Utility of psychotherapy assessed with Kessler scale in a population of cancer patients undergoing systemic oncological treatment: a mono-institutional experience

Pasquale Vitale[1], Ida Bocchino[1], Vincenzo De Falco[1]^, Gelsomina Auletta[1], Ilaria Di Giovanni[1], Marco Bocchetti[2,3]^, Annunziata Auriemma[1], Roberto Conchiglia[1], Raffaele Addeo[1]^

[1]Medical Oncology Unit, "San Giovanni di Dio" Hospital, ASL Napoli 2 Nord, Frattamaggiore, Italy; [2]Department of Precision Medicine, University of Campania "Luigi Vanvitelli", Naples, Italy; [3]Molecular Oncology and Precision Medicine Laboratory, Fondazione Biogem, Ariano Irpino, Italy

Contributions: (I) Conception and design: P Vitale, I Bocchino, R Addeo; (II) Administrative support: G Auletta, R Conchiglia; (III) Provision of study materials or patients: I Bocchino, R Conchiglia, R Addeo, I Di Giovanni, A Auriemma; (IV) Collection and assembly of data: P Vitale, I Bocchino; (V) Data analysis and interpretation: M Bocchetti, R Addeo; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Dr. Raffaele Addeo, MD. Head of Medical Oncology Unit, "San Giovanni di Dio" Hospital, ASL Napoli 2 Nord, Via Giovanni XXIII, 80027 Frattamaggiore, Italy. Email: raffaele.addeo@aslnapoli2nord.it; raffaeleaddeo19@gmail.com.

Background: Psychological distress has been associated with greater physical symptom severity, suffering, and mortality in cancer patients. For this reason, today, psychological care represents a fundamental tool for improving the quality of life of cancer patients.

Methods: From September 2021 to May 2022, 170 newly diagnosed cancer patients, were enrolled in the observational study at Medical Oncology Unit, "San Giovanni di Dio" Hospital. Before the start of oncological treatment, they were subjected to the Kessler 10 (K10) test, a validated measure of non-specific symptoms of psychological distress of the past 4 weeks. On the basis of the score, they were divided into three groups: low [10–19], moderate [20–29] and high [30–50] distress. After 3 months of psychological therapy, they repeated the test.

Results: Majority of patients were female (74.1%), aged <70 years (78.2%). The most represented tumours were breast (47.6%), colon (15.3%), urothelial (10.6%) and lung (7.6%) cancer and most patients started intravenous chemotherapy treatment (74.7%) rather than oral therapy. The previous remote pathological history and the family cancer history of the patients were also evaluated. Finally, marital status, schooling and employment status were recorded. At baseline we found 55, 72, and 43 patients with a low, moderate and high psychological distress, respectively. After the 3 months of psychotherapy, we re-administered the K10 test and we found a radical improvement in the degree of psychological distress (96 patients had a low score, 62 with a moderate score and just 12 patients with a high score). The great reduction in the score in K10 was statistically significant with a P value of <0.0001. The reduction of the K10 score was observed indiscriminately in all subgroups analysed. A statistically significant difference was observed between patients with different education levels (low 56% *vs.* high 32% of reduction in K10 score). Furthermore, the improvement in psychological health was greater in unemployed patients than in workers.

Conclusions: The use of the K10 test is helpful in monitoring the degree of psychological distress of patients facing the diagnosis of cancer and who are about to start oncological treatment. Psychotherapy is effective in reducing the distress of these patients just a few months after starting treatment.

Keywords: Psychotherapy; Kessler scale; psychological distress; K10 score; supportive care

^ ORCID: Vincenzo De Falco, 0000-0003-0261-0382; Marco Bocchetti, 0000-0002-2143-6669; Raffaele Addeo, 0000-0001-9197-8060.

Introduction

The diagnosis of cancer has a great impact on the lives of our patients, not only on their physical health, but also on their psychological (1,2). Very often the psychological aspect also involves the patients' families and determines an overall worsening of the quality of life (3). About 20% of cancer patients develop depression and up to 50% may develop a psychological disorder (4,5). Anxiety affect between 30% and 50% patients before, during and after treatment and are associated with impairments in physical functioning, overall quality of life, and decision-making ability, as well as delayed return to work and poor adherence to treatment (6). Distress is defined as a multifactorial, unpleasant experience of a psychologic (i.e., cognitive, behavioural, emotional), social, spiritual, and/or physical nature (7). This problem is relevant because can diminish the ability of the patient to effort the cancer care: both clinical and preclinical studies have demonstrated the influence of stress on tumorigenesis, tumor progression and metastasis (8,9). Furthermore, numerous observational studies have demonstrated the negative correlation between psychological distress and the response and tolerability to oncological treatments (10-13).

