Burnout e Vinculação em Oncologia e Fim de Vida

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Preface

As a specialist in Internal Medicine dedicated to Palliative Care in an oncology hospital, I felt a deep responsibility to investigate the prevalence of Burnout among healthcare professionals within my institution. The demands of providing care to cancer patients often result in compassion fatigue and Burnout, presenting significant challenges to healthcare workers.

One day, I found myself reflecting: "What personal traits predispose certain individuals to develop Burnout syndrome under similar stressors?" and "Could attachment theory offer insights into these individual differences?"

These reflections became the foundation and driving force behind this doctoral thesis.

Publications related to this thesis

Published Articles

- ✓ Gonçalves F, Gaudêncio M. Burnout and quality of life in Portuguese healthcare professionals working in oncology and palliative care-a preliminary study. BMC Palliat Care. 2023 Oct 13;22(1):155. doi: 10.1186/s12904-023-01273-7
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Accepted Articles

- ✓ Gonçalves F, Gaudêncio M, Rocha A, Paiva I, Rego MF, Nunes R. Desafios éticos do controlo sintomático em Cuidados Paliativos - reflexão crítica - accepted to Revista Bioética

Resumo

Introdução

A atual escassez de recursos humanos no setor da saúde é reconhecida como um problema crescente na saúde pública e que deverá agravar-se nos próximos anos. Embora as más condições de trabalho sejam tradicionalmente associadas ao *burnout*, os traços de personalidade, nomeadamente os estilos de vinculação, também influenciam significativamente o desenvolvimento desta síndrome.

O conceito de *burnout* foi originalmente introduzido por Herbert Freudenberger na década de 1970. Carateriza-se pela desmotivação, exaustão emocional e cinismo associados ao ambiente de trabalho. Os instrumentos utilizados para detetar e medir o *burnout* evoluíram ao longo dos anos. Maslach desenvolveu uma escala amplamente utilizada, o *Maslach Burnout Inventory* (MBI), que continua a ser uma referência na área. De acordo com Maslach, a síndrome de *burnout* manifesta-se por despersonalização, exaustão emocional, e diminuição da realização pessoal. Apesar da sua utilização extensiva em diversos contextos laborais, existem críticas a esta escala, em que se argumenta que a despersonalização pode ser vista como um mecanismo de *coping,* levantando questões sobre a validade do MBI.

O *burnout* pode resultar de stress prolongado quando as expectativas profissionais de um indivíduo não estão alinhadas com o seu ambiente laboral. Embora esteja associado a condições de trabalho desgastantes, nem todos os indivíduos são igualmente afetados nas mesmas circunstâncias. Por conseguinte, reconhece-se cada vez mais o papel dos traços de personalidade individuais na contribuição para esta síndrome.

Kristensen *et al.* desenvolveram o *Copenhagen Burnout Inventory* (CBI), uma ferramenta de medição de acesso livre que alarga o conceito de *burnout* a vários aspetos da vida dos trabalhadores, incluindo a vertente pessoal, relacionada com o trabalho e relacionada com o cliente/paciente. A presença de *burnout* representa uma ameaça para o desempenho e saúde do trabalhador, uma vez que tem sido associada a comportamentos aditivos, perturbações do sono e depressão.

O *burnout* é bastante prevalente entre os profissionais de saúde, particularmente entre os que cuidam de doentes com sofrimento significativo, como os que têm cancro e outras doenças crónicas avançadas. No entanto, como já foi referido, nem todos os indivíduos expostos ao mesmo ambiente de trabalho desenvolvem *burnout*, o que realça a importância de fatores individuais como os traços de personalidade.

A teoria da vinculação refere que as experiências da infância são fundamentais na formação de vários laços emocionais e relações interpessoais que influenciam o comportamento futuro no local de trabalho. Consequentemente, tem havido um interesse crescente em compreender o

impacto do estilo de vinculação na conduta dos profissionais. John Bowlby foi pioneiro na investigação sobre os efeitos da vinculação emocional em diversos comportamentos organizacionais. Uma perspetiva positiva predispõe os indivíduos para um estilo de vinculação seguro. Por outro lado, um estilo de vinculação inseguro está geralmente correlacionado com uma maior suscetibilidade ao *burnout* e a uma diminuição do desempenho profissional. Esta constatação pode elucidar o motivo pela qual alguns indivíduos desenvolvem *burnout* em circunstâncias stressantes comparáveis, enquanto outros não.

Objetivos

O principal objetivo deste estudo foi determinar se existe associação entre o estilo de vinculação e o risco de *burnout* na população dos profissionais de saúde que trabalham num hospital oncológico.

Os objetivos secundários deste estudo foram:

- Avaliar o risco de *burnout* nos indivíduos que trabalham com doentes oncológicos e paliativos;

- Identificar os vários estilos de vinculação exibidos pelos profissionais de saúde de Oncologia e Cuidados Paliativos;

- Determinar os potenciais preditores de *burnout* na população de profissionais que trabalham em Oncologia e Cuidados Paliativos;

- Avaliar a qualidade de vida profissional da população dos profissionais que trabalham no hospital oncológico;

- Explorar a potencial associação entre o *burnout* e a qualidade de vida profissional dos indivíduos que trabalham com doentes oncológicos e paliativos.

Materiais e métodos

Trata-se de um estudo transversal, descritivo e correlacional, realizado entre janeiro e dezembro de 2018.

O estudo foi realizado no Instituto Português de Oncologia de Coimbra Francisco Gentil, EPE, envolvendo 1003 profissionais de saúde da instituição que foram convidados a participar.

Os critérios de inclusão incluíram profissionais de saúde com idade ≥18 anos, da instituição, dispostos a participar e fornecer consentimento por escrito, e capazes de compreender os objetivos do estudo. Foram excluídos os profissionais de saúde com menos de 18 anos de idade, os que se recusaram a participar ou os que apresentavam psicopatologia.

Dos 1003 profissionais convidados, 337 participaram, enquanto 626 se recusaram a participar e 40 foram excluídos devido a patologia psiquiátrica. Assim, obteve-se uma amostra de conveniência de 337 profissionais de saúde, resultando numa taxa de resposta de 36%.

O protocolo de avaliação incluiu um questionário sociodemográfico, dois questionários de *burnout* - o *Maslach Burnout Inventory* (MBI) e o *Copenhagen Burnout Inventory* (CBI), a *Adult Attachment Scale* (AAS), a *Professional Quality of Life 5 Scale* (ProQOL 5) e uma pergunta "*É habitual trabalhar com doentes em cuidados paliativos*?". Esta questão permitiu dividir a amostra em dois grupos: os profissionais que apenas trabalham com doentes oncológicos não paliativos e os profissionais que trabalhavam com doentes oncológicos paliativos.

A análise estatística foi efetuada com recurso ao software IBM SPSS Statistics V.25, tendo os testes sido realizados com um nível de significância de 5%.

Resultados

Verificou-se que 76,8% dos profissionais da amostra trabalhavam com doentes oncológicos não paliativos.

Ao comparar os dois grupos de profissionais através do questionário CBI, verificou-se que mais de 50% apresentavam níveis elevados de *burnout* pessoal, não havendo diferenças estatisticamente significativas entre eles (53,5% vs. 56,8%, p=0,619). A mesma tendência foi observada relativamente às dimensões do trabalho (p=0,626) e do *burnout* relacionado com o doente (p=0,672).

O número de horas trabalhadas por semana e a consequente exposição ao sofrimento foram positivamente correlacionados com as dimensões pessoal e laboral do *burnout* no questionário CBI e com a exaustão emocional no questionário MBI (p<0,05).

Ambas as escalas de *burnout* mostraram tendências consistentes, com níveis mais elevados de *burnout* nas dimensões pessoal, relacionada com o trabalho e relacionada com o paciente, correlacionando-se com maior exaustão emocional, despersonalização e menor realização pessoal (p<0,001).

A exploração da correlação entre as dimensões do *burnout* e as dimensões da escala de vinculação do adulto revelou que níveis elevados de exaustão emocional, despersonalização, *burnout* relacionado com o trabalho e *burnout* relacionado com o doente estão associados a níveis mais elevados de ansiedade (p<0,001). Achados semelhantes foram observados na amostra de profissionais que trabalham com doentes em fases avançadas da doença oncológica.

A exploração da correlação entre as dimensões do *burnout* e as dimensões da Qualidade de Vida Profissional não revelou diferenças estatisticamente significativas entre os dois grupos da amostra.

Discussão e conclusões

O trabalho em oncologia e cuidados paliativos exige dos profissionais de saúde uma comunicação eficaz e uma personalidade resiliente, sem as quais o *burnout* pode emergir. Sabe-se que o *burnout* é multifatorial, envolvendo tanto fatores ocupacionais como traços de personalidade dos profissionais de saúde, sendo de destacar o estilo de vinculação.

No que respeita ao *burnout* na amostra estudada, não foram encontradas diferenças estatisticamente significativas entre os dois grupos de profissionais de saúde. Níveis mais elevados de ansiedade foram correlacionados com níveis mais elevados de *burnout* relacionado com os doentes e com o trabalho, indicando que um padrão de vinculação inseguro pode predispor os indivíduos para o *burnout*. Ambos os grupos tinham uma qualidade de vida profissional semelhante.

O fator desencadeante mais significativo do *burnout* nesta amostra foi o número de horas trabalhadas por semana e a consequente exposição ao sofrimento humano. A prática de exercício físico, uma boa higiene do sono, psicoterapias de base cognitivo-comportamentais (incluindo técnicas de mindfulness) e estratégias relacionadas com o que classicamente chamaríamos "a procura da felicidade" podem ajudar a prevenir o burnout.

Este estudo beneficiou da utilização de duas escalas de burnout, incluindo o CBI, e da correlação dos níveis de burnout com o estilo de vinculação e a qualidade de vida profissional dos profissionais de saúde que prestam cuidados a doentes oncológicos, alguns dos quais em fase final de vida.

Palavras-chave

Burnout, Cancro, Cuidados Paliativos, Escala de Vinculação do Adulto, Inventário de Burnout de Copenhaga, Inventário de Burnout de Maslach, Oncologia, Profissionais de Saúde, Qualidade de Vida Profissional, Vinculação

Abstract

Introduction

The current shortage of human resources in the healthcare sector is increasingly recognized as a critical public health issue, with projections indicating that this challenge will escalate in the coming years. While poor working conditions have traditionally been regarded as the primary cause of burnout, emerging evidence underscores the pivotal role of personality traits, including attachment styles, in the development of this syndrome.

The concept of burnout was first introduced by Herbert Freudenberger in the 1970s, defining it as a state characterized by despersonalization, emotional exhaustion and demotivation linked to work. Over time, tools to assess and measure burnout have been developed and refined. One of the most widely used instruments is the Maslach Burnout Inventory (MBI), created by Christina Maslach. According to this framework, burnout syndrome is defined by three core dimensions: emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment. Despite its widespread application across various professional domains, some critics have questioned the validity of the MBI, particularly the interpretation of depersonalization, which may function as an adaptive coping mechanism rather than an unequivocal symptom of burnout.

Burnout typically arises from prolonged exposure to stress, especially when an individual's expectations are incongruent with their work environment. Although unfavorable working conditions are strongly associated with the syndrome, not all individuals respond to such conditions in the same way. This has led to increasing interest in the role of individual personality traits and their contribution to the susceptibility to burnout.

The Copenhagen Burnout Inventory (CBI), developed by Kristensen *et al*, offers an alternative, open-access instrument designed to evaluate burnout. It assesses three distinct dimensions: personal burnout, work-related burnout, and client/patient-related burnout. The presence of burnout significantly jeopardizes healthcare professionals' performance and well-being, as it has been associated with adverse outcomes such as addictive behaviors, sleep disorders, and depression.

Burnout is a prevalent issue among healthcare professionals, particularly those caring for patients experiencing profound suffering, such as individuals with cancer or other advanced chronic diseases.

Recognizing that not all individuals exposed to similar work environments develop burnout, increasing attention has been directed toward understanding the role of individual characteristics in the syndrome's onset. Among these factors, the study of attachment traits revealed useful as a promising root to understand variability in burnout production and

development of preventive strategies.

Attachment theory asserts that early childhood experiences critically shape emotional bonds and interpersonal relationships, which, in turn, influence workplace behavior. John Bowlby's pioneering research on emotional attachment demonstrated its relevance to various organizational and professional contexts. Individuals with a secure attachment style, often linked to a positive outlook, are more resilient to workplace stressors. Conversely, an insecure attachment style is generally associated with greater susceptibility to burnout and diminished professional performance. This insight may help explain why some healthcare professionals develop *burnout* under similarly stressful conditions, while others remain unaffected.

Objectives

The primary objective of this study was to determine whether there is an association between attachment style and the risk of burnout in a population of healthcare professionals working in an Oncology Hospital.

The secondary objectives of this study are as follows:

- To assess the risk of burnout in individuals working with oncology and palliative care patients;

- To identify the various attachment styles exhibited by healthcare professionals in oncology and palliative care;

- To determine potential predictors of burnout in the population of healthcare professionals working in oncology and palliative care;

- To assess the professional quality of life in the population of professionals working at the Oncology hospital;

- To explore the potential association between burnout and the quality of professional life in individuals working with cancer patients and in palliative care.

Materials and Methods

This was a cross-sectional, descriptive, and correlational study conducted between January and December 2018. The study was carried out at the Portuguese Institute of Oncology of Coimbra Francisco Gentil, EPE, involving 1003 healthcare professionals from the institution who were invited to participate.

The inclusion criteria encompassed healthcare professionals aged ≥18 years, currently employed at the institution, willing to participate, and able to provide written informed consent, with an adequate understanding of the study objectives. Healthcare professionals who declined participation and those with diagnosed psychopathologies were excluded. Of the 1003 professionals invited, 337 participated, 626 declined to participate, and 40 were excluded due to psychiatric conditions. Thus, a convenience sample of 337 healthcare professionals was obtained, yielding a response rate of 36%.

The assessment protocol included a sociodemographic questionnaire, burnout assessments via the *Maslach Burnout Inventory (MBI)* and the *Copenhagen Burnout Inventory (CBI)*, the *Adult Attachment Scale*, the Professional *Quality of Life-5 Scale (ProQOL-5)*, and a single question: "*Is it common to work with patients in palliative care*?" This question allowed for the categorization of the sample into two groups: professionals who had exclusively worked with non-palliative oncology patients and those who had worked with palliative oncology patients.

Statistical analyses were performed using IBM SPSS Statistics V.25 software, with significance tests conducted at the 5% level.

Results

It was observed that 76.8% of the healthcare professionals in the sample were involved in the care of non-palliative oncology patients.

Upon comparing the two groups of professionals using CBI, it was found that more than 50% of the participants reported high levels of personal burnout, with no statistically significant differences between the groups (53.5% in one group and 56.8% in the other, $p=0.619$). Similar findings were noted for the work-related ($p=0.626$) and patient-related ($p=0.672$) dimensions of burnout.

The analysis of the correlation between burnout dimensions and attachment style demonstrated that higher scores in emotional exhaustion, depersonalization, work-related *burnout*, and patient-related burnout were significantly associated with increased levels of anxiety ($p<0.001$). These findings were consistent across both groups, including professionals working with patients in the advanced stages of oncological diseases.

The exploration of the correlation between burnout dimensions and the dimensions of the Adult Attachment Scale revealed that elevated scores in emotional exhaustion, depersonalization, work-related burnout, and patient-related burnout were significantly associated with higher levels of anxiety ($p<0.001$). These findings were consistent in the sample of professionals working with patients in the advanced stages of oncological diseases.

Further exploration of the correlation between burnout dimensions and the dimensions of Professional Quality of Life (ProQOL-5) did not reveal any statistically significant differences between the two groups within the sample.

Discussion and Conclusions

Working in oncology and palliative care requires effective communication and a resilient personality from healthcare professionals. Without these two key factors, the likelihood of burnout increases. The etiology of burnout is multifactorial, involving both occupational factors and the personality traits of healthcare professionals, with attachment style being particularly significant.

