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Development of the Anxiety, Depression and Coping (ADAF) screening tool for emotional and coping problems in cancer patients

Pedro Pérez-Segura[1] | Santos Enrech Francés[2] | Ignacio Juez Martel[3] | Maria Angeles Pérez Escutia[4] | Elena Hernández Agudo[5] | Leticia Leon[6,7] | Guido Corradi[7] | Helena Olivera Pérez-Frade[6] | Francisco Sánchez Escamilla[7] | Marta Baselga López[7] | Jose Luis Baquero[8] | Marta Redondo Delgado[7]

[1]Department of Medical Oncology and IdISSC, Hospital Universitario Clínico San Carlos, Madrid, Spain

[2]Department of Medical Oncology, Hospital Universitario de Getafe, Madrid, Spain

[3]Department of Medical Oncology, Hospital Universitario de Fuenlabrada, Madrid, Spain

[4]Department of Radiotherapy Oncology, Hospital Universitario 12 de Octubre, Madrid, Spain

[5]Department of Medical Oncology, Hospital Universitario Severo Ochoa, Madrid, Spain

[6]IdISSC, Hospital Universitario Clínico San Carlos, Madrid, Spain

[7]Department of Health Sciences, Universidad Camilo Jose Cela, Madrid, Spain

[8]Foro Español de Pacientes, Spain

Correspondence
Leticia Leon, Instituto de Investigación Sanitaria del Hospital Clínico San Carlos (IDISSC), Hospital Clínico San Carlos; Madrid, Spain.
Email: lleon@salud.madrid.org

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Abstract

Objective: Clinical guidelines recommend psychological screening in cancer patients. However, most scales cover many items and hamper detection. In addition, patients are generally referred from routine consultations. The specific objective of the present study was to develop and validate a tool, Anxiety, Depression, Coping (ADAF), to screen for anxiety and depression and assess coping in cancer patients.

Methods: Cross-sectional, multicenter study performed in the medical and radiotherapy-oncology services of five hospitals in Madrid and coordinated by the Medical Oncology Service of Hospital Clínico San Carlos (CEIC nº19/265-E). To determine psychometric properties, the ADAF screening questionnaire ADAF was administered. ADAF includes five items (1 related to anxiety symptoms, 2 related to depressive symptoms, 1 for helplessness coping, and 1 for avoidance coping). Hospital Anxiety and Depression Scale and Mini-Mental Adjustment to Cancer scale were used as the gold standards. Intraclass correlation coefficients were calculated and receiver operating characteristic (ROC) curves constructed. A p value of <0.05 was considered significant.

Results: A total of 186 patients completed the evaluation. The correlation coefficients were significant for all dimensions (anxiety, depression, helplessness coping, and avoidance coping) ($p < 0.001$). The statistical analysis of the ROC curves suggested that the cut-off point for screening was >2 points (3 in the case of depression), with a sensitivity and specificity between 62% and 90%, and an area under the curve above 0.8 for the first 4 items.

Conclusions: ADAF screening has adequate reliability and good sensitivity and specificity. This instrument is useful and can be easily applied to identify emotional and coping problems in cancer patients.

KEYWORDS
anxiety, cancer, depression, oncology, psycho-oncology

1 | BACKGROUND

Patients with cancer often experience negative emotions such as sadness, anxiety, and fear, which, if unaddressed, can impair adaptation and emotional well-being and may negatively affect adherence to treatment.

Whenever possible, cancer patients should be screened for emotional problems, since 25%–40% exhibit high levels of psychological distress requiring professional intervention.[1,2] Data from a systematic review and meta-analysis show prevalence values to be 15% for major depression, 20% for minor depression, and 10% for anxiety disorders in patients treated for cancer.[2] Therefore, distress has been considered the "sixth vital sign" in cancer care, and recommendations on routine screening for management of distress have been established as an integral part of whole-person cancer care in clinical practice guidelines.[3,4] In cancer, emotional distress (in terms of its main components of anxiety and depression) may appear at any point during the course of the disease. It is a source of suffering per se, although it may also interfere with adherence to treatment, health, and well-being.

