



## Research report

# Risk factors for suicide among 34,671 patients with psychotic and non-psychotic severe depression



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## ABSTRACT

**Background:** Severe unipolar depression is associated with increased risk of suicide, but it remains unknown whether the same risk factors are present in the non-psychotic (non-PD) and psychotic (PD) subtypes respectively. Therefore, this study aimed to identify risk factors for suicide in non-PD and PD separately, and to investigate if the presence of psychotic symptoms is an independent risk factor for suicide in severe depression.

**Methods:** This register-based, nationwide, historical prospective cohort study used logistic regression analyses to ascertain risk factors for suicide among all adults diagnosed with severe depression at Danish psychiatric hospitals between January 1, 1994 and December 31, 2010. The risk for suicide was expressed as adjusted odds ratios (AOR).

**Results:** A total of 34,671 individuals with severe depression (non-PD:  $n=26,106$  and PD:  $n=12,101$ ) were included in the study. Of these, 755 completed suicide during follow up. PD was not found to be an independent risk factor for suicide in severe depression (AOR=0.97 [0.83–1.15]). Older age (non-PD AOR=1.05 [per year], PD AOR=1.04 [per year]), male sex (non-PD AOR=1.89, PD AOR=1.98), and a previous incident of self-harm (non-PD AOR=5.02, PD AOR=5.17) were significant risk factors for both groups.

**Limitations:** As the study population was comprised only of patients with contact to psychiatric hospitals, the results cannot be extrapolated to the primary care setting.

**Conclusion:** The following risk factors for non-PD and PD were identified: older age, male gender and previous incidents of self-harm. In suicide prevention efforts, equal attention should be paid to non-PD and PD patients.

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## 1. Introduction

Every year, approximately 1 million people complete suicide worldwide (World Health Organization, 2011). Psychological autopsy studies suggest that at least 90% of the victims fulfilled criteria for a mental disorder at the time of suicide (Cavanagh et al., 2003). There has therefore been considerable interest in identifying potential risk factors for suicide among people suffering from mental disorders (Mortensen et al., 2000; Oquendo et al., 1997). Knowing such risk factors can help identify patients

at risk and elicit targeted preventive measures (Berman, 2006; Erlangsen et al., 2011; Madsen et al., 2012; Nordentoft et al., 2007; Nordentoft, 2007).

Unipolar depression, particularly if severe, is associated with a significantly increased risk of suicide (Agerbo et al., 2001; Jeon et al., 2010, 2013; Qin and Nordentoft, 2005). Severe unipolar depression is subdivided into non-psychotic depression (non-PD) and psychotic depression (PD) in both the International Classification of Disease, 10th revision (ICD-10) (World Health Organization, 1993) and the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association, 2000) (see Fig. 1).

Patients with PD suffer from delusions and/or hallucinations, in addition to the symptoms of a depressive episode (Østergaard et al., 2013b; Rothschild, 2009). A number of studies have

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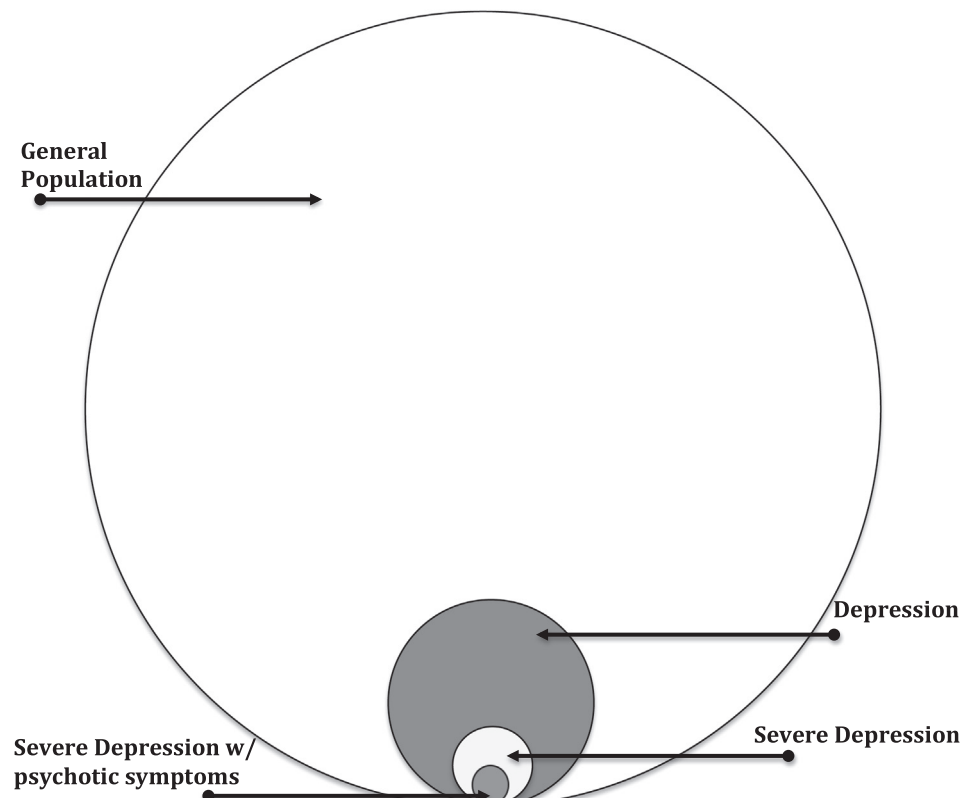