In the studied sample, no statistically significant differences were found between the two groups of healthcare professionals. Higher levels of anxiety were correlated with increased levels of both patient-related and work-related burnout, suggesting that an insecure attachment pattern may predispose individuals to burnout. Both groups experienced a similar quality of working life.

The most significant contributor to burnout in this sample was the number of hours worked per week, leading to prolonged exposure to human suffering. Preventive measures, including the pursuit of personal well-being, regular physical activity, mindfulness practices, and the maintenance of proper sleep hygiene, can help reduce the risk of burnout.

This study was enhanced by the use of two established *burnout* scales, including the Copenhagen Burnout Inventory (CBI), and by examining the correlation between burnout levels, attachment style, and the professional quality of life among healthcare professionals caring for cancer patients, some of whom were in end-of-life stages.

Keywords

Adult Attachment Scale, Attachment, Burnout, Cancer, Copenhagen Burnout Inventory, Healthcare Professionals, Maslach Burnout Inventory, Oncology, Palliative care, Professional Quality of life

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List of abbreviations

AAS - R - Adult Attachment Scale - Revised

BO - Burnout

CBI - Copenhagen Burnout Inventory

CF - Compassion Fatigue

CS - Compassion Satisfaction

DP - Depersonalization

EE - Emotional Exhaustion

ICD - International Classification of Diseases

MANOVA - Multivariate Analysis of Variance

MBI - Maslach Burnout Inventory

PA - Personal Accomplishment

PC - Palliative Care

ProQOL - Professional Quality of Life

ProQOL-5 - Professional Quality of Life - 5 Scale

QoL - Quality of Life

STS - Secondary Traumatic Stress

WHO - World Health Organization

Whoqol-bref - World Health Organization Quality of Life - BREF

1. Introduction

Europe is currently facing a labour crisis within the healthcare sector, a situation that is expected to worsen in the coming years[1]. One of the primary factors contributing to the attrition of healthcare professionals is burnout. Traditionally linked to poor working conditions, it is now recognized that personality factors also play a significant role in the development of burnout[2].

The term "Burnout" was first introduced in 1974 by psychologist Herbert Freudenberger, who characterized it by demotivation, emotional exhaustion, and depersonalization (corresponds to an adoption of attitudes of indifference towards colleagues and patients), particularly within helping professions[3]. Over time, various methods have been developed to identify and measure burnout. A pioneering contribution in this regard is the development of the Maslach Burnout Inventory (MBI) by Christina Maslach[4].

According to Maslach, burnout syndrome is conceptualized as a three-dimensional phenomenon, comprising emotional exhaustion, depersonalization, and reduced personal accomplishment[4,5]. Although the Maslach Burnout Inventory (MBI) is widely used, its psychometric reliability has been questioned[6]. Long periods of work, sleep deprivation, irregular circadian cycles, irregular meal times, stressful and emotionally exhausting work environment can lead to emotional exhaustion and burnout, especially when the expectations of healthcare professionals do not align with the reality they face[7]. Some researchers describe burnout as “burning out from work” [7]. However, it is important to note that burnout is not solely triggered by poor working conditions, as individuals exposed to similar circumstances may respond differently[7]. This underscores the significance of individual factors in the development of burnout[7].

To address the psychometric limitations and other challenges of the MBI, Kristensen et al. developed a new tool to identify and measure burnout, the Copenhagen Burnout Inventory (CBI)[8]. This instrument, available free of charge, shares the three-dimensional structure of the MBI, evaluating personal, work-related, and client-related components[8]. Burnout has far-reaching consequences, both in the professional and personal lives of individuals. It contributes to decreased efficiency and increased vulnerability to health problems such as emotional disorders and addictive behaviors, among others[9]. However, it is important to note that establishing a causal relationship between burnout and these negative effects remains challenging, and it is difficult to determine the time period required for such outcomes to materialize[9].

Burnout is particularly prevalent among healthcare professionals who provide care to patients with chronic, advanced, and often end-of-life conditions[10]. The management of such diseases presents significant challenges for healthcare providers[11], and may contribute to the high rates of burnout observed within this professional group[12]. Studies by HaGani et al. have reported a notable prevalence of burnout among healthcare professionals who care for cancer patients[12], though these findings are not always consistent across different studies. For example, Shanafelt et al. found similar rates of burnout among oncologists and other physicians in the United States[13]. As the prevalence of chronic diseases continues to rise, approximately one in three adults is predicted to have multiple comorbidities[13]. This exponential increase leads to an escalating demand for palliative care, consequently exposing healthcare professionals to heightened levels of stress[14].The prevalence of burnout among healthcare professionals working in palliative care varies across studies[7,15]. However, existing literature suggests that working in palliative care does not inherently result in a higher rate of burnout [7,15].

While work-related factors undoubtedly contribute to burnout, it is critical to acknowledge that within the same challenging work environment, some individuals develop burnout while others do not[16]. This discrepancy underscores the importance of individual factors, including personality characteristics, patterns of behavior, and acquired strategies for dealing with stress, play a pivotal role in the development or not development of burnout[16].

In recent years, increasing attention has been paid to the role of attachment style in the development of burnout[16]. This approach aims to allow the design of preventive strategies that are not only focused on working conditions but also on the development of personal mechanisms that allow the individual to be resilient in environments that potentially lead to the development of burnout[16].

Attachment theory explains that early childhood experiences are fundamental in shaping attachment bonds throughout adulthood[17]. This theory is based on the importance of interpersonal relationships and their potential consequences on the development of emotional bonds in adulthood[18]. Literature shows us that from an early age, children develop emotional bonds, creating an affective bond with the attachment figure (usually the mother)[18]. The type of bond created tends to last over time, influencing future interpersonal relationships[18]. These bonds, in turn, influence interpersonal relationships and individual behavior in the workplace[17,18].

Therefore, at present, attachment style is considered a key predictor of workplace behavior and emotional intelligence[16,18]. Bowlby's attachment theory provides a crucial framework for understanding how attachment styles impact various organizational behaviors[15,18].

A secure attachment style is positively correlated with reduced burnout and more effective coping strategies, whereas insecure attachment styles—such as anxious or avoidant—are associated with increased burnout and maladaptive coping mechanisms[2]. Healthcare professionals with an insecure attachment style are more prone to developing psychopathology and burnout in response to stress[2]. This association was first identified by Pines in 2004, when studying a cohort of Israeli students[2]. Extensive research supports the notion that attachment style significantly shapes an individual's coping mechanisms and behavior in the face of stress[2].

Lenzo et al. were among the first to investigate the relationship between burnout and attachment style in palliative care, using a sample of 108 professionals[11]. Although the overall risk of burnout in their sample was low, they discovered statistically significant correlations between the dimensions of the Maslach Burnout Inventory (MBI) and the attachment style questionnaire used in their study[11].

Specifically, a higher sense of trust in oneself and others was found to have a statistically significant negative correlation with emotional exhaustion[16], while discomfort with closeness and the need for external validation were positively correlated with emotional exhaustion[11]. Over time, the intersection between care and attachment has grown increasingly complex[18].

Attachment encompasses four key dimensions: protection and safety, provision, expression of affection and validation of feelings, and socialization[19,20].

The integration of self-report tools to assess attachment security during personnel recruitment could be highly beneficial[11]. These instruments are designed to evaluate secure attachment styles, which incorporate the aforementioned aspects[20]. Using self-assessment tools in healthcare recruitment can help identify individuals with secure attachment patterns[11]. Psycho-emotional interventions aimed at enhancing interpersonal skills are critical in reducing the risk of burnout[11]. Additionally, mindfulness and compassion-based therapies play vital roles in improving self-esteem, fostering better interpersonal interactions, and strengthening attachment styles[20].

The quality of life of a professional is defined as the degree of satisfaction an individual experience in their workplace, reflecting the pleasure they feel when arriving at or being in their work environment[21].

In 2005, Stamm developed the Quality of Life at Work Scale (ProQOL), with the ProQOL-5 version being the most widely used[22], ProQOL comprises two essential components: Compassion Satisfaction, which denotes the fulfillment an individual derives from helping

others, and Compassion Fatigue, which encompasses both Burnout and Secondary Traumatic Stress[22].

Numerous studies have explored the relationship between professional quality of life and various psychopathologies, such as depression and anxiety, particularly within the domains of Oncology and Palliative Care[23,24,25].

To date, no study has specifically examined the relationship between burnout, as measured by the Maslach Burnout Inventory (MBI), and the Quality of Professional Life Scale (ProQOL-5) in individuals working in palliative care or oncology, nor conducted comparative analyses between these two professional groups. It is hypothesized that higher levels of burnout are inversely related to the quality of professional life.

1.1. Burnout Syndrome

A chaotic or disorganized work environment significantly contributes to the development of psychopathology and burnout in healthcare professionals, ultimately depleting their coping mechanisms[26,27,28,29]. Burnout has become a significant occupational hazard, with far-reaching negative consequences for both individuals and organizations[26,27,28,29].

Burnout syndrome is an individual response to chronic stress within the workplace, potentially causing harm to the professional's health[30]. This condition is marked by emotional and behavioral changes that result in inappropriate attitudes toward patients/clients and colleagues[31,32].

Not only is burnout syndrome an individual concern, but it is also a consequence of detrimental aspects within the professional environment[33].

The expression and manifestation of burnout can vary across scientific disciplines, spanning clinical, psychological, historical, and organizational contexts. Herbert Freudenberger's pioneering work on burnout in clinical settings investigated its origins, symptoms, progression, and treatment modalities[34]. In 1974, Freudenberger coined the term "Burnout" to describe a syndrome characterized by exhaustion, disillusionment, and withdrawal, primarily observed in volunteer mental health workers[35].

Maslach introduced the term "Burnout" to the scientific community through her research on its effects among social work professionals[36]. Maslach and Jackson focused on the psychosocial domain, proposing that burnout arises from the interaction between professionals and adverse working conditions[34]. They conceptualized burnout within a three-

dimensional framework comprising emotional exhaustion, depersonalization, and reduced personal accomplishment[34].

Cary Cherniss approached burnout from an organizational perspective, evaluating the workplace factors that contribute to its development[34]. A notable distinction from Maslach and Jackson's theory is that Cherniss viewed emotional exhaustion, depersonalization, and reduced personal fulfillment as mechanisms through which individuals adapt to stress, rather than as direct consequences of a stressful work environment[34].

According to Sarason, burnout results from the values of contemporary society, which prioritize individualism over collective well-being, rather than arising from personal or organizational factors[34]. As evident, a significant challenge in burnout research lies in finding a universally accepted model. The ideal model would need to address both individual factors (of the employee) and organizational elements (of the employer), while also considering the consequences for both parties and promoting preventive or mitigative measures[37].

1.1.1. Burnout – Historical evolution

As previously mentioned, Freudenberger pioneered the conceptualization of burnout defining it as a state of exhaustion and fatigue accompanied by physical symptoms such as headaches, insomnia, and dyspnea, among others[3,38]. In his research, Freudenberger concluded that the symptoms of burnout varied across individuals, though exhaustion and fatigue were universally present[3,38]. He attributed these symptoms to the pressures exerted by hierarchical structures to achieve unrealistic objectives[3,38]. In his studies involving individuals with addictive behaviors, Freudenberger observed that those most at risk of burnout were often the most dedicated to their work[3]. Freudenberger later expanded the definition of burnout to encompass all helping professions, which involved interpersonal relationships, emotional demands, and long working hours[3].

In the 1980s, Maslach and Jackson further explored burnout, focusing on its psychosocial aspects[4,39]. They found that burnout was particularly prevalent in professions involving significant interpersonal contact, including healthcare roles[4,39]. Prolonged exposure to stress was identified as the primary trigger for this syndrome[4,39]. These authors were the first to describe burnout as a three-dimensional syndrome, which included emotional exhaustion, depersonalization, and reduced personal accomplishment. [4,7]. They also found that individuals with more resilient personalities were less likely to develop burnout[4,7]. Emotional exhaustion is characterized by a profound sense of fatigue and a lack of energy to cope with professional demands, representing the individual dimension of the syndrome[40]. Depersonalization refers

to a sense of cynicism and detachment towards others[40]. Reduced personal accomplishment manifests as feelings of incompetence or inadequacy in one's work[40].

Robert Golembiewski, Robert Munzenrider, and Diane Carter examined burnout with a focus on the organizational sphere, applying the Maslach Burnout Inventory (MBI) to commercial professionals[41]. They integrated the three dimensions of the MBI into an eight-stage burnout model and found that depersonalization was more closely associated with low levels of burnout, whereas emotional exhaustion was linked to high levels of burnout[41].

Simultaneously, alternative theories of burnout emerged. As previously mentioned, Cary Cherniss centered her research on the organizational perspective, studying professionals across various sectors, including law, nursing, education, and mental health[42]. She employed interviews as a research methodology, yielding results that closely resembled those obtained through the Maslach Burnout Inventory (MBI)[42]. Cherniss proposed that burnout arises from the interaction between poor working conditions and workers, who are simultaneously exposed to external stressors[42]. Stressors are multifaceted, and workers' reactions vary widely, from negative behaviors to effective coping strategies[42]. According to Cherniss, burnout, when it develops gradually, becomes an adaptive mechanism[42]. She argued that burnout is a consequence of social factors and that cultural conditions must exist for burnout to take root, continuing to influence individuals until these conditions diminish[43].

This interplay of factors contributes to a multitude of stress sources[43]. Employees' responses can range from negative reactions to rejecting working conditions, to adopting coping strategies to manage adversity[43]. Cherniss asserted that burnout unfolds gradually over time and serves as a coping mechanism or adaptation to multiple stressors in the workplace[42]. She emphasized that societal factors influence burnout, stating, "No matter how much we work at developing techniques for alleviating burnout, the cultural conditions that contribute to it will persist until their influence on us diminishes"[43].

Leiter, a prominent researcher in the psychosocial theory of burnout, did not adopt the phased approach of Golembiewski[44]. Leiter believed that burnout results from chronic exposure to stress and high workplace demands, leading to emotional exhaustion followed by depersonalization as an adaptive mechanism[44]. If depersonalization fails as a coping strategy, a lack of personal accomplishment can lead to absenteeism[44]. In Leiter's view, emotional exhaustion was the principal component of burnout[42,44]. Leiter also emphasized the importance of treating burnout in a manner that allows the individual to return to the workplace and succeed[42].

Schaufeli and Greenglass described burnout as a state of physical and emotional exhaustion arising from high-stress work environments and excessive workloads[45]. They argued that burnout extends beyond being merely an occupational health issue[45]. Schaufeli and Buunk also posited that burnout develops gradually and subtly, often associated with ineffective coping strategies[6].

In 2019, the World Health Organization (WHO) reclassified burnout as an occupational phenomenon rather than a disease, emphasizing that it results from chronic workplace stress that has not been successfully managed[46]. According to the WHO, burnout is characterized by feelings of energy depletion or exhaustion, mental detachment, negativity and cynicism towards work, and a sense of inefficacy[46]. Furthermore, the WHO introduced a new specific code for burnout in the 11th edition of the International Classification of Diseases (ICD), distinguishing it from its previous classification in the 10th edition as "burnout—state of total exhaustion"[47].

As of January 1, 2022, burnout was officially defined as an occupational phenomenon linked to work activity, marking a departure from its earlier categorization as a pathological disorder in the 10th edition of the ICD[48].

Other scholars, however, view burnout as a distinct state, diverging from Maslach's view that burnout is a gradual, cumulative process[49]. For instance, Brill defines burnout as a work-related state stemming from unmet expectations that render the individual dysfunctional[49]. This individual, according to Brill, does not have a prior psychopathology, has demonstrated effective performance in the past, and cannot recover without external assistance[49].

The instruments used to assess burnout in this study are described below.

1.1.2. Maslach Burnout Inventory (MBI)

The Maslach Burnout Inventory (MBI) was first introduced in 1981 and has since become the most widely used scale for measuring burnout[50,51].