The well-documented considerable impact of psychological variables among cancer patients has fueled interest in coping mechanisms.[5] Coping comprises the set of cognitive and behavioral responses implemented after a stressful event in an attempt to mitigate its psychological impact. The various means of coping have been grouped into large strategies. Given their effect on psychological well-being and on disease course, the most widely studied have been passive (or helpless) and avoidant coping.[6-9]

If the diagnosis is interpreted as a loss, or if defeat and death are seen as inevitable, we talk of a "helpless/hopeless" style. When the threat is so great that people minimize, avoid, or even deny its severity, we talk of "cognitive avoidance".[10] Studies have consistently found greater emotional distress in patients whose cognitive avoidance takes the form of helpless/hopeless and anxious adjustment styles.[11-14]

In line with observations in other diseases, active coping predicts a better disease course, and avoidance represents the patient's rejection of the diagnosis of cancer, in an attempt to minimize its severity and not think about it, thus increasing fear levels and reducing quality of life. On the other hand, helplessness/hopelessness (passive coping) is used by patients who adopt a completely pessimistic attitude and who are overwhelmed by the diagnosis and want to give up.[15] In the last 2 types of coping, adherence to treatment and healthy lifestyle habits are affected, as is, consequently, disease course. Since these coping styles are considered dysfunctional, early detection is important. Therefore, a screening instrument could provide appropriate and useful data.

Patients should be screened for emotional distress and dysfunctional coping at their initial visit, at appropriate intervals, and as clinically indicated. This is especially relevant when there are changes in disease status (i.e., post-treatment, recurrence, progression) and when there is a transition to palliative and end-of-life care. However, easily applied instruments for assessing psychological needs in such a way as to gather both negative emotions and coping issues are lacking in the outpatient setting.

The wide variety of brief screening tools with successful diagnostic validity for detecting cancer-related mood disorders include the distress thermometer and emotion thermometer, although most of the instruments assess only depression. Some tools also explore anxiety, but none include coping.[16,17] Screening for distress or depression, while necessary, cannot cover all the psychological complications that patients experience.

Thus, we consider that exploring both constructs in a combined form would provide relevant information on how the patient is dealing with his/her illness at the psychological level.

A study of health professionals working in cancer care revealed that the ideal screening practice was to use 1, 2, or 3 simple questions or a short validated questionnaire, but not to refer to a specialist for diagnosis. The main barrier to successful screening was lack of time, although insufficient training and low confidence were also influential.[18] Despite these barriers, most clinicians believe screening promote good communication and/or helped with recognition.[19,20]

The aims of the present study were to develop and validate a tool, Anxiety, Depression, Coping (ADAF; Spanish acronym: Ansiedad, Depresión, Afrontamiento), to screen for anxiety and depression and assess coping in cancer patients in the outpatient care setting.

2 | METHODS

2.1 | Study design and patients

We performed a cross-sectional validation study in the medical and radiotherapy-oncology services of five hospitals of the public health system of the Community of Madrid. The study was coordinated by the medical oncology service of Hospital Clínico San Carlos, Madrid, Spain.

The reference population consisted of all individuals from these hospitals' catchment areas. The inclusion criteria were cancer, age over 18 years of age, and informed consent. Patients who did not meet these criteria, presented cognitive impairment, or were not able to carry on a conversation or understand the questions on the questionnaire were excluded. The research protocol was approved by the Ethics and Clinical Research Committee of Hospital Clínico San Carlos (CEIC n°19/265-E).

After providing written informed consent, consecutive eligible patients were included during the scheduled visits to the medical or radiation-oncology departments. Respondents filled out the questionnaires individually, although a psychologist was present to clarify doubts. All data were recorded anonymously in an electronic health record.

2.2 | Procedure

The group responsible for the study consisted of psychologists, medical oncologists, radiation oncologists, oncology nurses, patient representatives (leaders of self-help groups), and statisticians, who met to discuss needs and gaps in this area. Based on the results and the state of the art, the dimensions of the instrument were identified, being one for anxiety, helplessness coping, and avoidance coping, and two for depression (sad/hopeless and lack of enjoyment).[21,22] The items were drafted and discussed by the members of the study group. The wording, meaning, and general feasibility of the items were verified by a survey of health researchers ($n = 6$). Since no requests for modification of the instrument were issued, the instrument was prepared for psychometric testing. This required the participation of patients with different types and stages of cancer. The questionnaire was presented to the subjects in paper-and-pencil format.

2.3 | Measures

A questionnaire requested descriptive data from each patient with sociodemographic variables including sex, age, nationality, marital status, educational level, employment status, and work activity.

The ADAF screening questionnaire was administered, along with the Hospital Anxiety and Depression Scale (HADS) and the Mini-Mental Adjustment to Cancer scale (Mini-MAC). Intraclass correlation coefficients were calculated, and receiver operating characteristic (ROC) curves were constructed. Statistical significance was set at $p < 0.05$.

ADAF measures psychological problems in 2 dimensions: (a) negative emotions, consisting of three items, 1 related to anxiety symptoms, and 2 related to depressive symptoms (one for sad/hopeless and another for lack of enjoyment); and (b) dysfunctional coping, which comprises the strategies that maintain or strengthen stressors. It consists of two items (one for coping helplessness and another for coping avoidance) (Appendix 1).

