RUNNING HEAD: SELF-HARM IN ULTRA HIGH RISK

Are People at Risk of Psychosis also At Risk of Suicide and Self-Harm? A Systematic Review and Meta-Analysis

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Abstract

Background: Suicide and self-harm are prevalent in individuals diagnosed with psychotic disorders. However, less is known about the level of self-injurious thinking and behaviour in those individuals deemed to be at Ultra-High Risk (UHR) of developing psychosis, despite growing clinical interest in this population. The current review provides a synthesis of the extant literature concerning the prevalence of self-harm and suicidality in the UHR population, and the predictors and correlates associated with these events.

Method: A search of electronic databases was undertaken by two independent reviewers. A meta-analysis of prevalence was undertaken for self-harm, suicidal ideation and behaviour. A narrative review was also undertaken of analyses examining predictors and correlates of self-harm and suicidality.

Results: Twenty-one eligible studies were identified. The meta-analyses suggested a high prevalence of recent suicidal ideation (66%), lifetime self-harm (49%) and lifetime suicide attempts (18%). Co-morbid psychiatric problems, mood variability and a family history of psychiatric problems were amongst the factors associated with self-harm and suicide risk.

Conclusions: Results suggest that self-harm and suicidality are highly prevalent in the UHR population, with rates similar to those observed in samples with diagnosed psychotic disorders. Appropriate monitoring and managing of suicide risk will be important for services working with the UHR population. Further research in this area is urgently needed considering the high rates identified. **PROSPERO Registration: CRD42014007549**

Keywords: Psychosis, Ultra High Risk, Suicide, Self-Harm, Meta-analysis, Prevalence

Introduction

It has been established that individuals receiving a diagnosis of a psychotic disorder (e.g., schizophrenia) experience high rates of suicidal phenomenon, including completed suicide (life time prevalence = 4.9% - 6.6%; Nordentoft *et al.*, 2011, Palmer *et al.*, 2005), suicide attempt (lifetime prevalence = 30.2%; Baca-Garcia *et al.*, 2005, Radomsky *et al.*, 1999) and ideation (15-day prevalence = 20.4%; Kontaxakis *et al.*, 2004, Young *et al.*, 1998). Self-harm, which may or may not include any intent to die, is also pronounced in this population (lifetime prevalence = 29.9%; Mork *et al.*, 2013). Studies examining the earlier stages of psychotic illness suggest that suicidality may be particularly pronounced in the early stages of the disorder (Palmer *et al.*, 2005). Suicide attempts occurring during the First Episode of Psychosis (FEP), for example, make up around half of all the suicide attempts associated with those with psychosis (Nielssen and Large, 2009). Understanding such periods of risk is vital for services to effectively manage suicide risk and self-injury in this population.

Recently there has been increasing focus on the period preceding the initial transition into psychosis. This prodromal stage, referred to as Ultra-High Risk (UHR; also called the At-Risk Mental State) is typically characterised by a triad of putative and overlapping syndromes, including either the presence of attenuated positive psychotic symptoms, short-term psychotic symptoms, or a decline in general functioning combined with a parental history of psychotic illness suggesting a genetic vulnerability to the disorder (Correll *et al.*, 2010, Fusar-Poli *et al.*, 2013a). In addition to UHR, the 'basic symptoms' criteria describes more subtle cognitive and perceptual abnormalities (Schultze-Lutter, 2009; Correll *et al.*, 2010), and may precede the development of the more pronounced UHR syndromes (Rausch *et al.*, 2013). The focus on this UHR period arises from the possibility of early intervention and prevention of psychosis. Initial evidence already supports the efficacy of treatments

delivered to this UHR group in preventing subsequent transition to psychosis (Hutton and Taylor, 2014, Stafford *et al.*, 2013).