The MBI is a self-report instrument comprising 22 items designed to identify and assess the presence of burnout syndrome across various professional groups[50,51]. These 22 items reflect statements about the employee's perception of their workplace. Responses are evaluated using a Likert scale, with scores ranging from 0 to 6 [50,51].

The MBI measures burnout across three dimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment[50,51]. Emotional exhaustion is

assessed through 9 items, depersonalization through 5 items, and reduced personal accomplishment through 8 items[50,51].

The risk of burnout can be classified as low, moderate, or high, with cut-off points as follows: 0–18, 19–26, and greater than 26 for emotional exhaustion; 0–5, 6–9, and greater than 9 for depersonalization; and greater than 39, 34–39, and 0–33 for decreased personal accomplishment[50,51]. If an individual scores high in at least one dimension, they are considered at risk of developing burnout[50,51].

The MBI has been the most widely used scale worldwide for studying burnout[51]. It has been translated into numerous languages, highlighting its importance in the assessment of burnout[5]. It is important to note, however, that the MBI is not a diagnostic tool for burnout[5]. This scale solely measures the intensity of burnout in the individuals who complete it[5].

1.1.3. Copenhagen Burnout Inventory (CBI)

The MBI is undoubtedly the most widely used instrument for investigating burnout, used in more than 90% of scientific studies. However, it is not without its criticisms, which have led some authors to propose alternative methods for assessing and measuring burnout[8]. The fact that the MBI does not assess burnout in employees who do not interact directly with the public has prompted the development of alternative scales, such as the Copenhagen Burnout Inventory (CBI) [8].

The assumption that burnout is only present in employees who work directly with the public implies that other workers are immune to this syndrome[8]. Additionally, it is debated that the MBI lacks coherence between the definition of burnout and the methodology used to assess it[8].

The concept of burnout must be approached holistically, considering the individual in their entirety. In the MBI, each of the three dimensions is assessed independently, despite some suggestion that they may be interrelated[8]. Furthermore, while Maslach and Jackson considered depersonalization to be an adaptive mechanism, the MBI treats it as one of the defining dimensions of burnout[8].

Despite the extensive use of the MBI, it remains controversial. Depersonalization is often understood as an adaptive response, and reduced personal fulfillment is seen as a consequence of prolonged exposure to stress[8]. These concerns prompted Kristensen et al.to develop a new tool for assessing burnout, the Copenhagen Burnout Inventory (CBI)[8].

Additional criticisms raised by these authors include the fact that the MBI is not freely available and that its translation into Danish is not straightforward[8]. Notably, the CBI is also a three-dimensional instrument, comprising personal, work-related, and client-related dimensions of burnout[8].

As previously mentioned, the Copenhagen Burnout Inventory (CBI) comprises three dimensions: personal burnout, which evaluates the level of exhaustion experienced by workers irrespective of their work activities; work-related burnout, which assesses the physical and emotional fatigue linked to the work environment; and client-related burnout, which measures the degree of exhaustion resulting from interactions with clients[8].

The CBI has been translated into several languages, including Portuguese, and has been implemented in various countries[8].

1.2. Burnout Syndrome in Healthcare Professionals

Burnout is a multifactorial condition, resulting from the interaction between occupational and personal factors[52].

Extensive research has been conducted to identify the factors that place individuals at a higher risk of developing burnout[52]. Maslach asserts that it is the presence of precarious working conditions that influence the employee's personality, thereby fostering an environment conducive to the onset of this syndrome [52].

Labor security (or its lack) encompasses factors such as excessive workloads, long working hours, hierarchical pressures, unjust decision-making, and the failure to recognize employees' competencies[52]. When the stressful situation persists over time, employees are no longer able to restore their equilibrium, ultimately resulting in burnout[52]. Effective leadership and the trust placed in employees, by promoting their autonomy, contribute to positive organizational outcomes[52,53]. The devaluation of workers' efforts, through the failure to acknowledge their merit—whether at a social, institutional, or financial level—leads to diminished motivation, thereby increasing the risk of burnout and resulting in negative workplace outcomes[52].

The workplace environment plays a pivotal role in the development of burnout, particularly in the absence of mutual support among professionals and in environments marked by hostility and mistrust[52]. Factors such as unequal decision-making, perceptions of injustice, and disparities in the treatment of employees significantly contribute to an elevated risk of burnout[52,53]. When the values and expectations of new employees do not align with

organizational objectives, it can lead to frustration and demotivation, potentially precipitating the onset of burnout syndrome[52].

Although work-related variables have been extensively studied, personality traits have increasingly gained prominence in understanding the development of burnout syndrome[54]. This perspective aligns with the notion that both the work environment and the employer are dynamic, evolving entities[52].

According to Larsen and Buss, "Personality is the set of psychological traits and mechanisms within the individual that are organized and relatively enduring, and that influence his or her interactions with, and adaptations to, the intrapsychic, physical, and social environments"[55]. This definition emphasizes the critical role of individual personality traits in the context of burnout.

Personality traits are defined as stable patterns of thoughts, emotions, and behaviors that are integral to understanding an individual and predicting their reactions across a variety of situations[55,56]. Extensive research has focused on traits such as extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience[57]. These five traits exist along a continuum, each having an opposing end, and span a range from low to high[55]. Extraversion, in contrast to introversion, is characterized by a preference for frequent, intense social interactions, higher activity levels, a need for stimulation, and general cheerfulness[56]. Neuroticism, in contrast to emotional stability, is associated with a tendency toward negative emotional states such as anxiety or sadness, often linked to low self-esteem or a heightened risk of depression and suicide[56]. Agreeableness pertains to interpersonal dynamics, including the nature of social interactions, the degree of organization, persistence, self-control, and motivation toward achieving goals[56]. Openness to experience, in contrast to conservatism, is associated with traits such as creativity, originality, and a broad intellectual curiosity[56]. Higher levels of neuroticism, lower extraversion, reduced openness to experience, diminished agreeableness, and decreased conscientiousness are all correlated with an increased risk of burnout[57].

In addition, work-related factors such as appropriate workload, manageable weekly hours, and the effects of work on family or personal life are closely linked to higher burnout levels[55]. Non-work-related factors, such as family dynamics, can also exacerbate work-related stress and further elevate the risk of burnout[55].

Burnout has far-reaching consequences, not only for individuals but also for the organizations they serve[47]. Exhaustion, a central symptom of burnout, provokes both physiological and psychological responses in individuals exposed to chronic stress[52]. It manifests through

multidimensional symptoms, including psychological, psychosomatic, somatic, and social impairments[47]. Common symptoms such as headaches, fatigue, gastrointestinal disturbances, hypertension, respiratory infections, and sleep disorders are often observed in individuals experiencing emotional exhaustion due to prolonged stress[52].

Although the association between burnout and mental health symptoms is complex, stronger correlations have been identified with anxiety, irritability, depression, and, in severe cases, suicide[52]. The predominant complaint among individuals suffering from burnout is chronic fatigue and persistent exhaustion, frequently accompanied by cognitive impairments, such as difficulties with concentration, memory lapses, or changes in personality[47]. Moreover, substance abuse, including alcohol and drug use, is commonly associated with burnout[47].

Burnout is a dynamic, progressive process. Weber and Reinhard proposed the burnout cascade model, which delineates burnout into eight stages, culminating in severe consequences such as suicide[47]. It is vital to recognize that the repercussions of burnout extend beyond individual employees, affecting the broader organization.

According to Maslach, employees experiencing high levels of burnout demonstrate increased absenteeism, heightened turnover intentions, reduced productivity, and diminished job satisfaction, all contributing to a decline in overall organizational performance[4,52]. Furthermore, burnout-prone employees are more likely to experience conflicts with colleagues, which can spread burnout within the workforce, in addition to increasing personal conflicts and substance misuse[4]. Healthcare professionals, in particular, can have their performance compromised by the widespread consequences of burnout[58]. These effects may manifest as an increased likelihood of clinical errors, diminished work performance, and a reduction in workplace satisfaction[58].

A study conducted in the United States revealed that more than 43% of physicians experienced burnout, with prevalence varying by specialty. Approximately 55% of emergency medicine clinicians reported symptoms of burnout[59].

Burnout is now recognized as a significant public health issue, affecting a broad range of workers[60]. Healthcare professionals, in particular, are vulnerable to burnout due to their direct interaction with patients, often under high stress, with heavy symptom burdens, long working hours, and difficult emotional demands[60]. It is not uncommon for healthcare teams to work in conflicting and high-stress environments[60].

The quality of both personal and professional life may be compromised when burnout is present[60,61].

Throughout this dissertation, the author will talk about the professional quality of life, however, it is equally important to remember the quality of life in general.

The concept of Quality of Life (QoL) remains subjective and varies between individuals, as it encompasses a wide range of personal variables[62]. What constitutes good QoL for one person may not be the same for another[62]. QoL is a multidimensional and cross-disciplinary concept that applies to all areas of society[63].

The World Health Organization (WHO) recently defined QoL as "an individual's perception of their position in life within the context of cultural and value systems"[64]. This definition highlights that QoL encompasses both objective and subjective dimensions, including factors such as living conditions, profession, income, personal and family well-being, love, and a sense of personal accomplishment[63]. Many organizations, particularly in healthcare, have undergone significant changes over time—often for the worse—resulting in increased workload, team conflicts, and instability, which foster insecurity[62]. These changes can affect workers' well-being, either fortifying their resilience or causing them to feel threatened[62].

Adverse work environments can negatively impact quality of life and contribute to the onset of burnout, a phenomenon supported by multiple studies [65,66,67,68,69].

In recent years, interest in burnout has surged, as it is now widely recognized as a public health issue[,70,71,72].

Healthcare professionals experiencing burnout report altered relationships with partners, which in turn, negatively affects patients and their families[73,74,75]. Patients express dissatisfaction when cared for by professionals who are emotionally exhausted and demotivated, perceiving a decline in the quality of care and attention[73,74,75,76,77]. For healthcare workers, burnout leads to a diminished quality of life[73,74,75,78,79]. An exacerbating factor of burnout is shift work, which significantly disrupts personal and family life[80,81]. Studies have shown that shift work, coupled with high workload, directly negatively impacts the personal and family lives of healthcare professionals, contributing to burnout and a reduced quality of life[82,83,84]. In Portugal, several studies have addressed burnout among doctors and nurses[58,85,86,87]. During the COVID-19 pandemic, as in other countries, there was an exponential increase in research on this topic, as it had a profound impact on the general health and quality of life of healthcare professionals.

1.2.1. Burnout Syndrome in Oncology Healthcare Professionals

Oncology is widely acknowledged as one of the most stressful medical specialties, characterized by significant challenges in providing complex care and frequent exposure to mortality[88,89,90].

The concept of death is deeply embedded in the perceptions of professionals working in this field [88,89,90]. Additionally, exposure to various stressors—such as the constant presence of pain, suffering, loss, high demands on care quality, workload overload, and poor working conditions—can make healthcare workers more susceptible to physical and emotional exhaustion[91].

As previously noted, burnout syndrome is a state of emotional exhaustion linked to chronic workplace stress[92,93,94,95]. The term "Burnout" refers to physical and psychological depletion in the workplace, manifesting in three primary dimensions: emotional exhaustion, depersonalization, and diminished personal accomplishment[92]. Burnout has detrimental consequences for workers, ranging from absenteeism to, in the most extreme cases, suicide[96].

Continuous contact with patients and the failure to align expectations with the reality of care are key triggers for the development of this syndrome[97]. Some studies suggest that nurses are particularly affected by burnout, owing to their extensive hours spent interacting with patients and their families[98].

Among oncology professionals, direct interaction with suffering patients, many of whom are in the final stages of life, contributes to heightened stress within the workplace, significantly impacting both their physical and emotional well-being[99].

When caring for terminally ill patients, healthcare professionals often find themselves confronting their own mortality as they empathize deeply with the patients' experiences[100].

The proximity to death can evoke existential fears of the unknown, triggering intense feelings of sadness, helplessness, and despair[101,102].

In light of these emotional burdens, it becomes essential to implement effective coping strategies and provide robust emotional support[103,104,105,106]. For example, nurses working with cancer patients closely follow the progression of illness, witnessing firsthand the suffering, uncertainty, and profound effects on both patients and their families[103,104,105,106]. When a patient die, these professionals frequently experience a sense of personal loss, as the bond formed during care often extends beyond professional boundaries, and they feel as though they have lost a friend[103,104,105,106].

1.2.2. Burnout Syndrome in Palliative Care Healthcare Professionals

Palliative care addresses the patient and their family in a holistic, multidimensional manner[107,108,109,110,111,112]. Its principles and philosophy encompass the physical, psychological, social, and spiritual dimensions, requiring a high level of relational and communication skills[107,108,109,110,111,112].

Between 1975 and 1979, Watson developed the Human Caring Theory[113], which posits that dignity and care form the foundation of nursing practice[113,114]. In this framework, nursing care extends far beyond physical support, encompassing spiritual, social, and mental dimensions as well[113,115,116].

Palliative care professionals, who care for patients with complex and life-threatening conditions, often face the challenge of balancing their own well-being while providing compassionate care[117,118]. As a result, these healthcare providers are among the most vulnerable groups to chronic occupational stress, which can ultimately contribute to the development of burnout[119,120].

Palliative care professionals are continuously exposed to situations that require significant emotional resilience, both through their interactions with patients and within the work environment itself[121,122].

A study conducted between 2011 and 2017 found that approximately 44% of physicians in the United States experienced burnout[59]. The prevalence varied by specialty, with 29.6% in occupational medicine, around 55% in emergency medicine, and between 32% and 35% in palliative care[59]. Additional studies from other countries revealed varying burnout rates among palliative care professionals, with 24% in Australia and 42% in Singapore[123,124]. Nurses are the healthcare professionals most affected by burnout, with the highest reported rates[125].

Sociodemographic and occupational factors, such as gender, age, marital status, and number of shifts, contribute to the increased susceptibility of these professionals to burnout[126,127]. Similarly, personality traits, including neuroticism, agreeableness, and extroversion, have been identified as significant influencing factors[126,127].

Gonçalves and Gaudêncio conducted a study examining the influence of burnout on quality of life among healthcare professionals working in a Palliative Care Unit at a Portuguese cancer hospital[69]. In their preliminary study, they found that males represented only 20% of the sample, with the average age being around 43 years[69]. Nursing staff accounted for nearly 50% of the sample, making them the largest professional group[69]. Despite the small sample size (34 participants), the study yielded valuable insights[69]. Professionals were motivated to

participate, achieving a response rate of 92%[69]. Both doctors and nurses exhibited high levels of emotional exhaustion[69]. However, despite these findings, their overall quality of life was not significantly affected, as the distribution across various quality of life dimensions remained homogeneous[69]. Thus, burnout (measured by the MBI) and quality of life (assessed by the woqol-bref) were found to behave independently[69].

Regarding the topic of burnout and quality of life in Oncology and Palliative healthcare professionals, the author wrote the article entitled "Burnout and quality of life in Portuguese healthcare professionals working in oncology and palliative care – a preliminary study" and published in October 2023 (BMC Palliative Care). About this theme, the author also wrote the article entitled "Qualidade de vida nos profissionais de saúde de Cuidados Paliativos Oncológicos", published in 2017 (Revista Sinais Vitais).

1.3. Attachment Theory

Attachment theory is grounded in the understanding of how human relationships influence the development of individual personality[128,129,130]. Early in childhood, children form bonds with their caregivers, and these initial attachments play a crucial role in shaping future personality and interpersonal relationships[128,129,130]. When these bonds are not successfully established, they can have detrimental effects on the individual's development and future social interactions[128,129,130]. Attachment theory is based on psychoanalytic principles, but has its origins as such in the works of John Bowlby[131,132].

Insecure attachment styles, formed during childhood, can lead to significant negative outcomes, including impaired socialization and the development of mental health disorders and psychiatric conditions[131,132]. The recognition of attachment theory has consequently led to the formulation of therapeutic strategies aimed at mitigating the damage caused by poorly formed emotional bonds[131,132].