Items are scored on a 4-point Likert scale ranging from 0 ("almost never") to 3 ("almost always") based on a recall period of one week; higher scores represent poorer functioning. The final depression score includes two additional items ("I have little desire to do things and enjoy them less," "I have been sad and hopeless"); therefore, the final results is between 0 and 6.

It takes about 2 min to be completed by the patient alone or with the help of the professional.

As gold standards, we use the Mini-MAC scale and the HADS, which are two of the most widely used instruments for assessing cancer-specific coping. The 29-item Mini-MAC,[23] Spanish version,[24,25] is derived from the original MAC scale.[26] This self-rated questionnaire examines five cancer-specific coping strategies: (1) Fighting spirit (the illness is experienced as a challenge and the patient has some degree of control over the situation) (4 items); (2) Helplessness (the individual senses irreparable loss, fears death, and lacks insight into their situation) (8 items); (3) Anxious preoccupation (the patient is afraid and doubts whether there is any possibility of exerting some control over the situation) (8 items); (4) Cognitive avoidance (the threat and need for personal control are downplayed) (4 items); and (5) Fatalism (the individual believes that their disease cannot be controlled and passively accepts it) (5 items). Each item is scored using a 4-point Likert scale. The higher the score on each scale, the more frequent this type of coping. We consider coping avoidance case if score >12, and coping helplessness case if score >23. The original Mini-MAC scores had reliability estimates (Cronbach's alpha) ranging from 0.62 to 0.88.[27] In the present study, we use the Spanish version of the scale, in which the scores range from 0.60 to 0.90.[25] The Spanish version of Mini-MAC has an adequate factor structure for discrimination between the different coping scales.

Negative emotions were assessed using the HADS,[28] which comprises two subscales, one measuring anxiety, with seven items, and another measuring depression, with seven items, which score separately. Each item was answered by the patient on a 4-point (0–3) scale; therefore, the possible scores ranged from 0 to 21 for each of the two subscales. The test takes 2–5 min to complete. The HADS manual indicates that a score between 0 and 7 is "normal," between 8 and 10 "mild," between 11 and 14 "moderate," and between 15 and 21 "severe." We consider case of anxiety a score >8 in HADS-A, and case of depression a score >8 in HADS-D. Previous studies have shown the adequacy of HADS in evaluating emotional condition in physical disease, and, specifically in cancer patients.[29,30] HADS has previously been validated as an appropriate instrument for use with Spanish cancer patients,[29] with good psychometric characteristics and a confirmed bifactorial structure.[31]

2.4 | Statistical analysis

A description of the sociodemographic characteristics of patients included was explored with the frequency distribution and the mean and standard deviation (SD) or median and interquartile range.

The correlation between questionnaire sum scores (Pearson r) was calculated. We also calculated the operating characteristics in terms of sensitivity, specificity, the Youden index, positive predictive value, negative predictive value, and overall accuracy (percentage of true results) for all possible cut-off points on the ADAF.

We performed ROC curve analyses to assess the diagnostic accuracy of HADS, Mini-MAC, and ADAF. ROC curves indicate sensitivity and specificity combined for all possible cut-off points, with the area under the curve (AUC) acting as a measure of diagnostic accuracy.[32] The AUC summarized the ability of the ADAF to discriminate between patients with and without negative emotions or dysfunctional coping. Higher AUC values indicated better discriminatory capacity.

Statistical significance was set at $p < 0.05$. The statistical analysis was performed using Jamovi and R version 4.02.

3 | RESULTS

A total of 195 patients (88% of those proposed) consented to participate and completed the evaluation between July and October 2019. Baseline characteristics are summarized in Table 1. Females accounted for 73% (n = 122) of the sample, and the mean age was 59 years (SD = 13.1, range 18–85); most were married or partnered (64.1%), and only 33.3% were educated to primary level. The most common employment status was retired (51.3%, owing to either age or illness).

TABLE 1 Patient characteristics

Variables	Value (n = 195)
Age, mean (SD), years	59 (13.1)
Female, *n* (%)	122 (73)
Marital status, *n* (%)	
Single/Divorced	52 (26.6)
Married/Parterned	125 (64.1)
Widow	18 (9.2)
Working status, *n* (%)	
Active	40 (21)
Unemployed	6 (3.1)
Student	2 (1)
Retired	100 (51.3)
Housewife	19 (9.7)
Sick leave	24 (12.3)
Not reported	4 (2.1)
Education, *n* (%)	
Primary schooling	66 (33.3)
Secondary	59 (30.3)
University	70 (36.4)
HADS, mean (SD)	
Depression (0–21)	4.60 (3.79)
Anxiety (0–21)	7.29 (4.07)
Mini-MAC, mean (SD)	
Helplessness coping (8–38)	12.9 (4.62)
Avoidance coping (4–16)	11.3 (3.03)
ADAF, mean (SD)	
Depression (0–6)	1.85 (1.73)
Anxiety (0–3)	1.12 (0.96)
Helplessness coping (0–3)	0.70 (0.89)
Avoidance coping (0–3)	1.51 (1.14)

Abbreviations: ADAF, Anxiety, Depression, Coping; HADS, Hospital Anxiety and Depression Scale; Mini-MAC, Mini-Mental Adjustment to Cancer; SD, standard deviation.