Finally, an oncological diagnosis can lead to social problems for the patient (especially for their families) or also economic problems (14) because the patient cannot or who are unable to continue working (7). For this reason,

cancer should be considered as a bio-psycho-social disease (15-17). Today, the psychological care of the patients has different target: decreasing the emotional distress, anxiety and stress and increasing patient's quality of life (15,18), but it seems also to reduce the fatigue related cancer, adverse event, and pain (19,20). Psychotherapy for cancer patients should be easily available to all, without costs, well organized and structured with individual interviews and group sessions. Another fundamental aspect is that it should be started from the moment the diagnosis is communicated and continued during all stages of the diagnostic and therapeutic process (21-23). Despite many international guidelines recommend taking care of the psychological health since the first visit, many patients do not receive adequate psychological support. This lack has a major impact, on the mental health, for patients who could be considered as "vulnerable" or "fragile" due to these circumstances. This term implies people with a bad economic condition, or who belong to ethnic minority or patient with a low schooling level (24). Literature examining the predictors of psychological distress among cancer patients and their caregivers suggest that information like patient/caregiver age, gender, marital status, financial adequacy, employment status, relationship with one another (i.e., spouse and child) are important characteristics to consider, especially in different cultural settings as they can differ across societal norms (25). Considering the central role of the psychological therapy since many years (26,27), in our department, we offered, to all the patients, the opportunity to be evaluated by a psychologist at the moment of taking charge. The psychologist evaluated every single case and decided if the patient needed a psychological support or not, forward decided the methods and number of the sessions. In light of the good back-up received by the patients about this new opportunity, we decided to evaluate the impact of the psychological care by conducting a prospective observational study. In this study, we administered the Kessler 10 (K10) test, a validated measure of non-specific symptoms of psychological distress of the past 4 weeks. It contains 10 questions, is a simple and easy-to-use instrument and can be administered in 2 to 3 minutes (28-30). The K10 was administered to patients with newly diagnosed cancer that accepted to participate in this trial.

After 3 months of psychological therapy, we re-administered the same K10 test in order to evaluate changes. We present this article in accordance with the STROBE reporting checklist (available at https://cco.amegroups.com/article/view/10.21037/cco-23-54/rc).

Methods

The study sample included 170 adult patients with histologically proven primary cancer enrolled from September 2021 to May 2022, treated at Medical Oncology Unit, "San Giovanni di Dio" Hospital in Frattamaggiore. The Institutional Ethics Committee (ASL Napoli 2 Nord) approved the study and informed consent was obtained from all patients. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013).

In this cohort, we included patients with different types of cancer (mostly represented by breast cancer and colorectal) in different treatment settings: adjuvant and metastatic. They were offered support by a psychologist specializing in cancer patients. Psychological support interviews were individual, every 2 weeks (for 1 hour), about 6 for each patient, with a view to a systemic relational orientation, which takes into account the patient and his family network. In a multidisciplinary perspective, the patient was at the center of the treatment process, we tried to direct his emotions towards a better quality of life, his relationships and personal time management. The K10 test was administered before the start of treatment and after 3 months. On the basis of the score in the test, the patients were divided into three groups: scores from 10 to 19 were classified as "K10 low", from 20 to 29 classified as "K10 medium", from 30 to 50 "K10 high". Patients were asked for their consent to record this data and all sensitive data was removed.

Statistical analysis

K10 scores before and after the psychological aid were compared for the whole dataset using *t*-test analysis on GraphPad PRISM Ver. 9.5. The comparison was expressed as a violin plot graph. Then, all the patients' clinical data were coded in numerical values and imported in IBM SPSS Ver. 25 software in 11 different variables (sex, age, diagnosis, K10, therapy, adjuvant/metastatic, familiar oncology status, neuroendocrine drugs, marital status, level of education, employment) using different strategies. K10 scores were coded as dichotomous variables, where a score decrease

after treatment was coded as '1', while equal or higher scores were coded as '0'. All the dichotomic variables were coded assigning "0" to "no event" and "1" to "event presence", for example for the "age" variable, if age was <70 years we assigned "0" and if age was ≥70 years we assigned "1". Non-dichotomic variables were coded as ordinal based on the objective importance of the event. The distribution of the data was assessed using the Kolmogorov-Smirnov test in order to select the appropriate bivariate analysis to carry out. Two-tailed Spearman bivariate correlation analysis was then applied between the variables contained in the dataset, the statistical relevance was expressed as follows (2-tailed: *$P<0.05$; **$P<0.01$; ***$P<0.001$). Frequency tables, cross tabulations and relative graphs were also carried out using IBM SPSS Ver. 25.

