



Interventional strategies to address burnout in young medical oncologists: results from the Resilience-Spanish Society of Medical Oncology (SEOM) Study and a university hospital experience in Spain

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Abstract

Purpose Burnout syndrome is an increasingly prevalent problem among young oncologists with a prevalence of up to 71% of physicians in Europe, with potential personal and professional consequences. Few studies have been conducted to evaluate the best primary prevention or interventional strategy to reduce burnout levels. The aim of our study was to determine the efficacy of a therapy.

Patients and methods The Resilience-SEOM study was carried out by the +MIR section, which involved three training workshops organized to improve coping and communication skills in a pilot sample of medical oncology residents. On the other hand, the Group Psychotherapy (GP) program was carried out with the mentor of residents of the Oncology Department at the Vall D'Hebron University Hospital, providing a therapeutic space of 1 h per month from September 2023 to June 2024. Participants in both studies completed the Maslach Burnout Inventory Human Services Survey (MBI-HSS) at the beginning and at the end of the programs.

Results The results indicate that there was no significant difference in the average initial MBI score, although a trend toward a decrease in burnout levels was observed. The % of participants of workshops with a high level of personal achievement increased from 5 to 25%, the difference being statistically significant ($p=0.002$). The results of the GP program show that the difference in the overall pre- and post-intervention scores was statistically significant (0.029).

Conclusion In the Resilience-SEOM study, communication skills workshops as an interventional strategy mitigated burnout levels in medical oncology residents, mainly by improving personal achievement. GP as an interventional strategy for burnout could be feasible to address the emotional impact of burnout.

Keywords Professional burnout · Young oncologists · Residents · Interventional strategies · Group psychotherapy

Introduction

The impact of burnout on the emotional well-being of healthcare professionals, particularly in medical oncologists, has become more evident [1–3]. Medical oncologists must cope with continuous advances in oncological therapeutic approaches, an increasing demand for care, and the need to consider available resources, particularly the availability of pharmacological treatments, when making therapeutic decisions, while also providing emotional support to patients in

vulnerable situations where therapeutic failure may occur. These factors increase psychological distress and contribute to the long-term development of burnout syndrome among medical oncologists. Burnout affects one in three oncologists, with prevalence data varying widely ranging from 20 to 70% [4, 5]. Early detection and management is essential due to the potential consequences at a personal and professional level [6, 7]. Burnout may lead to chronic health conditions, including cardiovascular disease, obesity and mental disorders, which can adversely affect quality of care, decision-making capacity, the doctor-patient relationship, and professional satisfaction, and may ultimately contribute

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to oncology workforce shortages through reduced working hours, absenteeism, or early retirement [8].

The main risk factors include single status, poor previous psychological well-being, dissatisfaction between work and personal life, and young age, especially under 40 years of age [4, 9].

Young oncologists are a particularly vulnerable population due to work overload, academic pressure, and mismatched expectations that make it difficult to achieve an adequate work–life balance. ESMO conducted a survey of 737 oncologists in 41 European countries identifying a burnout prevalence of up to 71%, with 74% of oncologists not having access to psychological support in their centers [9]. In Spain, SEOM conducted a survey of the +MIR population (residents and young oncologists in their first 5 years), identifying a 25% prevalence of burnout, especially in 2nd-year residents, with 23.3% of oncologists having doubts about their vocation [10].

There have been few randomized trials aimed at investigating the best intervention to prevent or reduce burnout levels, with most of them conducted in other medical specialties such as internal medicine and with small groups of specialists [11, 12]. Some of these interventions include meditation, mindfulness, psychotherapy with psychotherapists for several weeks, or debriefing, but the real effectiveness of these methods, which do not cover all the dimensions of burnout or all of the factors of burnout, has not been proven.

Moreover, there are no long-term follow-up data on these tools and, to date, no studies have been published on an intervention to promote resilience in young oncologists.

Therefore, the aim of our study was to determine the efficacy of a therapy based on communication skills workshops aimed at reducing burnout through self-care, communication training, and values-based work in medical oncology residents in Spain.