Screening with HADS and Mini-MAC revealed that 14.5% were positive for depression and 32.8% for anxiety. A total of 3.2% were classified as coping avoidance and 39.2% as coping helplessness.

A statistically significant correlation (Pearson) was observed between paired variables. Mini-MAC coping avoidance and ADAF coping avoidance showed the lowest correlation ($r = 0.37$, $p < 0.001$), as did Mini-MAC coping helplessness and ADAF coping helplessness ($r = 0.47$, $p < 0.001$). The highest correlation was observed for HADS depression and ADAF depression ($r = 0.64$, $p < 0.001$) and HADS anxiety and ADAF anxiety ($r = 0.65$, $p < 0.001$).

ADAF proved to be an accurate screening tool, with most AUCs above 0.80 (anxiety 0.85, depression 0.84, coping helplessness 0.82), although performance was poor for identifying coping avoidance (0.68) (Figures 1–4).

According to our analyses, and to facilitate the establishment of the cut-off for depression measured with the ADAF, the overall score chosen was ≥3, revealing a similar sensitivity (70.37%) and specificity (76.1%). Thus, it was determined that patients with scores ≥3 presented depressive symptoms.

Regarding anxiety, a cut-off of 2 was selected according to the metric score and showed lower sensitivity (67.2%) than specificity (89.6%). When coping avoidance scores were assessed (taking Mini-MAC Coping Avoidance as the reference), the suggested cut-off was 2, with similar sensitivity (69.86%) and specificity (61.95%). Regarding coping helplessness (taking Mini-MAC Coping Helplessness as the reference), the best performance cut-off was 2, with similar sensitivity (83.33%), and specificity (82.2%) (Table 2).

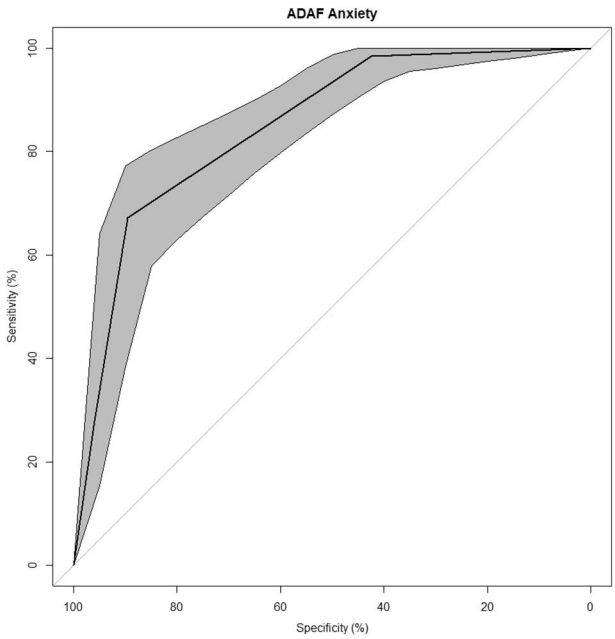

FIGURE 1 Receiver operating characteristic (ROC) curves for Anxiety, Depression, Coping (ADAF) anxiety. The area under the ROC curve with its 95% confidence interval (CI) is 0.85 (95% CI, 0.79–0.90)

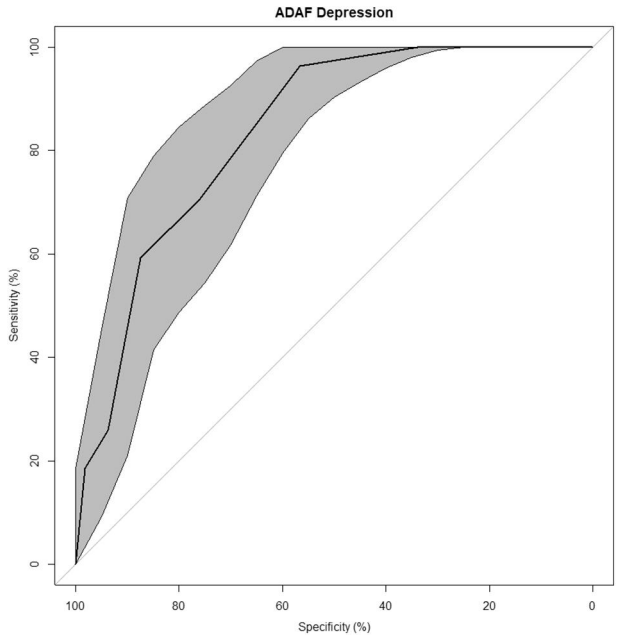

FIGURE 2 Receiver operating characteristic (ROC) curves for Anxiety, Depression, Coping (ADAF) depression. The area under the ROC curve with its 95% confidence interval (CI) is 0.84 (95% CI, 0.77–0.90)