Results

We administered K10 test to 170 patients of which 133 patients (78.2%) were <70 years (see characteristics and demographics in *Tables 1,2*). There were 44 males (25.9%) and 126 females (74.1%). The most frequent tumor was breast cancer with 81 patients (47.6%), followed by colorectal cancer (15.3%), urothelial cancer (10.6%) and lung cancer (7.6%). The majority of the patients were treated with intravenous chemotherapy (74.7%). At baseline, we found this situation: 55 patients with a K10 score between 10–19, 72 patients with a score between 20–29 and 43 patients with a score between 30–50 (*Figures 1,2*). After 3 months of psychotherapy, we repeated the K10 test and found the following situation: 96 patients had a low K10 score; 62 patients had a medium K10 score and only 12 patients had a high K10 score. The great reduction in the score in K10 is statistically significant with a P value of <0.0001.

We then analysed the variation of K10 scores across various subgroups. First of all, we analysed the K10 variation according to cancer type in the two most represented subgroups: in the breast cancer group, we found that at 3 months, we had a diminishing of K10 in 33 patients (40%) while in the colorectal cohort we had a decrease of K10 score in 11 patients (42%). We also analysed the patients according to treatment setting: adjuvant *vs.* metastatic without finding statistically significant differences (*Figure 3*). We had 92 patients in adjuvant group and 78 in the metastatic setting. In the adjuvant setting we had a decrease of K10 score in 43 patients (46%). Instead in the metastatic patient we had a reduction in 35 patients (45%). We also test the patients

Table 1 Characteristics of main patients

Characteristic	Value
Patients, n	170
Age (years)	
Median [range]	62 [30–85]
≥70, n (%)	37 (21.8)
<70, n (%)	133 (78.2)
Sex, n (%)	
Male	44 (25.9)
Female	126 (74.1)
Baseline value K10 (from 10 to 19)	55
Baseline value K10 (from 20 to 29)	72
Baseline value K10 (from 30 to 50)	43
Value K10 (from 10 to 19) after 3 months	96
Value K10 (from 20 to 29) after 3 months	62
Value K10 (from 30 to 50) after 3 months	12
Diagnosis, n	
Breast cancer	81
Gallbladder cancer	1
Colon cancer	26
Gastric cancer	7
Female genitals cancer	9
Occult cancer	1
Lung cancer	13
Anus cancer	4
Pancreas cancer	1
Head and neck	7
Urogenital cancer	18
Gist	1
Melanoma	1
Therapy, n	
Chemotherapy	127
Oral therapy	43

Table 2 Demographics of patients

Demographics	Value (n)
Marital status	
Celibate	5
Married	125
Nubile	9
Separate	10
Widower	16
Divorced	5
Schooling	
Primary school	42
Secondary school	52
High school	47
Degree	28
Not schooled	1
Work	
Housewife	52
Trader	6
Employees	62
Free profession	7
Retired	1
Unemployed	3
Doctor	1
Worker	38
Others	
Neurologic drugs (yes/no)	31/139
Familiarity oncologic (yes/no)	97/73
Caregiver (yes/no)	163/7

