Prevalence of mental health conditions in cancer patients in acute care—a meta-analysis

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Background: To what extent is professional psychosocial care of cancer patients in acute hospitals necessary? In a previous meta-analysis, prevalence of psychological sequelae was found to be the same as in the general population. New studies with advanced methodology have been published since; therefore, an updated meta-analysis was needed.

Methods: We systematically reviewed studies assessing the prevalence of mental health conditions in acute care hospitals with comprehensive structured clinical interviews.

Results: Of 46 retrieved manuscripts, eight were deemed eligible for this meta-analysis. Within the studies, 1448 cancer patients had been assessed, whereby 456 were diagnosed having a mental health disorder. The prevalence rates ranged from 23% (breast cancer patients in Turkey) to 53% (elderly cancer patients in Uganda). The combined prevalence estimate is 32% (95% confidence interval 27% to 37%).

Conclusion: One-third of the cancer patients in acute care hospitals is suffering from mental health disorders and need appropriate treatment.

Key words: comorbidity, depression, mental health, meta-analysis, neoplasms, psychology

Introduction and objectives

Comprehensive cancer care includes not only medical procedures but should also include psychosocial support if needed. The issue of whether psychological care should be delivered by mental health professionals has been often debated and specifically whether hospitals should employ psycho-oncologists to deliver such care remains contested [1–3].

Having a clear understanding of the prevalence of common mental disorders in patients with cancer is important not only from the point of planning services geared towards holistic care but also because there is evidence to indicate that untreated psychiatric comorbidities in patients with cancer have a significant impact on disability [4] and quality of life [5] and they tend to worsen if not treated adequately [6].

In a previous meta-analysis [7] of studies published from 1980 to 1994, the authors concluded that the prevalence of all mental disorders, but depression in cancer patients, was the same as in the general population. However, this meta-analysis was on the basis of studies that used screening instruments instead of comprehensive clinical interviews, which remain the gold standard for diagnosing mental disorders. Additionally, the investigators did not weight the results of the single studies according to the number of the study participants.

Therefore, the purpose of the current review was to conduct a new meta-analysis of studies, which exclusively used structured clinical interviews. Validated and comprehensive instruments internationally regarded as being valid instruments for the assessment of mental disorders are the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (DSM) (SCID), the Composite International Diagnostic Interview (CIDI), the Clinical Interview Schedule (CIS), and the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) [8–11].

Methods

A systematic review was undertaken to find studies investigating the prevalence of nonpsychotic psychopathology in cancer patient populations in acute care hospital settings with structured clinical interviews.

Selection criteria

Inclusion criteria for the review were as follows: study population consisted in part or entirely of acute cancer inpatients; assessment of psychiatric morbidity was done with SCID, CIDI (or Diagnostisches Expertensystem, which is a computerised form of CIDI), CIS, CIS-R, or SCAN; and conference proceedings or original articles. Exclusion criteria were as follows: reviews, case reports, and incomplete interviews. Although depression and anxiety are probably the most common conditions in daily clinical practice, other problems, such as adjustment disorders, alcohol or drug dependencies,
acute- and post-traumatic stress or somatoform disorders are relevant as well. Not considering these diagnoses may lead to an underestimation of the overall prevalence of mental disorders in cancer patients. Therefore, studies with incomplete interviews, i.e. where the prevalence of only selected diagnoses were investigated, were excluded. However, if psychotic disorders were not included, it was not a reason for exclusion.

If more than one report had been published on a study, only the paper with the most detailed information about prevalence was selected for this review.

**search strategy**

Databases searched were PsycEXTRA, PsycINFO, Global Health, Medline, EMBASE, and ISI Web of Science (i.e. the Science Citation Index Expanded, Social Sciences Citation Index, and Conference Proceedings Citation Index).

The search was carried out on 15 March 2009, without restrictions regarding publication year or language. Search terms were initially on the basis of words used in key publication titles, abstracts, and subheadings; tested in a pilot; and refined afterwards in order to enhance specificity and sensitivity of the search. The following search terms were used in the final search:

1. TS = (distress or adjustment or psych* or mental)
2. TS = (cancer or tumor or oncolog* or neoplasms or malign*)
3. TS = (SCID or SKID or CIDI or 'structured clinical interview' or 'Composite International Diagnostic Interview' or 'CIS-R' or 'clinical interview schedule' or 'schedule? for clinical assessment')
4. TS = (hospital or 'acute care' or in?patient)

Additionally, hand searches were carried out for volumes of 'Psycho-Oncology', the journal of the International Psycho-Oncological Society, 1998–2009.