Material and methods

Resilience-SEOM study: communication skills program

Design

The Resilience-SEOM study was supported by the Spanish Society of Medical Oncology (SEOM) +MIR Section [represented by 12 oncologists, including specialists, residency mentors, and resident medical interns (or MIR, Médico Interno Residente)], a section devoted to analyzing and addressing the specific concerns of young medical oncologists in Spain, with the main objective of assessing the effectiveness of conducting communication skills workshops to reduce burnout. The study used quantitative

and qualitative methods to evaluate the perspectives and results of the interventional strategy implemented. Regarding the group psychotherapy (GP) study, it was implemented with the aim of supporting the psycho-emotional health and interpersonal communication of the residents in the medical oncology department at the hospital. The program was conducted for 1 h per month, during working hours and as part of the residents' training plan. Although attendance was voluntary, respect and group commitment were encouraged. The study was carried out within the framework of quantitative research, using a quasi-experimental design with pre- and post-intervention measurements.

The phases to be carried out during the development of the projects were:

- A) Creation of a working group.
- B) In the case of the GP study, an initial contact was made with the 13 residents from medical oncology through a group email, providing them with information and the annual schedule of the GP program.
- C) Design and administration of a pre-intervention structured, anonymous self-developed survey on sociodemographic data.
- D) Research and application of the measurement instrument "Maslach Burnout Inventory (MBI)" (Maslach, 1986) to assess the work environment and the "Burnout Syndrome" or occupational burnout of the residents.
- E) Conducting three training workshops aimed at improving the residents' coping skills and/or conducting the GP sessions from September 2023 to June 2024.
- F) Post-intervention administration of the MBI measurement instruments.
- G) Completion of the final document: evidence analysis, pre–post intervention statistical analysis.

Participants and setting

The Resilience-SEOM project from the +MIR section started as a proof of concept to assess the usefulness of the strategy. The project was carried out with the participation of a pilot sample of medical oncology residents from Catalonia, Valencian Community—Elche and Galicia. Medical oncology residents, assessed by their tutors, were invited to participate through an informative e-mail with details of the study and the interventional strategy that was going to be implemented. The study was conducted during the second and third term of 2023. Regarding GP, it began in October 2022 with the support of the mentors from the medical oncology department, as a pilot program aimed at preventing burnout and promoting a relational space

(intrapsychic and interpersonal) for the 13 residents from the hospital's own department.

Inclusion and exclusion criteria

The communication skills workshops were aimed at medical oncology residents; those invited to participate were based at a teaching hospital during the second term of 2023, including 2nd-year residents up until 4th-year residents.

The GP program was conducted exclusively for the hospital's 13 medical oncology residents, including trainees from the first to the fifth year of residency between September 2023 and June 2024.

Burnout assessment

The assessment instrument used to measure the work environment and the “Burnout Syndrome” or occupational burnout of the residents was the Maslach Burnout Inventory Human Services Survey (MBI-HSS).

It consists of 22 items, and in it three subscales can be differentiated that measure, in turn, the three dimensions that make up the syndrome:

- Emotional exhaustion (EA). This subscale is made up of nine items that describe feelings of being overwhelmed and emotionally exhausted by work.
- Depersonalization (DP). This subscale is made up of five items describing an impersonal response and lack of feelings toward the subjects being cared for or served.
- Personal accomplishment at work (PR). The subscale is composed of eight items describing feelings of competence and successful accomplishment at work toward others.

These 22 items are assessed with a Likert-type scale, in which the subject scores the frequency with which he/she experiences the feelings that make up the syndrome. The frequency range consists of seven adjectives ranging from “never” (0) to “every day”.

The relationship between the score obtained and the degree of burnout is dimensional; therefore, there is no cut-off point to indicate whether or not such an entity exists. The ranges of the total scores of each dimension or subscale are distributed into three brackets that define a level of burnout experienced as low, medium, or high. These ranges were established based on normative distribution of scores obtained in samples representing different professions and/or populations.

Data collection

Phase I Burnout prevalence was measured by asking participants to complete the MBI assessment. The mean of the ratings for each item was calculated. The items of each subscale were grouped. Based on the sum of the means, burnout symptoms were established for each subscale: high, medium, or low, calculating the total degree of burnout.

