Common mental disorders, subthreshold symptoms and disability: longitudinal study

Dheeraj Rai, Petros Skapinakis, Nicola Wiles, Glyn Lewis and Ricardo Araya

Summary
In a representative sample of the UK population we found that common mental disorders (as a group and in ICD–10 diagnostic categories) and subthreshold psychiatric symptoms at baseline were both independently associated with new-onset functional disability and significant days lost from work at 18-month follow-up. Subthreshold symptoms contributed to almost half the aggregate burden of functional disability and over 32 million days lost from work in the year preceding the study. Leaving these symptoms unaccounted for in surveys may lead to gross underestimation of disability related to psychiatric morbidity.

Declaration of interest
None.

Method
We used data from the longitudinal subset of the 2000 UK Psychiatric Morbidity Survey (details available elsewhere). Briefly, 8580 adults representative of the UK population participated in face-to-face interviews at baseline ($T_1$) in 2000. A representative subsample ($n = 2406$) was followed up 18 months later ($T_2$). Ethical approval was granted by the Multi-centre Research Ethics Committee in England.

Psychiatric morbidity was assessed using the revised Clinical Interview Schedule (CIS–R). A CIS–R score of $\geq 12$ indicates the presence of a common mental disorder and algorithms allow identification of ICD–10 diagnoses of depression, anxiety-based disorders (phobias, generalised anxiety disorder, panic disorder and obsessive–compulsive disorder) and mixed anxiety/depression. We defined three main exposure groups: no common mental disorders; subthreshold psychiatric symptoms (CIS–R score 6–11 and no ICD–10 diagnosis); and mixed anxiety/depression.

Functional disability was studied using seven domains of activities of daily living including personal care, using transport, medical care, household activities, practical activities, dealing with paperwork and managing money (see online supplement). Those employed were asked to report the number of days they had been off sick from work in the past year in a cohort employed at both waves ($n = 1573$). Logistic regression was used to estimate the association of psychiatric morbidity and the outcomes, while adjusting for potential confounders (Table 1). Analyses were conducted using svy commands in Stata I/C v.10.1 (Windows). Probability weights were used to account for the stratified sampling and non-response. Population attributable-risk fractions were calculated using the alogit procedure.

Results
Among people with no functional disability at baseline ($n = 1573$), 15.2% had subthreshold symptoms and 11.9% a common mental disorder. In total, 60% of those with common mental disorders had mixed anxiety/depression, 28.6% an ICD–10 anxiety-based disorder and 11.4% a depressive episode.

During follow-up, 14.8% of participants with common mental disorders at baseline developed a new functional disability, compared with 12.6% of those with subthreshold symptoms and 7.7% of those with no common mental disorder (Fig. DS1). A graded relationship was also observed in mean days lost from work; those with no common mental disorders at baseline missed 4.1 days (s.d. = 1.9), those with subthreshold symptoms 7.6 days (s.d. = 2.5) and those with a common mental disorder 13.2 days (s.d. = 4.0). An estimated 148.3 million days were lost from work in the year preceding $T_2$ when extrapolating results to the UK population. These comprised: no common mental disorders 70.3 million days (95% CI 37.3–103.0), subthreshold symptoms 32.4 million days (95% CI 21.6–43.2), mixed anxiety/depression 25.3 million days (95% CI 16.0–34.5), ICD–10 anxiety-based disorders 10.9 million days (95% CI 3.3–18.3) and ICD–10 depression 9.4 million days (95% CI 1.1–17.7).

Individuals with baseline subthreshold symptoms or common mental disorders were both twice as likely to report a new-onset functional disability at $T_2$ compared with those with no common mental disorders (Table 1). A non-linear relationship was observed between subthreshold symptoms and work days lost. There was no association between subthreshold symptoms and single-day work absences (adjusted odds ratio (OR) = 1.1, 95% CI 0.8–1.7) but these individuals were two times more likely to report absences lasting over 14 days (Table 1). Common mental disorders, by contrast, were associated with over a twofold increase in odds for both these outcomes (adjusted OR for 1 day lost 2.2, 95% CI 1.5–3.1; for 14-days lost OR = 2.9, 95%
CI 1.6–5.2.) Population attributable-risk fractions for subthreshold symptoms explained a much greater proportion of new-onset functional disability (11.1%) than ICD–10 depression (3.0%) or anxiety-based disorders (5.3%).