Whilst there has been much focus on the risk of transition to psychosis within the UHR population, there is currently no clear picture concerning the level of suicide risk and self-injury within this group. This is an issue as understanding the size of the problem posed by self-injury in this population and understanding the risk factors associated with this is important in enabling services to best organise their resources to support the well-being of UHR individuals. Notably, whilst transition rates appear low in this group (Ruhrman et al., 2012) this does not negate the possibility of additional clinical need, such as high risk of suicide.

UHR individuals may be considered free of many of the challenges faced by those in the FEP population, including traumatic experiences of symptoms and hospitalisation, and the heightened stigma tied to diagnosis (Dinos *et al.*, 2004, Jackson *et al.*, 2004, Tarrier *et al.*, 2007). However, risk factors for suicidality (Hawton et al., 2005) are apparent in those in the UHR population including fears around what their experiences mean and concerns of "going mad", and co-morbid mood and substance use disorders (Ben-David et al., 2013; Byrne and Morrison, 2010, Fusar-Poli *et al.*, 2013c).

The primary aim of the current study is to provide a systematic review and meta-analysis, where appropriate, of the prevalence of suicidality and self-harm within those judged to be in the UHR group. A secondary aim is to provide a systematic review of the risk factors, predictors and correlates of suicidality and self-harm in this population.

Method

Search Strategy

The electronic databases PsycInfo, Embase and Medline were searched up to October 2013, using the following key words: ("at risk" OR CAARMS OR prodromal OR ARMS OR

"ultra-high risk" OR UHR OR prevention) AND (psychosis OR schizo*) AND (self-harm OR suicid* OR self-injury OR self-mutilation). Screening was undertaken independently by two authors (PJT, LW). First, abstracts and titles were screened, followed by the full text of remaining articles. Conference abstracts and theses that were identified through the database search were also followed up. Presenters were contacted regarding the eligibility of research related to conference abstracts, whether published or unpublished. All corresponding authors of selected articles were contacted regarding any additional published or unpublished work that had been involved in that may be eligible for the review. References within selected articles were hand-searched for further eligible articles. Finally, recent reviews concerning the UHR population, including Fusar-Poli and colleagues (2012, 2013a), Hutton & Taylor (2014), and Stafford and colleagues (2013) were hand-searched for eligible studies. Figure 1 presents a flow-chart outlining the search process. Twenty-one eligible articles were eventually identified.

FIGURE 1 ABOUT HERE

Inclusion & Exclusion Criteria

Inclusion criteria were that studies had to be a) English-language; b) include individuals' classified as being UHR as determined via a validated tool designed for this purpose (e.g., the Comprehensive Assessment of At Risk Mental States; Yung *et al.*, 2005); c) include an assessment of either self-harm or suicidality; d) provide, as a minimum, descriptive statistics relating to the measure of suicidality/self-harm. Exclusion criteria included a) a history of frank psychotic episodes; b) previous extended use of anti-psychotic medication; c) a diagnosis of an intellectual disability or Autistic Spectrum Disorder (ASD).

For the purposes of this review we define the UHR state based upon a definition adapted from Fusar-Poli and colleagues (2012), requiring i) individuals are aged between 8 and 40 years and ii) the presence of one or more of the following: attenuated psychotic

symptoms (APS), brief limited intermittent psychotic episode (BLIP), and trait vulnerability (e.g., genetic risk) plus a marked decline in psychosocial functioning.

Suicidal ideation was broadly defined as some form of explicit cognition relating to a desire to die, to permanently cease consciousness or to commit suicide. Likewise, we defined suicide attempts as any self-injurious behaviour (irrespective of lethality) committed with at least the partial aim of ending one's life, although ambivalence and uncertainty is common (Freedenthal, 2007). Definitions of self-harm are more problematic as they vary, with some emphasising a lack of suicidal intent as being necessary in defining self-harm (Laye-Gindhu and Schonert-Reichl, 2005), whereas others do not specify this criterion (Royal College of Psychiatrists., 2010). Again, we adopted a broad definition of self-harm as an act of non-accidental self-injurious behaviour irrespective of intent. The above definition may introduce uncertainty in regards to whether an act is described as self-harm or a suicide attempt. We managed this by adopting the term used by the study authors, unless there was a clear indication this not appropriate such as where an act is described as a suicide attempt but where it is noted that there was no intent to die. The term suicidality is used to describe the full continuum of suicidal phenomena (from ideation to behaviour).