Insecure attachment styles are particularly concerning as they may be linked to gender dysphoria, depression, anxiety, and various other psychological pathologies[133,134].

Bowlby discovered that infants possess an innate need to seek comfort from their primary caregivers, particularly their mothers, with whom they establish strong emotional bonds[135,136,137]. From a psychoanalytic perspective, attachment theory plays a foundational role in the development of the "self" and relational behaviors[135,136,137].

It is through the interactions between children and caregivers that children come to understand the reciprocal nature of their relationships. Secure attachments foster the development of confident, self-assured individuals who are not only aware of their intrinsic worth but also capable of trusting others[137,138]. These interactions with caregivers facilitate the organization and regulation of thoughts, emotions, and behaviors[137,138]. A secure attachment figure creates an environment conducive to autonomy and exploration, which is essential for the child's cognitive and emotional development[139,140,141,142]. In the first year of life, infants establish a unique bond with their caregivers, typically the mother, which ensures both survival and emotional security[139,140,141,142]. This caregiver serves as a "safe haven," offering a source of comfort in times of threat or distress[139,140,141,142].

The attachment relationship is asymmetrical yet complementary, wherein the caregiver—usually the mother—provides the necessary support that allows the child to explore the world, while also offering a refuge of affection in moments of vulnerability[143,144,145].

Mary Ainsworth expanded Bowlby's framework adding relevant empirical evidences to support the attachment theory[137]. Through naturalistic and laboratory observations, Ainsworth studied how children behave in controlled situations with their attachment figures[137]. One of Bowlby's principal goals was to understand the origins of individual differences in the attachment relationships between children and their mothers[146,147,148,149]. He argued that these differences stemmed from the mother's behaviors toward the child and how she transmitted attachment, thus introducing the concept of the "secure base" [146,147,148,1492].

Sensitivity, a fundamental quality of caregivers, refers to their ability to recognize and interpret the child's emotional states, responding with appropriate, assertive, and nurturing care[150,151,152]. Effective caregiving requires flexibility, with caregivers adjusting their proximity and responsiveness based on the child's needs, thus fostering a secure bond[153,154,155,156].

1.3.1. Attachment Styles

Models of self and others emerge from the mutual interactions between a child and their attachment figure[157,158,159,160,161]. These interactions form the foundation of dynamic internal models, which serve as cognitive and emotional frameworks that shape future relationships[157,158,159,160,161].

Dynamic internal models act as links between early attachment styles and caregivers, influencing the quality of intimate relationships later in life[143,162]. These models, developed during the early years, define an individual's perception of themselves, others, and the

world[163,164,165,166]. Individuals with a secure internal model tend to trust in their abilities and foster healthy, fulfilling relationships[163,164,165,166]. Conversely, those with an insecure internal model often exhibit emotional dependency, a lack of trust in others, and a higher susceptibility to burnout in stressful circumstances[163,164,165,166]. Insecure models are also associated with distancing behaviors, emotional hostility, and difficulty forming positive connections[163,164,165,166].

A two-dimensional model was developed to better understand attachment, comprising one dimension related to the self and another focused on an individual's perception of others[168,169]. The self-model reflects how individuals value themselves, while the other-model pertains to the availability and support perceived from others[169,170,171].

From these two dimensions, four distinct attachment styles emerge: Secure, Fearful, Avoidant and Preoccupied[172] (Figure 1). Individuals with a secure attachment style typically exhibit higher self-esteem, trust in others, reduced anxiety, and greater ease in forming romantic relationships[172]. They are able to maintain a balance between individual autonomy and a strong connection with their partner, ensuring neither is neglected[172,173,174].

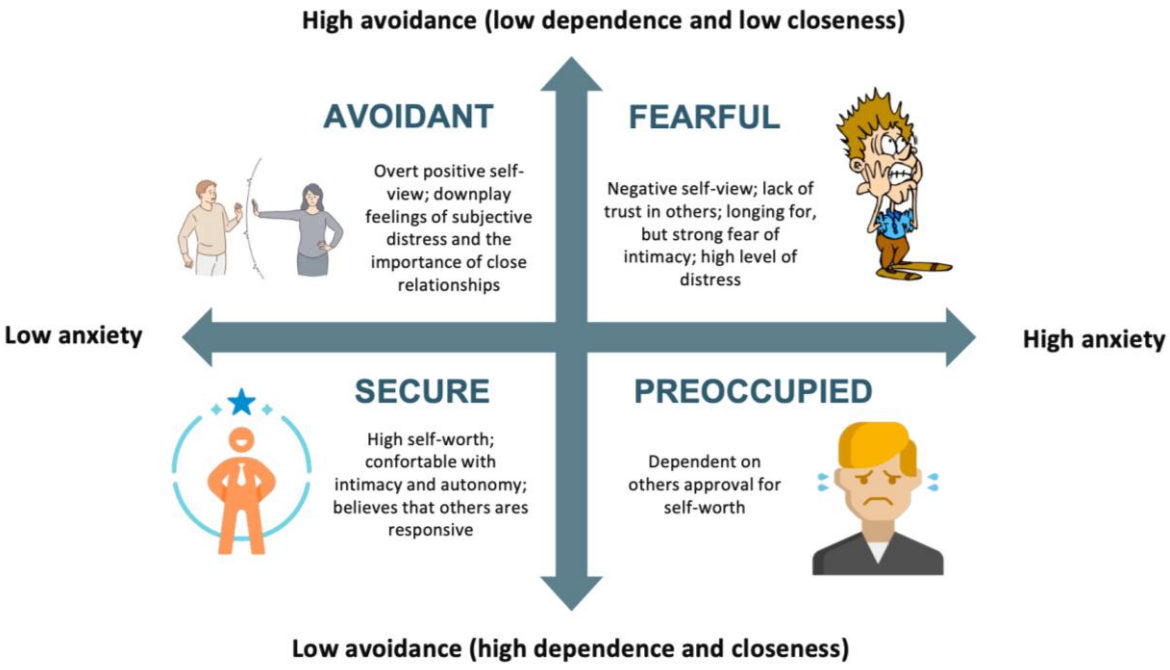

Figure 1: Attachment styles

Adapted from França G, Laranjeira E, Silva F, Monteiro L, Moreira AM, Carvalho S. Attachment Style and Insight in Schizophrenia: a Cross-Sectional Study. Psychiatr Q. 2020 Mar;91(1):31-43. doi: 10.1007/s11126-019-09675-8

Individuals with a dismissive-attachment style tend to avoid others, overvaluing themselves while belittling those around them. As a result, they avoid intimate relationships and generally exhibit low levels of anxiety[171].

Individuals with preoccupied and fear-avoidant attachment styles are typically insecure and have low self-esteem[171]. Those with a preoccupied attachment style devalue themselves while overvaluing others, often experiencing a lack of affection and displaying high levels of anxiety[171]. Fearful individuals maintain a negative view of both themselves and others[171]. They do not perceive themselves as worthy of love, leading them to avoid forming connections with others, even though they may desire such relationships[171]. These individuals are dependent on others yet actively avoid intimacy out of a fear of rejection[171].

1.3.2. Attachment Styles in Adulthood

Several authors, including Hazan and Shaver, have observed that attachment styles persist into adulthood, where parental relationships are partially replaced by romantic partnerships[175,176,177]. However, the type of attachment bond established during childhood exerts a significant influence on future relational patterns[175,176,177]. Children who develop secure bonds of affection evolve into confident adults, capable of initiating and maintaining reciprocal romantic relationships[175,176,177].

In contrast, individuals who experienced insecure attachment styles during childhood often manifest similar patterns in adulthood, characterized by avoidant or anxious/ambivalent behaviors[175,176,177]. These behaviors frequently contribute to insecurity and emotional distress in romantic relationships[175,176,177]. Additionally, research indicates that the neurological modulation of the brains of children who share a strong bond with a protective mother increases the likelihood of their development into emotionally secure and content adults[178].

The instrument used to assess adult attachment is described below.

1.3.3. Adult Attachment Scale (AASr)

This scale was originally developed and revised by Collins and Read in 1990[179]. In the Portuguese population, the first study using the Adult Attachment Scale was conducted by Canavarro in 1997[180].

It is a measurement instrument comprising 18 items distributed across three subscales: anxiety, trust in others, and comfort with proximity, each containing six items[179]. The Anxiety dimension (items 3, 4, 9, 10, 11, and 15) assesses the level of anxiety experienced in

interpersonal relationships, such as fears of abandonment or rejection[179]. The Trust in Others dimension (items 2, 5, 7, 16, 17, and 18) measures the extent of trust an individual place in others[179]. The Comfort with Proximity dimension (items 1, 6, 8, 12, 13, and 14) evaluates how comfortable an individual feel with intimacy and closeness[179].

Responses are scored using a 5-point Likert scale, where 1 corresponds to "Not at all characteristic of me" and 5 to "Extremely characteristic of me"[179]. Both the Trust in Others and Comfort with Proximity dimensions include direct and inverted items[179]. For direct items, the values on the scale are followed as indicated: 1, 2, 3, 4, and 5[179]. For inverted items, the scoring is reversed, with values starting from 5, followed by 4, 3, 2, and 1[179]. Thus, for direct items, a score of 5 indicates a high level of comfort or trust, while for inverted items, a score of 1 represents the same high level[179]. There are five inverted items (items 2, 7, 16, 17, and 18) in the Trust in Others dimension and two inverted items (items 8 and 13) in the Comfort with Proximity dimension[179].

The total score for each dimension is calculated as the average of its items, while the overall scale score is determined by averaging the sum of the scores from all three dimensions[179]. The psychometric properties of the Portuguese version of the scale confirm its suitability for both scientific research and clinical applications, demonstrating robust reliability and validity[180].

1.4. Impact of attachment style on burnout among healthcare professionals

Attachment theory asserts that childhood experiences significantly shape an individual's behavior in adulthood[140,143,180]. Research on adult attachment styles reveals that these styles influence various domains, including workplace interactions[181], intimate and romantic relationships [165,176, 182] and nearly all aspects of human life[183].

Insecure attachment has been closely linked to reduced work performance and an increased vulnerability to burnout[184]. Malach-Pines observed a negative correlation between secure attachment styles and burnout[185]. Moreover, early childhood experiences not only affect career choices in adulthood but also shape professional goals and expectations, potentially contributing to the development of burnout[184].

Bordoagni et al., in their studies on the relationship between attachment styles and burnout among nursing students and professionals, concluded that insecure attachment styles within these populations jeopardize their clinical practice, both as caregivers and as healthcare team

members[186]. Schröder et al. investigated the impact of attachment styles on susceptibility to burnout and other mental health disorders among social work professionals [187].

In summary, the literature highlights that attachment styles, often established in early childhood, can serve as a determinant for burnout in adulthood and are closely associated with diminished work performance.

Regarding the topic of burnout and attachment in Oncology and Palliative healthcare professionals, the author wrote the article entitled "Burnout and attachment in oncology and palliative care healthcare professionals" and published in December 2024 (BMJ Supportive and Palliative Care).

1.5. Professional Quality of Life

Burnout, emotional exhaustion, and quality of life have garnered significant attention in recent decades due to their profound impact on organizations, particularly those involving healthcare professionals [188,189, 190,191].

The concept of quality of professional life has become increasingly relevant in scientific research[192,193].

Quality of working life (ProQOL) directly influences an employee's well-being and professional behavior[194].

Stamm defines quality of professional life within the healthcare sector as a combination of manifestations and consequences experienced by employees as a result of their emotional and affective involvement with the suffering of the patients they care for[193]. It is a multifaceted concept, incorporating both organizational and personal factors, including past traumatic experiences[193].

According to Stamm, the quality of professional life always includes two distinct dimensions[193]. The positive dimension refers to the sense of pleasure and fulfillment derived from providing care to sick and vulnerable individuals[193]. In contrast, the negative dimension pertains to fatigue and diminished empathy that often accompany helping relationships[193].

Furthermore, Stamm identifies compassion fatigue as comprising two key components: burnout and secondary traumatic stress[193].

The instrument used to assess professional quality of life is described below.

1.5.1. Professional Quality of Life – ProQOL-5

The Professional Quality of Life Scale, Version 5 (ProQOL-5), is a widely employed self-assessment tool in the healthcare sector[193]. It consists of 30 items, divided into three subscales, each containing 10 questions[193]. These subscales are as follows: items 3, 6, 12, 16, 18, 20, 22, 24, 27, and 30 correspond to Compassion Satisfaction (CS); items 1, 4, 8, 10, 15, 17, 19, 21, 26, and 29 measure Burnout (BO); and items 2, 5, 7, 9, 11, 13, 14, 23, 25, and 28 assess Secondary Traumatic Stress (STS) [193].

"Compassion Fatigue" refers to the combined impact of Burnout and Secondary Traumatic Stress[193]. Participants complete the scale by selecting a score for each item based on their experiences in the past month[193].

The scale uses a 5-point Likert format, where 1 = "Never" and 5 = "Very often"[193]. The total score for each subscale is obtained by summing the responses for its respective items[193]. Higher scores reflect greater levels of Burnout, Compassion Satisfaction, or Secondary Traumatic Stress[193].

Each subscale is categorized as low, moderate, or high, according to the following thresholds: STS (≤22 = low; 23–41 = moderate; ≥42 = high), CS (≤22 = low; 23–41 = moderate; ≥42 = high), and BO (≤22 = low; 23–41 = moderate; ≥42 = high)[193].

Regarding the topic of burnout and professional quality of life in Oncology and Palliative healthcare professionals, the author wrote the article entitled "Burnout and Professional quality of life assessment in Portuguese Healthcare professionals working in Oncology and Palliative Care: a cross-sectional study" and published in December 2024 (Healthcare - Basel).

2. Aims

The **primary objective** of this study was to determine whether there is an association between attachment style and the risk of burnout in a population of healthcare professionals working in an Oncology Hospital.

The **secondary objectives** of this study are as follows:

- To assess the risk of burnout in individuals working with oncology and palliative care patients;

- To identify the various attachment styles exhibited by healthcare professionals in oncology and palliative care;

- To determine potential predictors of burnout in the population of healthcare professionals working in oncology and palliative care;

- To assess the professional quality of life in the population of professionals working at the Oncology hospital;

- To explore the potential association between burnout and the quality of professional life in individuals working with cancer patients and in palliative care.

3. Material and methods

A cross-sectional, descriptive, and correlational study was conducted at the Portuguese Institute of Oncology of Coimbra Francisco Gentil, EPE, following approval by the institution's Ethics Committee (opinion no. T1 02/17). Health professionals from the institution participated in this investigation.

The authors requested and obtained copyright authorization to use some previously published data in this thesis.

3.1. Sample

This study was conducted with an initial sample of 10 03 healthcare professionals employed at a Portuguese tertiary hospital specializing in cancer care.

The inclusion criteria encompassed adult healthcare professionals (≥18 years) whose primary place of work was the hospital, who provided written consent to participate, and who demonstrated an understanding of the study's objectives.

From the initially selected population, 337 healthcare professionals participated, while 666 individuals were excluded—40 due to psychiatric conditions and 626 due to refusal to participate. Consequently, a convenience sample of 337 healthcare professionals was used, yielding a response rate of 36%.

According to Rea and Parker, a minimum of 278 participants is required to detect a significant result (i.e., p-value ≤ 0.05) with 80% power. Therefore, the sample size is deemed sufficient to achieve adequate statistical power[194].

3.2. Data collection

Data collection adhered strictly to the Helsinki Protocol[195] and the Oviedo Convention[196]. The sociodemographic questionnaire and assessment instruments were distributed individually in sealed envelopes to ensure that participants' confidentiality was never compromised. Each envelope contained an explanatory letter outlining the study's purpose and objectives.

Participants voluntarily provided informed consent to participate, which was obtained prior to the commencement of data collection. An adapted assessment protocol was employed to gather the required data.

