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Depression assessment and classification in palliative cancer patients: a systematic literature review

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Abstract

The objective of this study was to review the literature on depression in palliative cancer care in order to identify which assessment methods and classification systems have been used in studies of depression. Extensive electronic database searches in PubMed, CancerLit, CINAHL, PsychINFO, EMBASE and AgeLine as well as hand search were carried out. In the 202 included papers, 106 different assessment methods were used. Sixty-five of these were only used once. All together, the Hospital Anxiety and Depression Scale (HADS) was the most commonly used assessment method. However, there were regional differences and while the HADS dominated in Europe it was quite seldom used in Canada or in the USA. Few prevalence and intervention studies used assessment methods with an explicit reference to a diagnostic system. There were in total few case definitions of depression. Among these, the classifications were in general based on cut-off scores (77%) and not according to diagnostic systems. The full range of the DSM-IV diagnostic criteria was seldom assessed, i.e. less than one-third of the assessments in the review took into account the duration of symptoms and 18% assessed consequences and impact upon patient functioning. A diversity of assessment methods had been used. Few studies classified depression by referring to a diagnostic system or by using cut-off scores. Evidently, there is a need for a consensus on how to assess and conceptualize depression and related conditions in palliative care.

Keywords
depression, depressive disorder, palliative care, cancer, assessment, classification

Introduction

Depression has probably been studied more than any other mental disorder in palliative care. However, there are no agreed-upon methods on how to assess and classify depression either for research or clinical purposes.

Previous reviews[1–4] on the prevalence and treatment of depression in palliative care have pointed to

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diagnosis and classification of depression as problematic. This has limited the reviews' possibilities to establish reliable prevalence rates,[1,2] summarize available data of treatment,[2] provide evidence-based guidelines[1] and evaluate the effectiveness of psychotherapeutic interventions.[3]

In general, the term depression is used with different meanings; as a specific diagnosis (e.g. major depressive disorder and related diagnoses), as a looser category implying significant distress, or as a colloquial term meaning unhappiness or distress. This variation of meaning is reflected in the widely varying prevalence estimates of depression in palliative care patients (3–58%).[1] This inconsistency can obscure the selection of candidates for specific treatments such as antidepressants for a major depressive disorder. In general, proper diagnostics help in differentiating those who probably will benefit from a given treatment from those who will not. In relation to depression in palliative care, there is reason to believe that the inconsistencies in assessment and classification can lead to over- and/or under-treatment, both of which can be problematic for the palliative patients with short life expectancies and multiple symptoms.[5]

Depression can be conceptualized in two major ways: as a category or as a dimension. The categorical perspective views depression as a disorder, while the dimensional perspective views depression as increased levels of depressive symptoms without necessarily constituting a disorder. Within the categorical perspective, depression can be defined by the fulfilment of a set of criteria such as in the Diagnostic and Statistical Manual of Mental Disorders—IV (DSM-IV).[6] The DSM-IV criteria for a major depressive episode include the presence of at least five out of nine symptoms during the same 2-week period and should represent a change from previous functioning. At least one of the symptoms is either depressed mood or loss of interest or pleasure (anhedonia).

Irrespective of conceptualizing depression categorically or dimensionally, the overlap between symptoms attributable to the physical disease and some depressive symptoms is particularly challenging in relation to depression in palliative patients as in the somatically diseased in general. Fatigue, changes in appetite and weight, sleep and concentration problems all count as somatic depressive symptoms in the psychiatric context, and can be explained by the disease and/or the treatment, as well as by depression. It may therefore not be appropriate to assess depression in palliative care in the same way as in physically 'healthy' populations, directly transplanting assessment methods developed for these into somatically ill patients. Different methods have been proposed to overcome this challenge. Within the dimensional perspective, some questionnaires specifically designed for use in physically ill populations have excluded the somatic depressive symptoms. Within the categorical perspective, different techniques have been proposed to adjust the diagnostic criteria in order to reduce the risk for misdiagnosis by counting the somatic depressive symptoms as part of a depression disorder.[7]

Additional challenges in relation to the assessment and diagnosis of depression are the lack of consistency regarding the use of symptom severity thresholds and assessments conducted without assessing duration and functional decline. Assessments performed without taking these into account hinder differentiation between normal reactions such as sadness or transient distress and depression. We do not know to what extent these challenges including adjustment of assessment methods and classification systems have been met in studies of depression in palliative care. In the worst case, the knowledge base on depression in palliative care can be biased due to not taking these issues into account.