Data Extraction

Extraction of study details was undertaken independently by two authors (PJT, PH) using a pre-specified data-collection form, with disagreements resolved through discussion and arbitration by the third author (LW). In eight cases clarifying information was obtained from corresponding authors. This led to the correction of typographical errors and the receipt of additional data. Consequently, reported details may differ from those in the original papers in some instances.

Proportions and related statistics were estimated from the complete dataset with missing cases excluded. It was felt that the likelihood of large proportions for some outcomes

(e.g., suicidal ideation) would make basic imputation methods, such as assuming all non-completers did not experience the outcome, unrealistic. More complex imputation strategies were also not an option as they would require access to the original datasets in order to generate probable estimates for missing values.

Methodological Quality

Methodological quality of studies was assessed independently by two authors (PJT, PH) using a tool for assessing the quality of observational studies adapted from the Agency for Healthcare Research and Quality (Williams *et al.*, 2010). This measure required ratings of whether studies met, did not meet or partially met quality criteria in a number of key methodological areas. A copy of the adapted measure is displayed in Appendix I. Quality ratings made by the two authors were combined, with disagreements resolved through arbitration by the third author (LW).

Data Synthesis and Analysis

We employed meta-analysis where there were three or more studies contributing suitable data. Meta-analyses of prevalence were undertaken for binary outcomes. Proportions were subjected to a double arcsine transformation to stabilise the variance, following the recommendations of Barendreqt, Doi, Norman and Vos (2013). These analyses were undertaken using the MetaXL software (http://www.epigear.com/index_files/metaxl.html). Meta-analyses of continuous means were undertaken using the DerSimonian and Laird (1986) inverse variance method in STATA version 9.2 (StataCorp, 2007). A random-effects model was used so as to distinguish true heterogeneity in prevalence (due to differences in measurement, sample, etc.) from sampling error.

Results

Study Characteristics

Study characteristics are outlined in Table 1. Studies were predominantly cross-sectional, although a number of longitudinal designs were present ($k = 9$). The majority of studies took place in the UK, with the remainder occurring in Western societies (Australia, USA, Finland and Italy) with one exception (South Korea; Kang *et al.*, 2012). The CAARMS was the most common tool used to determine UHR status.

TABLE 1 ABOUT HERE

Study Quality

The assessment of study methodological quality is presented in Table 2. The most common methodological problems related to the measurement of outcome, justification of sample size, blinding of researchers and control of confounders in analyses. Suicidality and self-harm was often determined with single self-report items or continuous subscale measures of suicidality, such as from the CAARMS or Brief Psychiatric Rating Scale (BPRS). These scales were not developed as stand-alone measures, may lack reliability and may provide a limited coverage of suicidal phenomena (Gratz, 2001). This is problematic as factors such as the ambivalence and uncertainty surround suicidal phenomena can complicate assessment (Freedenthal, 2007). However, there is support for the predictive and convergent validity of the Beck Depression Inventory-II (BDI-II; Beck *et al.*, 1996) suicidal ideation item (Brown, 2000), which was commonly used. Specifically this item has demonstrated a large correlation with scores on the Beck Scale for Suicidal Ideation (Beck & Steer, 1991) and was found to significantly predict the likelihood of patients committing suicide (Brown, 2000) .No studies justified their sample size in terms of power calculations. This may mean that analyses focussing on predictors and correlates of suicidality and self-harm may have been underpowered in some cases, leading to inflated Type II error rates. However, it is important to recognise that often self-harm or suicidality were not primary outcomes of the study. Attempts at blinding researchers or interviewers to participants' UHR status were rarely