Phase II After completing the three workshops and the GP program, all participants repeated an MBI at approximately 3 weeks after the last session to evaluate if there was a change in the burnout score. A comparison was made between the initial MBI and post-workshop MBI data:

- Burnout symptoms by general subscale.
- Percentage of professionals with low, medium, and high burnout ratings.
- Percentage of professionals with low, medium, and high burnout values for each subscale.

Communication skills workshops

Three training workshops were conducted and, during the workshops, an active participative and experiential methodology was used, consisting of presentations, dynamics, and role-playing training, based on practical assumptions drawn from the daily reality of those attending the training. We worked at two levels: rational and emotional, thus facilitating an in-depth work not only of knowledge, but also of attitudes and skills, essential to produce changes that are maintained and transferred to the workplace.

The methodology used was:

- Contents with scientific evidence.
- Mobilization of beliefs and attitudes.
- Use of objectives with emotional value for people.
- Immediate applicability.

The main contents of the workshops are summarized below:

1. First workshop:
2. Evidence on burnout and emotional impact in oncology. Data, causes and possible ways of protection.
3. Working with suffering and uncertainty: skills.
4. The meaning of being a physician.
5. What affects me? How does it affect me? How do I resolve it?
6. The triad of self-care in oncology: acceptance; self-regulation and compassionate communication.
7. Emotional self-regulation: practical training.

Table 1 Demographic information of participants of the Resilience-SEOM study

Demographic data		% (n)
Country of origin	Spain	83.3% (20)
	Colombia	12.5% (3)
	Venezuela	4.2% (1)
Sex	Men	33.3% (8)
	Women	66.7% (16)
Age range	26–30	87.5% (21)
	31–35	8.3% (2)
	41–45	4.2% (1)
Smoker	Yes	8.3% (2)
	No	91.7% (22)
Drug consumption	Yes	4.2% (1)
	No	91.7% (22)
	Not answered	4.2% (1)
Antidepressants or anxiolytics	Yes	8.2% (2)
	No	91.7% (22)
Alcohol consumption weekly Mean (min–max)	2.2 (0–6)	
Hospital information and work–life balance		Median (min–max)
Hours of dedication during work hours	Clinic	8 (3–8)
	Investigation	1 (1–2)
	Teaching	1 (1–3)
	Activities	1 (1–4)
Mean of medical oncologists at the hospital		17 (9–65)
Mean of patients/week		47.5 (12–150)
Travel time from home to the center	0–15 min	37.5% (9)
	16–30 min	58.3% (14)
	31–45 min	4.2% (1)
Psychological support available at the center	Yes	16.7% (4)
	No	50% (12)
	Not answered	33.3% (8)
Average hours of exercise		3.5 (0–8)
Average hours of recreational activities		16.2 (0–30)
Has suffered burnout at the hospital center	Yes	70.8% (17)
		Psychological support - Yes: 23.5% (4) - No: 76.5% (13)
	No	29.2% (7)
Work–life balance	Yes	16.7% (4)
	No	37.5% (9)
	Could be improved	45.8% (11)
Couple relationships	Yes	62.5% (15)
	No	37.5% (9)
Lives alone	Yes	37.5% (9)
	No	62.5% (15)
Children	Yes	0
	No	100% (24)
Adequate vacation time	Yes	37.5% (9)
	No	50% (12)
	Not answered	12% (3)

Table 2 Demographic information of participants of the group psychotherapy study

Demographic data		% (n)
Sex	Men	50% (5)
	Women	40% (4)
	I prefer not to answer	10% (1)
Age range	26–30	80% (8)
	31–35	10% (1)
	41–45	10% (1)
Couple relationships	Yes	60% (6)
	No	30% (3)
	I prefer not to answer	10% (1)
Need for psychological support during residency	Yes	40% (4)
	No	60% (6)
Has previously undergone psychotherapy	Yes	60% (6)
	No	40% (4)
Considers it necessary to have a psycho-emotional support space for their clinical practice	Yes	80% (8)
	No	10% (1)

8. Second workshop:

Training rooms: practical training.

3. Third workshop:

Acceptance: awareness of limits and realistic goals.
Compassion toward oneself and others.
Communication and resolution of difficult situations.
Personalized case laboratory for the group.

