FEP is feasible in the majority of patients. We agree with the authors that this is indeed the case for the large majority of patients, despite the possibility of some selection bias; however, we wonder why the authors did not provide any further information on why the scanning of 2.5% of patients with FEP in the clinical sample could not be completed. What were the reasons? This information would have been very informative, especially from a clinical perspective.

Second, we do not understand why the authors did not control for gender in the clinical sample, particularly because they use previously collected data. It was shown long ago that gender[2] is an important factor in MRI research in schizophrenia. It has, for instance, been suggested that the significant differences between male and female patients with schizophrenia arise from the interplay of sex hormones, neurodevelopmental and psychosocial sex differences,[3] and it is therefore strange that the authors did not explain why they decided not to control for it.

Third, we found the second hypothesis very unspecific. What do the authors mean exactly by 'a substantial proportion'? It is unclear what percentage of the patients had to show radiological abnormalities in order to prove or reject the hypothesis.

Finally, on what criteria do the authors draw the conclusion that an MRI scan is indicated in the clinical assessment of all patients presenting with FEP? In particular, if one takes into account the cost–benefit analysis that they mention in the introductory section of their paper, this conclusion seems unfounded. The point here is that if one does not apply strict cost–benefit criteria, one can also make the claim for preventive scanning of everyone in society to detect early tumours, encephalitis, and so on.

1 Falkenberg I, Benetti S, Raffin M, Wuyts P, Pettersson-Yeo W, Dazzan P, et al. Clinical utility of magnetic resonance imaging in first-episode psychosis. *Br J Psychiatry* 2017; **211**: 231–7.

2 Nasrallah HA, Schwarzkopf SB, Olson SC, Coffman JA. Gender differences in schizophrenia on MRI brain scans. *Schizophr Bull* 1990; **16**: 205–10.

3 Leung A, Chue P. Sex differences in schizophrenia, a review of the literature. *Acta Psychiatr Scand Suppl* 2000; **401**: 3–38.

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Authors' reply: We welcome the interest in our study on the prevalence of MRI abnormalities in patients with FEP. MRI scanning could not be completed in 2.5% of patients ($n = 6$) in the clinical sample. According to the radiological reports, this was due to patient intolerance. As no further details were given, we are unable to provide any information regarding the reasons for this.

Although we agree with Van den Noort and colleagues that gender effects play an important role in MRI studies in patients with schizophrenia, we did not control for gender effects because our study did not reveal any gender differences in terms of the prevalence of radiological abnormalities, as we stated in the Results section.

As previous estimates of the prevalence of radiological abnormalities in patients with psychosis have mainly been based on studies with smaller sample sizes, using heterogeneous samples of patients recruited to research studies and heterogeneous imaging methods, the true prevalence of such abnormalities in patients with FEP is unclear. Because we adopted an exploratory approach to estimate the prevalence of radiological abnormalities, no specific rate was hypothesised. The implications of our findings for making decisions, particularly regarding the routine use of MRI in FEP, thus depend on the perspectives adopted.

As our study was not designed to examine cost–benefit analyses, we cannot draw any definite conclusions about health economic considerations. However, failing to detect radiological abnormalities at an early stage can result in the patient not receiving the appropriate medical treatment for an underlying 'organic' condition, which may have serious consequences for that individual. We therefore think that it is prudent to scan patients with FEP in order to avoid this scenario, even if it is relatively uncommon.

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Hallucinations in BPD: more prevalent than community sample study suggests?

The conclusion reached by Kelleher & DeVylder[1] that hallucinations are no more prevalent in borderline personality disorder (BPD) than in depression and anxiety was unexpected and raises some interesting points. The prevalence of BPD in the community population they studied is low (0.4%) compared with previously published prevalence rates of between 0.7 and 2.7%.[2] This suggests that the Adult Psychiatric Morbidity Survey may lack sensitivity for detecting BPD in a community sample (57% response rate; possible self-selection bias). Similarly, the correlation between hallucinations and BPD in this study is considerably lower than clinical experience and research estimates would suggest. Schroeder

et al[3] reported rates between 20 and 50% in a review of findings on the prevalence and clinical management of psychotic symptoms, particularly hallucinations, in BPD. The disparity between these findings may be explained by the use of community versus clinical sampling, since community sampling may underreport severe presentations of BPD, which in turn are more likely to be accompanied by hallucinations.[4]

Well-conducted studies have demonstrated that hallucinations in BPD are highly correlated with the experience of childhood trauma, including childhood sexual abuse.[3] Childhood trauma is not as prevalent in patients with depression and anxiety. Although a similar prevalence of hallucinations in BPD, depression and anxiety, as reported by Kelleher & DeVylder, could suggest that previous prevalence estimates in BPD may be compounded by these co-occurring disorders,[5] we regard this as unlikely.