undertaken. This may introduce bias where researchers pre-existing assumptions about UHR individuals influence ratings. In a single-arm study, blinding may still be possible, for example by bringing in external assessors who are blind to participants' clinical status. Four of the seven studies involving group comparisons did not attempt to match UHR individuals and those in comparison groups on socio-demographic variables (e.g., age, gender, ethnicity, socio-economic status) and attempts were not made, where analyses were undertaken, to adjust for group differences statistically. Hence confounding variables may have biased group comparisons. Confounding variables were also rarely considered in analyses looking at predictors and correlates of self-harm/suicidality (for exception, see Palmier-Claus *et al.*, 2012).

TABLE 2 ABOUT HERE

Prevalence of Self-Harm and Suicidality

The results of the meta-analysis of prevalence for binary self-harm and suicidality outcomes are displayed as forest plots in Figure 2. Too few studies contribute to any one outcome to allow exploration of heterogeneity via techniques such as meta-regression (Borenstein *et al.*, 2009). Instead, we undertook sensitivity analyses to further explore the role of individual studies in contributing to heterogeneity.

FIGURE 2 ABOUT HERE

Suicidal ideation. For recent (two week) suicidal ideation the meta-analysis suggested a prevalence of 66.08% (60.57 – 71.39), $N = 402$, $Q = 3.47$, $p = .33$, $I^2 = 13.59$. All studies providing data on recent suicidal ideation used the BDI-II suicide item, dichotomised to capture the presence or absence of suicidal ideation. A further study used the BDI-I, which only assesses a one-week period, and so as expected observed a slightly lower prevalence of suicidal ideation of 30.00% (n = 6/20) (DeVylder *et al.*, 2012).

Only three studies contributed data to the meta-analysis of lifetime suicidal ideation, and substantial heterogeneity was present, with the meta-analysis suggesting a prevalence of 66.25% (28.76 – 95.78), $N = 60$, $Q = 14.76$, $p < .01$, $I^2 = 86.45$. Notably, this heterogeneity was largely attributable to a single study (Adlard and Yung, 1997). Removing this study reduced the heterogeneity to non-significant levels, $Q = 0.71$, $p = .40$, $I^2 = 0.00$, and led to a smaller prevalence estimate of 48.61% (32.21 - 65.16).

Self-harm. The meta-analysis of lifetime self-harm indicated a prevalence of 49.38% (33.08 – 65.74), $N = 279$, $Q = 14.96$, $p < .01$, $I^2 = 79.94$, but was affected by substantial heterogeneity. The heterogeneity again appeared attributable to a single study (Phillips *et al.*, 2009). With this study excluded: 41.72% (31.70 – 52.10), $Q = 0.58$, $p = .75$, $I^2 = 0.00$. It is unclear why rates of self-harm were higher in this study than the other three. Notably, the estimated prevalence is similar regardless of whether this study is included or excluded from the analysis. In regards to more recent self-harm, Adlard & Yung (1997) report that 32.00% (n = 8/25) of their sample engaged in self-harm in the past year, whilst Welsh and Tiffin (2013) report that 53.33% (n = 16/30) of their sample engaged in self-harm in the past six months.