Group psychotherapy

A psychotherapeutic program was designed with the aim of supporting the psycho-emotional health, as well as the communication and interpersonal relationships of the medical oncology residents at hospital. The sessions take place once a month in a closed room to promote confidentiality and to create a safe and trusting space.

The content of the sessions was decided by the residents themselves, as they choose to freely share what is happening to them and their experiences in the here-and-now interactions between group members. Through dialogue, they worked on therapeutic factors such as communication, altruism, group cohesion, and the development of socialization techniques.

Statistical analysis

The statistical treatment of the sociodemographic data from the workshops and the results of the MBI measurement instrument was performed with the IBM SPSS software package (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.), showing the results of the sociodemographic data as absolute frequencies (number of cases) and percentages (%) for categorical variables and as median and minimum–maximum for continuous variables. Regarding the sociodemographic data of the GP, they were analyzed using the REDCap program [20] version 14.2.2, with the results shown as percentages (%).

For the assessment of initial (pre-) and final (post-) workshop scores, “Burnout syndrome” will be reported as absolute frequencies (number of cases) and percentages for categorical variables, and as median $\pm$ standard deviation along with minimum and maximum for continuous variables. The Chi-square test of independence will be used to evaluate whether pre- and post-MBI scores are independent, with a significance threshold of $p < 0.05$.

Regarding the results of the GP, to assess whether the pre- and post-intervention MBI scores are independent, the non-parametric Wilcoxon signed-rank test was used.

Ethical statement

This study involved a voluntary burnout reduction and soft skills intervention through an educational activity organized for physicians. Participants were informed about the intervention objectives and agreed to participate voluntarily. All participants provided voluntary consent prior to participation. No participant data were collected, and participation

Table 3 Initial and post-workshop burnout assessment

Subscale xsfds	Score per item		Group psychotherapy	
	Resilience-SEOM		Initial (n = 12)	Post (n = 12)
	Initial (n = 19)	Post (n = 8)		
Emotional exhaustion				
1. Because of my job, I feel emotionally drained	3.4	4.0	4.17	3.36
2. At the end of the day, I feel exhausted	4.2	4.4	4.67	3.82
3. I find myself tired when I wake up in the morning and have to face another day of work	3.9	4.1	3.92	3.36
6. Working with patients every day is a strain for me	2.1	2.6	2.50	2.45
8. I feel “burned out” from work	3.4	3.4	3.67	2.91
13. I feel frustrated about my job	2.8	3.1	3.17	2.27
14. I feel like I am doing too hard a job	3.3	3.8	3.25	3.00
16. Working in direct contact with patients is quite stressful for me	2.3	2.8	3.17	2.00
20. At work, I feel that I am at the limit of my possibilities	2.9	3.4	3.00	2.00
Total	28.1	31.5	31.58	25.18
Depersonalization				
4. I think I treat some patients/colleagues as if they were objects	1.5	2.0	1.67	1.36
10. I think I have a more sensitive behavior with people since I have been doing this job	4.1	3.4	2.92	2.45
11. I worry that this job is hardening me emotionally	2.9	3.1	2.92	2.64
15. I really do not care what will happen to some of the patients/colleagues	1.2	2.5	1.92	1.55

Table 3 (continued)

Subscale xstfs	Score per item		Group psychotherapy	
	Resilience-SEOM			
	Initial (n = 19)	Post (n = 8)	Initial (n = 12)	Post (n = 12)
22. I feel that patients blame me for some of their problems	2.3	2.1	2.33	1.45
Total	12.1	13.1	11.83	9.36
Personal achievement				
5. I easily understand how patients and my colleagues feel	4.4	4.1	5.17	5.18
6. I deal very well with the problems my patients present to me	3.8	3.9	4.75	4.64
9. I feel that through my work I am positively flowing into the lives of others	4.0	4.0	4.58	4.82
12. I find myself with a lot of vitality	2.2	3.1	3.33	4.09
17. I have a facility to create a relaxed atmosphere for my patients	4.1	4.1	4.42	4.55
18. I find myself encouraged after working together with patients/colleagues	3.3	3.0	4.25	4.45
19. I have done a lot of worthwhile things in this job	3.8	3.5	4.42	4.73
21. In my work, I deal with emotional problems very calmly	3.4	2.9	4.17	3.91
Total	28.9	28.6	34.50	35.64
MBI total	69.1	73.2	77.91	70.18