The protocol included a sociodemographic questionnaire with variables such as age, sex, marital status, number of children, professional category, years of experience, weekly working hours, night shifts, job precariousness, managerial position, daily sleep duration, and professional area. Additionally, it included Burnout assessment tools (CBI, MBI), an attachment questionnaire (Adult Attachment Scale - AAS), a single question on experience with palliative care patients (" *Is it common to work with patients in palliative care*?") and the Professional Quality of Life Scale (ProQOL-5).

To protect the sensitive nature of the data, strict measures were implemented to ensure participant anonymity throughout the process.

3.3. Measures

3.3.1. Copenhagen Burnout Inventory and Maslach Burnout Inventory

The CBI (Copenhagen Burnout Inventory) is a three-dimensional instrument designed to assess burnout across personal, work-related, and patient-related domains, each defined by specific items[8].

It comprises 19 items, which are rated on a Likert scale ranging from 1 to 5[8]. The scale can be evaluated either through continuous values, ranging from 0 to 100, with descriptive metrics, or transformed into a binary classification for each dimension, indicating the presence or absence of high levels of burnout[8]. When a dimension score exceeds 50, it is considered to indicate high levels of burnout[8]. The 19 items on the CBI are rated as follows: Items 1, 2, 3, 4, 5, 6, 10, 11, 12, 18, and 19 are scored on a scale from 1 to 5, where 1 means “always”, 2 means “frequently”, 3 means “sometimes”, 4 means “rarely”, and 5 means “never/almost never”. Item 13 is reverse coded, with the scale as follows: 1 = “never/almost never”, 2 = “rarely”, 3 = “sometimes”, 4 = “frequently”, and 5 = “always”. Items 7, 8, 9, 14, 15, 16, and 17 are classified as follows: 1 = “very high”, 2 = “high”, 3 = “a little”, 4 = “low” and 5 = “very low” [8]. For this study, the Portuguese-language validated version of the CBI was applied[197].

Regarding the internal consistency of the MBI for the sample in question, the Cronbach's Alpha values for the 19 items were 0.943.

The Maslach Burnout Inventory (MBI) assesses three core dimensions: emotional exhaustion, depersonalization, and personal accomplishment[50,51, 198]. It consists of 22 items, each scored on a scale from 0 to 6[50,51, 198]. The total score for each dimension is obtained by summing the individual item scores.

Emotional exhaustion ranges from 0 to 54, depersonalization from 0 to 30, and personal accomplishment from 0 to 48[50,51, 198]. Each dimension of the MBI scale has three levels: low, medium, and high, as described respectively below: emotional exhaustion: ≤13; 14–26; ≥27; depersonalization: ≤5; 6–9; ≥10; and personal fulfilment: ≤33; 34–39; ≥40[50,51, 198]. Burnout syndrome is considered when scores of emotional exhaustion and depersonalization are high and scores of personal fulfilment are low[50,51, 198]. This study used the version of the MBI validated for the Portuguese language[198].

Regarding the internal consistency of the MBI for the sample in question, the Cronbach's Alpha values for the 22 items were 0.736.

Both scales were used in this study to assess the risk and prevalence of burnout, aiming to achieve a comprehensive evaluation. The CBI evaluates burnout across work-related, patient-related, and personal dimensions. In contrast, the MBI primarily focuses on emotional exhaustion.

3.3.2. Adult Attachment Scale

The Adult Attachment Scale (AAS) was translated and adapted into Portuguese by Canavarro in 1995[180], based on the Adult Attachment Scale, that Collins and Read developed for the first time in 1990[179].

This instrument allows the identification of four attachment patterns: the secure, the avoidant, the preoccupied and the fearful[179,180]. The scale consists of 18 items that are organized into three dimensions[179,180]:

1) Anxiety refers to the degree of anxiety felt by the individual in relationships and the fear of being abandoned or not loved;

2), Closeness assesses whether the individual feels comfortable with closeness and intimacy;

3) Dependency evaluates whether the individual trusts others.

The scoring of responses on this scale follows a Likert-type format, with a range from 1 to 5[179,180]. Items 1, 3, 4, 5, 6, 9, 10, 11, 12, 14, and 15 are classified as follows: 1 - not characteristic of me; 2 - unusual for me; 3 - characteristic of me; 4 - moderately characteristic of me; 5 – very characteristic of me[179,180]. For items 2, 7, 8, 13, 16, 17, and 18, the assessment is reversed as follows: 5 - not characteristic of me; 4 - unusual for me; 3 - characteristic of me; 2 - moderately characteristic of me; 1 – very characteristic of me[179,180].

Each dimension is evaluated as follows: anxiety = the average of items 3, 4, 9, 10, 11, and 15; discomfort with proximity = the average of items 1, 6, 8, 12, 13, and 14; discomfort with dependence = the average of items 2, 5, 7, 16, 17, and 18 [179,180]. This study applied the Portuguese version of the AAS-R[180].

According to Feeney et al. (1990), each dimension of the AAS - R can be subdivided into 3 levels: low if the score is less than 3, medium if between 3 and 3.49, and high if greater than or equal to 3.5. According to this classification, there may be a fourth style, the unclassifiable ones.

Regarding the internal consistency of the AAS - R for the sample in question, the Cronbach's Alpha values for the 18 items were 0.356.

3.3.3. The Professional Quality of Life Scale

The Professional Quality of Life version 5 (ProQOL-5) is a widely used instrument for measuring professional quality of life in the healthcare sector[22,197]. This self-response scale consists of 30 items, divided into three dimensions, each containing 10 items[22,197].

These dimensions are as follows: Compassion Satisfaction (CS) – items 3, 6, 12, 16, 18, 20, 22, 24, 27, 30; Burnout (BO) – items 1, 4, 8, 10, 15, 17, 19, 21, 26, and 29; and Secondary Traumatic Stress (STS) – items 2, 5, 7, 9, 11, 13, 14, 23, 25, and 28[22,197]. According to some authors, burnout and secondary traumatic stress together constitute "Compassion Fatigue" [22,197]. To complete the scale, each participant indicates the value that most closely reflects their experience over the past month[22,197]. The scale follows a Likert-type format, scored from 1 (never) to 5 (very often) [22,197].

The sum of the responses within each subscale provides the total score for that dimension[22,197]. Higher scores correspond to higher levels of each subscale[22,197]. Each subscale is classified as low, moderate, or high, with the following ranges: STS (≤22; 23–41; ≥42); CS (≤22; 23–41; ≥42); and BO (≤22; 23–41; ≥ 42) [22,197].

Regarding the internal consistency of the ProQOL 5 for the sample in question, the Cronbach's Alpha values were 0,845 for Compassion Satisfaction, 0,749 for Burnout and 0,852 for Secondary Traumatic Stress.

The necessary authorizations to use these instruments in the study were requested and granted.

3.4. Missing data

Regarding missing values in the three dimensions of the CBI scale, when two of the questions was not answered, the average of the items in that dimension was assigned. For the MBI and AAS-R scales, participants were excluded if more than 20% of their items were not answered.

Specifically, for the MBI scale, missing values were imputed only when more than three items in the emotional exhaustion and personal fulfillment dimensions were not answered, and more than two items in the depersonalization dimension were not answered.

For the AAS-R scale, missing values were considered only when more than two items in the respective dimension were not answered. When possible, missing values were replaced by the average of the remaining responses.

3.5. Internal consistency

Descriptive statistical analysis of each item on the scale (mean and standard deviation) was conducted prior to the calculation of Cronbach's alpha coefficients to ensure the reliability of the average values and mitigate the influence of extreme values.

The correlation coefficients between each pair of items within the same dimension were evaluated using Kendall's Tau-b coefficient, as each item has up to five possible values.

According to the literature, Cronbach's alpha values greater than 0.80 are considered excellent, values above 0.70 are recommended, and values above 0.60 are minimally acceptable for research purposes. In this study, internal consistency was deemed satisfactory for any result exceeding 0.60.

3.6. Statistical analysis

The descriptive analysis, as indicated in the comparative analyses, was performed on the total sample and the two groups. Depending on whether the variables were categorical or continuous, they were characterized by absolute and relative frequencies or by their respective means and standard deviations.

For the comparative analyses between cancer care and palliative care in relation to sociodemographic data, the asymptotic χ^2 test or the exact χ^2 test were applied for categorical variables. The t-test for independent samples was used to compare the means of continuous variables.

One-way multivariate analysis of variance (MANOVA) was the method selected to assess differences across multiple dimensions when performing comparative analyses between groups for continuous variables.

The Wilks' Lambda or Pillai's Trace tests were conducted, depending on the homogeneity assumption of the variance-covariance matrices. Significant differences within each dimension were assessed using a Bonferroni-adjusted significance level (5% / 3 = 1.7%).

Comparisons of means between groups within each dimension were made using t-tests for two groups and analysis of variance (ANOVA) when more than two groups were present. The F-test was applied in ANOVA when the homogeneity of group variances was confirmed by Levene's test. In cases where homogeneity could not be confirmed, the Welch test was used. In the first case, multiple comparisons were performed using Tukey's test, and in the second case, the Games-Howell test was employed.

Pearson's correlation coefficient was used to evaluate the correlation between two continuous variables.

Statistical analysis was conducted using IBM SPSS Statistics V.25, with a significance level set at 5%.

4. Results

4.1. Sociodemographic characteristics of the sample

In the study sample, more than three-quarters of health professionals (76.8%) worked with cancer patients in less advanced stages of the disease (Oncology, Surgery, and Radiotherapy Services).

No significant differences were found between the two groups regarding marital status (single: 29.7% vs. 24.5%; married: 62.2% vs. 64.5%, p = 0.799), sex (female: 85.1% vs. 83.7%; male: 14.9% vs. 16.3%, p = 0.764), weekly workload (36±6 vs. 38±4, p = 0.112), number of children (p = 0.201), or professional category (doctors: 10.8% vs. 12.2%; nurses: 55.4% vs. 44.1%; operational assistants: 21.6% vs. 21.2%; other categories: 12.2% vs. 22.4%; p = 0.198) (Tables 1 and 2).

However, significant differences were observed regarding age, with professionals working with palliative patients being approximately 2 years younger (Table 1).

Table 1 - Analysis between professionals working in Oncology and Palliative care services (personal characteristics)

VARIABLES		Working in Palliative care (n=74)	Working in Oncology Services *□ (n=245)	p**
Age (years), mean ± standard deviation		40 ± 10	42 ± 9	**0.046**
Gender, n (%)	Female	63 (85.1)	205 (83.7)	0.764
	Male	11 (14.9)	40 (16.3)	
Number of children, n (%)	0	31 (41.9)	68 (27.8)	0.201
	1	23 (31.1)	76 (31.0)	
	2	17 (23.0)	89 (36.3)	
	3	3 (4.1)	10 (4.1)	
	4	0 (0.0)	1 (0.4)	
	5	0 (0.0)	1 (0.4)	
Marital status, n (%)	Single	22 (29.7)	60 (24.5)	0.799
	Divorced	5 (6.8)	24 (9.8)	
	Widow	1 (1.4)	3 (1.2)	
	Married	46 (62.2)	158 (64.5)	

* Oncology, Surgery and Radiotherapy Services; □ Missing - 18; ** For categorical variables, the comparison between the two groups was conducted using the asymptotic χ^2 test or the exact χ^2 test, depending on the assumptions for applying the test. For continuous variables, the means between the two groups were compared using the t-test for independent samples.

Additionally, differences were found concerning years of experience (p = 0.002), night work and employment link (Table 2). Specifically, the majority of professionals caring for palliative patients had been working for less than 3 years (27.0% vs. 9.8%), while fewer had been working for more than 10 years (54.1% vs. 70.5%) (Table 2).

In the group of healthcare professionals working in palliative care, there is a predominance of professionals who work night shifts (Table 2). In the other group, the opposite is observed.

Among healthcare professionals working in palliative care and oncology in general, there is a predominance of professionals with stable employment contracts (Table 2).

Table 2 - Analysis between professionals working in Oncology and Palliative care service (professional characteristics)

VARIABLES		**Working in Palliative care (n=74)**	**Working in Oncology Services *□ (n=245)**	**p****
Weekly workload, mean ± standard deviation		36 ± 6	38 ± 4	0.112
Professional Category, n (%)	Physician	8 (10.8)	30 (12.2)	0.198
	Nurse	41 (55.4)	108 (44.1)	
	Operational assistant	16 (21.6)	52 (21.2)	
	Other	9 (12.2)	55 (22.4)	
Night work, n (%)	Yes	44 (59.5)	82 (34.0)	**<0.001**
	No	30 (40.5)	159 (66.0)	
Years of work, n (%)	<=3 years	20 (27.0)	24 (9.8)	**0.002**
	4-5 years	1 (1.4)	7 (2.9)	
	6-10 years	13 (17.6)	41 (16,8)	
	> 10 years	40 (54.1)	172 (70.5)	
Management position, n (%)	Yes	8 (11.3)	30 (12.5)	0.781
	No	63 (88.7)	210 (87.5)	
Employment link, n (%)	Yes	66 (89.2)	229 (96.2)	**0.035**
	No	8 (10.8)	9 (3.8)	
Extra-work activities, n(%)	Yes	34 (46.6)	94 (39.2)	0.260
	No	39 (53.4)	146 (60.8)	
Sleep hours per day, n (%)	≤ 6h	17 (23.3)	58 (24.0)	0.459
	>6h - ≤ 8h	53 (72.6)	180 (74.4)	
	> 8h	3 (4.1)	4 (1.7)	

* Oncology, Surgery and Radiotherapy Services; □ Missing - 18; ** For categorical variables, the comparison between the two groups was performed using the asymptotic χ^2 test or the exact χ^2 test, depending on the assumptions for the application of the respective test. For continuous variables, the means between the two groups were compared using the independent samples t-test

4.2. Effects of working or not in Palliative Care on the prevalence of burnout and attachment levels

In this section, burnout levels were analyzed in two professional groups (oncology vs. palliative care) using the two scales described earlier, the CBI and the MBI (Tables 3-8). A one-way MANOVA was conducted to examine the differences between professionals according to each burnout dimension of the CBI (treated as continuous variables) (Tables 3-4).

Since the assumption of homogeneity of covariance matrices was not rejected (p=0.696), the Wilks' Lambda test was applied to compare the groups across the three dimensions. The results indicated no significant differences between the groups (F: p=0.673; partial $\eta^2 = 0.005$). Given the lack of significant differences, individual tests for each burnout dimension were not conducted (Tables 3-4).

Table 3 - Burnout levels using the Copenhagen Burnout Inventory - CBI among healthcare professionals working working in palliative care (continuous values)

Burnout CBI (continuous)	N	Mean	Standard deviation	P value*□
Personal	74	49.44	17.60	-
Work	74	49.18	18.03	-
Patient	74	34.85	19.03	-

* T-test; □ Multiple comparisons are not performed because only two groups are compared

Table 4 - Burnout levels using the Copenhagen Burnout Inventory - CBI among healthcare professionals working in oncology service (continuous values)

Burnout CBI (continuous)	N	Mean	Standard deviation	P value*□
Personal	245[1]	48.98	17.59	-
Work	244[2]	46.97	18.61	-
Patient	236[3]	33.42	20.45	-

* T-test; □ Multiple comparisons were not performed, as only two groups were compared; 1 - 18 missing; 2 - 19 missing; 3 - 27 missing

When comparing healthcare professionals from the two groups, it was found that slightly more than 50% exhibited high levels of personal burnout, though this difference was not statistically significant (53.5% in oncology vs. 56.8% in palliative care, p = 0.619).

A similar pattern was observed for work related burnout (50.8% in oncology vs. 54.1% in palliative care, p = 0.626).

Regarding patient-related burnout, high levels were found in approximately 25% of professionals in both groups (24.6% in oncology vs. 27.0% in palliative care, p = 0.672) (Table 5).