according to the age: <70 or ≥70 years old (*Figure 4*). We had 133 patients with <70 years old and 37 with ≥70 years old. In the first group we had a reduction of K10 score in 62 patients (47%) and in the group of aged ≥70 we had a
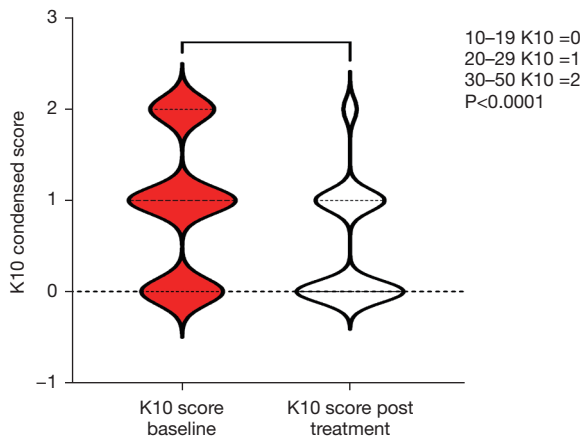
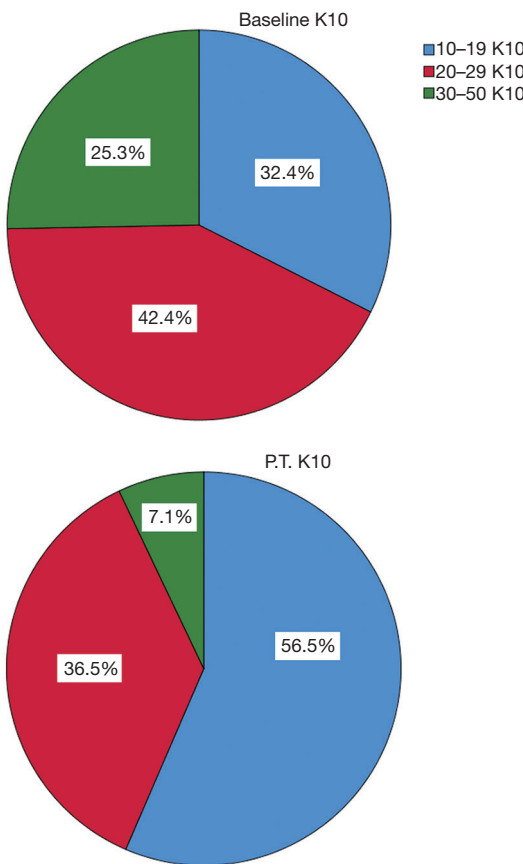**Figure 1** Violin plot of K10 score. K10, Kessler 10 score.

Figure 2 Distribution of K10 test scores at baseline and 3 months later. K10, Kessler 10 score; P.T., post treatment.

Figure 3 Differences in K10 score between adjuvant *vs.* metastatic subgroups. K10, Kessler 10 score; Adjuv, adjuvant.
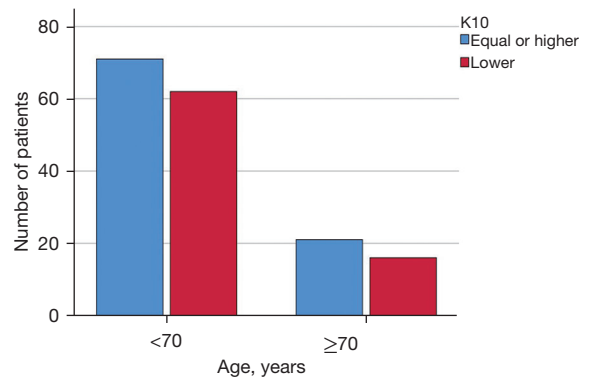
Figure 4 Difference in K10 score in <70 *vs.* ≥70 years old patients. K10, Kessler 10 score.

doesn't take it (139 patients) (*Figure 5*). In the group who did not take neurological drugs, 63 (45%) patients had a reduction of K10 score after 3 months. In the group who took these drugs there was a reduction of K10 after 3 months in 15 patients (49%). There is not a statistical difference between two groups.

We also analysed the difference between the patients in oral therapy (43 patients) and patients in intravenous therapy (127 patients) (*Figure 6*). We had a reduction of K10 in 10 patients in oral therapy (23%) and a reduction in K10 score in 68 patients during intravenous therapy (53%). These results confirm a difference between the reduction in the two subgroup that is statistically significant (P<0.001). This difference could be due to the varying sizes of the two patient groups.