The probable association between hallucinations and severity of BPD presentation[4] suggests that hallucinations might respond well to effective treatment. This is our clinical experience, supported by a small pilot study we conducted involving 38 women diagnosed with BPD (aged 18–56 years at intake). The presence and nature of hallucinations was recorded using the Psychotic Symptom Rating Scale (PSYRATS). At intake, 34% of participants reported hallucinations (PSYRATS score: 15.30 s.d. = 17.22); 50% also reported a history of childhood sexual abuse (Childhood Trauma Questionnaire). After 12 months of individual psychotherapy using a common factors approach, the PSYRATS score was 7.00 (s.d. = 13.93; $P = 0.04$). This correlated with a reduction in the number of BPD symptoms assessed using the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II: intake: 7.00 (s.d. = 1.63); 12 months: 4.60 (s.d. = 1.84); $P = 0.01$). These preliminary data suggest, in agreement with previous findings,[4] that hallucinations may positively correlate with BPD severity. Our findings also suggest that treating BPD using appropriate psychotherapy reduces the experience of hallucinations.

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Author's reply: Thank you to Beatson and colleagues for their interest in our work.[1] There are, of course, as they suggest, differences between mental disorders in the population and mental disorders that we see in the clinic – this is a result of selection bias in clinical samples, termed Berkson's bias, which we suggested in our paper might be a reason for differences between population data and clinic data.

Research suggests that 20–50% of clinic samples with borderline personality disorder (BPD) report hallucinations.[2] In our population sample, the prevalence of hallucinations in individuals with BPD was 14%. When you consider recent research findings on psychotic symptoms, the difference in prevalence of hallucinations in community *v.* clinical samples is not surprising: we and others have shown that the presence of psychotic (or attenuated psychotic) symptoms (specifically, hallucinations and delusional beliefs) in non-psychotic disorders is associated with more severe psychopathology on a number of counts,[3,4] including number of comorbid disorders, cognitive impairment, functional impairment, suicidality and poor treatment response. That is, the prevalence of hallucinations increases as the severity of psychopathology increases, as do (crucially) the odds of presenting to clinical services. This provides an optimal environment for breeding Berkson's bias.

The above findings, it should be noted, are in no way unique to BPD. Clinical studies that systematically assess for hallucinations find much higher prevalences than do community studies. Looking at a clinic sample of people with major depressive disorder, for example, Chambers *et al* found that 40% had psychotic symptoms when systematically assessed for them.[5] Similarly, we found that 46% of a clinic sample of adolescents (with a wide variety of mental disorders) had one or more psychotic symptom when systematically assessed (the most common was hallucinations).[3]

An interesting point is that clinical anecdote would suggest that hallucinations are more common in BPD than in many other mental disorders. Bearing in mind that our study was, to our knowledge, the first to systematically compare across BPD and other mental disorders, and is awaiting replication studies, we must question why this clinical belief is common. It could be that individuals with BPD are more likely to spontaneously report experiences of hallucinations in clinic (without being specifically asked about them) than is the case, for example, for individuals with anxiety disorders. However, the results of this study demonstrate that individuals with anxiety disorders do, in fact, report hallucinations as frequently as people with BPD when they are specifically asked about them – the key part of that sentence being 'when they are specifically asked about them'; perhaps we are not as systematic as we could be in asking all patients about psychotic phenomena. It is, however, important to point out that our findings relate to community samples; it may, in fact, be the case that hallucinations are more prevalent in clinical samples with BPD than in clinical samples with other disorders. We plan to investigate this and look forward to sharing the results.

1 Kelleher I, DeVylder JE. Hallucinations in borderline personality disorder and common mental disorders. *Br J Psychiatry* 2017; **210**: 230–1.

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