In cases where more heterogeneous populations (which included cancer patients as a subgroup) were investigated but only the overall prevalence rates had been reported, the authors were contacted by e-mail and asked whether they could provide further information.

**quality assessment**

The main quality criterion in the evaluation of the prevalence of mental health disorders is using a validated and, even more important, comprehensive instrument. For this review, only studies that had used either of the standard instruments (SCID, CIDI, CIS, or SCAN) were included in order to ensure high-quality assessment of mental conditions in the primary studies.

Other quality criteria like application by trained personnel and calculation of inter-rater reliability, if applicable, were recorded. Response rates (RRs) (percentage of participants out of all eligible patients) were documented.

**data extraction and synthesis**

All potentially relevant papers’ abstracts found by electronic and hand searches were reviewed. Papers that were clearly not eligible from the information given in the abstract according to the selection criteria were excluded at this stage, for all other articles the full text was read.

If more than one report had been published on a study, only the paper with the most detailed information about prevalence was selected for this review. Of 46 studies identified (n = 33 by ISI, additional n = 12 by Medline, n = 1 by hand search, no additional papers by PsycEXTRA, PsycINFO, Global Health, or EMBASE), 26 were considered potentially relevant according to the abstract. In two cases, no access to the full text could be achieved, either through libraries or through e-mail contacting the author. One of those, a study from Pakistan [12], appeared to fit the inclusion criteria well; however, the information given in the abstract was not considered to be sufficient and resulted in the exclusion of this study. Of the remaining 24 papers, the full text was read and further 16 publications were excluded (see Figure 1 for all exclusions). Consequently, eight papers met all inclusion criteria and their prevalence estimates were included in the overall meta-analysis.

**prevalence rates**

In the selected studies, a total of 1448 patients were evaluated, whereby 456 (31.5%) were cases according to the structured clinical interview used. The prevalence rates ranged from 23% (breast cancer patients in Turkey) to 53%...
The results of the meta-analysis revealed a combined estimate of 31.7% (random effects model). There was evidence for heterogeneity between the studies ($P = 0.002$). The forest plot (Figure 3) confirmed that seven of the eight studies provided relatively similar estimates, whereas the Ugandan study had higher prevalence rates. However, after exclusion of the Ugandan study, there was still some evidence for heterogeneity ($P = 0.01$, combined prevalence rate 30.4%). The variation attributable to heterogeneity was 30%. Therefore, no fixed effects model was calculated.

**discussion**

This review and meta-analysis aimed to define the frequency of mental health conditions in cancer patients that are treated in acute care hospitals. Eight studies met all the inclusion criteria. Their prevalence rates ranged from 23% to 53%. The heterogeneity between the studies may have been due to the different cancer populations included, i.e. elderly versus younger patients, or patients with different locations or stages of tumour, therefore with differing treatments of varying intrusiveness. Reasons for the heterogeneity could not be further explored because of the small number of studies included. We know, however, that patients treated with chemotherapy, or during the time of

<table>
<thead>
<tr>
<th>Year</th>
<th>Authors</th>
<th>Reference</th>
<th>Country</th>
<th>Sample</th>
<th>N</th>
<th>RR (%)</th>
<th>Instr</th>
<th>Administered by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>Costantini et al.</td>
<td>[13]</td>
<td>Italy</td>
<td>Breast cancer patients after adjuvant chemotherapy at first follow-up visit</td>
<td>132</td>
<td>67</td>
<td>SCID</td>
<td>Psychologist</td>
</tr>
<tr>
<td>2000</td>
<td>Härter et al.</td>
<td>[14]</td>
<td>Germany</td>
<td>Heterogeneous cancer patients: breast, 37%; gymn, 33%; GI, 10%</td>
<td>82</td>
<td>51</td>
<td>CIDI</td>
<td>Trained psychologists, doctors or psychology students in last term</td>
</tr>
<tr>
<td>2001</td>
<td>Wancata et al.</td>
<td>[15]</td>
<td>Austria</td>
<td>Heterogeneous cancer patients</td>
<td>114</td>
<td>93</td>
<td>CIS</td>
<td>Trained psychiatrists; inter-rater reliability between pairs of raters: 0.79–1.00 (weighted kappa)</td>
</tr>
<tr>
<td>2004</td>
<td>Keller et al.</td>
<td>[16]</td>
<td>Germany</td>
<td>Cancer patients 1–3 days before surgery: GI, 69%; soft tissue: 8%</td>
<td>78</td>
<td>79</td>
<td>SCID</td>
<td>Trained psychologist; inter-rater agreement (double rating of audio-taped interviews by second psychologist): 98%</td>
</tr>
<tr>
<td>2004</td>
<td>Atesci et al.</td>
<td>[17]</td>
<td>Turkey</td>
<td>Heterogeneous cancer patients after chemotherapy: hema, 31%; GI, 15%; gymn, 13%; lungs, 14%</td>
<td>117</td>
<td>89</td>
<td>SCID</td>
<td>Psychiatrist</td>
</tr>
<tr>
<td>2007</td>
<td>Singer et al.</td>
<td>[18]</td>
<td>Germany</td>
<td>Heterogeneous cancer patients at second day in hospital: urological, 30%; GI, 24%; gymn, 14%; breast, 11%; H&amp;N: 7%</td>
<td>689</td>
<td>62</td>
<td>SCID</td>
<td>Trained and supervised psychologists or psychology or medical students</td>
</tr>
<tr>
<td>2007</td>
<td>Nakasujja et al.</td>
<td>[19]</td>
<td>Uganda</td>
<td>Elderly cancer patients (260 years)</td>
<td>32</td>
<td>n.i.</td>
<td>SCID</td>
<td>Psychiatrist</td>
</tr>
<tr>
<td>2008</td>
<td>Ozalp et al.</td>
<td>[20]</td>
<td>Turkey</td>
<td>Breast cancer patients</td>
<td>204</td>
<td>92</td>
<td>SCID</td>
<td>Psychiatrist</td>
</tr>
</tbody>
</table>

