Depression in elderly medical inpatients: a meta-analysis of outcomes

Body and mind

Corps et esprit

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Abstract

Objective: To determine the prognosis of elderly medical inpatients with depression.

Data sources: A MEDLINE search for relevant articles published from January 1980 to September 1996 and a search of the PSYCH INFO database for articles published from January 1984 to September 1996. The bibliographies of identified articles were searched for additional references.

Study selection: Eight reports (involving 265 patients with depression) met the following 5 inclusion criteria: original research, published in English or French, population of general medical inpatients, mean age of depressed patients 60 years and over, and affective state reported as an outcome. The validity of the studies was assessed according to the criteria for prognostic studies described by the Evidence-Based Medicine Working Group.

Data extraction: Information about the patient population, the proportion of cases detected and treated by attending physicians, the length of follow-up, the affective outcome and the prognostic factors was abstracted from each report.

Data synthesis: All of the studies had some methodologic limitations. A meta-analysis of outcomes at 3 months or less indicated that 18% of patients were well, 43% were depressed and 22% were dead. At 12 months or more, 19% were well, 29% were depressed and 53% were dead. Factors associated with worse outcomes included more severe depression, more serious physical illness and symptoms of depression before admission.

Conclusions: Elderly medical inpatients who are depressed appear to have a very poor prognosis: the recovery rate among these patients is low and the mortality rate high.

Résumé

Objectif : Déterminer le pronostic de patients âgés hospitalisés en médecine avec une dépression.

Sources de données : Recherche dans MEDLINE d'articles pertinents publiés de janvier 1980 à septembre 1996 et recherche, dans la base de données PSYCH INFO, d'articles publiés de janvier 1984 à septembre 1996. On a cherché des références supplémentaires dans les bibliographies des articles repérés.

Sélection d'études : Huit rapports (portant sur 265 patients atteints de dépression) ont satisfait aux 5 critères d'inclusion suivants : recherche originale, texte publié en anglais ou en français, population de patients hospitalisés en médecine générale, patients atteints de dépression âgés en moyenne de 60 ans et plus et état affectif indiqué comme résultat. On évalue la validité des études en fonction des critères relatifs aux études de pronostic décrits par le Groupe de travail sur la médecine fondée sur des preuves.

Extraction des données : On a résumé, dans chaque rapport, l'information sur la population des patients, la proportion des cas repérés et traités par les médecins traitants, la durée du suivi, le résultat sur l'affectivité et les facteurs liés au pronostic.

Synthèse des données : Toutes les études comportaient certaines limites sur le plan de la méthodologie. Une méta-analyse des résultats à 3 mois ou moins a in-

diqué que 18 % des patients se portaient bien, 43 % étaient en proie à la dépression et 22 % étaient morts. À 12 mois ou plus, 19 % se portaient bien, 29 % étaient en proie à la dépression et 53 % étaient morts. Parmi les facteurs associés aux résultats plus graves, mentionnons une dépression plus sérieuse, une maladie physique plus grave et l'existence de symptômes de dépression avant l'admission.

Conclusions : Les patients âgés hospitalisés en médecine qui sont en proie à la dépression semblent avoir un pronostic très médiocre : le taux de rétablissement chez ces patients est faible et le taux de mortalité, élevé.

Depression is an important problem among elderly medical inpatients. It is estimated that 10% to 20% of those who are cognitively well suffer from clinically significant symptoms of depression.[1] Despite this high prevalence, the course and outcome of the disorder in this patient group are not clear. We reviewed systematically all original research reports on the subject to determine the prognosis in this population. The review process, modified from the one described by Oxman and colleagues,[2] involved systematic selection of articles, assessment of validity, abstraction of data and examination of results.

Methods

Selection of articles

The selection process involved 4 steps. First, 2 databases were searched for potentially relevant articles: MEDLINE for articles published between January 1980 and September 1996 and PSYCH INFO for those published between January 1984 and September 1996. The key words used for this search were "depression," "prognosis or course or follow-up" and "aged." Second, the relevant reports were retrieved for more detailed evaluation. Third, the bibliographies of relevant articles were searched for additional references, and finally, all retrieved articles were screened by one of us (M.G.C.) for 5 inclusion criteria: (1) original research; (2) published in English or French; (3) study population including primarily general medical inpatients (studies of populations with exclusively 1 condition such as stroke or myocardial infarction were not included); (4) mean age of 60 years and over; (5) affective state reported as an outcome.