In palliative care research in general, variations and a lack of consensus on assessment and classification of symptoms and syndromes are not confined to depression. These issues are also relevant for other clinical conditions such as pain and cachexia.[8] On this background, working towards common methods for the assessment and classification of depression, pain and cachexia by similar approaches is a major task for The European Palliative Care Research Collaborative (EPCRC).[8] The present systematic literature review was conducted in order to identify which assessment methods and classification systems have been used in studies of depression in palliative care. The following research questions were posed:

(1) What are the assessment methods that have been used according to the type of study, year of study, sample size and geographical region?
(2) In studies that report on depression cases, what are the classification systems that have been used to define caseness and how have the criteria of duration and functional consequences of symptoms been met?

Methods

A systematic literature review of studies including palliative cancer patients was performed. The following steps were conducted: literature search, primary screening of titles, abstracts and keywords, and extraction of data from the retrieved full-length articles.

Patients in focus for this review, i.e. palliative cancer care patients, constitute the majority of the palliative care population. To a large extent, they suffer from similar symptoms and side-effects of treatment. Therefore, these conditions make this group presumably homogeneous.

Literature search

Relevant articles were identified from searches in the following databases: MEDLINE (PubMed; 1966–2007), CancerLit (1983–2007), CINAHL (1982–2007), PsychINFO (1887–2007), EMBASE (1980–2007) and AgeLine (1978–1999). The search terms were 'depression' or 'depressive disorder' and 'palliative care' or 'terminal care' or 'hospice' or 'palliative medicine' or 'advanced cancer'.

Primary screening

The titles, abstracts and keywords of the citations were screened independently by two authors (EW, EB) to select all papers of possible relevance. Papers selected by both readers were included for further reading. Those identified by only one of the readers were discussed for consensus on inclusion or not. The predefined criteria for inclusion were that the paper concerned a clinical study including a sample of adult ($\geq$18 years) palliative cancer patients and one or more assessments of depression/distress and/or classification of depression. An assessment method was defined as how data on symptoms of depression/distress were collected (e.g. a questionnaire or an interview). Classification was defined as the categorization of these data into predefined categories for being a case (i.e. a case definition related either to a diagnostic system or to a predefined cut-off score). The criteria for exclusion of a paper were non-English-language papers, papers not measuring depression/distress, papers concerning samples with less than 50% advanced cancer patients, papers addressing children or adolescents and reviews, commentaries and case reports.

In order to attain optimal reliability, a pilot study was performed regarding the screening procedure. The pilot study demonstrated that the search criteria yielded citations with no information about depression/distress. Therefore the inclusion criteria were somewhat modified, i.e. depression/distress had to be explicitly mentioned in the title, abstract or as a keyword.

From the 2419 papers identified in the searches, 1939 were excluded due to the following reasons: reviews, commentaries and case reports (36%); papers addressing a sample other than adult cancer patients (30%); papers not measuring depression/distress (9%); non-English-language papers (9%); duplicates (5%); papers concerning samples with less than 50% advanced cancer patients (3%).

Out of the 480 remaining full-text papers, 278 were excluded due to the following reasons:

papers concerning samples with less than 50% advanced cancer patients (64%); papers not measuring depression/distress (13%); papers addressing a sample other than adult cancer patients (9%); reviews, commentaries and case reports (8%); non-English-language papers (3%); papers or abstracts with insufficient information on sample or assessment (2%); duplicates (1%).

Data extraction

The full-length papers were read and consequently categorized according to the following subheadings:

- *Paper* – including type of study (i.e. prevalence, observational (in which relations among variables are observed but not manipulated), validation, or intervention study), country and publication year.
- *Sample* – including inclusion/exclusion criteria, sample size, age, gender, performance status, previous history of depression, current anti-depressant medications, number and type of cancer diagnoses, in/outpatient, life expectancy and survival time (data to be reported in a forthcoming publication)
- *Assessment methods* – including content of the assessment method, method of collecting data, assessment of duration of depression and functional decline.
- *Classification systems* – including identified systems for a case definition of depression/distress, explicitly related to a diagnostic system or to a classification based upon cut-off scores.