In addition, we took in consideration in our analysis the group of the patients that have a family member who have had cancer (97 patients) and patients without any familiar

reduction of the K10 scores in 16 (48%). We made also comparison between group of patients who took neurological or psychiatric medication (31 patients) and the group that
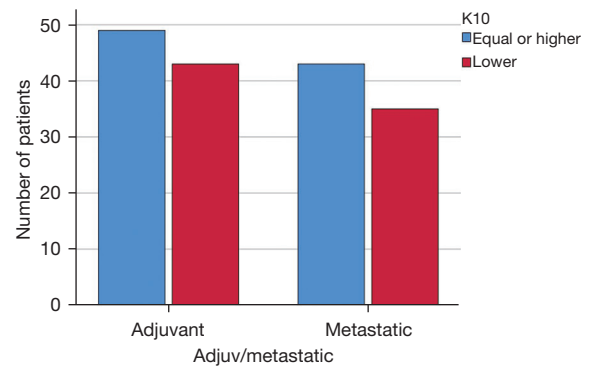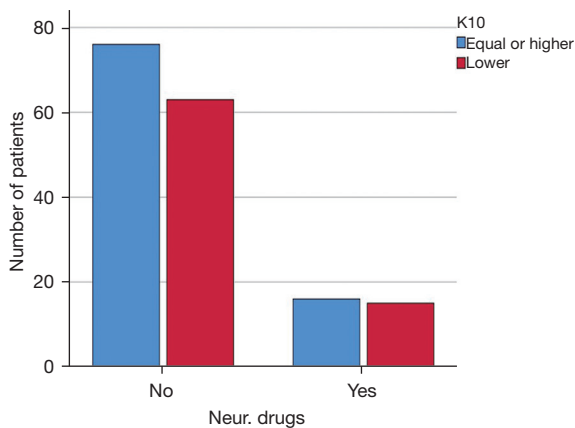
Page 6 of 9

Vitale et al. K10 to check distress in cancer patients during psychotherapy

Figure 5 Differences in K10 score in patients who take neurological drugs *vs.* patients who don't. K10, Kessler 10 score; Neur., neurological.
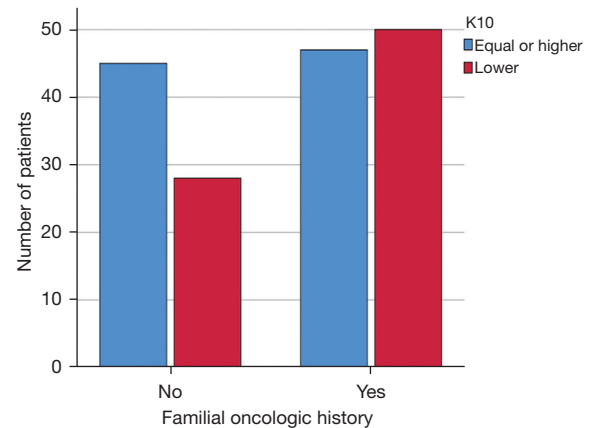

Figure 7 Differences in K10 score in patients with familial oncological history *vs.* no familial oncological history. K10, Kessler 10 score.
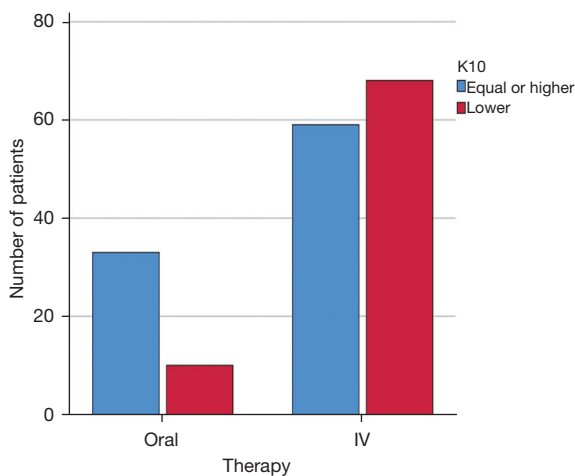

Figure 6 Differences in K10 score in patients with oral *vs.* intravenous oncological therapy. K10, Kessler 10 score; IV, intravenous.
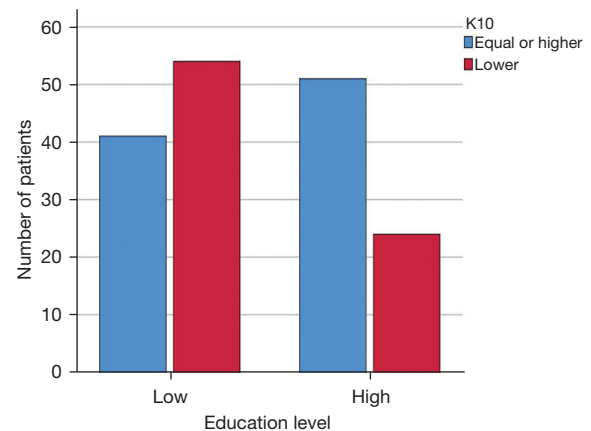

Figure 8 Differences in K10 score in patients with high level of education *vs.* patients with low level of education. K10, Kessler 10 score.

member affected (73 patients) (*Figure* 7). There was a reduction of K10 score in 50 patients (51%) in the first group and a reduction in 28 patients (34%) in the second group. This observed difference is not statistically significant.