Fig. 1. Prevalence of depression and its severe subtypes.

identified significant differences, beyond the psychosis, between non-PD and PD (Ostergaard et al., 2012b). The differences concern heritability (Leckman et al., 1984), genetic and environmental risk factors (Domschke, 2013; Ostergaard et al., 2013a), symptomatology (Ostergaard et al., 2012a), treatment response (Coryell et al., 1996; Kessing, 2004; Leadholm et al., 2013; Loo et al., 2011), prognosis (Coryell et al., 1996) and mortality (Vythilingam et al., 2003). It has also been suggested that the risk of suicide is higher in PD than in non-PD (Park et al., 2010; Roose et al., 1983), but this has not been observed in all studies (Rothschild, 2009). Furthermore, the extensive literature on risk factors for suicide in depression has not reported whether the identified risk factors differ in quality and quantity between non-PD and PD respectively (Coryell and Young, 2005; Oquendo et al., 1997). At present, there has only been one study investigating markers associated with suicidality among patients with PD (Schaffer et al., 2008), and none examining risk factors for completed suicide.

Previous studies examining the risk factors for completed suicide have focused particularly on risk factors easily observable in a clinical setting. These include:

### 1.1. Socio-demography

In both the general population and among patients with mental disorders, suicide is more frequent among males than females (Large et al., 2011; Qin, 2011) and the risk is positively correlated with age (Qin, 2011). The relationship between educational level and suicide remains controversial. While some studies report that suicidality is not affected by years of education (Schaffer et al., 2008), others have found that both low education level (Wiktorsson et al., 2010) and completion of higher education (Wenzel et al., 2011) are associated with increased risk of suicide, depending on the population in question. Also, the nature of a person's affiliation to the labor market affects the risk

of suicide. Recent unemployment has been shown to increase the risk of suicide among the mentally ill (Hoyer et al., 2009). Furthermore, recipients of disability pension seem to be at increased risk of suicide (Ahs and Westerling, 2006). Solitary habitation is shown to be a risk factor for suicide, even when adjusted for age, sex and other demographic variables (Mortensen et al., 2000; Wiktorsson et al., 2010). Finally, institutionalization (long-term psychiatric and/or social care at a residential institution) has previously been shown to lower the risk of suicide among people with schizophrenia in Denmark (Uggerby et al., 2011).

### 1.2. Psychiatric morbidity

Mental disorders co-morbid to depression have been reported to increase the risk of suicide (Bolton et al., 2010). This is the case for mental disorders due to substance abuse (Ganz and Sher, 2009), organic mental disorders (Haw et al., 2009), anxiety (Bolton et al., 2010), obsessive compulsive disorder (Torres et al., 2011), and personality disorders (Dumais et al., 2005). In studies examining mixed populations of psychiatric patients, the relation between psychotic symptoms and suicidality/suicide varies (Angst et al., 2005; Caetano et al., 2006; Grunebaum et al., 2001). Finally, a previous suicide attempt is a strong risk factor for later completed suicide (Wiktorsson et al., 2010).

### 1.3. Physical co-morbidity

Physical illness increases the risk of depression (Goldberg and Harrow, 2010). This relationship is particularly strong for e.g. cardiovascular disease (Lippi et al., 2009), stroke (Cumming et al., 2010), diabetes (Kokoszka et al., 2009), chronic pulmonary disease (Goodwin, 2011; Putman-Casdorph and McCrone, 2009), and cancer (Spiegel, 1996). A number of studies have shown that

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