Research priorities in mental health, part 1: an evaluation of the current research effort against the criteria of disease burden and health system costs

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Objective: To examine the amount of research that various mental disorders are currently receiving in Australia and compare this with the disease burden and health system costs attributable to these disorders.

Method: A content analysis was carried out on a year's worth of published articles and a year's worth of competitive research grants. Abstracts of articles and grants were coded for a number of attributes, including the type of mental disorder covered. The percentage of articles and grant funding for various mental disorders was compared against published data on the disease burden and health system costs attributable to these disorders.

Results: Mental disorders contribute 19.1% of disease burden and 9.8% of health system costs, but receive only 8.9% of National Health and Medical Research Council funding. An examination of the distribution of research within the mental health area showed that substance use disorders are by far the most researched in terms of both publications and grant funding, followed by affective disorders. By contrast, affective disorders account for the most burden, followed by dementia, substance use and anxiety disorders. The biggest consumers of health system costs are dementia, affective disorders, and schizophrenia and other psychoses.

Conclusions: While all mental disorders merit more research attention than they are currently receiving, affective disorders and dementia appear to be particularly under-researched given their contribution to disease burden and health system costs.

Key words: burden of disease, health costs, research priorities.

There is increasing recognition among policy makers and within the community of the need to address the high level of personal, social and financial burden imposed by mental health problems and disorders in Australia. It is clear that mental health research can play an important role in providing evidence for identifying potentially useful strategies to address the burden of mental health problems and for evaluating the effectiveness of these strategies. However, currently in Australia, there is neither a comprehensive explicit set of priorities nor any systematic processes for establishing priorities within the mental health research field.

Currently, priorities for research in mental health are established by a mixture of explicit and implicit means. These include the personal scientific interests of researchers, the priorities of those who serve as reviewers for grants, the philanthropic interests of those who privately fund research, the availability of researchers or institutions who specialize in a subject area, government policy, stakeholder lobbying and media interest, and the

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profit potential of the research. In the past, there has been little explicit setting of research priorities at a national level, although this situation is gradually changing. For example, the report of the Health and Medical Research Strategic Review (the 'Wills Report') called for a greater emphasis on priority-driven research:

> Australia needs a well managed, priority-driven program of research. This program requires explicit funding, national coordination, and a rigorous priority-setting process. Capacity must be built to undertake this research and to facilitate the transfer of research results into policy and practice. [1, p.94]

Consistent with this recommendation, the National Health and Medical Research Council (NHMRC) has set up a Strategic Research Development Committee (SRDC) to identify and encourage research into emerging health problems in Australia and areas of importance to Australian health care that are currently being under-researched. The SRDC has already undertaken some activities in areas of mental health: youth suicide, illicit drug use and early psychosis intervention programmes.

In 1999, the National Mental Health Working Group (an initiative of Commonwealth, state and territory governments) was stimulated by the Wills Report to establish a subcommittee to examine mental health research priorities. This committee concluded that present research is ad hoc and uncoordinated, and there is no national agenda for mental health research. The Group saw a need to prepare a framework outlining priorities for future research. In order to progress the work of the subcommittee, the Centre for Mental Health Research was invited to undertake a consultancy to provide information about current research projects and gaps in the research agenda. This consultancy involved a content analysis of current mental health research in Australia and a comparison of the current research with various standards. These standards were: prevalence, burden, health system cost, stakeholders' priorities and national policy requirements. The present paper reports the data from this consultancy on the distribution of research publications and funding across categories of mental disorder and compares this to the distribution of disease burden and health system costs.

Method

Defining mental health research

A preliminary step in analysing the current state of mental health research is to define what is 'mental health' and what is 'research'. Mental disorders have been listed in the ICD-10 [2]. This classification system was chosen for defining mental disorders in the present project

because (i) it is widely accepted nationally and internationally, and (ii) it is used officially in Australia in reporting health statistics, allowing comparison of our findings with existing data on prevalence, cost and burden of mental disorders. We did make one alteration to the ICD-10 definition to include suicide and self-inflicted injury in our audit. The ICD-10 classifies these as injuries rather than as mental disorders, but we included them because they are overwhelmingly attributable to mental disorders. We also included subclinical states of relevance to mental disorders, such as anxiety and depressive symptoms. We were unable to find any definition of 'research' in the literature which was sufficiently precise for our purposes, so we developed the following definition of our own:

> Research involves activities which collect new data or carry out some novel analysis of existing data. Research can involve a variety of methodologies including quantitative, ethnographic, phenomenological, historical, and case study methods. Literature reviews, professional updates, editorials and discussions do not in themselves constitute research.