A second pilot study was performed prior to the data extraction. The results of this pilot study indicated that the descriptions of the samples varied considerably. Thus, papers reporting on 'advanced cancer patients' were heterogeneous and did not necessarily include palliative cancer patients. To be able to generalize the findings from the review to the palliative population, a working definition of a palliative population was therefore formulated. The working definition aimed at further describing the term 'palliative cancer patients' as stated in the inclusion criteria. Therefore, to include a paper the description of the sample should include one or more of the following descriptors:

- life expectancy at most 12 months;
- survival time at most 9 months;
- use of the term 'palliative' in describing the sample;
- use of the term 'terminal' in describing the sample;
- the sample is connected to a palliative care team, a palliative care unit or a hospice.

Table 1. Categories of retrieved assessment methods

(1) STRUCTURED DIAGNOSTIC INTERVIEWS
Structured diagnostic interviews or questionnaires with *explicit* reference to a diagnostic system.
Example: The Primary Care Evaluation of Mental Disorders (PRIME-MD)

(2) UNSTRUCTURED DIAGNOSTIC INTERVIEWS
Interviews or evaluations *explicitly* referring to a diagnostic system. The category also includes unknown assessment methods with explicit reference to a diagnostic system. None of the assessment methods in this category refer to a structured diagnostic interview as in category 1.
Example: Interviews referring to Diagnostic and Statistical Manual of Mental Disorders—IV (DSM-IV)

(3) STRUCTURED CLINICAL INTERVIEWS
Clinical interviews or evaluations without an explicit reference to a diagnostic system.
Example: Hamilton Depression Rating Scale (HDRS)

(4) SPECIFIC QUESTIONNAIRES
Depression/distress specific questionnaires
Example: Versions of the Becks Depression Inventory (BDI)

(5) GENERAL QUESTIONNAIRES
Health related quality of life (HRQoL), generic or disease specific questionnaires that include emotional distress as one dimension
Example: The Edmonton Symptom Assessment System (ESAS)

(6) SINGLE/TWO ITEMS
Single/two-item questions or a combination of 1-3 questions into a algorithm.
Example: Single item: Are you depressed?

The assessment methods were classified according to six pre-defined categories, see Table 1 for details. These categories were formulated based upon general knowledge (EW, JHL) of the content of depression/distress assessment methods. The retrieved assessment methods were then systematized into these categories by two authors (EW, EB). Assessments methods with unclear content were discussed and agreed upon.

In addition, all assessment methods were systematized according to type of study, publication year, sample size, geographical region. Thus, the *frequency* of the usage of every assessment method was calculated. Each study could have used more than one assessment method.

In order to identify how depression cases had been defined, the assessments in each paper were examined. Since each study could include more than one assessment method, the number of assessments exceeds the number of studies. The assessments were subsequently systematized into:

(1) a category for case definition of depression/distress, explicitly referring to a diagnostic system (i.e. structured diagnostic interviews, unstructured diagnostic interviews);
(2) a category for case definition of depression/distress, based upon e.g. cut-off scores (structured clinical interviews, specific questionnaires, general questionnaires, single/two items);
(3) no classification.

Assessment methods that reported on depression cases were further analysed with regards to classification system.

Results

Identification of relevant articles

The initial search of relevant databases resulted in 2419 citations after duplicates were removed. After the screening procedure, 202 full-length articles were included in the review.

Assessment

Assessment methods: In the 202 included papers, 106 different methods were used for assessing depression/distress. These assessment methods were categorized according to the pre-defined categories as: structured diagnostics interviews ($N=11$); unstructured diagnostic interviews ($N=6$); structured clinical interviews ($N=8$); specific questionnaires ($N=28$); general questionnaires ($N=40$); and single/two item questions ($N=13$). Four papers included in the category unstructured diagnostic interviews referred to a diagnostic system but did not report on any assessment method, i.e. the papers contained information on how patients were classified but not on how they were assessed.