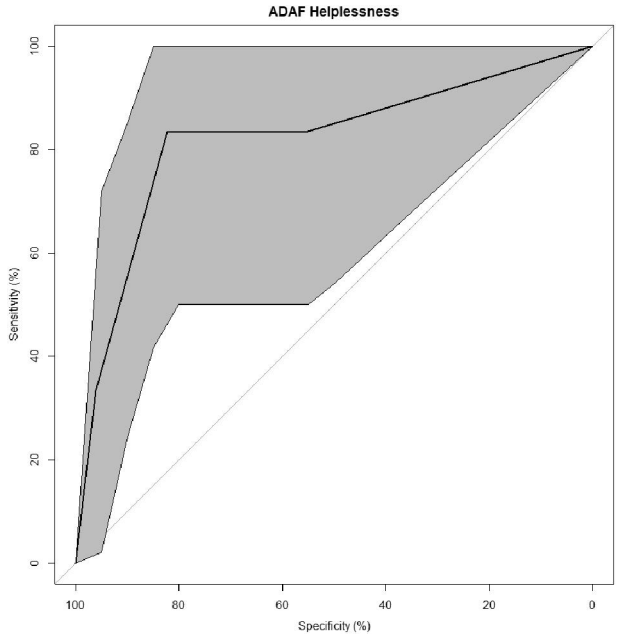

FIGURE 3 Receiver operating characteristic (ROC) curves for Anxiety, Depression, Coping (ADAF) helplessness coping. The area under the ROC curve with its 95% confidence interval (CI) is 0.82 (95% CI, 0.60–0.99)

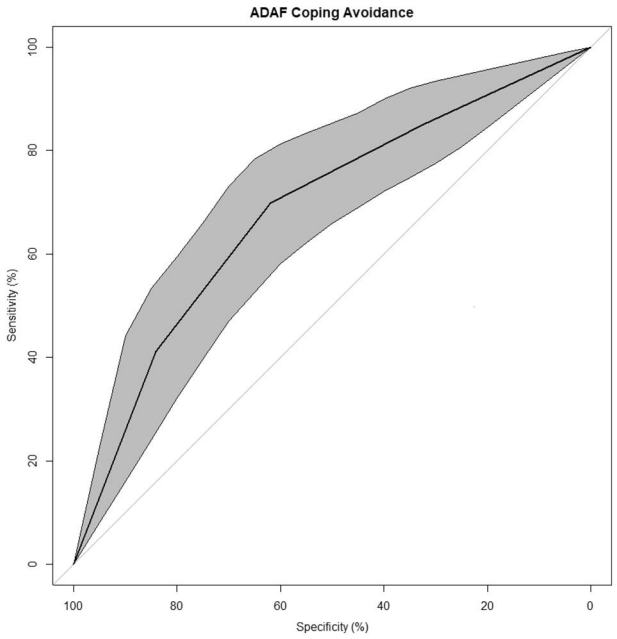

FIGURE 4 Receiver operating characteristic (ROC) curves for Anxiety, Depression, Coping (ADAF) avoidance coping. The area under the ROC curve with its 95% confidence interval (CI) is 0.68 (95% CI, 0.61–0.76)

4 | DISCUSSION

In this multicenter study of patients with cancer, the ADAF demonstrated good diagnostic screening for emotional and coping problems, as illustrated by the AUCs, which ranged from 0.68 to 0.84. The systematic application of this rapid tool would enable patients with psychological problems to be easily identified in clinical practice and, therefore, aid healthcare professionals to adjust their communication to the patient's psychological state, as well as to identify those patients requiring specialized care.

The context of the study is the rising burden of cancer, in which the patient's experience of the disease is multidimensional. Patient-reported outcomes are used to assess health across broad areas including symptoms, physical functioning, work and social activities, and mental well-being. The use of patient-reported outcomes related to psychological state, representing the patients' needs and problems, would provide us with general indicators of health outcomes and enable us to analyze the patient's progress. It can also be very useful to compare different and heterogeneous clinical situations. In this sense, we think that ADAF is a simple screening tool that can be applied in different types of cancer.

If psychological needs are not addressed, regardless of when they arise, they then predict long-term stress, increased anxiety and depressive symptoms, low quality of life, increased adverse effects, poor adherence, and more physical symptoms.[33,34] Screening can be a first approach when referring patients in need of a more thorough evaluation by mental health professionals. Therefore, strategies for early identification should be a priority in oncology.