Table 5 - Analysis between professionals working in oncology and palliative care services according to burnout levels (Copenhagen Burnout Inventory/CBI categorical values)

Burnout CBI (Categorical)		**Working in oncology service (n=245)**	**Working in palliative care service (n=74)**	**p***
Personal, n (%)	No (<50)	114 (46.5)	32 (43.2)	0.619
	Yes (≥ 50)	131 (53.5)	42 (56.8)	
Related with work, n (%)	No (<50)	120 (49.2)	34 (45.9)	0.626
	Yes (≥ 50)	124 (50.8)	40 (54.1)	
Related with patient, n (%)	No (<50)	178 (75.4)	54 (73.0)	0.672
	Yes (≥ 50)	58 (24.6)	20 (27.0)	

* The comparison between the two groups was carried out using the asymptotic chi-square test because the assumptions for its use were satisfied

A one-way MANOVA was performed to examine the differences between the two groups across the three burnout dimensions of the MBI (continuous variables) (Tables 6-7). Since the assumption of homogeneity of covariance matrices was not violated (p = 0.966), the Wilks' Lambda test was used to compare the groups on the three dimensions. The analysis revealed no significant differences between the groups (F: p = 0.190; partial η^2 = 0.017). Given the absence of differences, individual tests for each burnout dimension were not conducted (Tables 6-7).

Table 6 - Burnout levels using the Maslach Burnout Inventory MBI - among healthcare professionals working in palliative care (continuous values)

Burnout MBI (continuous)	N	Mean	Standard deviation	p*	p □
Exhaustion	67[1]	21.16	10.57	-	-
Depersonalization	67[1]	6.37	4.63	-	-
Personal accomplishment	67[1]	35.79	7.35	-	-

* T-test; □ Multiple comparisons were not conducted since only two groups were compared; 1 - 7 missing

Table 7 - Burnout levels using the Maslach Burnout Inventory MBI - among healthcare professionals working in oncology service (continuous values)

Burnout MBI (continuous)	N	Mean	Standard deviation	p*	p □
Exhaustion	223[1]	21.73	11.62	-	-
Depersonalization	218[2]	5.37	5.10	-	-
Personal accomplishment	217[3]	35.22	8.39	-	-

* T-test; □ Multiple comparisons were not performed as only two groups were compared; 1 - 40 missing; 2 - 45 missing; 3 - 46 missing

There were no statistically significant differences between the two groups in any dimension of the MBI (categorical variables).

Approximately 35% of participants in each group exhibited medium to high levels of emotional exhaustion, while less than 30% showed low levels (p=0.743) (Table 8). Regarding depersonalization, more than 50% of participants in each group reported low levels, with 20% to 25% displaying medium to high levels (p=0.435) (Table 8). The same lack of statistically significant differences was observed between the groups in the personal accomplishment dimension (p=0.865), where the distribution was very similar (Table 8).

The prevalence of burnout, characterized by high emotional exhaustion and depersonalization and low personal accomplishment at work, was 8.8% (28 participants) in the total sample and 4.05% (3 participants) in the subgroup of professionals who work with patients in palliative care.

Table 8 - Analysis between professionals working in oncology and palliative care services according to burnout levels (Maslach Burnout Inventory/MBI categorical values)

Burnout MBI (Categorical)		Working in general services (n=245)	Working in palliative care (n=74)	p*
Exhaustion, n (%)	Low (≤13)	65 (2911)	19 (28.4)	0.743
	Medium (14-26)	79 (35.4)	27 (40.3)	
	High (≥ 27)	79 (35.4)	21 (31.3)	
Depersonalization, n (%)	Low (≤ 5)	130 (59.6)	34 (50.7)	0.435
	Medium (6-9)	46 (21.1)	17 (25.4)	
	High (≥10)	42 (19.3)	16 (23.9)	
Personal accomplishment, n (%)	Low (≤ 33)	80 (36.9)	23 (34.3)	0.865
	Medium (34-39)	64 (29.5)	22 (32.8)	
	High (≥ 40)	73 (33.6)	22 (32.8)	

* The comparison between the two groups was conducted using the asymptotic chi-square test, as the assumptions for its use were satisfied.

To examine the differences between the two groups, a comparative analysis was performed on the three dimensions of the Adult Attachment Scale (AAS-R) using a MANOVA test. Since the homogeneity of the variance-covariance matrix was not rejected (p = 0.70), the Wilks 'Lambda test was applied to compare the groups across the three dimensions. The results revealed no significant differences between the groups (F: p = 0.731; partial η2 = 0.004). Consequently, individual tests for each dimension were not conducted (Tables 9-10).

Table 9 - Attachment levels using Adult Attachment Scale among professionals working in palliative care

AAS - R (continuous)	N	Mean	Standard deviation	p*	p**
Anxiety	74	2.14	0.71	-	-
Closeness	74	3.61	0.54	-	-
Dependency	74	3.29	0.56	-	-

* T - test; ** Multiple comparisons were not performed as only two groups were compared

Table 10 - Attachment levels using Adult Attachment Scale among professionals working in general services

AAS - R (continuous)	N	Mean	Standard deviation	p*	p**
Anxiety	245[1]	2.13	0.69	-	-
Closeness	245[1]	3.62	0.48	-	-
Dependency	245[1]	3.23	0.55	-	-

* T - test; ** Multiple comparisons were not conducted because only two groups were compared; 1 - 18 missing

Table 11 - Attachment levels using Adult Attachment Scale among professionals working in palliative care

AAS-R (Categorical)		Working in Palliative care (n=74)	Working in Oncology Services *† (n=245)	p**
Anxiety, n(%)	Low (< 3)	66 (89.2)	222 (90.6)	0.705
	Medium (3-3.49)	4 (5.4)	13 (5.3)	
	High (≥3.5)	4 (5.4)	10 (4.1)	
Closeness, n (%)	Low (< 3)	10 (13.5)	26 (10.6)	0.407
	Medium (3-3.49)	19 (25.7)	58 (23.7)	
	High (≥3.5)	45 (60.8)	161 (65.7)	
Dependency, n (%)	Low (< 3)	26 (35.1)	97 (39.6)	0.293
	Medium (3-3.49)	16 (21.6)	61 (24.9)	
	High (≥3.5)	32 (43.3)	87 (35.5)	

* Oncology, Surgery and Radiotherapy Services; † Missing - 18

There were no statistically significant differences between the two sample groups with regard to the various dimensions of the AAS-R. Most professionals have low levels of anxiety (89.2% of professionals working in PC vs 90.6% of professionals in Oncology Services in general); on the other hand, regarding comfort with proximity, most professionals have high levels (60.8% of professionals working in PC vs 65.7% of professionals in Oncology Services in general). Finally, regarding comfort with dependence, it is also observed that most professionals have high levels in this evaluation parameter (Table 11).

4.3. Correlation between burnout and attachment scales

The author begins by examining the association between the scales across the total sample (Table 12).

The results showed that all correlations were positive and statistically significant across all dimensions of the CBI (yellow cells) ($p < 0.001$) (Table 12). For the MBI (blue cells), we found that higher emotional exhaustion scores were positively correlated with higher depersonalization scores ($p < 0.001$) (Table 12). Additionally, personal accomplishment was negatively correlated with the other dimensions ($p < 0.001$) (Table 12).

Regarding the Adult Attachment scale (red cells), higher anxiety scores were negatively associated with both comfort with closeness and comfort with dependence (Table 12). Furthermore, comfort with dependence and closeness were positively correlated with each other (Table 12).

When correlating the burnout scales (green cells), we observed that high levels of burnout in all CBI dimensions were associated with high levels of emotional exhaustion and depersonalization, as well as low levels of personal accomplishment ($p < 0.001$) (Table 12).

In the statistical analysis of correlations between the various dimensions of the CBI scale and the attachment scale (orange cells), we found that higher burnout scores in each of the CBI dimensions were associated with higher anxiety scores and lower comfort with both proximity and dependence ($p < 0.001$) (Table 12).

Regarding the relationship between the attachment scale and the MBI (gray cells), we observed that higher scores of emotional exhaustion and depersonalization were linked to higher anxiety scores and lower comfort with closeness and dependence ($p < 0.001$) (Table 12). Conversely, higher levels of personal accomplishment were associated with lower anxiety levels and higher comfort with closeness and dependence ($p < 0.001$) (Table 12).

Table 12 - Correlation between Burnout and Attachment scales in the total sample (oncology and palliative healthcare professionals

Pearson Correlation Coefficient*									
Scales	**CBI Personal**	**CBI Work**	**CBI Patient**	**MBI EE**	**MBI DP**	**MBI PA**	**AAS - R Anxiety**	**AAS - R Closeness**	**AAS - R Dependency**
CBI Personal	1.000	0.825	0.551	0.754	0.374	-0.333	0.293	-0.185	-0.314
CBI Work		1.000	0.647	0.801	0.470	-0.382	0.297	-0.209	-0.304
CBI Patient			1.000	0.637	0.470	-0.456	0.246	-0.215	-0.315
MBI EE				1.000	0.486	-0.350	0.305	-0.152	-0.279
MBI DP					1.000	-0.352	0.209	-0.164	-0.299
MBI PA						1.000	-0.238	0.367	0.209
AAS-R Anxiety							1.000	-0.271	-0.481
AAS - R Closeness								1.000	0.282
AAS - R Dependency									1.000

CBI - Copenhagen Burnout Inventory; MBI - Maslach Burnout Inventory; EE - Emotional Exhaustion; DP - Depersonalization; PA - Personal accomplishment; AAS - R - Adult Attachment Scale

* All correlations presented in this table are significant with $p < 0.001$

Subsequently, the author decided to investigate whether there was any correlation between the two burnout scales and the attachment scale in the group of professionals working with patients in palliative care (Table 13).

It was confirmed that these correlations were present across all dimensions of the CBI (yellow cells), and all were positive and statistically significant ($p < 0.001$). That is, the higher the levels in one dimension, the higher they were in the others (Table 13).

Regarding the behavior of the MBI dimensions (blue cells), it was observed that higher emotional exhaustion scores were positively associated with higher depersonalization scores ($p < 0.001$) (Table 13). For depersonalization, it was found that higher scores were negatively correlated with personal accomplishment ($p < 0.001$) (Table 13). No statistical relationship was found between emotional exhaustion and personal accomplishment ($p > 0.001$) (Table 13).

Regarding the Adult Attachment Scale (cells in red), it was observed that higher anxiety scores were negatively correlated with comfort with dependence scores (negative coefficients, $p <$

0.001) (Table 13). A positive association was identified between comfort with dependence and closeness ($p < 0.05$) (Table 13). However, no significant relationship was found between anxiety and comfort with proximity ($p > 0.05$) (Table 13).

In the analysis of both burnout scales (green cells), it was determined that higher scores in personal and professional burnout were associated with elevated emotional exhaustion scores and reduced personal accomplishment scores ($p < 0.001$) (Table 13). Additionally, a significant association was found between patient-related burnout scores and emotional exhaustion scores ($p < 0.001$) (Table 13).

As depicted in Table 13, when correlating the dimensions of the Copenhagen Burnout Inventory (CBI) with those of the Adult Attachment Scale in the group of professionals working with palliative care patients (orange cells), it was noted that higher scores for both personal and professional burnout were linked to higher anxiety scores ($p < 0.001$). Furthermore, increased personal burnout scores were associated with lower comfort with dependence scores ($p < 0.001$) (Table 13).

No significant associations ($p > 0{,}001$) were identified between the burnout dimensions of the Maslach Burnout Inventory (MBI) and the attachment scale dimensions (gray cells) (Table 13).

Table 13 - Correlation between Burnout and Attachment scales in the group of professionals working in palliative care

Pearson Correlation Coefficient									
Scales	**CBI Personal**	**CBI Work**	**CBI Patient**	**MBI EE**	**MBI DP**	**MBI PA**	**AAS - R Anxiety**	**AAS - R Closeness**	**AAS-R Dependency**
CBI Personal	1.000	**r=0.805 (p=0.000)**	**r=0.534 (p=0.000)**	**r=0.633 (p=0.000)**	r=0.268 (p=0.028)	**r=-0.437 (p=0.000)**	**r=0.541 (p=0.000)**	r=-0.292 (p=0.011)	**r=-0.407 (p=0.000)**
CBI Work		1,000	**r=0.691 (p=0.000)**	**r=0.740 (p=0.000)**	r=0.351 (p=0.004)	**r=-0.453 (p=0.000)**	**r=0.412 (p=0.000)**	r=-0.239 (p=0.04)	r=-0.327 (p=0.004)
CBI Patient			1.000	**r=0.669 (p=0.000)**	r=0.336 (p=0.005)	r=-0.380 (p=0.002)	r=0.306 (p=0.008)	r=-0.235 (p=0.044)	r=-0.389 (p=0.001)
MBI EE				1.000	**r=0.438 (p=0.000)**	r=-0.389 (p=0.001)	r=0.408 (p=0.001)	r=-0.231 (p=0.06)	r=-0.263 (p=0.031)
MBI DP					1.000	**r=-0.434 (p=0.000)**	r=0.193 (p=0.118)	r=-0.267 (p=0.029)	r=-0.396 (p=0.001)
MBI PA						1.000	r=-0.218 (p=0.076)	r=0.395 (p=0.001)	r=0.400 (p=0.001)
AAS-R Anxiety							1.000	r=-0.323 (p=0.005)	**r=-0.543 (p=0.000)**
AAS - R Closeness								1.000	r=0.327 (p=0.004)
AAS - R Dependency									1.000

CBI - Copenhagen Burnout Inventory; MBI - Maslach Burnout Inventory; EE - Emotional Exhaustion; DP - Depersonalization; PA - Personal accomplishment; AAS - R - Adult Attachment Scale

As we can see in table 14, there were no statistically significant differences between the two sample groups regarding attachment styles. The majority of professionals in both groups (Palliative Care vs. Oncology in general) have an unclassifiable style (intermediate between different styles), with a percentage of 67.5% vs. 69.8%. On the other hand, the secure style appears in 27% of palliative care professionals and in 25.7% of professionals working in oncology Services.

Table 14 - Attachment styles in the sample

Attachment styles	Working in Palliative care (n=74)	Working in Oncology Services *† (n=245)	p**
Secure, n(%)	20 (27)	63 (25.7)	0.332
Anxious/preoccupied, n(%)	0 (0)	0 (0)	
Avoidant, n(%)	3 (4.1)	11 (4.5)	
Fearful, n(%)	1 (1.4)	0 (0)	
Unclassifiable, n(%)	50 (67.5)	171 (69.8)	

* Oncology, Surgery and Radiotherapy Services; † Missing - 18; ** Chi-square test

As we can see in Table 15, regarding emotional exhaustion, the secure style shows low to moderate levels, while the unclassifiable styles show moderate to high levels. Regarding depersonalization, the secure style shows low to moderate levels, while the unclassifiable styles show equally low levels. Regarding personal accomplishment, the secure style shows high levels, while the unclassifiable styles show low to moderate levels.

It was also found that of the 28 professionals who presented burnout (8.8%), 21 presented an unclassifiable style, 4 a secure style, 2 an avoidant style, 1 a fearful style, and none presented an anxious style.