As mentioned, each study could employ more than one assessment method. The Hospital Anxiety and

Table 2. Ways of assessing, classifying depression/distress in each type of study

	Observational studies	Prevalence	Intervention: Depression outcome	Validation: Depression assessment	Validation: Other assessment	Intervention: Other outcome	Other or not specified
Unstructured diagnostic interviews	4	2	5	4			2
Structured diagnostic interviews	10	9		7	3		1
Structured clinical interviews	9	4	3		3		4
Specific questionnaires	54	24	18	23	10	10	4
General questionnaires	41	22	15	2	11	5	7
Single/two items	10		1	10			
TOTAL	128 (38%)	61 (18%)	42 (12%)	46 (14%)	27 (8%)	15 (5%)	18 (5%)
Most frequent	HADS: 31 ESAS: 10 EORTC QLQ C-30: 9	HADS: 12 ESAS: 7	HADS: 7 CES-D: 6	HADS: 9	HADS: 7 ESAS: 5	HADS: 7	
Methods occurring once	39	24	13	23	9	6	10

Depression Scale (HADS)[9] was used in 76 studies and was therefore the most commonly used assessment method. Other rather frequently used assessment methods were the Edmonton Symptom Assessment Scale (ESAS)[10] (30 studies), the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire—C30 (EORTC QLQ-C30)[11] (17 studies) and the Beck Depression Inventory (BDI)[12] (all versions summarized, 15 studies). In total, 65 assessment methods were only used once.

Type of study: The most frequent type of studies were observational (38%) and prevalence studies (18%), see Table 2 for details. A low number of the intervention 12% (5 of 42) and prevalence studies 18% (11 of 61) used structured or unstructured diagnostic interviews for the assessment. Independent of the type of study, specific questionnaires were used most commonly. For instance, in prevalence studies specific questionnaires were employed in 39% (24 of 61) of the assessments. General questionnaires were rarely included in validation studies of depression assessment methods (4%), although they were frequently employed in all other studies. The single/two item assessment methods were mainly used in these validation studies and in the observational studies.

Year of study: The number of published papers increased with time, most pronounced after year 2000. The specific and general questionnaires have been frequently used throughout the whole period from 1990 until today and especially the HADS. The structured diagnostic interviews and the unstructured diagnostic interviews were less frequently used (13–16%) than the HADS during the same period (1990–2007). However, they were not used before 1990. Throughout the whole period 1970–2007, many assessment methods were used only once (see Table 3 for further details).

Sample size:

In Table 4 the papers are grouped by sample size. Studies with sample sizes between 50 and 100 were the most common (36%). In contrast, larger studies including samples with more than 200 patients were more rare (17%). Although not as common as the HADS, the ESAS was rather frequently used in samples larger than 50 (6–15%). In larger studies with more than 100 patients included, structured diagnostic interviews were more common than in studies with less than 50 patients.

Table 3. Ways of assessing, classifying depression/distress by year of publication

	1970s	1980s	1990s	2000–2004	2005–2007
Unstructured diagnostic interviews			5	6	6
Structured diagnostic interviews			6	12	12
Structured clinical interviews	1	2	3	9	8
Specific questionnaires	1	7	28	54	53
General questionnaires		1	22	46	34
Single/two items			3	9	9
TOTAL	2(1%)	10(3%)	67(20%)	136(40%)	122(36%)
Most frequent		CES-D: 3	HADS: 16	HADS: 30 ESAS: 13	HADS: 29 ESAS: 13
Methods occurring once	2	7	26	30	31

Table 4. Ways of assessing, classifying depression/distress due to sample size

	≤50	51–100	101–200	≥201
Unstructured diagnostic interviews	8	6	1	2
Structured diagnostic interviews	3	11	7	9
Structured clinical interviews	10	7	4	5
Specific questionnaires	33	52	37	18
General questionnaires	15	35	30	18
Single/two items	5	9	6	1
TOTAL	74 (22%)	120 (36%)	85 (25%)	57 (17%)
Most frequent	HADS: 16	HADS: 34 EORTC QLQ C30: 10 ESAS: 8	HADS: 17 ESAS: 13	HADS: 8 ESAS: 4
Methods occurring once	31	30	27	21

Geographical region:

There were some evident differences in the usage of assessment methods across regions. While the HADS dominated in Europe it was quite seldom used in Canada or in the USA. In contrast, structured diagnostic interviews as well as the ESAS were commonly used in Canada. In the USA, no method dominated. Instead, several assessment methods were equally frequent: structured diagnostic interviews, the Center for Epidemiological Studies Depression Scale (CES-D)[13], the ESAS and the Hamilton Depression Rating Scale (HDRS)[14].