### Discussion

We found that both subthreshold symptoms and common mental disorders pose a substantial risk of functional disability and absence from work, even after accounting for potential confounders. Almost half the aggregate burden of new-onset functional disability in the population as a result of psychiatric morbidity could be attributed to subthreshold symptoms. Almost two-thirds of the future disability attributable to psychiatric symptoms in the population may be missed if analyses are restricted to individuals with anxiety and depressive disorders.

Our results add to previous findings that disability rises in increments with increasing psychiatric symptom load, not just for depression but for the entire spectrum of common mental disorders. We found that the largest proportion of disability even in the common mental disorders group was contributed by mixed anxiety/depression that is itself often considered a subthreshold category. We highlight that the aggregate costs of psychiatric symptoms to society may be grossly underestimated when studying specific psychiatric diagnoses in isolation.

The use of a structured psychiatric interview, a large representative sample and prospective design are strengths of this study. Limitations include attrition in the two waves leading to an overall 56% response rate, although we accounted for non-response using probability weights. Data collection at two time points, with little knowledge of the intervening period may have led to some random misclassification. Finally, our broad definition of functional disability may overestimate disability; and the possibility of recall bias of reported work days lost cannot be excluded.

The importance of subthreshold symptoms should not be underestimated. However, this should not be interpreted as if we suggest the creation of a new diagnostic category. Since subthreshold symptoms are likely to be on the same continuum as common mental disorders, rather than distinct disorders, adding dimensional approaches to supplement categorical diagnostic systems may help improve their recognition. Development of strategies to identify and manage these problems may reduce future disability associated with them, generating significant societal savings.

### Table 1 Relationship between baseline psychiatric morbidity and new-onset functional disability and >14 days off work at 18-month follow-up: weighted logistic regression analyses and population attributable fractions

<table>
<thead>
<tr>
<th>No common mental disorders</th>
<th>Onset of functional disability at T&lt;sub&gt;2&lt;/sub&gt; (in cohort with no functional disability at T&lt;sub&gt;1&lt;/sub&gt;, n = 1573)</th>
<th>&gt;14 days off work in past year at T&lt;sub&gt;2&lt;/sub&gt; (in cohort employed at both waves, n = 1317)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crude OR (95% CI)</td>
<td>Adjusted OR&lt;sup&gt;a&lt;/sup&gt; (95% CI)</td>
</tr>
<tr>
<td>No common mental disorders</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Subthreshold symptoms</td>
<td>1.7 (1.1–2.7)&lt;sup&gt;*&lt;/sup&gt;</td>
<td>2.2 (1.3–3.6)&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>Common mental disorders</td>
<td>2.1 (1.3–3.3)&lt;sup&gt;**&lt;/sup&gt;</td>
<td>2.5 (1.5–4.3)&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>Mixed anxiety/depression</td>
<td>1.7 (1.0–3.0)</td>
<td>2.2 (1.1–4.3)&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>ICD–10 anxiety-based disorder</td>
<td>2.7 (1.5–4.8)&lt;sup&gt;**&lt;/sup&gt;</td>
<td>2.9 (1.5–5.6)&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>ICD–10 depression</td>
<td>2.9 (1.3–6.6)&lt;sup&gt;**&lt;/sup&gt;</td>
<td>3.3 (1.3–8.1)&lt;sup&gt;**&lt;/sup&gt;</td>
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</table>

Discussion: The importance of subthreshold symptoms should not be underestimated. However, this should not be interpreted as if we suggest the creation of a new diagnostic category. Since subthreshold symptoms are likely to be on the same continuum as common mental disorders, rather than distinct disorders, adding dimensional approaches to supplement categorical diagnostic systems may help improve their recognition.

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### Acknowledgements

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### References

Data supplement

Activities of daily living items in the questionnaire

Based on the Medical Research Council Needs for Care Assessment.8

Do you have any difficulty with any of the following activities:
(a) personal care such as dressing, bathing, washing, or using the toilet? (yes/no)
(b) getting out and about or using transport? (yes/no)
(c) medical care such as taking medicines or pills, having injections or changes of dressing? (yes/no)
(d) household activities such as preparing meals, shopping, laundry and housework? (yes/no)
(e) practical activities such as gardening, decorating or doing household repairs? (yes/no)
(f) dealing with paperwork such as writing letters, sending cards or filling forms? (yes/no)
(g) managing money such as budgeting for food or paying bills? (yes/no)

Fig. DS1  Onset of activities of daily living (ADL) difficulties at follow-up by symptom group in those with no difficulty at baseline (n = 1573, weighted percentages)
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