Table 4 Comparison of initial vs. post = burnout syndrome symptoms for each dimension

	Resilience-SEOM			Group psychotherapy		
	Initial	Post	<i>P</i> -value	Initial	Post	<i>P</i> -value
Emotional exhaustion	28.1	31.5	0.895			0.055
Mean	28.05	31.5		31.58	25.18	
Standard deviation	11.25	11.832		11.34	10.01	
Minimum	7	18		12	11	
Maximum	54	54		48	43	
Depersonalization	12.1	13.1	0.616			0.109
Mean	12.10	13.12		11.83	9.36	
Standard deviation	5.435	6.998		6.68	6.68	
Minimum	4	3		0	0	
Maximum	24	24		24	22	
Personal achievement	28.9	28.6	0.825			0.759
Mean	28.94	28.62		34.50	35.64	
Standard deviation	6.231	13.866		6.72	5.42	
Minimum	15	7		20	24	
Maximum	40	43		44	41	
General	69.1	73.2	0.570	78.3	71.0	0.029

Statistically significant differences ($p < 0.05$) are presented in bold

implied consent. Participation was entirely voluntary, and participants were informed that they could withdraw from the educational activity at any time. Formal ethics committee approval was not sought, as the study was considered an educational activity. The authors confirm that all procedures complied with the ethical principles of the Declaration of Helsinki, respecting participants' autonomy, confidentiality, and well-being.

Results

Participants and sociodemographic data: communication skills program

Twenty-four of the 30 invited medical oncology residents entered this study. Nineteen participants completed the MBI burnout survey as an initial assessment. The number of participants was distributed as follows: 1. Catalonia: ten participants filled the demographic questionnaire, five the burnout initial assessment, five participated in the workshops, and five filled the burnout post-workshop; 2. Valencia: six filled the demographic questionnaire, six the burnout initial assessment, two participated in the workshops, and two filled the burnout post-workshop; Galicia: eight filled the demographic questionnaire, seven the burnout initial assessment, one participated in the workshops, and one filled the burnout post-workshop.

Demographic information is summarized in Table 1.

Residents identified several measures to reduce burnout, including: (1) improved organization and support during

training, (2) reduced patient care load, (3) access to psychological support tailored to residents' needs, (4) social support from family and friends, (5) adherence to rest periods, (6) more frequent social interactions, (7) regular physical exercise, (8) minimization of overall workload, and (9) advance knowledge of rotation schedules.

Participants and sociodemographic data: psychotherapy group program

12 out of the 13 residents from the medical oncology department at the hospital participated in the study. It should be added that 2 of the 13 participants did not complete the sociodemographic data. According to the results, eight of the residents were between 26 and 30 years old, with 50% of them being male. As protective factors, it is noteworthy that 60% had a stable partner.

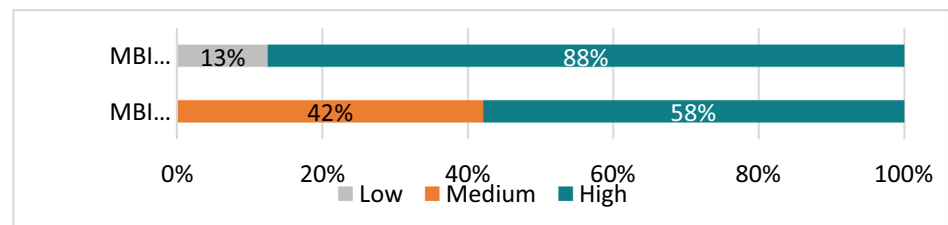
The psycho-emotional demographics are summarized in Table 2.