Taken together, studies from Europe were the most common (50%) followed by studies from the USA (20%), Canada (15%), Asia/Middle East (8%) and Australia/New Zealand (7%).

Classification

Classification systems: In 59% ($N = 200$) of the assessments, the results were classified into cases of depression/distress. Only those assessments that reported on depression cases were further analysed. Among these, structured diagnostic interviews ($N = 30$) and unstructured diagnostic interviews ($N = 17$) referred explicitly to a diagnostic system. The most commonly used classification systems were the DSM-IV ($N = 20$) followed by the DSM-IIIR ($N = 7$).

However, the majority of the case definitions of depression/distress did not classify according to DSM-IV (or comparable diagnostic systems). Instead, they were based upon e.g. cut-off scores. Among these assessments, specific questionnaires were most frequent ($N = 90$) with assessment methods such as the HADS ($N = 51$), versions of the BDI ($N = 11$) and the CES-D ($N = 7$). There were also case definitions in general questionnaires ($N = 38$), in single/two items ($N = 17$) and in structured clinical interviews ($N = 8$).

Duration and functional consequences: Classifying major depressive disorder according to the DSM-IV criteria involves assessments of the depressive symptoms but also the confirmation of the presence of symptoms during the last 2-week period and a change from previous functioning. The two latter aspects were rare among assessments reporting on depression cases. The duration (2 weeks) of symptoms was evaluated in 22% (44 of 200) of these assessments. Among those assessments that evaluated duration, 77% were structured diagnostic interviews and unstructured diagnostic interviews. An explicit formulation of assessing change from previous functioning was found in 18% of the assessments used for classification. All of these referred explicitly to a diagnostic system, i.e. structured diagnostic interviews and unstructured diagnostic interviews, i.e. none referred to cut-offs in questionnaires.

Criteria modifications: There were few modifications of the diagnostic criteria due to the overlap between the somatic and the psychological symptoms. The DSM-IV criteria were modified eight times by excluding the somatic items[15] and, in addition, adjusting the required number of symptoms[16] or by substituting the excluded items by items assumed to be less influenced by the somatic disease.[17]

Discussion

The identified papers demonstrated a large number of assessment methods for depression ($N = 106$), many of which were unique to one paper ($N = 65$). Further, the content of the assessment methods varied greatly and included different types such as structured diagnostic interviews, specific questionnaires and general questionnaires. Although heterogeneity in assessments was expected,[2,18] the diversity in the reviewed papers was pronounced. Depression and distress are rarely conceptualized explicitly and it is often unclear why a given measure was chosen. This diversity in methods hinders comparisons between studies and limits the potential to summarize data from these papers to estimate, for example, the prevalence of depression. Further, it makes it hard to compare the results of intervention studies.

The results also suggest that the choice of assessment methods is often made out of habit rather than on clear theoretical grounds. This is expressed in the regional differences in the usage of different methods. The HADS was the most commonly used assessment method in Europe but was seldom employed in the USA or in Canada. The journals may further reinforce this tendency by choosing referees within the same region as the authors. Thus, different regions generate knowledge on possibly different conditions. The possibility to build upon findings from other regions is therefore limited and, at worst, impossible. There is no reason to believe that a European or a Canadian type of depression exists. Findings from and practice within psychiatry in general do not support this. In addition, there seems to be a tendency towards increased usage of more sophisticated assessment methods, e.g. structured diagnostic and clinical interviews, among the more recent publications.

In total, there were few case definitions (59%) of depression/distress, i.e. the condition was not classified. The majority of the classifications were based on cut-off scores. In addition, a majority of the assessments neither took into account the duration of symptoms nor their consequences and impact upon patient functioning. Further, a minority of the intervention (12%) and prevalence (18%) studies used assessment methods referring to a diagnostic system. This may imply that many of the cases detected as ‘depression’ in these studies are closer to normal reactions or sadness. An inflation of the prevalence rate of depression is a probable consequence as has been demonstrated in a previous review.[2] Moreover, this might also give reason to suspect that interventions have been performed in samples suffering from self-limiting and transient conditions, thus camouflaging possible effects of the interventions.