Under this definition, a meta-analysis qualified as research, but a qualitative literature review did not.

Content analysis of current research

The project analysed the content of current research by examining abstracts for a year's worth of published articles in mental health and a year's worth of competitive grant funding. We analysed the content of publications and grants according to four different schemes:

1 The type of mental disorder being investigated (ICD-10 code). This allowed comparison with existing data on burden and cost.
2 The goals of the research, for example, prevention, service evaluation, genetics, prevalence, risk factors. This classification was developed by us based on a trial coding of the contents of a sample of published articles from the year 1999.
3 The participant type and setting where the research was carried out, for example, members of the community, patients in primary care, patients in specialist care, students.
4 The inclusion of special interest groups in the research, for example, indigenous people, children and adolescents, older people, rural and remote people.

Only the categorization of research according to type of mental disorder is reported in the present paper. The other categorizations of current research are reported in a companion paper [3].

The classification scheme was applied to a year's worth of publications. To identify publications in mental health, we examined all publications meeting the following criteria: (i) published in 1998; (ii) listed in either PubMed (MedLine), PsycLit (Psychological Abstracts) or The Australasian Medical Index (AMI); (iii) having a senior author with an Australian postal address; and (iv) involving a journal article, rather than a chapter or book. The year 1998 was chosen because this was the most recent year for which complete information was available in all three databases. We excluded any publications that were not journal articles, because not all of the databases included other types of publications. This procedure identified 5767, including articles which were duplicated across databases and a small number of articles where the first author was not an Australian resident. Two of our team then independently read the abstract for each article and made a judgement about whether it fitted our definitions of 'mental health' and 'research'.

Where there was a disagreement, this was resolved by discussion, sometimes involving a third member of the team. We included articles which had mental health content, even if these articles were primarily concerned with a physical disorder (e.g. an article reporting on multiple associations with cancer, including depressive symptoms). This procedure left us with 685 articles on mental health research. The abstracts of these articles were then coded using a pretested coding scheme covering authorship, state, institution, type of disorder, subpopulation groups, goals and participant type. Two people independently coded each abstract. Where there was a disagreement in the way an abstract was classified, then this was discussed in order to reach a consensus.

In addition to publications, we examined competitive research grants for the year 2000, which was the most recent year available. These were grants for which money was provided in 2000 and included grants that may have been awarded some years earlier. Titles of all types of NHMRC grant and most Australian Research Council (ARC) grants were available on the Web. Other ARC grant titles were obtained from administering universities. One member of our team selected all the titles on mental health and these selections were checked by a second person. Any differences of opinion were resolved by discussion. Abstracts of these mental health grants were obtained from NHMRC, the ARC and, in the case of small ARC grants, from individual universities. Rotary was asked to provide details of all grants in the mental illness category awarded by the Australian Rotary Health Research Fund and details of General Practice Evaluation Program (GPEP) grants were obtained from a database held by the National Information Service based at Flinders University. To identify other grants, the SPIN database was searched (http://australia.infoed. org/wConnect/wc. dLl?spinwww~srch_cri~~AU~612518428009).

Searches were conducted using supplied keywords in the database which satisfied one of the following: (i) a name of an ICD-10 mental disorder; (ii) a mental health service; (iii) a specific mental health treatment (e.g. behaviour therapy, crisis counselling); or (iv) a discipline primarily involved in mental health (e.g. clinical psychology). Grants sourced from within Australia were then identified. A list of new and continuing research grants awarded for 2000 was then sought from each granting body. From this list, one member of the team selected the mental health grants and another checked the decisions. Abstracts were sought for the grants selected as involving mental health research. The grants were coded using the same methods as for publications.