Suicide attempt. The meta-analysis of lifetime suicide attempt indicated a prevalence of 17.74% (6.67 – 32.24), $N = 345$, $Q = 28.27$, $p < .01$, $I^2 = 85.85$, but was affected by substantial heterogeneity. A large degree of this heterogeneity was attributable to the high rate of reported suicide attempts in one study (47.06%; n = 16/34; Hutton *et al.*, 2011). In contrast the prevalence reported in the other four studies ranged from 6.67% to 28.00%. The exclusion of this study led to a smaller prevalence estimate and more moderate levels of heterogeneity, 11.64% (06.16 – 18.50), $Q = 6.04$, $p = .11$, $I^2 = 50.35$. Two studies also assessed the presence of suicide attempts within the past six months, with prevalence rates reported at 30.00% (n = 9/30; Welsh and Tiffin, 2013) and 0.00% (n = 0/15; Kang *et al.*,

2012), whilst Adlard & Yung (1997) report a prevalence of 24.00% (n = 6/25) for the previous 12 months. There were only two studies that assessed suicide attempts prospectively, suggesting prevalence rates of 5.26% over 12 months (n = 3/57; Preti *et al.*, 2009) and 3.70% over 24 months follow-up (n = 1/27; Welsh and Tiffin, 2013). Notably, in these prospective studies the participants may have been receiving treatment that could have attenuated rates.

   Completed suicide. There was little available data concerning completed suicide, with few prospective designs that would allow the assessment of this outcome. No completed suicides were reported for 1 year (n = 57 and n = 16), 2 year (n =31), 3 year (n = 10) and 10 year (n = 290) follow-up periods but samples were often small (Fusar-Poli *et al.*, 2013b, Morrison *et al.*, 2007, Morrison *et al.*, 2012, Morrison *et al.*, 2004, Preti *et al.*, 2009). However, four individuals died of suicide (1.25%, n = 4/320) within a variable follow-up of UHR individuals, ranging from 2.4 to 14.9 years (Nelson *et al.*, 2013), and a further death (0.55%, n = 1/182) by suicide was reported within a 12 month follow-up period in a pan-European study (Velthorst *et al.*, 2010). The low base rate of completed suicide means that stable estimates are unlikely to be obtained even over a follow-up period of several years (Goldney, 2005).

   Suicidality. Three studies reported continuous mean data for the CAARMS suicidality subscale, a seven point subscale capturing suicidal thinking and self-injurious behaviour. Meta-analysis suggested an aggregate mean score of 2.27 (2.12 – 2.42), $N = 537$, $Q = 2.39$, $p = .30$, $I^2 = 16.30$ with minimal heterogeneity. A score of 2 on the CAARMS corresponds to occasional, passive suicidal ideation (e.g., tired of living) or thoughts of self-harm but no active suicidal ideation plans or behaviour. This result is perhaps inconsistent with the high prevalence of suicidal ideation observed with the BDI-II, and may reflect the interview-based nature of the CAARMS, which could inhibit disclosure (Kaplan *et al.*, 1994).

Group Comparisons

Seven studies allowed for comparisons between UHR and other clinical or non-clinical control groups. As these comparisons varied by outcome and comparison group meta-analyses were not appropriate. Instead, the results of these comparisons are provided on a study-by-study basis in Table 3. Across the studies suicidal ideation was typically greater in the UHR groups compared to non-clinical controls (including help-seeking youths who did not meet UHR status). In contrast, there was little evidence of a significant difference between UHR and non-clinical controls for self-harm and suicide attempt, although the small numbers of attempts may have limited power in these analyses. There was also little evidence of greater levels of suicidality in UHR individuals compared to other clinical groups, including FEP and young people on the depression spectrum (see exceptions in Adlard and Yung, 1997).

TABLE 3 ABOUT HERE

Correlates and Predictors of Self-Harm and Suicidality

Demographic variables. Two studies reporting on cross-sectional relationships between demographic variables and suicidality or suicide attempts did not identify any relationships with occupation, age, gender, ethnicity, education or marital status (Demjaha *et al.*, 2012, Preti *et al.*, 2009), despite relatively large samples ($n = 81 - 122$).

Previous suicide attempts. Previous UHR suicide attempters were more likely to make subsequent suicide attempts over a 12 month period (2/4) than those without this history (1/53; Preti *et al.*, 2009).