Assessment of validity

To determine validity, the methods and design of each study were assessed according to the 7 criteria for prognostic studies described by the Evidence-Based Medicine Working Group:[3] formation of an inception cohort, description of referral pattern, adequate length of follow-up to determine outcome, completion of follow-up (determination of outcomes for at least 80% of the inception cohort), objective outcome criteria, unbiased outcome assessment and adjustment for extraneous prognostic factors (e.g., severity of physical illness or cognitive impairment). Each study was scored according to whether it met (+), did not meet (–) or partially met (+/–) these criteria.

Abstraction of data

Information about several topics was systematically abstracted from each report: patient population, diagnostic criteria, proportion of cases detected and treated by attending physicians, length of follow-up, affective outcomes and prognostic factors. To compare the results of the different studies, the proportion of patients in each reported outcome category was calculated by using the number of patients in the inception cohort as the denominator; when this number was not reported it was calculated or estimated.

Synthesis of data

Qualitative

Information about the patient population, diagnostic criteria, proportion of cases detected and treated by attending physicians, length of follow-up, outcomes and prognostic factors was tabulated and summarized.

Quantitative

To combine the results of the different studies, we selected the outcome categories that were consistent across most of the studies. We then used a random-effect model to combine the results of these outcome categories.[4,5] Finally, we performed a test of homogeneity of the outcomes in each category across all the studies,[4] designating the outcomes as heterogeneous when the level of the test was less than 0.10. An estimate of 0 for a study category was replaced by 0.5 in the calculations. The statistical analyses were conducted using SAS statistical software, version 6.10 (SAS Institute Inc., Cory, NC, 1995).

Results

Selection of articles

The computer search identified 666 potentially relevant articles. However, most of these were not studies of prognosis or of elderly people; consequently, only 27 reports were retrieved for more detailed evaluation. Of this group, 8 studies,[6–13] involving a total of 265 depressed patients, met all the inclusion criteria (Table 1). The excluded studies did not meet inclusion criterion 3 (n = 10), 5 (n = 6) or 4 (n = 3). For 2 studies[8,12] the authors were contacted and asked to clarify the reported outcomes.

Assessment of validity

The results of the validity assessment are summarized in Table 2. All of the studies had some methodological limitations, most often in the following areas: description of referral pattern, length of follow-up, bias in outcome assessment and adjustment for extraneous prognostic factors.

Synthesis of data

Qualitative

The results from the 8 studies are summarized in Table 1. For establishing the diagnosis of depression, 3 studies used DSM-3[15] or DSM-3R[16] criteria, 2 used Research Diagnostic Criteria,[19] 2 used cut-off points on depression symptom rating scales (20 on the Beck Depression Inventory[14] in 1 study and 11 on the Geriatric Depression Scale[17] in the other), and 1 used Geriatric Mental State/AGECAT case level criteria.[18] The sample size ranged from 8 to 65 patients. The patients' mean ages were reported in 3 studies (68 to 73.7 years). Four studies included men only and in 2 others, two-thirds of the patients were women. The period of reported follow-up ranged from discharge from hospital to 36 months. Three studies reported the rates of detection of depression by attending physicians on the medical units; these ranged from rare to 26% (median 10%). Five studies reported rates of eventual antidepressant treatment; these ranged from rare to 100% (median 46%).

Four reports identified prognostic factors; however, these varied from study to study. More severe depression was associated with a worse outcome in 2 studies[9,13] and more severe medical illness with a worse outcome in 1 study[7] but not in another.[10] Finally, the presence of dysthymia before admission was associated with a worse outcome in 1 study.[13]

Quantitative

To facilitate the quantitative analyses we separated the studies into 2 groups according to length of follow-up: 5 had a follow-up of 3 months or less (mean 1.5 months)[8–12] and 4 had a follow-up of 12 months or more (mean 18 months)[6,7,11,13] (the study by Evans[11] included follow-up data at both 3 and 12 months so was included in both groups). Three outcome categories were consistent across most of the studies: patients who were well, those who were depressed and those who died. The other outcomes (i.e., dementia, partial remission, lost to follow-up, refusal, other) were categorized as "other" in this analysis. Some specific outcome categories (e.g., dead) were not evaluated in a few studies. In such cases, we removed these studies from the calculation of the pooled estimate of these outcome categories. Consequently, the combined estimates of the different outcome categories within each follow-up period do not necessarily add up to 100%. Ranges of prognostic outcomes and combined outcomes (with 95% confidence intervals) are presented in Table 3.