Table 15 - Attachment Style and burnout in total sample

Attachment styles			Secure	Anxious/ preoccupied	Avoidant	Fearful	Unclassifiable	p**
Burnout MBI (Categorical)	Exhaustion, n (%)	Low (≤13)	35 (43.2)	0 (0)	3 (21.4)	0 (0)	50 (24.4)	0.029
		Medium (14-26)	28 (34.6)	0 (0)	6 (42.9)	0 (0)	76 (37.1)	
		High (≥ 27)	18 (22.2)	0 (0)	5 (35.7)	1 (100)	79 (38.5)	
		Total	*81*[1]	*0*	*14*	*1*	*205*[2]	
	Depersonalization, n (%)	Low (≤ 5)	55 (68.75)	0 (0)	7 (53.8)	0 (0)	106 (52.7)	0.015
		Medium (6-9)	19 (23.75)	0 (0)	3 (23.1)	0 (0)	43 (21.4)	
		High (≥10)	6 (7.5)	0 (0)	3 (23.1)	1 (100)	52 (25.9)	
		Total	*80*[3]	*0*	13[4]	1	201[5]	
	Personal accomplishment, n (%)	Low (≤ 33)	22 (27.5)	0 (0)	9 (69.2)	1 (100)	77 (38.5)	0.001
		Medium (34-39)	18 (22.5)	0 (0)	1 (7.7)	0 (0)	69 (34.5)	
		High (≥ 40)	40 (50)	0 (0)	3 (23.1)	0 (0)	54 (27)	
		Total	*80*[3]	*0*	*13*[4]	*1*	*200*[6]	

1 - 2 missing; 2 - 16 missing; 3 - 3 missing; 4 - 1 missing; 5 - 20 missing; 6 - 21 missing. ** Chi-square test

Table 16 shows the behavior of burnout and attachment style in the subgroup of professionals who stated they worked with patients in palliative care. We see that with regard to emotional exhaustion and depersonalization, no statistically significant differences were found between the different attachment styles. With regard to personal accomplishment, high levels were observed in the secure style, while low to moderate levels were observed in the unclassifiable styles.

Of the 3 professionals who presented burnout (4.05%), one presented a secure style, another a fearful style, and another an unclassifiable style.

Table 16 - Attachment Style and burnout in Palliative Care

Attachment styles			Secure	Anxious/preoccupied	Avoidant	Fearful	Unclassifiable	p**
Burnout MBI (Categorical)	**Exhaustion, n (%)**	Low (≤13)	7 (35)	0 (0)	1 (33.3)	0 (0)	11 (25.6)	0.490
		Medium (14-26)	10 (50)	0 (0)	1 (33.3)	0 (0)	16 (37.2)	
		High (≥ 27)	3 (1.5)	0 (0)	1 (33.3)	1 (100)	16 (37.2)	
		Total	*20*	*0*	*3*	*1*	*43[1]*	
	Depersonalization, n (%)	Low (≤ 5)	12 (60)	0 (0)	2 (66.6)	0 (0)	20 (46.5)	0.342
		Medium (6-9)	6 (30)	0 (0)	0 (0)	0 (0)	11 (25.6)	
		High (≥10)	2 (10)	0 (0)	1 (33.3)	1 (100)	12 (27.9)	
		Total	*20*	*0*	*3*	*1*	*43[1]*	
	Personal accomplishment, n (%)	Low (≤ 33)	4 (20)	0 (0)	3 (100)	1 (100)	15 (34.9)	0.036
		Medium (34-39)	5 (25)	0 (0)	0 (0)	0 (0)	17 (39.5)	
		High (≥ 40)	11 (55)	0 (0)	0 (0)	0 (0)	11 (25.6)	
		Total	*20*	*0*	*3*	*1*	*43[1]*	

4.4. Determination of potential burnout predictors/patterns

The two burnout scales and the attachment scale were correlated with several socio-demographic variables, including age, weekly working hours, actual working time with palliative care patients, and the number of hours healthcare professionals were exposed to suffering (variable calculated for this purpose) (Tables 17-20).

Burnout predictors	Descriptives
Months working in healthcare, median [Q1; Q3], min-max	168 [108;252], 0-492
Months working in Palliative care, median [Q1; Q3], min-max	36 [0;84], 0-132
Hours exposed to suffering, median [Q1; Q3], min-max	35 [30;40], 0-42

Table 17 - Burnout predictors/patterns (descriptive statistics)

It was found that no statistically significant correlation existed between workload, actual working time in the respective area, and the nine dimensions of burnout and attachment ($p > 0.05$) (Tables 17-20).

The older the participants, the lower the level of emotional exhaustion ($p < 0.001$) and depersonalization ($p < 0.05$).

However, the number of hours per week in which professionals were exposed to suffering was positively correlated with three dimensions: personal burnout, professional burnout, and emotional exhaustion ($p < 0.05$) (Tables 17-18). None of the remaining six dimensions showed statistically significant correlations ($p > 0.05$) (Tables 17-20).

Table 18- Correlation between CBI scale with sociodemographic and work characteristics of the sample

Pearson Correlation Coefficient					
	Age	**Weekly workload**	**Months working in healthcare**	**Months working in palliative care**	**Hours exposed to suffering**
CBI Personal	r=-0.019 (p=0.735)	r=-0.063 (p=0.248)	r=-0.005 (p=0.934)	r=-0.027 (p=0.817)	**r=0.163 (p=0.007)**
CBI Work	r=-0.038 (p=0.492)	r=-0.011 (p=0.847)	r=-0.005 (p=0.934)	r=0.014 (p=0.904)	**r=0.153 (p=0.012)**
CBI Patient	r=-0.072 (p=0.200)	r=-0.058 (p=0.303)	r=-0.039 (p=0.498)	r=-0.027 (p=0.821)	r=-0.017 (p=0.776)

CBI - Copenhagen Burnout Inventory

Table 19 - Correlation between MBI scale with sociodemographic and work characteristics of the sample

Pearson Correlation Coefficient					
	Age	**Weekly workload**	**Months working in healthcare**	**Months working in palliative care**	**Hours exposed to suffering**
MBI EE	**r=-0.209 (p < 0,01)**	r=-0.006 (p=0.922)	r=0.019 (p=0.752)	r=0.045 (p=0.718)	**r=0.148 (p=0.019)**
MBI DP	**r=-0.159 (p=0.011)**	r=0.027 (p=0.650)	r=-0.063 (p=0.289)	r=-0.122 (p=0.325)	r=0.083 (p=0.191)
MBI PA	r=0.036 (p=0.534)	r=0.041 (p=0.485)	r=0.039 (p=0.514)	r=-0.159 (p=0.199)	r=-0.089 (p=0.161)

MBI - Maslach Burnout Inventory; EE - Emotional Exhaustion; DP - Depersonalization; PA - Personal accomplishment

Table 20 - Correlation between AAS-R scale with sociodemographic and work characteristics of the sample

Pearson Correlation Coefficient					
	Age	**Weekly workload**	**Months working in healthcare**	**Months working in palliative care**	**Hours exposed to suffering**
AAS - R Anxiety	r=-0,068 (p=0,215)	r=0,012 (p=0,831)	r=-0,058 (p=0,306)	r=-0,106 (p=0,369)	r=0,048 (p=0,434)
AAS - R Closeness	r=-0,038 (p=0,484)	r=-0,065 (p=0,235)	r=0,079 (p=0,162)	r=-0,023 (p=0,843)	r=0,046 (p=0,449)
AAS - R Dependency	r=-0,060 (p=0,272)	r=0,051 (p=0,352)	r=-0,052 (p=0,361)	r=-0,153 (p=0,194)	r=-0,060 (p=0,323)

AAS - R - Adult Attachment Scale

4.5. Assessment of Professional Quality of Life

No statistically significant differences were observed in any of the dimensions of the ProQOL-5 scale between the two sample groups ($p > 0.05$), as demonstrated in Tables 21 and 22.

In both groups, approximately three-quarters of the professionals reported average satisfaction with compassion, with high levels found in about 17-20% and low levels in less than 6% ($p = 0.794$) (Table 22).

For the burnout dimension (Table 21), medium levels were observed in about 96% of the cases, while low and high levels were seen in fewer than 4% ($p = 0.618$).

Similarly, no statistically significant differences were noted in relation to secondary traumatic stress ($p = 0.625$), with approximately half of the sample displaying medium and low levels, and fewer than 1.2% in both groups reporting high levels (Tables 21 and 22).

Table 21 - Professional quality of life of health professionals working in oncology and palliative care services (PROQOL - continuous variables)

PROQOL (continuous variables)	Working in Health Service (n=263)*	Working in Palliative care (n=74)	P-value**
PROQOL (Compassion satisfaction), median [Q1; Q3], min-max	36 [33; 40], 0-50	37.5 [33;41], 0-50	0.552
PROQOL (Burnout), median [Q1; Q3], min-max	31 [28;34], 0-45	31 [28;34], 0-43	0.993
PROQOL (Secondary Traumatic Stress), median [Q1; Q3], min-max	23 [18;28], 0-48	23 [19.75; 27.25], 0-35	0.701
PROQOL (total score), median [Q1; Q3], min-max	90 [83.5; 98], 0-127	92 [86; 98], 0-118	0.664

* Missing – 18; ** Mann-Whitney test

Table 22 - Professional quality of life of health professionals working in oncology and palliative care services (PROQOL - categorical variables)

PROQOL (categorical variables)		Working in Health Service (n=263)*	Working in Palliative care (n=74)	P - value
PROQOL (Compassion satisfaction), n (%)	Low	14 (5.7)	3 (4,0)	0.794
	Average	187 (76.3)	56 (75,6)	
	High	44 (17.9)	15 (20.2)	
	Total	*245*	*74*	
PROQOL (Burnout), n (%)	Low	9 (3,6)	2 (2,7)	0.618
	Average	235 (95,9)	71 (95,9)	
	High	1 (0,4)	1 (1,3)	
	Total	*245*	*74*	
PROQOL (Secondary Traumatic Stress), n (%)	Low	117 (47,7)	35 (47,2)	0.625
	Average	125 (51,0)	39 (52,7)	
	High	3 (1,2)	0 (0,0)	
	Total	*245*	*74*	

* Missing – 18

4.6. Correlation between Burnout and Professional quality of life

As shown in Table 23, the correlations between the dimensions of the ProQOL-5 and MBI scales were statistically significant across the total sample.

A negative correlation was observed between satisfaction with compassion (ProQOL-5) and emotional exhaustion (MBI), meaning that lower satisfaction with compassion was associated with greater emotional exhaustion.

Additionally, a higher prevalence of burnout (ProQOL-5) corresponded to higher levels of emotional exhaustion and depersonalization, as well as poorer personal fulfillment.

Coversely, a higher level of Secondary Traumatic Stress (ProQOL-5) was associated with higher emotional exhaustion and depersonalization, while a poorer perception of personal fulfillment was noted.

All correlations were statistically significant, with a p-value < 0.05.

Table 23 – Correlation between ProQOL-5 and MBI scales in the sample

	MBI EE (p - value)	***MBI DP (p - value)***	***MBI PA (p-value)***
Compassion Satisfaction	**- 0.501 (< 0.001)**	**- 0.498 (0.001)**	**0.546 (< 0.001)**
Burnout	**0.690 (< 0.001)**	**0.536 (< 0.001)**	**- 0.508 (< 0.001)**
Secondary Traumatic Stress	**0.449 (<0.001)**	**0.337 (< 0.001)**	**-0.274 (<0.001)**

Table 24 – Correlation between ProQOL-5 and MBI scales in the professional working with palliative patients

	MBI EE (p - value)	***MBI DP (p - value)***	***MBI PA (p-value)***
Compassion Satisfaction	**-0.452 (< 0.001)**	**- 0.403 (0.001)**	**0.543 (0.001)**
Burnout	**0.658 (< 0.001)**	**0.504 (0.001)**	**- 0.587 (0.001)**
Secondary Traumatic Stress	**0.499 (< 0.001)**	**0.282 (0.031)**	- 0.194 (0.142)

Table 24 presents the associations between the dimensions of the ProQOL-5 scale and the MBI dimensions in healthcare professionals working with patients in the palliative phase.

It was observed that lower levels of satisfaction with compassion were significantly correlated with greater emotional exhaustion and depersonalization (both with $p < 0.001$).

Higher satisfaction scores were associated with a greater sense of personal fulfilment ($p < 0.001$). Additionally, high levels of burnout on the ProQOL-5 scale showed a positive association with emotional exhaustion and depersonalization, while negatively correlating with personal fulfilment ($p < 0.001$).

Lower levels of Secondary Traumatic Stress were associated with lower emotional exhaustion and depersonalization ($p < 0.001$ and $p = 0.031$, respectively).

No statistically significant association was found between Secondary Traumatic Stress and personal fulfilment ($p = 0.142$).

5. Discussion

Working in the context of Oncology and Palliative Care entails specificities and needs that impose an increased dedication and effort from healthcare professionals compared to other contexts[199].

In this way, these professionals are exposed to suffering and adverse environments, sometimes with difficult decisions to make, particularly with ethical implications[199]. Hence, they constitute a vulnerable population to burnout[199].

The main objective of this study was to assess the relationship between attachment style and the risk of burnout in a population of healthcare professionals working in Oncology and Palliative care.

Thus, the authors correlated the three scales used in the sample without differentiating between professional groups, as well as, in the subgroup of professionals linked to Palliative Care.

First of all, in the sample, when correlating the two burnout scales (CBI and MBI), it was found that elevated levels of personal, work-related, and patient-related burnout were statistically significantly associated with emotional exhaustion, depersonalization, and low personal fulfillment ($p < 0.001$).

When correlating the CBI scale with the AAS-R, it became evident that elevated scores in the three dimensions of the CBI (personal, work-related, and patient-related burnout) corresponded to increased levels of anxiety and lower levels of discomfort with proximity and dependence ($p < 0.001$).

Similarly, when correlating the dimensions of the MBI with the AAS-R, high levels of emotional exhaustion and depersonalization were found to correlate with heightened anxiety and reduced comfort with closeness and dependency ($p < 0.001$). Conversely, higher levels of personal accomplishment were associated with lower anxiety levels and greater comfort with closeness and dependency ($p < 0.001$).

On the other hand, it was found that high levels of personal and work-related burnout (evaluated with CBI) are associated with high scores of emotional exhaustions, along with decreased personal fulfillment ($p < 0.001$) in the subgroup of healthcare professionals with Palliative Care.

In these professionals, the correlation between the dimensions of the CBI and the attachment scale revealed that higher personal and work-related burnout scores corresponded to higher levels of anxiety ($p < 0.001$).

Furthermore, higher personal burnout scores were correlated with decreased comfort with dependence ($p < 0.001$). However, no statistically significant association was observed between the MBI burnout dimensions and the attachment scale ($p > 0.05$) in the population of professionals linked to Palliative Care.

In the total sample, it was found that most professionals presented a style that could not be classified, followed by the secure style.

During this study, the authors sought to validate these scales (CBI, MBI and AAS-R) in the subpopulation of professionals who work specifically in the context of Palliative Care. It is important to note that the sample size may have influenced this outcome. It was calculated that for a correlation coefficient of 0.193, a significance level of 5%, and a power of 80%, a minimum sample size of 208 participants would be required, which exceeds the sample size of this study.

In the literature, there are few studies correlating burnout and attachment in healthcare professionals, particularly in this context (Oncology and Palliative Care).

Lenzo et al.explored the interaction between burnout risk and attachment styles among palliative care professionals[11]. Their study revealed correlations between the dimensions of emotional exhaustion and personal fulfillment with several attachment domains[11]. Specifically, high levels of emotional exhaustion were associated with increased discomfort with proximity, heightened concern about relationships, and a need for approval, all of which are indicative of anxious attachment[11].

The results of this study indicate, in fact, that the attachment style could contribute to explaining the burnout syndrome among Oncology and Palliative Care healthcare professionals. However, it should be noted that burnout is a complex process that appears to depend on personal and environmental factors.

This work has the advantage of using, in an innovative way, two burnout scales (particularly the CBI scale), in addition to trying to correlate the level of burnout and attachment in professionals exposed to suffering, such as those working in Oncology and Palliative Care.

Another objective of this study was to evaluate the risk of burnout among both professional groups (those working with or without patients in palliative care). Upon comparison of the two groups, no significant differences were found in any of the dimensions of the CBI or MBI scales.

Approximately half of the individuals in each group exhibited high levels of burnout across the dimensions of the CBI, although without statistical significance (personal burnout: 53.5% vs. 56.8%, p = 0.619; work-associated burnout: 50.8% vs. 54.1%, p = 0.626). Burnout associated with patient care was less prominent, affecting only a quarter of the participants (24.6% vs. 27.0%, p = 0.672).