Burnout prevalence

The results of the studies in communication skills (CS) and GP indicate that there was no significant difference in the average MBI score at baseline or in the MBI at the end of the interventions, although a trend toward a decrease in burnout levels was observed (Table 3). No significant difference was found in the average score of the emotional exhaustion subscale at baseline (28.1 CS—31.58% GP) and the average score post-intervention (31.5 CS—25.18% GP). No significant difference was observed in the average score of

Fig. 1 **A** Differences in the burnout values of participants: initial and post-workshop. **B** Percentage of residents in each subscale of the MBI (pre and post)

A. Differences in the Burnout values of participants: initial and post-workshop



	Low	Medium	High
MBI TOTAL PRE	13%	0%	88%
MBI TOTAL POST	0%	42%	58%

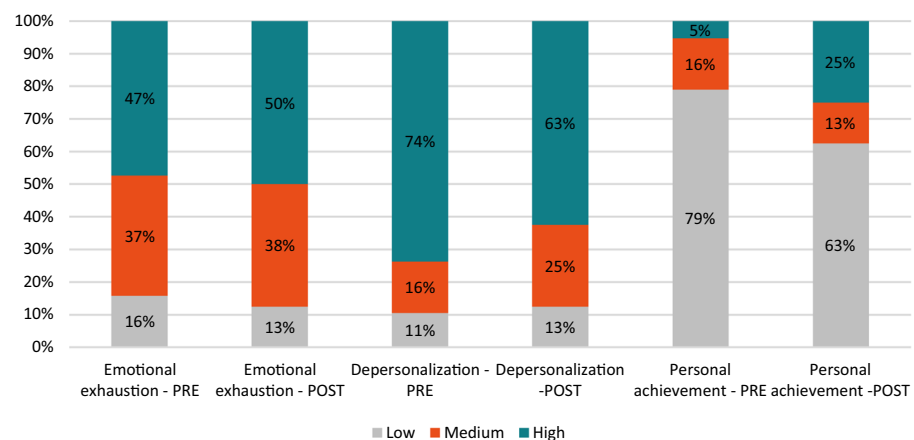
$p=0,377$

MBI TOTAL: Low: 1 - 33, Medium: 34 - 66; High: 67 - 99

B. Percentage of residents in each subscale of the MBI (PRE and POST)

Subscale	Low	Medium	High
Emotional exhaustion	0 to 18	19 to 26	27 to 54*
Depersonalization	0 to 5	6 to 9	10 to 30*
Personal accomplishment	0 to 33*	34 to 39	40 to 56

*Associated with increased burnout levels.



the depersonalization subscale at baseline (12.1 CS—11.83 GP) and the average score post-workshop (13.1 CS—9.36 GP). There was no significant difference in the initial average score of the personal accomplishment subscale (28.9 CS—34.50 GP) and the average score post-workshop (28.6 CS—35.64 GP).

Comparison of initial vs. post-workshop burnout syndrome symptoms for each dimension is summarized in

Table 4. The % of participants with a high level of personal achievement increased from 5 to 25%, the difference being statistically significant ($p=0.002$). 88% of participants showed initial high levels of burnout vs 13% who showed low levels of burnout (Fig. 1A). There was a 30% decrease in the number of participants with high burnout after the workshops: 88–58%, although the difference was not significant (Fig. 1A). The percentage of professionals with low, medium, and high burnout ratings overall and in each MBI

Table 5 Percentage of professionals with low, medium, and high burnout ratings overall and in each MBI INITIAL/POST subscale

	Low	Medium	High	P-value
Emotional exhaustion—INITIAL (R)	16%	37%	47%	0.845
Emotional exhaustion—POST (R)	13%	38%	50%	
Emotional exhaustion—INITIAL-GP	16.7%	16.7%	66.7%	0.360
Emotional exhaustion—POST-GP	27.3%	18.2%	54.5%	
Depersonalization—INITIAL ((R)	11%	16%	74%	0.396
Depersonalization—POST (R)	13%	25%	63%	
Depersonalization—INITIAL-GP	8.3%	33.3%	58.3%	0.204
Depersonalization—POST-GP	36.4%	27.3%	36.4%	
Personal accomplishment—INITIAL ((R)	79%	16%	5%	0.002
Personal accomplishment—POST (R)	63%	13%	25%	
Personal accomplishment—INITIALGP	16.7%	58.3%	25%	0.214
Personal accomplishment—POST-GP	18.2%	54.5%	27.3%	
MBI total initial (R)	0	42%	58%	0.377
MBI total post-workshop (R)	13%	0	88%	

Statistically significant differences ($p < 0.05$) are presented in bold

INITIAL/POST subscale are summarized in Table 4, 5 and Fig. 1B.