N, number of tumour patients with completed CIDI or SCID; RR, response rate (percentage of participating patients out of all eligible); Instr, instrument used for diagnosis of mental disorders; SCID, Structured Clinical Interview for DSM; CIDI, Composite International Diagnostic Interview; CIS, Clinical Interview Schedule; gymn, gynaecological cancer patients; GI, gastrointestinal cancer patients; hema, patients with haematological malignancies; H&N, head and neck cancer patients; n.i., no information provided.
diagnosis (and thus during high levels of uncertainty), have higher prevalence rates of mental disorders, whereas advanced compared with early cancer stages appear not to be associated with higher frequencies of mental conditions [18, 22].

However, regardless of the heterogeneity, all but three CIs of the prevalence estimates did not include the prevalence rates in the German general population, which is 20% (95% CI 19% to 21%) [21]. The overall prevalence in the acute care cancer patients was clearly higher with 31% (95% CI 26% to 36%). This result is in contrast to the outcomes of the previous meta-analysis [7] that reported that the prevalence of mental disorders in cancer patients is not increased compared with the general population. This discrepancy may be explained by the fact that we included only studies that used structured clinical interviews which have a higher sensitivity and specificity, compared with the screening instruments that were included in the earlier review [7]. In recent years, there have been a number of studies which have used improved measurement tools for mental disorder and which have incorporated study designs conducted to a higher standard. This has allowed us to carry out an updated meta-analysis which is arguably more valid than the review originally carried out by van’t Spijker et al., 10 years ago.

There are some limitations of our review, which need to be addressed. It could be argued that the DSM and International Classification of Diseases (ICD-10) criteria used are not optimal in identifying psychosocial problems in medicine, including oncology. A certain percentage of cancer patients who do not meet the criteria for DSM diagnoses may screen positive on different systems like the Diagnostic Criteria for Psychosomatic Research [23].

In addition, the categorical approach for identifying mental health condition has been criticised [24]. Within the general hospital setting, a large proportion of mental disorders may present as ‘subthreshold’ psychological distress, which may be missed if a purely categorical approach to diagnosis is used [25]. Categorical approaches were utilised over dimensional approaches in this review as this enhanced comparability across studies. However, had we also included subthreshold conditions, it is likely that prevalence estimates would have, in fact, been even higher than those which were described in this report.

Additionally, we also only included inpatient cancer patients in acute care hospitals in order to enhance homogeneity of the samples. However, we did not restrict our analysis to any specific cancer population as this would not have been valid in terms of clinical practice. In acute care hospitals, psycho-oncologists rarely work with single-tumour site patients solely; breast cancer patients are probably the only exception [26]. Generally, the decision on whether a psycho-oncologist needs to be appointed in the hospital is on the basis of an overall prevalence estimate.

