# Last Suicide Attempt before Completed Suicide in Severe Depression: An Extended Suicidal Process May Be Found in Men Rather Than Women.

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# Last suicide attempt before completed suicide in severe depression:

## An extended suicidal process may be found in men rather than women.

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ABSTRACT

**Objective:** To compare the time from last suicide attempt to suicide in men and women with major depressive disorder with melancholic and/or psychotic features. **Material and method:** The case records of 100 suicide victims with severe depression were evaluated. All suicide attempts during the course of depression were noted. The time from last suicide attempt to suicide was compared as well as the occurrence of suicide attempt during the last depressive episode, by gender. **Results**: Male suicide attempters made fewer suicide attempts than women during their last depressive episode before suicide (8% versus 37%). **Conclusion:** Men appeared to have a more extended suicidal process from suicide attempt to completed suicide, which ought to be considered in the after-care.

## INTRODUCTION

Suicide is a major health problem, and suicide attempt is the best known predictor of suicide (Harris & Barraclough 1997). Suicide risk has appeared to be highest during the first two or three years after an *index* suicide attempt for patients with mixed diagnoses according to several investigators (Hawton & Fagg 1988, Nielsen, Wang & Bille-Brahe 1990, Ekeberg, Ellingsen & Jacobsen 1991, Nordentoft et al. 1993, Johnsson-Fridell, Öjehagen A & Träskman-Bendz 1996, Tejedor 1999, Suokas et al. 2001) or for patients with unipolar depression and bipolar disorder (Tidemalm et al 2008). A highest peak after a *first-ever* hospitalization for a suicide attempt was found in the fourth year (Holley, Fick & Love 1998). Independent of suicide attempt, suicide also appeared to occur during the first episode of major depressive disorder, more so if there was also an alcohol problem (McGirr et al. 2008). On the other hand, a long-standing risk of suicide for more than a decade after an *index* suicide attempt has also been found (Suokas et al. 2001, Dahlgren 1977). Suicide mortality up to fourth decade after a *first* or an *index* suicide attempt, respectively, has also been reported (Brådvik 2003, Suominen et al. 2004). In the latter study there was a higher risk of late suicide in men than in women.

Several studies have shown that depression and male gender are overrepresented among suicide completers. In reviews of psychological autopsies it was concluded that an average of around 50%, 43% or 44% of all suicide victims had previously suffered from a depressive disorder (Lönnqvist 2000, Arsenault-Lapierre, Kim & Turecki 2004, Bertolote et al 2004). Severe depression (major depressive disorder with melancholic or psychotic features/endogenous depression) has been shown to predominate in the depressive group of suicide victims (Brådvik et al 2010, Thomson 2012). Men commit suicide more often than women in most Western countries (Canetto & Sakinovsky 1998). There is also a gender

paradox in that suicide attempts are more common among women, who are at lesser risk than men for completed suicide (Canetto & Sakinovsky 1998). Thus deliberate self-harm appeared to occur more often relative to each suicide in women than in men (Hawton & Harriss 2008). Men also appeared to make suicide attempts less often than women in the year preceding suicide (19% versus 39%) in one study (Isometsä & Lönnqvist 1998).

To the best of my knowledge, however, the final step of the suicidal career from *last* suicide attempt to completed suicide has not been investigated. Such knowledge would give a clue about the aftercare needed when a suicide attempt has occurred.
The present study deals with 1206 former in-patients prospectively diagnosed with severe depression/melancholia and followed from 1956 to 2010, including 116 suicide victims, out of whom there were 100 primary depressives.

The aim of the present study was to investigate the suicide risk after a suicide attempt by gender. First a survival analysis was used, and thereafter suicide attempts during the last depressive episode were compared for men and women. Second, suicide attempts among those who made suicide attempts were also compared between those who were and were not followed-up during their last depressive episode before suicide.

## MATERIAL AND METHOD

In the 1950s and 1960s, all in-patients at the Department of Psychiatry, University Hospital, Lund were rated on a multiaxial diagnostic schedule on discharge (Essen-Möller & Wohlfahrt 1947). This database enabled the selection of patients with a prospectively rated severe depression/melancholia for an investigation into suicide. The design of the sampling procedure is presented in a flow diagram (Figure 1).