The ADAF covers two important dimensions in cancer, namely, negative emotions (anxiety and depression) and coping. One of the advantages of this questionnaire is that it unites the 2 dimensions in a single tool.

Screening for dysfunctional coping quickly identifies which patients may have significant difficulties in their process of coping with

TABLE 2 Operating Characteristics of the ADAF screening and gold-standard (HADS and Mini-MAC)

	Sensitivity	Specificity	Youden index	Area under ROC curve
Anxiety	67.2%	89.6%	0.56	0.84
Depression	70.3%	76.1%	0.46	0.83
Helplessness coping	83.3%	82.2%	0.65	0.81
Avoidance coping	69.8%	61.9%	0.31	0.68

Note: Youden index (sensitivity + specificity)−1.

Abbreviations: ADAF, Anxiety, Depression, Coping; HADS, Hospital Anxiety and Depression Scale; Mini-MAC, Mini-Mental Adjustment to Cancer; ROC, receiver operating characteristic.

illness and adapting to treatments. Working on coping helplessness means enhancing the patient's ability to control. Thus, people who believe that they can do something for their health will initiate healthy behaviors, will become more involved in their rehabilitation, and will be more resilient to failure.[35] In general, they will cope more actively.

Perceived lack of control is associated with depression. Depressed persons have a poorer perception of control, which is also associated with escape and avoidance.[36] Without perceived control, distress is increased, and active coping strategies are not carried out.[37]

The sensitivity/specificity for the coping avoidance item was lower than for the other items, probably because this construct is very difficult to capture. The cognitive avoidance designed by Watson[23] includes four items that allow evaluating the patient's tendency to avoid actively thinking about the diagnosis and its implications, which represents an opportunity for the patient to escape from the situation. As an active distraction strategy, it is positively associated with the fighting spirit strategy. Avoidance is initially a direct result of high levels of intrusive thinking. However, over time, it appears that cognitive avoidance becomes a less harmful strategy that may be appropriate for those patients who use this strategy effectively.[38] This strategy was selected for its versatility and its clinical utility, since depending on the moment of the disease in which the patient is, we must be more attentive to its appearance, and it will be more dysfunctional if it appears very early.

ADAF also enables health professionals to better explore patients' psychological state and their ability to adapt to their disease. The data it provides enhance communication with the patient, help him/her to regulate negative emotions, and promote good coping, regardless of whether referral to mental health is necessary. Furthermore, patients feel that their doctor is concerned not only with medical variables, but also with other aspects of their illness. This may have a favorable impact on the patient's psychological well-being and on their relationship with the health professional.

Some aspects of the ADAF make it potentially more acceptable than more efficient tools, which are usually considered too lengthy for routine use. It has only five items in its full form and takes approximately 2 min to complete.

Another reason in favor of short tools, as opposed to full scales, is that they prevent people from becoming tired and leaving questionnaires incomplete, which is always a risk of self-completed tools. In the end, health professionals do not need to make a correction, since they receive an immediate response based on the cut-off point. This response is automatic and informative, provides a cut-off, and facilitates referral to psychological support, if necessary. It also acts as a "red flag" in the case of higher scores. Moreover, recent evaluations have demonstrated reductions in the use of healthcare resources when institutions adhere to protocols that screen for distress.[39]

The strengths of our study include its multicenter design and the large representative sample of patients from all treatment settings. Since the sample included patients with various diseases and disease stages who were receiving different medical treatments, the generalizability of findings can be considered good.

4.1 | Study limitations

Our study is subject to a series of limitations. First, its design was cross-sectional. Second, the two measures used were self-reported. Future research should explore the temporal stability and the sensitivity to change of the instrument. Third, including different subtypes of patients and analyzing them as a group may obviate the intrinsic differences between them. Fourth, although the ADAF has proven its reliability as a screening tool, a clinical approach is necessary to diagnose and manage emotional or adjustment disorders. Finally, it would be necessary to test the ADAF in several countries in order to ensure its cross-cultural validity.

4.2 | Clinical implications

Emotional problems and dysfunctional coping strategies are frequent in cancer. Therefore, it is necessary to implement screening or detection tools capable of determining the reality of a patient's situation. Early and simple detection of patients at risk will enable the

professional to adjust his/her communication with and approach to the patient from that moment onward and to make the appropriate decisions with respect to treatment, follow-up, and referral to mental healthcare.

4.3 | Conclusions

The ADAF screening tool has adequate reliability and good sensitivity and specificity. This instrument is useful and easy to apply when attempting to identify emotional and coping problems in cancer patients.

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CONFLICTS OF INTEREST

All authors had financial support from Fundación Viatris for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work.