The results of the GP program show that there is a difference in the overall pre- and post-intervention scores, with a lower score at the end, which was statistically significant (0.029). The score obtained in the emotional exhaustion subscale was not statistically significant, but it is clinically relevant, as a significant decrease was observed. The sample size is small, which is why it would be interesting to apply this to a larger sample to determine if it is significant (Table 4, 5).

Discussion

In the Resilience-SEOM study we found that the majority of the medical oncology residents who participated had higher levels of burnout compared to other studies focused on communication skills training [13, 14]. The communication skills workshops did not result in better burnout scores, but a significant increase in personal accomplishment was observed. Communication skill is a key clinical competence that is not included in the majority of medical training itineraries [15]. In this context, Bragard et al. [13] developed an intensive communication skills course, similar to our communication skills program, to prevent burnout in physicians focused on cognitive, behavioral, and affective approach.

Although given the size of the sample we cannot affirm that there are statistical differences, we do observe a tendency toward better communication skills in important aspects such as: handling one's own emotions in difficult situations without blocking oneself, feeling of understanding when talking to patients and relatives, emotional connection with patients and relatives, and involving patients in communication and decision-making.

Our study is one of the few prospective studies that analyzed the impact of communication skills training program to reduce burnout levels in junior doctors [12, 15] and, to our knowledge, the first to specifically evaluate the impact of these workshops on medical oncology residents from Spain. Previous studies that focused on interventional strategies to address burnout are presented in Table 3. Three published studies have included medical oncology doctors, and the study by Bragard et al. [13] was the only one that described burnout in 10% of participants prior to the intervention. These results differ substantially from our work, where we observed that the majority of the participants had burnout at the beginning of the workshops and most of them had high levels, results that we did not expect based on previous studies. Therefore, the results from the Resilience-SEOM study raise the issue of properly assessing burnout levels prior to the intervention and search for combined strategies that could be efficient in the long run. Data presented by the ESMO Resilience Taskforce [8] to manage psychosocial risk and optimize well-being could be useful to address burnout in medical oncology residents.

On the other hand, the University Hospital single center interventional strategy presented is similar to the methodology of GP groups, a training method that focuses on helping physicians understand the physician–patient relationship and assist them in personal skills, as in the Huang et al. trial [19]. As observed in Huang et al.'s trial [19], participants in this intervention group considered it helped them feel more supported as a group dynamic. However, due to the nature of the study which only consists of an exploratory analysis, burnout was not evaluable before and after the GP group sessions. One of the main differences with the Resilience-SEOM study relies on the possibility of focusing the intervention in emotional reactions and the doctor–patient

Table 6 Previous interventional strategies to prevent and address burnout

Type of study	Author (year)	Country	N total/N intervention	N (oncology)	Burnout	Type of intervention	Results
Prospective	Green (2020) [16]	USA	34/34	0	Yes, 57.7%*	- At an organizational level for 3 months - Better time shifts - More personnel recognition - Team work	- No significant differences→ yes, a tendency - ↓ burnout (57.7 vs 75%) - ↓ job stress (58.8% vs 65.5%) - ↑ satisfaction (70.6% vs 82.8%)
Randomized controlled trial (RCT)	Axisa (2019) [14]	Australia	46/23	0	Yes, 76%	- Workshops to improve well-being (3.5 h + 1 h rest) - Stress management	- No significant differences→ yes, a tendency - ↓ burnout, ↓ alcohol, ↓ depression
Prospective	Gil Bar-Sela (2012) [17]	Israel	17	17	N/A	- Balint groups (1/ month × 9) - Communication skills - Improve patient–doctor relationship	—No significant differences→ yes, a tendency - ↓ burnout
RCT	Gunasingam (2015) [12]	Australia	31/13	0	Yes, 68%	- Informative sessions performed by seniors (balint groups)	- No differences in burnout
RCT	Bragard (2006) [13]	Belgium	96/49	3	Yes, 10%	- Soft skills (40 h – 7 pax/s): - Communication skills (30 h) - Stress management (10 h)	- No differences in burnout - Yes, differences in communication skills and auto efficiency
RCT	Butow (2008) [18]	Australia	31/16	31	No	- Soft skills (1.5d – 6 pax/s): - Communication skills (30 h)	- No significant differences→ yes, a tendency - Depersonalization ↓ - Emotional exhaustion ↑ 6 m y ↓ 12 m
RCT	Huang (2020) [19]	China	36/18	0	Yes	- Balint groups (× 6 months) - 2 lectures - 10 small group discussions every week (1 h sessions) - A prepared case was presented challenging doctor–patient encounter - Discussion groups	- Decrease in emotional exhaustion and depersonalization - No statistically significant differences in emotional exhaustion and job satisfaction - Increase of the personal accomplishment subscale and job satisfaction - Participants perceived that Balint groups helped them feel supported and understood