A total of 1,206 patients received this diagnosis (506 men and 700 women). Their mortality was followed-up in three sessions to January 1, 1984 (Berglund & Nilsson 1987), to January 1, 1998 (Brådvik & Berglund 1998), and to February 10, 2010 (Brådvik & Berglund 2011). There were 103, 114, and 116 suicides respectively. Secondary depressions, mainly to alcoholism, were excluded. This left us with 100 completed suicides, 44 men and 56 women, with a primary severe depression.

The case records of the suicides and matched controls were prepared for a thorough blind evaluation by omitting the last sheet with information on the suicide, as has previously been described (Brådvik & Berglund 1993), and a similar procedure was used at second and third follow-up. Only suicide victims were included in the present study for a comparison of the relation of the last suicide attempt to completed suicide.

The entire course of depression up to the suicide was evaluated. The mean number of episodes for men was 3.80+/-3.73 (median 3) and for women 4.93+/-4.01 (median 4).When there were depressive episodes before index admission, some long before 1956, those were evaluated as well. The risk of an initial suicide attempt was highest early in the course of depression and then decreased according to a previous study (Brådvik & Berglund 2011). There was no significant difference in age at index admission between men (43 +/-16.28) and women (46 years+/-14.64), and no significant difference in age at suicide for men (52 +/-16.37) and women (55+/-14.14).

*Diagnoses*

A retrospective diagnosis according to DSM-IV (APA 1994) has been performed based on the symptoms reported in the records. It turned out that 91% of the patients met the criteria for major depressive disorder with melancholic or psychotic features, when in a depressive phase. Though the case-records were carefully written and very informative, individual symptoms might have been underreported. Thus the actual number was probably higher. There were 20

patients at some time had at least one episode of elevated mood, indicating bipolar disorder, and 57 that had at some time had an episode of psychotic depression.

In all, 52 subjects in the sample were in contact with the department within six months before suicide ("suicides in treatment"). This contact could be assumed to concern their last depressive episode. The remaining 48 patients were considered as survivors of last contact as they did not take their own life after contact with the clinic ("suicides not in treatment"). There were similar rates of men and women among "suicides in treatment" (22/44-50%- and 30/56-54%-) and also similar rates of suicide attempters in both groups by gender (13/25-52%- and 21/35-60%-). Bipolar disorder and psychotic features did not discriminate, neither did adequate treatment.

*Suicide attempts*

Suicide attempt was first scored by severity on the basis of the schedules introduced by Motto (1965) and Weisman & Worden (1972), as described in two previous papers (Brådvik & Berglund 1993, Brådvik & Berglund 2002). The first follow-up was performed in 1984 and the same definitions were used in the two follow-ups in 1998 and 2010.

We used a rather broad definition of self-harm, including what Motto (1965) called suicidal gestures, cases where intent was difficult to determine on the basis of case records, and also suicide attempts that were interrupted by the subject (aborted attempts). Some more recent investigators also use a broad definition of self-harm without considering the degree of intent (Hawton et al. 1997, Hawton et al. 2003, Silverman et al. 2007), which would include suicidal gestures and probably some aborted attempts. The latter have been described by Marzuk et al. (1997) and have been associated with actual suicide attempts (Barber et al. 1998).

There were similar rates of suicide attempts in men and women in the long-term course: 25/44 (57%) and 35/56 (63%) in the total sample.

Only suicide attempts mentioned in the charts could be included, as there were no personal interviews. The patients were followed by psychiatrists during basically the entire course of depressive episodes as out-patients as well as in-patients. Case-records from this period were usually very informative and even quite a few suicide attempts outside the hospital setting were reported. Other variables, which might be possible confounders in the analysis, were bipolar disorder, repeated or severe suicide attempts, marital/cohabitation status (living alone) and treatment at last contact (adequate ECT and/or antidepressant pharmacotherapy and/or Lithium). These have been described in previous studies (Brådvik & Berglund 1993, Brådvik & Berglund 2000) and have been included in the analysis. The case records were rated by one person and all suicidal behaviour was repeatedly rated in two sessions.