The DSM criteria were modified eight times. This was done by excluding somatic items or adjusting the required number of symptoms. In other words, there were few attempts to overcome the issue of overlap of somatic symptoms. Previously, authors such as Endicott[7] and Cohen-Cole et al.[19] have suggested adjusting the criteria to be suitable for somatically ill patients such as the palliative population. These endeavours do not seem to have had impact upon subsequent researchers although this problem should be well known in palliative care given the focus in palliative care on multi-symptomatic patients. Thus, the challenge of how to handle this issue seems at present unresolved or even worse not touched upon. The substitution criteria have been evaluated previously by Chochinov and co-workers.[20] The prevalence of depression increased through inclusion of the somatic symptoms, but only when these were included at lower symptom levels.

A smaller number of studies used diagnostic criteria without reference to any assessment method, thus leaving the interpretation of the findings to the reader. This gives rise to the question of whether it is possible to evaluate and compare findings from these specific studies.

The database search was focused on depression and depressive disorder. A majority of the retained assessments did not refer to the diagnostic criteria. Rather, these assessments seem to assess symptoms on a lower symptom level, and are perhaps more comparable to, e.g., psychological distress. In addition, the assessments may cover transient normal reactions and sadness.

Naturally, the reactions may be persistent but has to be followed over time and with other assessments to be fully recognised. The concepts depression and psychological distress need to be better distinguished and used with more caution.

Findings in the present review underline a need for a consensus on how to define and distinguish the concepts of depression, sadness and distress. In addition, consensus is needed on how to assess the concepts once they are defined. A possible way for achieving this would be an evaluation of the criteria, preferably made by experts as well as patients as experts. Further work would involve guidelines for assessment and classification based on such an evaluation. Guidelines have been formulated for depression in patients with comorbid medical illness in general.[21] Recommendations for practice, research and policy were developed, primarily based on a review and expert opinions.[21] The authors do not specify any particular method but recommend routinely screening of depression among all medically ill patients throughout the course of the disease. Screening for mood disorder should routinely be part of other assessments for health in general. The screening procedure needs to be reinforced by additional treatment and follow-up. Further, they underline the need to routinely include depression assessments in epidemiological studies and to focus on the course of depression and related issues in longitudinal studies. No specific method is suggested. For such a system to apply for patients in palliative care there would need to be screening or assessment that was integrated with the assessment of other symptoms and problems, and so it would need to be brief and valuable clinically (e.g. focusing on important clinical symptoms). These issues are being addressed in a parallel project within EPCRC focusing on clinical guidelines for the management of depression.

An agreement upon the concept of depression and related conditions would have positive consequences for the treatment of the patients. When an adequate diagnosis is established and distinguished from others, this has clinical implications in terms of improved possibilities for establishing a prognosis and thereby improved ability to foresee symptom burden and degree of disability. This in turn increases the possibilities for a better preparedness for delivering effective treatment within health-care systems. In addition, an improved diagnostic procedure renders possible a better evaluation of treatment attempts for this specific group of patients. Moreover, other symptoms such as pain co-occur with depression although this relationship needs to be explored in more depth.[22] Studying the co-morbidity of symptoms presupposes a well-defined sample in terms of stable conditions more than simultaneous correlations.

The present review explicitly defined the palliative population, and in order to do so we had to make a pragmatic definition of the population. This was undertaken with the intention to render possible a generalization of the findings to a distinct population. Thus, the included papers all describe palliative samples according to the pragmatic definition. Naturally, an extension of the inclusion criteria to the cancer population in general or to somatic patients may have given other results.

Conclusions

The present review demonstrates variations in the usage of assessment methods due to the type of study, publication year, sample size and geographical region. Evidently, there is a need for an agreement on how to conceptualize depression and related conditions in palliative care. This would include consistency on the adequate number of relevant symptoms to include in the criteria. Thus, severity thresholds need to be established, e.g. in order to predict treatment outcomes. Moreover, the need for agreement involves issues such as case definitions and overlap of somatic symptoms. To achieve consensus on these issues, a possible next step would be an evaluation of the criteria. Professional experts as well as patients may be important contributors in this work. Future work would involve guidelines for assessment and classification based on this suggested evaluation.

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