The dollar value of each grant for 2000 was also recorded, allowing a calculation of competitive grant expenditure on specific areas of research. For some large grants (e.g. NHMRC institute grants), only a fraction of the grant expenditure was on mental health. In such cases, the percentage spent on mental health was estimated by examining the web site of the organization funded by the grant. The number of pages describing mental health research was counted and divided by the total number of pages describing any type of health research.

In coding type of disorder, we coded as specifically as possible (e.g. posttraumatic stress disorder), but resorted to higher-order categories (e.g. anxiety disorder) if the article dealt with three or more specific disorders (e.g. three anxiety disorders) or if it only mentioned a broader category. Sometimes abstracts did not mention diagnostic categories at all, but discussed mental disorders in general or mental health problems in general. Accordingly, we allowed for these general categories in the coding scheme.

In some cases, an article or research grant covered more than one disorder. Where this was the case, we coded up to three disorders. To ensure that articles covering multiple disorders were not double-counted, we then weighted the alternatives so that they summed to 1. For example, if an article dealt with both anxiety and affective disorders, each disorder was given a weight of 0.5. Similarly, if an article dealt with three disorders, each was given a weight of 0.33. For competitive research grants, a similar procedure was used to attribute a proportion of the grant funding to each disorder being researched.

Comparison with existing data on burden and cost

Data on the burden of disease were available from a report on the Australian Burden of Disease and Injury Study [4]. This study was based around a new summary measure of health status, the disability-adjusted life year (DALY), that combines information on premature death and years lived with disability. The innovation in this method is that it includes non-fatal outcomes in a measure of health status and thereby provides a very different picture from the mortality statistics that have been relied on in the past. The report on the Australian Burden of Disease and Injury Study lists the percent of total DALYs attributable to various classes of mental disorders, giving a standard against which the current state of research effort can be compared.

The Australian Institute of Health and Welfare (AIHW) has estimated health system expenditure attributable to various classes of mental disorders [4]. These costs can be used as a second standard for evaluating the current research effort.

Results

Our coding of the mental disorders covered by published research and competitive research grants covered the full range of ICD-10 mental disorders. However, the data available on burden of disease excluded some disorders. In carrying out the comparison, we used the same disorder categories as used in Australian Burden of Disease and Injury Study. For example, the study included attention deficit hyperactivity disorder and autism and Asperger's syndrome under childhood disorders, but excluded other childhood mental disorders. Similarly, this study only examined borderline personality disorder and not other personality disorders. To ensure comparability, we followed exactly the classification used in calculating disease burden. In addition, we excluded articles and grants which referred to mental disorders in general, since these could not be attributed to particular disease categories. For these reasons, the data presented here differ from those in the companion paper which reports on the full range of ICD-10 disorders [3].

Table 1 shows the results in terms of percentages of disease burden compared to percentages of publications and grant funding. In calculating these percentages, only the disorders included in the table were used, so that the numbers add up to 100%. It can be seen that affective disorders account for the most burden, followed by dementia, substance use and anxiety disorders. By contrast, substance use disorders are by far the most researched in terms of both publications and grant funding, followed by affective disorders. Anxiety disorders rank third in terms of publications, but dementia is third in terms of grant funding.

The data on the distribution of health system costs available from AIHW used a grouping of disorders that differs somewhat from that in the Australian Burden of Disease and Injury Study. For example, the health system costs data included all personality and childhood disorders rather than a subset of diagnoses, while tobacco-related health costs were attributed mainly to physical rather than to mental disorders. Again, we have adjusted our classification to match that used in the published data on costs. Table 2 shows the results. It should be noted that because disorders are classified differently from Table 1, the percentages are not directly comparable across the tables. It can be seen from Table 2 that dementia, affective disorders, and schizophrenia and other psychoses account for the biggest health system costs, whereas substance abuse, affective disorders and anxiety disorders account for the most publications, and substance abuse and childhood disorders account for the most grant funding.