We performed another subgroup analysis between patients with low (95 patients) versus patients with high (75 patients) level of education (*Figure 8*). In the low level group (none education, primary or secondary school), there were 54 reductions of K10 score (56%) and in the high level group (high school or bachelor/master degree) there was a reduction in 24 patients (32%). Interestingly, this observed

difference is statistically significant (P<0.001).

The last sub-group analysis we did is about profession: we divided patients between worker and not worker (housewives, unemployed, retired). In the first group there were 114 patients and in the second group there were 56 patients. In the worker group there was a reduction of K10 score in 48 patients (42%) and in the non-worker group there was a reduction of K10 score in 30 patients (53%). This difference is not statistically significant, but we divided the category of workers according to the level of responsibility. We found that difference in K10 score

reduction became significant between the non-workers and workers with high responsibility (like executives, department heads, entrepreneurs with dependent employees, health professionals, etc.). There was a greater percentage of patients who had a reduction in K10 score in the latter group (P<0.05).

Discussion

The diagnosis of cancer, which is frequently a life-threatening disease, places patients in a series of challenging circumstances (31). Not surprisingly, as many as 40% of cancer patients, both with early-stage or advanced disease, for different reasons but always linked to the uncertainty of one's future, suffer from mood disorders or clinically elevated levels of distress, including increased anxiety and depressive symptoms (32). Anxiety and depression negatively impact the treatment compliance, quality of life, disease progression, and risk of mortality. Given that levels of anxiety and depression varied widely by cancer type, gender, and age, these results inform which cancer patients are most likely in need of psychosocial support (33). However, this aspect is often underestimated and not recognized by the clinician who are overworked and pay little attention to aspects beyond choosing the best cancer treatment (34). To overcome this barrier and the limited time available, it is possible to adopt in clinical practice the Kessler Psychological Distress Scale (K10), a well-validated, ten-item Likert-style survey that screens for the presence of mental disorder. This questionnaire is a tool that is easy and quick to use, yet with scientific validity. In this observational study we evaluated the efficacy of a scientific approach of the psychotherapy on patients who experience a diagnosis of cancer. We used K10 test in order to give a more objective measure of the benefit of this approach. We found that the therapy is effective just few months after the start and reduce the sense of anxiety and distress in the patient during the chemotherapy. The psychotherapy is also effective in the patients in various setting of disease (metastatic or adjuvant) in various cancer type, it is effective both in older and younger patient. We found a greater reduction in the K10 score in patients receiving intravenous therapy than in those receiving oral therapy. This may seem counterintuitive because the perception is that oral therapies are less impairing, however many studies have shown that, in these patients, cancer-related symptom burden is high and related to worse quality of life and psychological distress (35-37). We also observed a statistically significant difference in therapy efficacy among patients with different education levels. In particular, it seems that the K10 score after psychotherapy decreases significantly more in patients with a low level of education. This fact is related to different reasons and is also influenced by other factors (socio-economic and work factors). It is known that less educated individuals are more prone to mental illness (38), have fewer intellectual tools to understand a serious diagnosis such as cancer (39) and have lower levels of insight into the significance of emotional symptoms (40). Also the profession can reflect on efficacy of therapeutic approach because patients who have more responsibilities can have higher level of stress and anxiety linked to particular job they did. However, we can affirm that the psychotherapy is really effective in the reduction of stress level and should be administered to all patients that want to be helped. The K10 score test can help to understand the patients who really need of a more aggressive approach from the beginning. Finally, this trial shows that every oncology department should have a psycho-oncologist (or better a group of them) because the psychotherapy is a part of the global care of the patient with cancer. The current study is not without limitations. All data from the study were self-reported and based on volunteer participation (this could lead to a selection bias). Our sample size was relatively small and included a relatively short observation period. Finally, another limitation is certainly the lack of a control arm that would have better discriminated the effects of psychotherapy.