The levels of the tests of homogeneity were less than 0.10 in 3 of the 4 outcome categories at both 3 and 12 months; therefore, the results of the studies were heterogeneous. Possible sources of this heterogeneity included differences in study design, patient populations, length of follow-up and outcome assessments, but none of these could be consistently related to the differences in outcomes. However, a likely source of heterogeneity appeared to be treatment with antidepressants: when the study in which all depressed patients were treated and followed up[11] was removed from the analysis, the tests of homogeneity were less than 0.10 in only 1 of the 4 outcome categories at 3 and 12 months.

Discussion

Eight studies of the outcome of depression in elderly medical inpatients have been published in the English and French literature. The combined results of these studies indicated that over a mean follow-up of 1.5 and 18 months, 18% to 19% of patients were well, 29% to 43% remained depressed, and 22% to 53% had died. Thus, depression in this population seems to be a protracted condition with very low rates of recovery.

These outcomes are remarkably similar to those of depressed elderly people in the community (19% to 34% were well, 27% were continuously ill, and most of the remainder had died over a mean follow-up of 12 and 38 months[20]) but were much worse than those of elderly patients in hospital-based psychiatric services (60% were well or had had relapses with recovery, and 14% to 22% were continuously ill over a mean 13 and 52 months of

Table 1: Results of original studies on the prognosis of depression in older medical inpatients

Study	No. of patients	Age, yr (and mean)	Women/ Men	Population	Diagnostic criteria	% of cases of depression detected by attending physicians	% of patients treated	Length of follow-up (mo)	Outcome (%)	
Schuckit et al, 1980[6]	15	65+ (73.7)	0/15	General medical–surgical inpatients	RDC	Rare	Rare	36	Well Depressed Demented Dead	6 28 6 60
Rapp et al, 1991[7]	23	65+	0/23	General medical inpatients*	RDC	10	46†	12	Well Continuously ill No follow-up	26 48 26
Incalzi et al, 1991[8]	17	65+	NA	General medical inpatients*	DSM-3	NA	NA	Until discharge	Well Depressed No follow-up	0 77 23
Pomerantz et al, 1992[9]	8 (est.)	41–80 (68)	0/8	General medical inpatients*	BDI (20 on scale)	NA	NA	¼ and 1 postdischarge	Well Depressed No follow-up	25 50 25
Koenig et al, 1992[10]	55	65+ (71.5)	0/55	General medical–neurological inpatients	DSM-3R	26	56	2.3 (SD 1.6)	Well Partial remission Continuously ill Dead Other	11 11 38 31 9
										3 mo 12 mo
Evans, 1993[11]	23	65+	16/7	Geriatric medical unit inpatients*	GMS/AGECAT Case level	NA	100	3 and 12	Well Depressed Demented Dead Other	35 39 13 0 4 13 39 48 9 0
Dunham and Sager, 1994[12]	65	70+	NA	General medical inpatients* (community dwelling, disease not terminal, in hospital > 48 hr)	GDS (11 on scale)	NA	23	1 postdischarge	Well Depressed Dead No follow-up	28 44 0 28
Fenton et al, 1997[13]	59	65–74 (*n = 25*) 75–84 (*n = 25*) 85+ (*n = 9*)	42/17	General medical inpatients*	DSM-3	NA	NA	12	Well Partial remission Relapse Continuously ill No follow-up	12 24 10 36 18

Note: BDI = Beck Depression Inventory,[14] DSM-3 = *Diagnostic and Statistical Manual of Mental Disorders*, 3rd edition,[15] DSM-3R = *Diagnostic and Statistical Manual of Mental Disorders*, 3rd edition, revised,[16] GDS = Geriatric Depression Scale,[17] GMS = Geriatric Mental State,[18] NA = not available, RDC = Research Diagnostic Criteria,[19] SD = standard deviation.

*Excluding patients with moderate-to-severe cognitive impairment.

†These patients were receiving antidepressants.

follow-up[20]). Although the similar poor outcomes of depressed elderly medical inpatients and those living in the community may have resulted from similarities of such factors as patient population, type and severity of depression, or aspects of study design (e.g., length of follow-up, outcome measures), the similar outcomes may reflect the fact that in both settings the rates of detection and treatment of depression are low.[7,10,21] In contrast, in psychiatric settings, treatment is the norm. Thus, increased attention to the detection and treatment of this disorder in medical settings (including systematic detection and treatment programs) may improve the outcome. Notably, in this review, the study that reported the highest rates of recovery was that in which all depressed patients were treated (with fluoxetine) and followed up by the investigator.[11]

In medical settings, identifying depression in patients who require antidepressive treatment may present a diagnostic dilemma because many of the symptoms of depression (e.g., anorexia and anergy) are also symptoms of physical illness. Interestingly, in this review, the criteria for diagnosing depression were not related to specific outcomes. Depressed patients identified by either cut-off points on symptom rating scales or formal diagnostic criteria had similar outcomes. Moreover, the outcomes were not appreciably different regardless of whether the formal criteria were applied using an "etiologic"[10] or an "inclusive"[13] approach. In this respect, elevated scores on depression rating scales combined with a history of depressive symptoms before admission (which occurred in 25% to 75% of patients[7,10,13]) may be more useful than formal criteria in identifying patients who will remain depressed and consequently require antidepressive treatment. Conversely, low depression rating scores and no depressive symptoms before admission may identify patients who will recover quickly without treatment.