### Table 2. Estimation of prevalence of mental disorders in the included studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Estimation of prevalence (%)</th>
<th>95% CI Lower bound (%)</th>
<th>95% CI Upper bound (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costantini et al.</td>
<td>38</td>
<td>30</td>
<td>46</td>
</tr>
<tr>
<td>Härter et al.</td>
<td>24</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>Wancata et al.</td>
<td>39</td>
<td>30</td>
<td>48</td>
</tr>
<tr>
<td>Keller et al.</td>
<td>28</td>
<td>18</td>
<td>38</td>
</tr>
<tr>
<td>Atesci et al.</td>
<td>30</td>
<td>22</td>
<td>38</td>
</tr>
<tr>
<td>Singer et al.</td>
<td>32</td>
<td>29</td>
<td>36</td>
</tr>
<tr>
<td>Nakasujja et al.</td>
<td>53</td>
<td>36</td>
<td>70</td>
</tr>
<tr>
<td>Özalp et al.</td>
<td>23</td>
<td>17</td>
<td>29</td>
</tr>
<tr>
<td>Combined</td>
<td>32</td>
<td>27</td>
<td>37</td>
</tr>
</tbody>
</table>

CI, confidence interval.

**Figure 3.** Prevalence of mental disorders in cancer patients in acute care hospitals. The vertical line represents the 4-week prevalence in the general population (Germany).
However, further subdivision of patient groups (tumour sites, early versus advanced diseases, gender, age groups, etc.) would have been interesting, but there have been not enough studies conducted to date to carry out such analyses.

Another explanation for the discrepancies between cancer and general populations’ prevalence may be selection bias. The RR in the German general population study was only 61% and although the authors reported no evidence for any major systematic sample bias [21], it cannot totally be ruled out that affected persons perhaps tend not to take part in such a survey. Although this self-selection effect may occur in hospitals as well, it can be assumed that it is less pronounced there because the investigation takes place in a more personal way (i.e. not on the telephone, repeated contacts, and offer of psychosocial support). A second problem is that the German population prevalence study [21] excluded people over the age of 65. As cancer tends to be more prevalent in elderly populations, comparison of both populations should be made with caution.

However, in other representative general population studies, the prevalence rates were also remarkably lower than in the cancer populations, e.g. 7.5% in Northern Ireland [27] or 16% in the UK [28], both 4-week-prevalences, and 17% (12-month prevalence) in Lebanon [29]. Similarly, the British household survey revealed increased psychiatric morbidity in somatically ill persons [30], supporting the validity of this review.

One may wonder why it is important to stress the fact that cancer patients suffer more frequently from psychiatric disorders than the general population. One reason for this is because mental health conditions often go undetected by health care providers [2, 31, 32] (S. Singer, A. Brown, J. Einenkel et al., unpublished data). Since psychiatric conditions in cancer patients have been shown to be easily managed with psychotherapy [33, 34], pharmacotherapy [35], or a combined approach [36], their identification is crucial, preferably at an early stage of oncological treatment [37]. If oncologists are more aware of the fact that common mental disorders occur in one-third of their patients, they may pay more attention to these symptoms and include specific questions screening for this in their consultations. In addition, the use of questionnaires as screening instruments may become more acceptable than it is at present [38].

Another rationale is to inform policy makers on the planning of psycho-oncological care, especially the staffing levels. However, it needs to be stressed that prevalence data alone should not be the basis for decision making in that area. Psycho-oncological input may be needed even when diagnoses according DSM-IV or ICD-10 are not present, e.g. when the patient lacks information about the disease. In addition, mental health care in the oncological field is delivered by different members of the team, i.e. oncologists, nurses, psychiatrists, psychotherapists, social workers, speech therapists, etc. Thus, understanding the prevalence of mental disorders is just one stone in the mosaic of health care planning.

conclusions

This meta-analysis has demonstrated that one-third of cancer patients in acute care suffer from mental disorders and hence need appropriate treatment. In some countries, there is a lack of paid positions for mental health care professionals in acute cancer care and, perhaps as a consequence, undertreatment is prevalent in between 40% and 90% of cases [39, 40]. In comprehensive oncological care, this problem needs to be urgently addressed.

Pragmatically, servicing the psychological needs of one-third of cancer inpatients by mental health care professionals seems to be an impossible task. In our view, not all psychosocial problems need to be treated by a psycho-oncologist. On the contrary, most psychosocial support can (and should) be offered by nurses, oncologists, surgeons, and other nonpsychological professionals [18]. The decision of whether a psychiatrist or psychotherapist is needed has to be taken on a case-by-case basis and should not be solely related to the diagnoses but also to the severity of the symptoms, the availability of mental health care professionals, the skills of the nurse/medic, and of course to the preferences of the affected patient.

Further research is needed to identify reasons for the heterogeneity in prevalence rates. It may be that tumour site, stage, and treatment as well as cultural factors may play a role, but this needs further investigation. In addition, a fair amount of oncological care takes place in outpatient settings. It would therefore be worthwhile to carry out another meta-analysis of studies, investigating the prevalence of mental disorders at that stage of cancer care.

acknowledgements

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disclosure

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references