It is impossible to estimate what proportion of all health grant funding goes on mental health, because this would require a knowledge of total grant funding on all aspects of health. However, it is possible to say what proportion of NHMRC funding (which includes project grants, other grants and fellowships) goes on mental health. Given that this is by far the largest funding source (accounting for 75% of all mental health grant funding), it reflects much of the total picture. In making this estimate, we had to allow for some grants which covered both mental and physical health (e.g. depression in cancer patients). We assigned 50% of the value of these grants to mental health, and the rest to physical health. Using this procedure, mental health received $15 343 000 which was 8.9% of NHMRC funding in 2000. It is possible to compare the percentage of NHMRC funding on mental health with the percentage contribution of mental disorders to disease burden and health system costs. Mental disorders (including

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Table 1.   Comparison of the distribution of research with the distribution of disease burden

Category of mental disorder	% of burden (DALYs)*	% of published research*	% of competitive grant funding*
Affective disorders	23.1	16.7	15.7
Dementia	18.6	8.9	15.7
Substance use disorders	16.6	28.8	30.0
Anxiety disorders	15.8	16.3	9.7
Suicide & self-inflicted injury	11.7	4.2	1.9
Childhood conditions†	3.9	2.4	2.5
Schizophrenia‡	3.7	12.1	10.0
Borderline personality disorder	3.4	0.0	0.6
Eating disorders	2.3	4.5	1.8
Mental retardation	0.8	6.1	12.1
Total	100.0	100.0	100.0

*Percentages are based only on the disorders included in this table. Disorders have been classified so as to allow direct comparison with the available data on burden of disease.
†Consistent with the data on burden of disease, only a subset of childhood conditions are included in these figures.
‡Unspecified psychosis has been included here because the research on psychosis was predominantly about schizophrenia.

Table 2.   Comparison of the distribution of research with the distribution of health system costs

Category of mental disorder	% of cost*	% of published research*	% of competitive grant funding*
Dementia	24.8	8.9	14.1
Affective disorders	22.3	16.7	14.1
Schizophrenia & other psychosis	20.2	12.1	9.0
Anxiety disorders	12.2	16.3	8.7
Substance use disorders	12.1	20.0	22.0
Disorders of childhood & adolescence	2.5	9.8	16.2
Suicide	2.5	4.2	1.7
Personality disorders	1.8	1.3	1.8
Mental retardation	0.9	6.1	10.9
Eating disorders	0.8	4.5	1.6
Total	100.0	100.0	100.0

*Percentages are based only on the disorders included in this table. Disorders have been classified so as to allow direct comparison with the available data on health system costs.

dementia and suicide) are estimated to contribute 19.1% of DALYs in Australia, and 9.8% of health care costs [3].

Discussion

Mental health in general merits more research attention than it is currently receiving. NHMRC, which is the main funding source, allocates only 8.9% of its funding to mental health research. By contrast, mental disorders are estimated to contribute 19.1% of DALYs in Australia, and 9.8% of health care costs. When the distribution of funding within the mental health field is examined, it appears that affective disorders and dementia are particularly under-researched relative to their contribution to disease burden and health system costs.

These conclusions have some important limitations which must be acknowledged. We compared the distribution of research against the standards of disease burden and health system costs. However, there are other aspects of cost and burden that have not been considered because they have not been quantified. For example, some mental disorders (e.g. those involving substance abuse) involve considerable costs in the criminal justice system. There are other costs to the individual such as lost earning potential and there is suffering to families and others in the social network. There are also uncertainties about the accuracy of the cost and burden data we used as a standard. For example, different methods are known to produce considerable differences in estimates of disease burden [5].

Another limitation is that the data set represents published research and competitive research grants, but will miss other types of research activity. For example, some government-funded research may appear in reports that are not listed in the abstracting services we used as a sampling frame. We recognize that competitive grants are only one component of research funding. Other components are the salaries of people engaged in research (which may be hidden in university, hospital or other institutional budgets), infrastructure of these institutions applied to research, industry expenditure, and non-competitive funding of research by governments. However, to fully cost all of these components and allocate them to specific areas would be a major undertaking far beyond the scope of this project.

Finally, we acknowledge that disease burden and costs are not the only standard for evaluating the distribution of research. Other criteria can be used which could lead to different conclusions. For example, it could be argued that childhood disorders deserve more research attention than suggested by their burden and cost because of the opportunity for prevention and early intervention at this point in the lifespan. In the following companion paper we examine the priorities of various stakeholder groups, which are also important standards.

Acknowledgements

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