**Statistics**

First, the Kaplan-Meier survival analysis (Log Rank Test) was used to compare the suicide risk after suicide attempt at last contact in men and women. The intervals between last suicide attempt and completed suicide in "suicides in treatment" were compared with the intervals between last suicide attempt and last contact in "suicides not in treatment", survivors in relation to last contact; by gender.

A binary stepwise forward logistic regression was used for comparison of suicide attempts during last depressive episode before suicide among those who ever made a suicide attempt; by gender. Covariates (possible confounders) were bipolar disorder, adequate treatment at last contact, marital/cohabitation status (living alone) at last contact and repetition and/or severity of attempt. Student's t-test was used to compare age between groups.

Fisher's exact test was used for comparison between suicide attempts during last depressive episode in "suicides in treatment" and "suicide not in treatment".

The study has received approval by the Research Ethics Committee of the Medical Faculty at the University of Lund.

## RESULTS

### Time between last attempt and suicide

The time from last suicide attempt before last contact to suicide in men and women was compared by survival analysis (figure 2). There was no significant difference in the long-term course, but women seemed to die early in the course after suicide attempt more often.

The median time in the "suicide in treatment" group from suicide attempt to accomplished suicide was 200 days for women (range 1 to 1798 days, 4.9 years) and 1317 for men (range 186 to to 6501 days, 17.8 years).

### Suicide attempts during last depressive episode before suicide

In a stepwise forward logistic regression it was found that significantly more women than men died by their own hand after a suicide attempt during the last episode (11/35 versus 2/25, $p < 0.019$). None of the possible confounders (such as repeated attempt and treatment a. s. o.) remained in the equation.

In all, among "suicides in treatment" 11/30 (37%) of the women had made a suicide attempt during the last depressive episode before accomplished suicide versus 2/22 (9%) of the men.

In comparing "suicides in treatment" with "suicides not in treatment", men in the former group compared to the latter more often had subsequent depressive episodes after the last suicide attempt as (11/13 vs 4/12, Fisher's exact test = 0.015). Thus men who were followed-up to completed suicide were actually *less* suicidal at last contact compared to those who lost contact. No such difference was found in the female group (10/21 vs 6/14).

DISCUSSION

## Main findings

Men compared with women appeared to be less likely to complete suicide during the same depressive episode as a *last* suicide attempt. Thus there may be more extended process from *last* suicide attempt to completed suicide in men. Male suicide attempters who were followed-up to completed suicide also seemed to be *less* often suicidal at last contact as other male suicide attempters, who lost contact earlier in the course. This was another indication of an extended process in men.

An investigation into a large sample of completed suicides with mixed diagnoses (n = 1397), showed lower rates of suicide attempts during last year of life in men rather than women (19% versus 39%) (Isometsä & Lönnqvist 1998) and also lower rates of suicide attempts in men than women in the long-term course (38% versus 62%). Concordingly, the low rates of suicide attempts in men may have reflected lower life-time suicide rates in men. In the present study, however, there were similar rates of suicide attempts in men and women in the long term course (57% versus 63%), but there were lower rates of suicide attempts during the last year of life among those who had previously made suicide attempts (8% versus 37% in men and women respectively). This finding supports the view of a more extended suicidal process in men compared to women.

## Strengths and limitations

The present study deals with a large sample of suicides with a long-term follow-up over several decades and prospectively rated diagnoses, which is a strength. A major limitation is that only 52% of the patients were followed up to within six months before suicide. First, occasional suicide attempts occurring after last contact in “suicides not in treatment” could not be excluded. On the other hand, a suicide attempt is generally a

reason for admission to hospital. The migration rates were low during the time when most suicides occurred (89 primary depressives up to 1984) and probably there were low rates of suicide attempts in the year before completed suicide in this group. Initial suicide attempts also seemed rare later in the course of depression (Brådvik & Berglund 2011). Second, if there were more unknown suicide attempts, there is a question of a possible systematic error, as men tend so seek help for depression less often than women (Weissman & Klerman 1977, Grigoriadis 2008?). However, men and women in the present sample showed similar rates of follow-up to suicide for the total sample as well for those who had made suicide attempts. Thus the gender differences in help-seeking behaviour appear less obvious among these severely depressed patients, though it could not be definitely excluded.