Co-morbidity, functioning and symptoms. Greater psychiatric co-morbidity was typically associated with greater suicidality. Obsessive-Compulsive symptom severity was associated with both suicidality and suicidal ideation across two US samples (DeVylder *et al.*, 2012, Niendama *et al.*, 2008). Substance abuse was associated with previous suicide

attempts in an Italian sample of UHR individuals (OR = 97.33 [8.18 – 1158.72], p < .01; Preti *et al.*, 2009). Less problematic substance use was not related to previous suicide attempts. Studies employing continuous subscales measures of suicidality, such as from the CAARMS or BPRS, reported correlations with poorer global and social functioning and health (r = .28; Demjaha *et al.*, 2012, Preti *et al.*, 2009).

Suicide attempters had a greater risk of suicide attempts and psychiatric history in the family than non-attempters, but no significant increase in suicidality was observed for individuals with past trauma or a longer duration of untreated illness (Preti *et al.*, 2009). This study observed a small positive correlation between suicidality and symptoms when the latter were assessed with a screening instrument (the Early Recognition Inventory Retrospective Assessment of Symptoms checklist; Spearman's rho = .25; Rausch *et al.*, 2013). Although this relationship did not reach significance (*p* = .06) when psychotic symptoms were measured using the BPRS, a similar effect size was observed (Spearman's rho = .21).

Preti and colleagues (2009) found that those who showed an improvement in symptoms over the follow-up period also experienced a decrease in suicidality, but there was no comparison against those who did not experience symptomatic improvement. Psychopathology at baseline did not predict suicide attempts at 12-month follow-up.

Treatment. In an observational study, DeVylder and colleagues (2012) found no relationship between suicidal ideation and medication use, though the details of this analysis were not clearly reported. Preti and colleagues (2009) did not observe a relationship between prescribed medication at baseline and suicide attempts at 12-month follow-up.

Emotion and cognition. Depressive symptoms and greater risk of comorbid affective disorder were associated with increased suicidality in two studies (Fusar-Poli *et al.*, 2013c, Pyle *et al.*, in press). In a third study**,** the CAARMS suicidality subscale was positively associated with greater daily instability in negative affect, though not positive affect, whilst

controlling for the average intensity of affect. This study employed an experience-sampling methodology to estimate daily affect intensity and instability across a six-day period (Palmier-Claus *et al.*, 2012).

One study found that greater endorsement of negative appraisals of psychosis-related experiences (e.g., describing experiences as frightening) and less perceived social acceptance of experiences (e.g., feeling unable to talk to others about these experiences) had small correlations ($r = .24$) with suicidality (Pyle *et al.*, in press). Notably the measure of social acceptance of experienced had low internal reliability ($\alpha = .52$) that may have attenuated correlations. Beliefs about psychosis at baseline did not appear to predict changes in scores on the CAARMS suicidality scale over a six month period, however.

Transition to psychosis. One study with a 24-month follow-up period found baseline scores on the CAARMS suicidality subscale were unrelated to the rate of transition to psychosis (Hazard ratio 1.06 [0.83 – 1.35], $p = 0.662$), defined as the emergence of frank psychotic symptoms that did not resolve within one week (Demjaha *et al.*, 2012).

Discussion

The results of the meta-analyses suggested that suicidal and self-injurious thinking and behaviour were highly prevalent in the UHR population, particularly with regards to suicidal ideation and self-harm. Approximately half of individuals reported acts of self-harm in their lifetime, and over half reported both recent and lifetime suicidal ideation. Group comparisons indicated that suicidal ideation is more prevalent in UHR individuals than healthy controls, although differences were less clear for self-injurious behaviour.

The substantial rates of suicidality and self-harm observed in the UHR samples are similar to the high prevalence of suicidality reported in FEP samples (Barrett *et al.*, 2010a, Barrett *et al.*, 2010b, Challis *et al.*, 2013, Nordentoft, 2002, Upthegrove *et al.*, 2010). Thus, the high levels of suicidality in the FEP population may precede the onset of frank diagnosis.