ETHICS STATEMENT

This study was approved by the Ethics and Clinical Research Committee of the Hospital Clínico San Carlos (CEIC n°19/265-E) and was conducted in accordance with the ethical standards of the Declaration of Helsinki and its later amendments.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Pedro Pérez-Segura https://orcid.org/0000-0001-5049-7199
Leticia Leon https://orcid.org/0000-0001-7142-0545

REFERENCES

1. Krebber AM, Buffart LM, Kleijn G, et al. Prevalence of depression in cancer patients: a meta-analysis of diagnostic interviews and self-report instruments. *Psycho Oncol*. 2014;23(2):121-130. https://doi.org/10.1002/pon.3409
2. Mitchell A, Chan M, Bhatti H, et al. Prevalence of depression, anxiety, and adjustment disorder in oncological, haematological, and palliative-care settings: a meta-analysis of 94 interview-based studies. *Lancet*. 2011;12:160-174. https://doi.org/10.1016/S1470-2045(11)70002-X
3. *Practice Guidelines for the Management of Psychosocial Distress*. National Comprehensive Cancer Network (NCCN). 2017. Accessed 14 Dec 2020. http://www.nccn.org/
4. *European Guide for Quality National Cancer Control Programmes*. National Institute of Public Health (NIJZ). 2015. Accessed 14 Dec 2020. http://www.nijz.si
5. Parle M, Jones B, Maguire P. Maladaptive coping and affective disorders among cancer patients. *Psychol Med*. 1996;26:735-744.
6. Classen C, Koopman C, Angell K, Spiegel D. Coping styles associated with psychological adjustment to advanced breast cancer. *Health Psychol*. 1996;15(6):434-437. https://doi.org/10.1037//0278-6133.15.6.434
7. Johansson M, Rydén A, Finizia C. Mental adjustment to cancer and its relation to anxiety, depression, HRQL and survival in patients with laryngeal cancer–a longitudinal study. *BMC Canc*. 2011;11:283. https://doi.org/10.1186/1471-2407-11-283
8. Pérez S, Conchado A, Andreu Y, et al. Acute stress trajectories 1 year after a breast cancer diagnosis. *Support Care Canc*. 2016;24(4):1671-1678. https://doi.org/10.1007/s00520-015-2960-x
9. Seok JH, Choi WJ, Lee YS, et al. Relationship between negative mental adjustment to cancer and distress in thyroid cancer patients. *Yonsei Med J*. 2013;54(3):658-664. https://doi.org/10.3349/ymj.2013.54.3.658
10. Moorey S, Watson M. Cognitive therapy. In: Holland JC, Breitbart WS, Jacobsen PB, Loscalzo MJ, McCorkle R, Butow PN, eds. *Psycho-Oncology*. 3th ed. Oxford University Press; 2015:458-463.
11. Andreu Y, Galdon MJ, Durá E, Martínez P, Pérez S, Murgui S. A longitudinal study of psychosocial distress in breast cancer: prevalence and risk factors. *Psychol Heal*. 2012;27:72-87. https://doi.org/10.1080/08870446.2010.542814
12. Cordova MJ, Giese-Davis J, Golant M, et al. Mood disturbance in community cancer support groups. The role of emotional suppression and fighting spirit. *J Psychosom Res*. 2003;55:461-467.
13. Kulpa M, Kosowicz M, Stypuła-Ciuba BJ, Kazalska D. Anxiety and depression, cognitive coping strategies, and health locus of control in patients with digestive system cancer. *Przeglad Gastroenterol*. 2014;9:329-335. https://doi.org/10.5114/pg.2014.47895
14. Pereira MG, Baia V, Machado JC. Coping and quality of life in patients with skin tumors in the follow-up stage: the mediating role of body image and psychological morbidity. *J Psychosoc Oncol*. 2016;34:400-412. https://doi.org/10.1080/07347332.2016.1196807
15. Greer S, Watson M. Mental adjustment to cancer: its measurement and prognostic importance. *Canc Surv*. 1987;6(3):439-453.
16. Mitchell AJ. Short screening tools for cancer-related distress: a review and diagnostic validity meta-analysis. *J Natl Compr Canc Netw*. 2010;8(4):487-494. https://doi.org/10.6004/jnccn.2010.0035
17. Mitchell AJ. Pooled results from 38 analyses of the accuracy of distress thermometer and other ultra-short methods of detecting cancer-related mood disorders. *J Clin Oncol*. 2007;25(29):4670-4681. https://doi.org/10.1200/JCO.2006.10.0438
18. Mitchell AJ, Kaar S, Coggan C, Herdman J. Acceptability of common screening methods used to detect distress and related mood disorders-preferences of cancer specialists and non-specialists. *Psycho Oncol*. 2008;17(3):226-236. https://doi.org/10.1002/pon.1228
19. Mitchell AJ, Lord K, Slattery J, Grainger L, Symonds P. How feasible is implementation of distress screening by cancer clinicians in routine clinical care? *Cancer*. 2012;118(24):6260-6269. https://doi.org/10.1002/cncr.27648
20. Mitchell AJ. Screening for cancer-related distress: when is implementation successful and when is it unsuccessful? *Acta Oncol* 2013;52(2):216-224. https://doi.org/10.3109/0284186X.2012.745949
21. National Collaborating Centre for Mental Health. *Depression. The treatment and management of depression in adults*. The British Psychological Society; 2009.
22. Siu AL, Bibbins-Domingo K, Grossman DC, et al. The US Preventive Services Task Force (USPSTF). Screening for depression in adults: US Preventive Services Task Force recommendation statement. *J Am Med Assoc*. 2016;315(4):380-387. https://doi.org/10.1001/jama.2015.18392
23. Watson M, Law M, dos Santos M, Greer S, Baruch J, Bliss J. The Mini-MAC: further development of the Mental Adjustment to Cancer scale. *J Psychosoc Oncol*. 1994;12(3):33-46. https://doi.org/10.1300/J077V12N03_03