There were no formal interviews as the study is based on case record evaluation. This is a weakness. On the other hand the items investigated have been continuously registered in the case records, thus minimizing the recall bias inherent in retrospective interviews later in life.

## CONCLUSION

The duration of clinical interventions and aftercare to ensure that patients are appropriately supported, appears to be needed for a long time for men with a severe depression with melancholic or psychotic features.

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## Legends

### Figure 1

Flow diagram for the sample of patients with severe depression admitted to the Department of Psychiatry, Lund University Hospital.

### Figure 2

Kaplan-Meier survival curve: Survival, by gender, after last suicide attempt before last contact to completed suicide for “suicides in treatment” and to last contact for “suicides not in treatment”

Figure 1

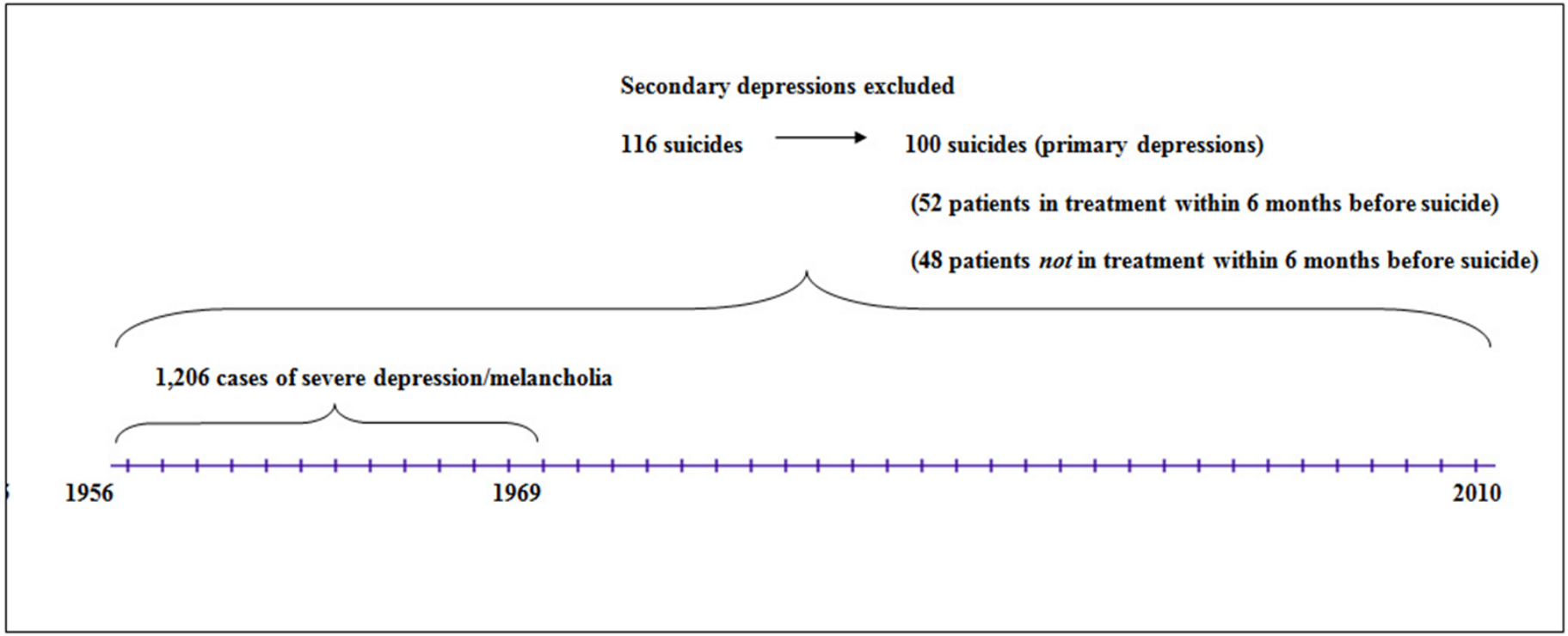
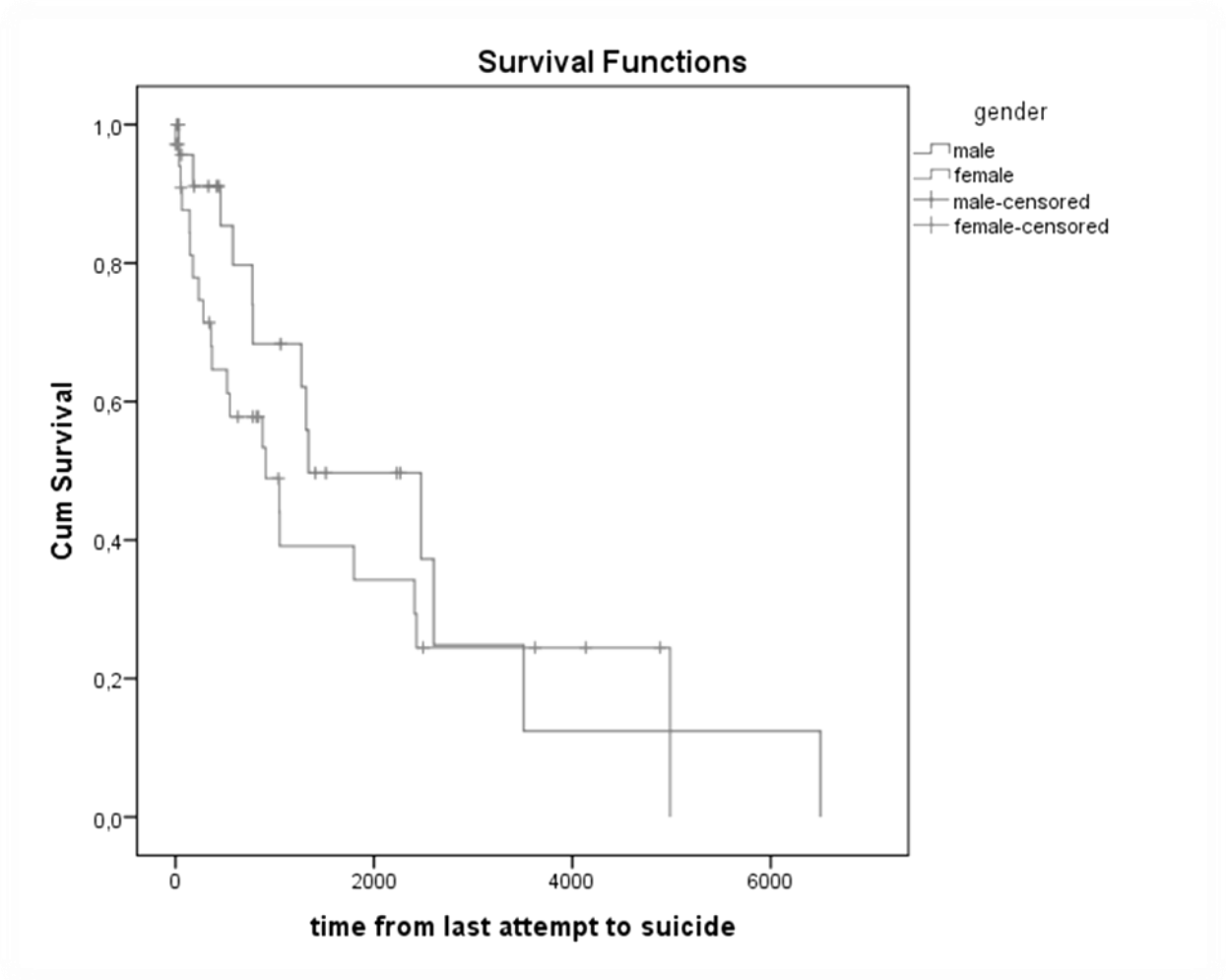

Secondary depressions excluded
116 suicides
100 suicides (primary depressions)
(52 patients in treatment within 6 months before suicide)
(48 patients *not* in treatment within 6 months before suicide)
1,206 cases of severe depression/melancholia
1956
1969
2010

**Figure 2**


Survival Functions
gender
male
female
male-censored
female-censored
Cum Survival
1,0
0,8
0,6
0,4
0,2
0,0
0
2000
4000
6000
time from last attempt to suicide