Conclusions

Our results suggest that the presence of early psychological screening and the rapid intervention of a psychologist may help the patients to face the oncological care pathway. However, this hypothesis should be directly tested in a prospective large clinical trial. This trial will also better explore other factors that could influence the effectiveness of psychotherapy such as social support, socioeconomic status, and the presence of comorbidities.

Acknowledgments

Footnote

Reporting Checklist: The authors have completed the STROBE reporting checklist. Available at https://cco.

amegroups.com/article/view/10.21037/cco-23-54/rc

Data Sharing Statement: Available at https://cco.amegroups.com/article/view/10.21037/cco-23-54/dss

Peer Review File: Available at https://cco.amegroups.com/article/view/10.21037/cco-23-54/prf

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://cco.amegroups.com/article/view/10.21037/cco-23-54/coif). RA serves as an unpaid editorial board member of *Chinese Clinical Oncology* from August 2022 to July 2024. The other authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The Institutional Ethics Committee (ASL Napoli 2 Nord) approved the study and informed consent was obtained from all patients. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013).

Open Access Statement: This is an Open Access article distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: https://creativecommons.org/licenses/by-nc-nd/4.0/.

References

1. Joshy G, Thandrayen J, Koczwara B, et al. Disability, psychological distress and quality of life in relation to cancer diagnosis and cancer type: population-based Australian study of 22,505 cancer survivors and 244,000 people without cancer. BMC Med 2020;18:372.
2. Mitchell AJ, 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 Oncol 2011;12:160-74.
3. Hamer M, Chida Y, Molloy GJ. Psychological distress and cancer mortality. J Psychosom Res 2009;66:255-8.
4. Krikorian A, Limonero JT, Román JP, et al. Predictors of suffering in advanced cancer. Am J Hosp Palliat Care 2014;31:534-42.
5. Pitman A, Suleman S, Hyde N, et al. Depression and anxiety in patients with cancer. BMJ 2018;361:k1415.
6. Ancoli-Israel S, Liu L, Rissling M, et al. Sleep, fatigue, depression, and circadian activity rhythms in women with breast cancer before and after treatment: a 1-year longitudinal study. Support Care Cancer 2014;22:2535-45.
7. Riba MB, Donovan KA, Andersen B, et al. Distress Management, Version 3.2019, NCCN Clinical Practice Guidelines in Oncology. J Natl Compr Canc Netw 2019;17:1229-49.
8. Eckerling A, Ricon-Becker I, Sorski L, et al. Stress and cancer: mechanisms, significance and future directions. Nat Rev Cancer 2021;21:767-85.
9. Wu Y, Zhou L, Zhang X, et al. Psychological distress and eustress in cancer and cancer treatment: Advances and perspectives. Sci Adv 2022;8:eabq7982.
10. Bi Z, Li W, Zhao J, et al. Negative correlations of psychological distress with quality of life and immunotherapy efficacy in patients with advanced NSCLC. Am J Cancer Res 2022;12:805-15.
11. Karunanithi G, Sagar RP, Joy A, et al. Assessment of Psychological Distress and its Effect on Quality of Life and Social Functioning in Cancer Patients. Indian J Palliat Care 2018;24:72-7.
12. Muzzatti B, Bomben F, Flaiban C, et al. Quality of life and psychological distress during cancer: a prospective observational study involving young breast cancer female patients. BMC Cancer 2020;20:758.
13. Abu-Odah H, Molassiotis A, Zhao IY, et al. Psychological distress and associated factors among Palestinian advanced cancer patients: A cross-sectional study. Front Psychol 2022;13:1061327.
14. Lu L, Gavin A, Drummond FJ, et al. Cumulative financial stress as a potential risk factor for cancer-related fatigue among prostate cancer survivors. J Cancer Surviv 2021;15:1-13.
15. Bultz BD, Carlson LE. Emotional distress: the sixth vital sign--future directions in cancer care. Psychooncology 2006;15:93-5.
16. Lewandowska A, Rudzki G, Lewandowski T, et al. Quality of Life of Cancer Patients Treated with Chemotherapy. Int J Environ Res Public Health 2020;17:6938.
17. Freire ME, Sawada NO, de França IS, et al. Health-related quality of life among patients with advanced cancer: an integrative review. Rev Esc Enferm USP 2014;48:357-67.