The nature of the association between depression and high mortality rate is not clear. Depression may increase mortality, or seriously ill patients (who are more likely to die) may have higher rates of depression. Alternatively, both situations may be caused by a third, unknown factor. However, in recent studies depression was associated not only with increased mortality[22,23] but also with increased health service utilization,[22] independent of the severity of the medical illness.

All of the studies used in this review had some methodologic limitations. Future studies of prognosis must pay attention to methods and design in order to advance knowledge. Specific points to be considered include the

Table 3: Ranges of prognostic outcomes in each category and combined outcomes

Outcome	Ranges of outcomes	No. of studies	Combined outcomes (95% CI)
Follow-up < 3 mo			
Well	0–35	5	18 (6–30)
Depressed	13–77	5	43 (24–61)
Dead	0–39	3	22 (0–49)
Other	13–28	5	22 (15–28)
Follow-up >12 mo			
Well	7–39	4	19 (6–32)
Depressed	0–48	4	29 (9–50)
Dead	48–60	2	53 (18–88)
Other	6–42	4	22 (15–29)

Table 2: Validity of studies with respect to achieving (+) or not achieving (–) criteria for prognostic studies*

Study	Formation of inception cohort†	Description of referral pattern	Adequate length of follow-up	Completion of follow-up	Objective outcome criteria	Unbiased outcome assessment	Adjustment for extraneous prognostic factors
Schuckit et al, 1980[6]	+	–	+	+ (estimated)	+	+	+/–
Rapp et al, 1991[7]	+	–	+	–	+	–	+
Incalzi et al, 1991[8]	+	–	–	+	+	–	+/–
Pomerantz et al, 1992[9]	+	–	–	+/–	+	–	–
Koenig et al, 1992[10]	+	–	+/–	+	+/–	–	+
Evans, 1993[11]	+	–	+	+	+	–	+/–
Dunham and Sanger, 1994[12]	+	–	–	–	+	–	+/–
Fenton et al, 1997[13]	+	–	+	+	+	+/–	+/–

*Criteria based on Evidence-Based Medicine Working Group.[3]
†All inception cohorts comprised series of consecutive newly admitted elderly medical patients who were systematically assessed 1 to 7 days after admission and were diagnosed as depressed.

following: (1) selection criteria should include both explicit diagnostic criteria and criteria indicating the minimum severity of depression as measured by a symptom rating scale; (2) important characteristics of patients and possible prognostic factors, including type and severity of physical illness, disability, cognition, premorbid personality, previous psychiatric history, depressive symptoms before admission, type of antidepressive treatment and response to treatment, should be monitored using valid and reliable measures; (3) follow-up assessments (a minimum of 2 excluding the initial assessment) should be independent of the initial assessment, should occur at regular, predetermined intervals after hospital admission, and should continue for at least 1 year; (4) investigators should plan to complete the follow-up (including deaths) on at least 80% of the inception cohort.

Of course, this review also had methodologic limitations. First, the literature search was limited to articles published in English or French because we did not have the resources to translate articles written in other languages. Second, we did not assess publication bias, although it is unlikely that this bias influences publication of studies of prognosis. Third, the selection of articles and the assessment of validity might have been conducted by at least 1 other reviewer, with each of us blind to the other's decisions and the extent of agreement recorded. In this review the selection and validity assessment were determined by only 1 author (M.G.C.); however, the criteria did not require considerable judgement in their application. Fourth, the number of studies in each follow-up period was small. Fifth, the examination of the results was complicated by differences in the period of follow-up and the outcome categories from 1 study to the next. Finally, because of the small number of studies, the small sample sizes and the significant heterogeneity of the results, the combined estimates of outcomes were not very precise.

Conclusions

The prognosis for elderly medical inpatients with depression appears very poor; the recovery rate is low and the mortality rate high. Despite the methodologic limitations of most of the studies used in this meta-analysis, these findings suggest that depressed medical inpatients should be the target of psychiatric interventions to improve outcomes.

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