24. Calderon C, Lorenzo-Seva U, Ferrando PJ, et al. Psychometric properties of Spanish version of the Mini-Mental Adjustment to Cancer scale. *Int J Clin Health Psychol*. 2020. https://doi.org/10.1016/j.ijchp.2020.06.001
25. Andreu Vaillo Y, Murgui Pérez S, Martínez López P, Romero Retes R. Mini-Mental Adjustment to Cancer Scale: construct validation in Spanish breast cancer patients. *J Psychosom Res*. 2018;114:38-44. https://doi.org/10.1016/j.jpsychores.2018.09.004
26. Watson M, Greer S, Young J, Inayat Q, Burgess C, Robertson B. Development of a questionnaire measure of adjustment to cancer: the MAC scale. *Psychol Med*. 1988;18:203-209. https://doi.org/10.1017/S0033291700002026
27. Bredal IS. The Norwegian version of the Mini-Mental Adjustment to Cancer Scale: factor structure and psychometric properties. *Psycho Oncol*. 2010;19(2):216-221. https://doi.org/10.1002/pon.1564
28. Zigmond AS, Snaith RP. The Hospital Anxiety and Depression Scale. *Acta Psychiatr Scand Suppl*. 1983;67:361-370.
29. López-Roig S, Terol MC, Pastor MA, et al. Ansiedad y depresión. Validación de la escala HAD en pacientes oncológicos. *J Health Psychol*. 2000;12(2):127-151.
30. Brennam C, Worral-Davies A, McMillan D, Gilbody S, House A. The Hospital Anxiety and Depression Scale: a diagnostic meta-analysis of case-finding ability. *J Psychosom Res*. 2010;69:371-378.
31. Herrero J, Blanch J, Peri JM, De Pablo L, Pintor A, Bulbena A. A validation study of the Hospital Anxiety and Depression Scale (HADS) in a Spanish population. *Gen Hosp Psychiatr*. 2003;25:277-283.
32. Hanley JA, McNeil BJ. The meaning and use of the area under a receiver operating characteristic (ROC) curve. *Radiology*. 1982;143:29-36.
33. Traeger L, Greer JA, Fernandez-Robles C, Temel JS, Pirl WF. Evidence-based treatment of anxiety in patients with cancer. *J Clin Oncol*. 2012;30:1197-1205.
34. Giese-Davis J, Collie K, Rancourt KM, Neri E, Kraemer HC, Spiegel D. Decrease in depression symptoms is associated with longer survival in patients with metastatic breast cancer: a secondary analysis. *J Clin Oncol*. 2011;29:413-420.
35. Alloy LB, Clements CM. Illusion of control: invulnerability to negative affect and depressive symptoms after laboratory and natural stressors. *J Abnorm Psychol*. 1992;101(2):234-245.
36. Folkman S, Greer S. Promoting psychological well-being in the face of serious illness: when theory, research and practice inform each other. *Psycho Oncol*. 2000;9:11-19.
37. Carver C, Harris S, Lehman JM, et al. How important is the perception of personal control? Studies of early stage breast cancer patients. *Pers Soc Psychol Bull*. 2000;26:139-149.
38. Creamer M, Burgess P, Pattison P. Reaction to trauma: a cognitive processing model. *J Abnorm Psychol*. 1992;101:452-459.
39. Zebrack B, Kayser K, Bybee D, et al. A practice-based evaluation of distress screening protocol adherence and medical service utilization. *J Natl Compr Canc Netw*. 2017;15(7):903-912.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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