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Letter to the Editor

Early detection of psychosis: positive effects on 5-year outcome?

Early detection of psychosis is a promising area of research and practice unfortunately prone to exaggeration. A recent editorial by McGorry (2011) proposed that Larsen *et al*.'s (2011) paper in *Psychological Medicine* constitutes 'solid evidence' that reducing duration of untreated psychosis (DUP) improves functional outcome and negative symptoms, contrasting with recent evidence that early intervention shows initial improvement unsustained at 5 years (Bertelsen *et al*. 2008).

Scrutiny suggests Larsen *et al*. (2011) demonstrate equivalent or worse 5-year outcomes. They compared geographic regions on outcomes in first-episode psychosis, where one region implemented public health measures that reduced DUP from 16 weeks to 4 weeks.

A primary outcome in early intervention, hospitalization (Marshall & Rathbone, 2011), is worse in the early detection (ED) sample over 5 years (30.8 to 45.3 weeks). Larsen *et al*. (2011) suggest that hospitalization is not a valid dependent variable because it is policy driven rather than psychopathology driven. Having identified this confounding factor which increased hospitalization rates by 50%, they neglect its impact on other measures; they identify a severe methodological flaw, use it to justify discarding the largest effect size in their study, which contradicts their main hypotheses, and ignore it in relation to results consistent with their hypotheses. They also refrain from describing this policy factor which is much more effective in reducing hospitalization than any clinical or organizational change yet reported.

Larsen *et al*. (2011) misuse the mixed-effects model, an efficient technique in datasets with missing variables which may not be applicable when missing variables are associated with outcomes as they are in this sample (Gueorguieva & Krystal, 2004). Moreover, they choose a linear model, then discard the baseline data because they make the data non-linear! This eliminates the majority of the variance to be explained. Their analysis of the Positive and Negative Syndrome Scale (PANSS) – negative subscale discards the five-point change over the first 3 months in the no-ED group, and retains the one-point change over 5 years. It also obscures the decreased difference between the groups over the 5 years (five points at baseline, two points at 5 years). One great strength of mixed-effects models is their capacity to incorporate non-linear models to more efficiently explain the variance of the dataset (Gueorguieva & Krystal, 2004). Larsen *et al*. (2011) appear to have used an inappropriate model, and to justify discarding the largest part of the effect to be explained to allow use of this model rather than using the same technique with a non-linear model to analyse the entire dataset.

Larsen *et al*. (2011) also appear to misinterpret their mixed-effects model, which demonstrates a significant difference in the PANSS scale scores over repeated measures between 3 months and 5 years. The model explains variance across all time periods, not any one point in time. Hypotheses about particular time points require additional tests, provided as point comparisons. These demonstrate no significant differences between groups at 5 years for PANSS positive, negative, and excitement components; Larsen *et al*. (2011) contradict their own results when they report a significant difference at 5 years on the negative component.

Larsen *et al*.'s (2011) design may have limited face validity. While median DUP is less in the ED group, they acknowledge that not all ED patients have reduced DUP. Increased effort to identify people with psychosis appears likely to identify people who would otherwise have been undetected. One possible such patient in the ED group had a DUP of 23 years. Assuming people with more severe psychosis are more likely to be detected by normal mechanisms, increased effort to detect psychosis appears likely to detect mainly people with less severe psychosis, creating a selection bias. Less severe ED pathology at baseline may therefore be a combination of reduced pathology due to early detection, and sampling from a population with less severe pathology. This would explain the pattern of change in symptom scores, with a rapid initial decrease in scores followed by a stable difference over time.

In conclusion, referring to Larsen *et al*. (2011) as solid evidence for improved outcomes with early detection of psychosis relies on uncritical acceptance of the authors' conclusions. The reported results demonstrate that reducing DUP does not improve 5-year outcomes on the positive or negative components of the PANSS, and may significantly increase the rate of hospitalization.

Declaration of Interest

None.

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