18. Oh PJ, Cho JR. Changes in fatigue, psychological distress, and quality of life after chemotherapy in women with breast cancer: a prospective study. Cancer Nurs 2020;43:E54-E60.

19. Jacobsen PB, Holland JC, Steensma DP. Caring for the whole patient: the science of psychosocial care. J Clin Oncol 2012;30:1151-3.

20. Williams AM, Khan CP, Heckler CE, et al. Fatigue, anxiety, and quality of life in breast cancer patients compared to non-cancer controls: a nationwide longitudinal analysis. Breast Cancer Res Treat 2021;187:275-85.

21. Schuit AS, Holtmaat K, van Zwieten V, et al. Organizing Psycho-Oncological Care for Cancer Patients: The Patient's Perspective. Front Psychol 2021;12:625117.

22. Jacobsen PB, Wagner LI. A new quality standard: the integration of psychosocial care into routine cancer care. J Clin Oncol 2012;30:1154-9.

23. Faller H, Schuler M, Richard M, et al. Effects of psycho-oncologic interventions on emotional distress and quality of life in adult patients with cancer: systematic review and meta-analysis. J Clin Oncol 2013;31:782-93.

24. Diaz-Frutos D, Baca-Garcia E, García-Foncillas J, et al. Predictors of psychological distress in advanced cancer patients under palliative treatments. Eur J Cancer Care (Engl) 2016;25:608-15.

25. Alfonsson S, Olsson E, Hursti T, et al. Socio-demographic and clinical variables associated with psychological distress 1 and 3 years after breast cancer diagnosis. Support Care Cancer 2016;24:4017-23.

26. Sheard T, Maguire P. The effect of psychological interventions on anxiety and depression in cancer patients: results of two meta-analyses. Br J Cancer 1999;80:1770-80.

27. McCarter K, Britton B, Baker AL, et al. Interventions to improve screening and appropriate referral of patients with cancer for psychosocial distress: systematic review. BMJ Open 2018;8:e017959.

28. Ongeri L, Ametaj A, Kim H, et al. Measuring psychological distress using the K10 in Kenya. J Affect Disord 2022;303:155-60.

29. Bu XQ, You LM, Li Y, et al. Psychometric Properties of the Kessler 10 Scale in Chinese Parents of Children With Cancer. Cancer Nurs 2017;40:297-304.

30. Kessler RC, Andrews G, Colpe LJ, et al. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. Psychol Med 2002;32:959-76.

31. Giese-Davis J, Waller A, Carlson LE, et al. Screening for distress, the 6th vital sign: common problems in cancer outpatients over one year in usual care: associations with marital status, sex, and age. BMC Cancer 2012;12:441.

32. Caruso R, Nanni MG, Riba MB, et al. The burden of psychosocial morbidity related to cancer: patient and family issues. Int Rev Psychiatry 2017;29:389-402.

33. Linden W, Vodermaier A, Mackenzie R, et al. Anxiety and depression after cancer diagnosis: prevalence rates by cancer type, gender, and age. J Affect Disord 2012;141:343-51.

34. Addeo R, Pompella L, Vitale P, et al. The Art of Counseling in the Treatment of Head and Neck Cancer: Exploratory Investigation among Perceptions of Health Professionals in Southern Italy. Curr Oncol 2022;29:6277-86.

35. Jacobs JM, Ream ME, Pensak N, et al. Patient Experiences With Oral Chemotherapy: Adherence, Symptoms, and Quality of Life. J Natl Compr Canc Netw 2019;17:221-8.

36. Berry DL, Blonquist TM, Hong F, et al. Self-reported adherence to oral cancer therapy: relationships with symptom distress, depression, and personal characteristics. Patient Prefer Adherence 2015;9:1587-92.

37. Mathes T, Antoine SL, Pieper D, et al. Adherence enhancing interventions for oral anticancer agents: a systematic review. Cancer Treat Rev 2014;40:102-8.

38. Niemeyer H, Bieda A, Michalak J, et al. Education and mental health: Do psychosocial resources matter? SSM Popul Health 2019;7:100392.

39. Doak CC, Doak LG, Friedell GH, et al. Improving comprehension for cancer patients with low literacy skills: strategies for clinicians. CA Cancer J Clin 1998;48:151-62.

40. Steele LS, Dewa CS, Lin E, et al. Education level, income level and mental health services use in Canada: associations and policy implications. Healthc Policy 2007;3:96-106.