Whilst the UHR population might be expected to be protected from some of the challenges associated with a first-episode of psychosis, such as heightened psychotic symptoms and distressing treatment experiences (e.g., hospitalisation), they may still struggle with making sense of their unusual experiences, fears of stigma, and co-morbid difficulties (Byrne and Morrison, 2010, Fusar-Poli *et al.*, 2013c). The high risk of self-injury observed in this study may also extend beyond UHR as psychotic symptoms occurring amongst adolescents in the general population are predictive of suicide risk (Kelleher *et al.*, 2012).

The finding that co-morbid mood and substance use problems and previous suicidality were risk factors for self-injurious thinking and behaviour also mirrors similar findings in those diagnosed with psychotic disorders (Challis *et al.*, 2013, Haw *et al.*, 2005, Hawton *et al.*, 2005). Other risk factors identified in the current review were unstable negative affect and family history of psychiatric problems. Findings were mixed, however, for negative beliefs about psychosis and symptom severity (replicating findings in FEP; Challis *et al.,* 2013) and further prospective studies are required. Another risk factor identified in FEP populations, duration of untreated illness, was not supported here (Challis *et al.*, 2013).

Suicidality and self-harm were rarely the primary focus of the included studies (with some exceptions, e.g., Palmier-Claus *et al.*, 2012, Preti *et al.*, 2009) and measures were often single items and subscales taken from other instruments. Future research would benefit from the use of validated, dedicated measures of self-harm and suicidal phenomena. Precise definitions for self-injurious acts were rarely provided by studies, and this can be problematic considering the wide variety of behaviours that could potentially be classified as self-harm. Classification systems of nomenclature for defining self-injurious thinking and behaviour have been developed (Silverman *et al.*, 2010) and could be drawn upon by future researchers. Where rates of self-injurious behaviour and thinking are assessed retrospectively across the lifetime it is also unclear exactly when the event occurred, and whether it coincided with or

preceded the emergence of the UHR state. Longitudinal cohort studies are required to better understand the temporal pattern of suicidality and self-harm in this population.

Studies were too few to allow any systematic exploration of heterogeneity, such as via techniques like meta-regression, or publication bias. As more studies emerge focussing on suicidality and self-harm within the UHR population, it will be possible to explore in more depth heterogeneity and publication bias. The total N for the analyses were, however, large for this area of research, and even with the removal of outlying studies the prevalence rates remained high.

Our findings indicate a concerning prevalence of self-injurious thinking and behaviour in the UHR population and suggest that further research is urgently needed in this area. The results support the routine monitoring of risk of self-injurious thinking and behaviour by clinicians working with those at risk of developing psychosis. Likewise, clinicians working in Accident and Emergency settings may benefit from a greater awareness of UHR criteria when evaluating the mental state of those presenting with self-harm. Our findings also suggest a need to develop acceptable and effective treatments to reduce suicide risk in this group. Although cognitive behavioural therapy (CBT) reduces the risk of developing psychosis (Hutton & Taylor, 2014), whether it is effective for reducing suicidal ideation in this group will remain unclear until trials start reporting data on this outcome. Dialectical behaviour therapy (DBT) has demonstrated efficacy in reducing self-injurious behaviour in other populations (Feigenbaum, 2007), and might be usefully adapted and tested for the psychosis at-risk group.

Recent estimates of rates of transition into psychosis for those in the UHR population have been lower than earlier estimates leading to a debate over whether specialised clinical services should be created for this population (Ruhrmann *et al.*, 2012). However, recent work has demonstrated a high level of comorbid difficulties and need for care in the UHR group

(Fusar-Poli et al., 2014). Our review supports the view that, irrespective of the risk of developing frank psychosis, many in this group may still benefit from some form of service intervention.

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Conflict of Interest

None to declare.

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