Follow up study of longstanding depression as predictor of mortality in elderly people living in the community

Tuula Pulska, Kimmo Pahkala, Pekka Laippala, Sirkka-Liisa Kivelä

University of Oulu, Department of Public Health Science and General Practice, Aapistie 1, FIN-90220 Oulu, Finland

Tuula Pulska, *research fellow*

Sirkka-Liisa Kivelä, *professor in public health science and general practice*

Health and Social Services, Provincial State Office of Western Finland, Regional Service Unit, Vaasa, Finland

Kimmo Pahkala, *counsellor*

University of Tampere, Tampere School of Public Health and Tampere University Hospital, Tampere, Finland

Pekka Laippala, *professor in biometry*

Correspondence to: Dr Pulska Tuula.Pulska@Oulu.Fi

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Longstanding and recurrent depressive disorders are quite common in elderly people.[1 2] Not much is known, however, of their clinical course and prognosis, including mortality. The need for treatment of longstanding, less severe depressive disorders is a matter of discussion.

We studied the relation between longstanding or recurrent depressive disorders and mortality and that between recovery from depressive disorders and mortality in elderly people.

Subjects, methods, and results

This study is based on the Ähtäri longitudinal epidemiological research project concerning depression in elderly people.[1–3] The initial series consisted of people born in 1923 or earlier and living in the municipality of Ähtäri, Finland, on 1 January 1984 (n = 1529). In the first study in 1984-5 the participation rate was 91%. The follow up study was performed in 1989-90 with a participation rate of 94%. Depression was determined after semistructured interviews by the criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, third edition (DSM-III).[1–3]

We examined mortality in subjects with a longstanding or recurrent course of depression and those who had recovered. Three groups were formed from those people without dementia who were alive in both 1984-5 and 1989-90: people depressed in both assessments (n = 78), people depressed in 1984-5 but not depressed in 1989-90 (n = 101), and people not depressed in both assessments (n = 634). The mean (SD) age of those participating in the follow up study was 74.3 (6.1) years on 1 January 1989. The mortality data from the official statistics were collected for a period from the individual examination days in 1989-90 to 31 December 1995.

The causes of death did not differ between the groups, cardiovascular and cerebrovascular diseases and malignant neoplasms being the most common. According to Kaplan-Meier survival analysis, 48% of the people with depression at both time points had died compared with 26% in the group without depression at both times ($P < 0.001$). In the group with depression in 1984-5 but not in 1989-90, 31% had died, so the survival in this group did not differ from that in the group without depression at either time ($P = 0.286$). The role of depression as a predictor of mortality was analysed with Cox's proportional hazards model, with age, sex, smoking, physical health, and functional abilities taken into account. Longstanding depression predicted mortality even when these factors were controlled for, while recovery from depression did not (table).

Predictors of mortality according to Cox's model (forced model)

Variable	Relative risk (95% CI)
High age (continuous variable)	1.1 (1.07 to 1.12)
Male sex	1.4 (1.04 to 1.80)
Smoking	1.7 (1.11 to 2.70)
Lowered functional abilities*	1.7 (1.21 to 2.39)
Poor physical health†	1.8 (1.38 to 2.42)
Depression‡:	
Recovered from depression	1.3 (0.85 to 1.87)
Longstanding/recurrent depression	1.5 (1.06 to 2.20)

*Reference group comprised independent subjects with functional abilities.
†Reference group comprised subjects in good physical health according to examining general practitioner.
‡Reference group comprised subjects without depression in both studies.

Comment

Longstanding depression seems to be a predictor for mortality in elderly people. In this study the groups of depressed people were formed on the basis of two measurements at interval of 5 years, and there were no data on the course of depression between the measurements. We assumed, however, that subjects with depression at both time points were suffering from longstanding or recurrent depression, and that this group and the group with depression at the first time point but without depression at the second differed from each other as to the course of their depression.

The results showed longstanding depression predicted mortality, whereas recovery from depression did not. More people in the group with depression at both time points than in the group who no longer had depression at the second time had had serious diseases or operations during follow up from 1984-5 to 1989-90. They had hence experienced more physical and psychosocial stress, which may be an underlying factor affecting mortality.[4] Apart from the variables concerning physical health and functional abilities inserted into the model, previous stress may also be a factor contributing to the higher mortality.

Clinical depression was determined over a 5 year interval, which may explain why the results differ from those of a previous study. According to the results of Thomas et al, depressive symptoms (emergent symptoms, remission, or persistent symptoms) measured over a 2 year interval were not associated with mortality.[5]

Our results support the proposal that more attention should be given to the treatment of longstanding and recurrent depressive disorders in elderly people. The effects of treatment should also be studied.

Contributors: TP participated in designing, analysing, and interpreting the results of the mortality study and wrote the initial version of this paper, which was discussed, revised, and accepted by all authors. S-LK supervised the community study on depression in old age and produced the initial ideas of the study design, methods, analyses, and interpretation of results. KP participated in designing, analysing, interpreting, and collecting data. PL was responsible for data analyses both in this mortality study and in the whole epidemiological study. TP and S-LK are guarantors of the study.