relationship in the GP groups. The primary limitation in evaluating the GP intervention is that, being a group experience, it cannot be comprehensively measured solely with quantitative instruments.

One of the main strengths of our studies presented in this manuscript is that we present two interventional strategies to address burnout in medical oncology residents from the same country, and some of the residents participated in both interventions. Although both interventions cannot be directly compared, the results raise the issue that the most suitable interventional strategy to prevent burnout in an early career stage is still to be addressed. The main limitations of the Resilience-SEOM study are the loss of follow-up, mainly because it was a volunteered study, and that the residents selected could be showing higher levels of burnout because they were previously selected by their tutors. To try to solve this limitation, an invitation was sent to all medical oncology residents, so that those who were interested could do the intervention. Another limitation is the final number of participants, but as shown in Table 6, it is in line with previously reported studies. Regarding the GP study, the main limitation for its applicability to other departments is that the therapy overlaps with other hospital activities such as on-call, committees, meetings, and/or rotations in other hospital departments. Therefore, a commitment from the department is required to have protected time for this strategy. In addition, the guidance of a psychologist would be required throughout the program, so the availability of this resource may limit implementation.

Conclusions

In the Resilience-SEOM study, communication skills workshops as an interventional strategy mitigated burnout levels in medical oncology residents, mainly by improving personal achievement. GP as an interventional strategy for burnout could be feasible to address the emotional impact of burnout. Future interventional strategies should be focused on prevention of burnout throughout collaborative studies.

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Authors contributions L1 authors contributed substantially to the conception, design, execution, and interpretation of the study. Vilma Pacheco-Barcia, MD, MSc, PhD, conceived the study, coordinated the project, supervised all stages of data collection and analysis, drafted the manuscript, and approved the final version. Berta Obispo, MD, PhD, participated in the study design, data collection, and critical revision

of the manuscript. Elia Tomas and Hernan Cancio contributed to the psychological assessment, qualitative analysis, and interpretation of psycho-oncological data. Clara Salva de Torres, MD, Teresa Quintanar, MD, Luis Leon, MD, Alexandra Cortegoso, MD, Urbano Anido, MD, Andrea Sesma Goni, MD, and Ana Fernandez Montes, MD, were involved in patient recruitment, data acquisition, and manuscript review. David Paez, MD, PhD, Noelia Tarazona, MD, PhD, Cesar Rodriguez, MD, and Alicia Quilez, MD, PhD, contributed to methodology, data validation, statistical analysis, and critical revision of the manuscript for important intellectual content. Pablo Jimenez Labaig, MD, and Domingo Antonio Sanchez Martinez, MD, assisted with data interpretation, manuscript editing, and final approval. Enriqueta Felip, MD, and Elena Elez, MD, PhD, provided senior supervision, conceptual guidance, critical review, and final approval of the manuscript. All authors read and approved the final version of the article and agree to be accountable for all aspects of the work.

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Data availability Data supporting the findings of this study are available upon reasonable request to the the corresponding author.

Declarations

Conflict of interest The authors have declared no conflict of interest related to this work.

Ethical approval and Informed consent This study involved a voluntary burnout reduction and soft skills intervention for physicians. Participants were informed about the study objectives and agreed to participate voluntarily. No patient data were collected, and participation implied consent. Participation was entirely voluntary, and participants could withdraw from the study at any time. Formal ethics committee approval was not sought, as the study was initially considered an educational activity. The authors confirm that all procedures complied with the ethical principles of the Declaration of Helsinki, respecting participants' autonomy, confidentiality, and well-being.

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