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Historical cohort study of in utero exposure to uterotonic drugs and cognitive function in young adult life

Henrik Toft Sørensen, Kenneth J Rothman, Matthew W Gillman, Flemming Hald Steffensen, Peer Fischer, Svend Sabroe

Oxytocin has potent uterotonic properties which can induce tetany, rupture, and water intoxication. Inappropriately high doses can affect the fetus by inducing abnormal heart rhythms, circulatory collapse, and preterm delivery accompanied by an increased risk of respiratory distress and damage to the central nervous system.[1] Several studies have reported an association between oxytocic drugs and neonatal hyperbilirubinaemia,[2] which might influence long term cognitive function.[3] Little is known, however, of the long term consequences of exposure to uterotonic drugs. We investigated whether in utero exposure to uterotonic drugs affects cognitive performance in draft age men.

Subjects, methods, and results

Nearly all Danish men have to register with the draft board at around the age of 18 years, at which time they undergo physical and mental examinations. We studied all men who were born in Denmark after 1 January 1973 and who were drafted while residing in North Jutland and Viborg counties from 1 August 1993 to 31 July 1994.

All draftees took a 45 minute intelligence test, the Boerge Prien test, developed in 1957 for the Danish draft board.[4] The test includes four time limited subtests covering four categories: letter matrices, verbal analogies, number series, and geometric figures. The test shows high correlations with the Weschler adult intelligence scale verbal intelligence quotient (0.78), the performance intelligence quotient (0.71), and the full scale intelligence quotient (0.82). In the validation study the mean full scale intelligence quotient was 106, equivalent to a mean Boerge Prien test score of 44.2.[4]

We linked data from the draft examination with the Danish Medical Birth Registry by means of a 10 digit unique personal identification number. The registry contains information relating to all births in Denmark since 1973. Oxytocin was the most commonly used uterotonic drug in that period. We examined the mean Boerge Prien test score according to in utero exposure to uterotonic drugs, taking account of possible confounding variables (table).

We identified 4805 conscripts during the study period. We had complete draft medical data on 4300; of the remainder, 495 were exempt from the examination mainly because of asthma, osteochondrosis, and epilepsy, and 10 had incomplete data in the birth registry. Of the 4300 men, 22.8% had been exposed to uterotonic drugs; among those who were exempt from the examination 23.5% had been exposed to uterotonic drugs.

The mean Boerge Prien score was similar for those exposed and not exposed to uterotonic drugs (43.1 *v* 42.9). We also stratified the subjects by mode of delivery; in subjects born by vaginal delivery the mean Boerge Prien score was 43.0 among those exposed to

Descriptive data on 4300 Danish draftees* according to exposure to uterotonic drugs during their delivery. Figures are numbers (percentages) of subjects unless stated otherwise

Detail	Not exposed (n=3289)	Exposed (n=1011)
Draftees		
Boerge Prien test score:		
Median (range)	44 (5-69)	44 (9-68)
Mean (95% CI)	43.1 (42.8 to 43.4)	42.9 (42.3 to 43.5)
Quartiles (1-3)	37-50	37-49
Median (range) birth weight (g)	3380 (1130-5380)	3630 (1630-5380)
Quartiles of birth weight (1-3)	3130-3800	3130-3880
Median (range) birth length (cm)	52 (39-62)	53 (40-61)
Quartiles of birth length (1-3)	51-54	51-54
Gestational age (weeks):		
⩾ 37	2974 (90.5)	926 (91.6)
34-36	222 (6.8)	62 (6.1)
⩽ 33	92 (2.8)	23 (2.3)
No of caesarean sections	188 (5.7)	76 (7.5)
Mother		
Median (range) age (years) at delivery	26 (15-43)	26 (16-43)
Quartiles of age (1-3) at delivery	23-29	23-29
Parity:		
0-1	2261 (68.7)	724 (71.6)
2	638 (19.4)	172 (17.0)
⩾3	390 (11.9)	115 (11.4)
Employment:		
Unemployed, housewife, retired	869 (26.6)	222 (22.1)
Employed	2219 (67.9)	737 (73.5)
Self employed, assisting spouse	179 (5.5)	44 (4.4)

*Total number of subjects for each variable is not always 4300 because of missing data.

Department of Internal Medicine V, Aarhus University Hospital, 8000 Aarhus C, Denmark
Henrik Toft Sørensen, *associate professor*
Danish Epidemiology Science Centre, Department of Epidemiology and Social Medicine, University of Aarhus, 8000 Aarhus C
Flemming Hald Steffensen, *research associate professor*
Svend Sabroe, *associate professor*
Department of Epidemiology and Preventive Medicine, Boston University School of Medicine, Boston, MA 02118, USA
Kenneth J Rothman, *professor*
Department of Ambulatory Care and Prevention, Harvard Medical School and Harvard Pilgrim Health Care, Boston, MA 02215
Matthew W Gillman, *associate professor*
Conscription Administration, County of North Jutland, 9000 Aalborg, Denmark
Peer Fischer, *consultant*
Correspondence to: Dr Sørensen hts@soci.au.dk

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