A study conducted during the COVID-19 pandemic by Gonçalves et al. examined burnout among physicians and nurses in palliative care units using the CBI[85,200]. Among physicians, the reported burnout rates across the three dimensions—work-associated, personal, and patient-associated—were 52%, 43%, and 21%, respectively[85]. In contrast, for nurses, the prevalence rates were 46%, 44%, and 22%, respectively[200]. It is important to note that this research was conducted during a particularly challenging epidemiological period—the COVID-19 pandemic—unlike the current study, which was conducted before the onset of the pandemic.

In the literature, the prevalence rates of burnout in oncology and palliative care settings vary across studies, with the MBI generally being the preferred tool for assessment.

As previously mentioned, healthcare professionals working with patients in palliative care represented a minority in this study. Significant differences were observed between the two groups with regard to age, years of professional experience, number of night shifts, and type of employment relationship ($p < 0.05$). Professionals in general oncology services were, on average, 2 years older, worked fewer night shifts, and had greater job stability.

In this study, medium to high levels of emotional exhaustion were observed in approximately 35% of participants in both groups (p = 0.743). Depersonalization was observed at medium to high levels in approximately 20%–25% of participants (p = 0.435). Regarding personal fulfilment, no significant differences were found, with a relatively homogeneous distribution across the three levels (low, medium, and high) (p = 0.865).

HaGani et al conducted a systematic review on burnout among oncology professionals[12]. They reported average prevalence rates for the three dimensions of the MBI: approximately 32% for emotional exhaustion, 21-26% for depersonalization, and 25-26% for personal accomplishment[12].

In another study, Dijxhoorn et al.performed a systematic review of the literature on burnout prevalence among palliative healthcare professionals[15]. Their findings, based on MBI

assessments, revealed a wide range of prevalence rates: high emotional exhaustion ranging from 3% to 49%, high depersonalization from 1% to 48%, and low personal accomplishment from 3% to 85%[15]. The prevalence of burnout within this professional group varied considerably, with reported rates ranging from 3% to 66%, though most studies indicated a prevalence of 18% or higher[15].

Gama et al noted lower levels of burnout symptoms among nurses working in palliative care units compared to those in other departments[201]. Specifically, nurses in palliative care units exhibited lower levels of emotional exhaustion when compared to their counterparts in oncology (mean = 13.03 vs. mean = 18.4, $p < 0.008$), hematology (mean = 13.03 vs. mean = 19.03, $p < 0.001$), and internal medicine (mean = 13.03 vs. mean = 16.42, $p < 0.009$)[201].

Similarly, Pereira et al found that healthcare professionals working in intensive care and other medical units experienced higher levels of burnout compared to those working in palliative care settings[7,202].

The findings from this study regarding the MBI dimensions align with the existing literature. We observed no significant differences between the two groups, suggesting that there is no higher prevalence of burnout among professionals working in palliative care.

So, the literature indicates that the prevalence of stress among healthcare professionals working in oncology services is high, although not always higher than in other clinical areas[203].

On the other hand, the authors decided to assess the attachment patterns of healthcare professionals working in oncology and palliative care settings. A comparative analysis was conducted to examine differences between these two groups based on the dimensions of the AAS-R. The results revealed no statistically significant differences between the two groups.

Regarding the attachment scale, in the three dimensions assessed (anxiety, closeness and dependency), the professionals presented median and similar values among themselves, which made it difficult to establish attachment patterns between them (applying only this scale).

Attachment style plays a crucial role in explaining how healthcare professionals, particularly in emotionally charged environments such as palliative care, answer to the suffering of terminally ill patients and their families[204]. A secure attachment style enables healthcare providers to exhibit assertive behaviors that align with the specific emotional needs of these patients[204].

Although the majority of the existing literature predominantly focuses on patients' attachment styles, this study aimed to investigate the potential effect of Oncology and Palliative healthcare professionals' attachment styles in the development of burnout.

In addition to these points, the authors also tried to identify potential predictors of burnout among participants in both groups. For that, they examined whether there were significant correlations between the burnout scales and various sociodemographic variables, including age, number of hours worked per week, and actual working time at the health institution.

It was found that the number of hours of exposure to suffering (variable calculated for this purpose), was positively associated with personal burnout, work-related burnout, and emotional exhaustion ($p < 0.05$).

Similar studies have identified other risk factors for burnout, such as lack of control over workload, insufficient time for documentation, ineffective teamwork, chaotic work environments, and misalignment of values between employees and leadership[205].

Yates et al conducted a systematic review on burnout in oncology and highlighted several contributing risk factors, including excessive work hours, a high number of patients, exposure to patient suffering, psychosomatic disorders, and the use of anxiolytics[206]. Kamal et al studied burnout in individuals working in hospices and palliative care at home, identifying additional risk factors, including working in smaller teams, long working hours, being under 50 years of age, and working late into the week[207]. Other causes of burnout cited included a tense atmosphere between teams, particularly between generalists and specialists in palliative care, as well as increasing job demands[207].

Gómez-Urquiza et al conducted a meta-analysis on the prevalence of burnout among oncology and palliative care nurses, identifying both occupational and psychological factors associated with burnout[208,209].

Occupational factors such as workload, commitment, work environment, work-life balance, the type of relationship with patients and families, and the ability to cope with death and suffering were found to be significant contributors to burnout[208,209]. Psychological factors, including personality traits such as extroversion, neuroticism, and meaning in life, were also noted as important influences[208,209].

Pereira et al., in their systematic review on burnout in palliative care, identified both protective and risk factors[7]. Risk factors included inadequate communication skills, work pressure,

difficulties in delivering bad news, challenges in managing pain and suffering, and issues related to dealing with death[7]. Additionally, factors such as the duration of professional experience and patients' economic resources for treatment were also identified as contributors to burnout[7].

In this sample, the number of hours per week exposed to suffering emerged as the most significant predictor of burnout. This finding closely aligns with previous studies discussed. There is growing evidence supporting the idea that mindfulness practices, regular physical activity, proper sleep hygiene, and the pursuit of happiness significantly reduce burnout among healthcare professionals[13].

Another objective of this study was to characterize the professional quality of life of healthcare professionals working with cancer patients, some of whom are involved in palliative care, and to examine the potential correlation between professional quality of life and burnout. To achieve this, the ProQol-5 Professional Quality of Life scale was applied.

The comparative analysis did not reveal significant differences between the two groups across the three dimensions of the scale. In both groups, moderate levels of satisfaction were most prevalent, with over three-quarters of professionals (~76%) reporting moderate satisfaction with compassion, approximately 96% experiencing burnout, and around 50% exhibiting secondary traumatic stress.

Maaidah Algamdi conducted a systematic review in 2022, which included fifteen studies and a total sample of 2,509 participants[210]. This review found prevalences of 22.89% for compassion satisfaction (CS), 62.79% for burnout (BO), and 66.84% for secondary traumatic stress (STM)[210].

Gerber et al showed varying levels of professional satisfaction with low to moderate BO and STM scores and moderate to high CS scores in professionals involved in pediatric palliative care[211].

Arimon - Pagès et al conducted a multicenter study on compassion fatigue and emotional impact among 297 nurses working with oncology patients[212]. They found that 18.2% of participants reported low levels of compassion satisfaction, 20.2% had high levels of burnout, and 37.4% experienced high levels of secondary traumatic stress[212]. In a study by Frey et al., 48.4% of nurses working in palliative care reported moderate to high levels of compassion satisfaction[212].

Similarly, Kaur et al reported high levels of compassion satisfaction in 49.2% of healthcare professionals working in palliative care[213].

Finally, the author correlated the dimensions of the ProQol-5 and MBI scales in the overall sample of healthcare professionals, as well as in the subgroup of palliative professionals, to investigate potential associations.

Although both scales measure the same concept, the author tried to understand whether these scales could be useful for assessing the prevalence of burnout and professional quality of life in the context of Oncology and Palliative Care.

The results showed a significant association between the dimensions of the MBI and ProQol-5 scales.

To date, no studies in the literature have correlated these two scales. However, the findings of this study align with expected outcomes.

Professionals presenting burnout (characterized by high emotional exhaustion and depersonalization, and low personal fulfillment) also reported low compassion satisfaction, indicating diminished pleasure in assisting suffering patients.

The findings reveal that high scores in personal, professional, and patient-related burnout are significantly associated with increased emotional exhaustion, depersonalization, and decreased personal fulfillment. This association was notably more pronounced for oncology professionals. Similarly, in the palliative care group, high personal and work-related burnout scores were linked to greater emotional exhaustion and reduced personal fulfillment.

The burnout levels measured by both scales yielded similar results, suggesting that both are reliable instruments for assessing this condition. When exposed to high levels of suffering, as in the case of palliative care patients, healthcare professionals are more susceptible to emotional exhaustion and cynicism. The absence of a correlation between secondary traumatic stress and personal fulfillment may be attributed to the development of effective resilience and coping mechanisms.

So, compassion Fatigue (CF) is a continuum of experiences that progressively evolve from compassion satisfaction to compassion fatigue, which is characterized by diminished satisfaction, increased secondary traumatic stress, and burnout. Compassion satisfaction (CS) has been understood as an individual characteristic associated with resilience and a sense of accomplishment when caring for chronically suffering patients. The empathy inherent in these professionals serves as a protective factor, shielding them from negative emotional outcomes.

The risk of compassion fatigue in workers who care for patients at the end of life can have a detrimental effect on both their own quality of life and that of their patients. Therefore, it is

crucial to support these healthcare professionals, helping them to develop coping strategies that will improve their work-life quality.

There were some strategies developed to help professionals to prevent burnout and subsequently, worse professional quality of life.

First of all, it is necessary to develop personal skills in meditation, coping and mindfulness, in order to fight against emotional exhaustion and burnout[214]. On the other hand, a supportive work environment is also essential, because positive interdisciplinary team dynamics help prevent burnout[214]. Healthcare organizations should create a culture of wellness, adopting measures such as limiting overtime, stress management, reducing caseload size or diversity, developing equitable and worker-friendly policies, adequate payment, communication skills and promotion of equity[214].

According to data from the Portuguese Association of Palliative Care, more than 70% of patients do not have timely access to Palliative Care, and in the case of children, the number rises to an alarming percentage of 90%[215]. This reality due to the lack of professionals and teams dedicated to this care[215]. As such, professionals who are already dedicated to Palliative Care must be guaranteed the conditions to ensure high quality care[215], in order to ensure their own well-being.

5.1. Limitations

Several limitations could be argued concerning our methodology.

Firstly, the study's cross-sectional design prevents causal inferences from being drawn. To gain a deeper understanding of the relationship between attachment styles and the intensity of burnout, future longitudinal studies are recommended.

Second, the findings of this study suggest that attachment patterns may influence the development of burnout in professionals working with cancer patients, particularly in palliative care. Burnout appears to arise from a complex interaction between organizational/environmental factors and individual characteristics., but the heterogeneity of the sample made it difficult to differentiate the severity of burnout across the various professional groups, despite the inclusion of all employees within a multidisciplinary healthcare team. Discriminating within the sample would be very productive, but the samples could be too small to allow additional conclusions.

Third, this study explored the association between the prevalence of burnout and the quality of professional life among workers exposed to human suffering. However, since the ProQol-5 scale also assesses burnout, this overlap could be considered both a limitation of the study and a reinforcement of the reliability of both instruments in measuring this phenomenon.

Finally, the study did not assess potential interventions for preventing burnout. Further research is necessary to translate theories developed to understand the different nuances related to the production of burnout in practical measures designed to solve the consequences of burnout in the Health of professionals and in the quality of care offered to patients.

6. Conclusion

Burnout is a multifactorial phenomenon involving individual characteristics that are influenced by environmental factors[216].

The present study aimed to assess the potential association between attachment styles and the dimensions of burnout (measured by the CBI and MBI), in professionals working within oncology and palliative care contexts.

The study demonstrated that elevated scores in any of the CBI dimensions correlated with heightened anxiety among professionals in general oncology services. The same pattern was observed among professionals working with palliative care patients, where high personal and work-related burnout scores were associated with increased anxiety. Furthermore, higher levels of personal burnout were correlated with reduced comfort with dependence. These findings suggest that an anxious attachment patterns may heighten the risk of burnout.

In this sample, the primary trigger for burnout was the number of hours per week spent exposed to human suffering. This result makes sense, since providing care for patients with advanced illnesses involves intense emotional engagement, particularly when the emotional burden extends to the families of these patients[216]. The severity of physical symptoms, grief, and proximity to death present substantial challenges for healthcare professionals[216].

No significant differences in burnout or quality of professional life were found between the two groups of professionals. However, an association was observed between the prevalence of burnout and professional quality of life within the group caring for patients with more advanced cancer.

Pereira et al demonstrated that working in palliative care may serve as a protective factor against the development of burnout in these professionals[7] . Protective factors identified include individual and/or group coping strategies, sufficient time allocated for interactions between patients and their families, effective communication skills, mechanisms for coping with patient death, understanding of the dying process, personal growth, finding meaning in providing care to dying patients, personal fulfillment, and overall job satisfaction[7] .

Identifying attachment style is a promising field for developing effective coping strategies for professionals, while also allowing managers to identify those with professional traits that predispose them to burnout syndrome[11].

Future research should involve larger populations across various institutions to further investigate how attachment styles influence the development of burnout, especially among healthcare professionals managing patients with advanced illnesses and complex needs.

The risk of burnout and compassion fatigue in this population of healthcare professionals highlight the need to develop strategies to minimize this risk. With this type of coping strategy, we seek to improve the quality of life, well-being, team spirit and attachment. It would be equally beneficial to study the impact of these strategies in responding to burnout and in response to improving levels of professional and personal satisfaction.

7. References

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Appendices

Appendix I. Deliberations of study approval

IPO COIMBRA

Qualidade
Um Compromisso

Exma. Senhora
Dra. Florbela Gonçalves
Serviço de Medicina Interna e Cuidados Paliativos

ASSUNTO: Projeto de investigação "Burnout e traço de vinculação em oncologia e fim de vida"

Em resposta ao pedido efetuado por V. Exa., para desenvolver o projeto de investigação identificado em epígrafe, informa-se que o Conselho de Administração aprovou a sua realização.

Mais se informa que o estudo deverá fazer referência à colaboração do IPO de Coimbra, assim como os seus resultados, após a sua conclusão, deverão ser comunicados ao Gabinete Coordenador da Investigação.

Com os melhores cumprimentos,

Coimbra, 13 de abril de 2017

PEL'O CONSELHO DE ADMINISTRAÇÃO

Carlos Santos
(Vogal Executivo)

1 / 1

IPO COIMBRA

Comissão de Ética

Modelo de Análise de Trabalhos de Investigação

Qualidade
Um Compromisso

PEDIDO DE PARECER

Trabalhos de Investigação

Nº. :TI 02/17

Data: 03/03/2017

Identificação do pedido: "Burnout e traço de vinculação em oncologia e fim de vida."

Identificação do(s) autor(es) do pedido: Florbela Gonçalves

Serviço de Medicina Interna e Cuidados Paliativos

Nomeio relator: Dr. Óscar Vilão e Profª. Isabel Moreira

Data: 17/02/2017

A Presidente da Comissão de Ética

.....

1 / 3

PARECER FINAL DA COMISSÃO DE ÉTICA

Trabalho de Investigação nº: TI 02/17

Data: 04/04/2017

Apreciado na reunião da Comissão de Ética de 4/4/2017, **tendo sido** *(*)* aprovado por unanimidade pelos elementos presentes

PEL'A COMISSÃO DE ÉTICA

(*) Indicar o resultado da votação de **aprovação** ou **rejeição** e se por unanimidade ou maioria, assinalando e juntando as declarações de voto que houver.

3/ 3

Appendix II. Informed consent

Caro (a) participante

O contacto profissional com o doente oncológico confrontam-no com situações complexas de sofrimento. A relação com estes doentes determina sentimentos de perda cujas consequências na vida profissional não estão ainda suficientemente estudadas.

No âmbito do projecto de Doutoramento com o título **"BURNOUT E TRAÇO DE VINCULAÇÃO EM ONCOLOGIA E FIM DE VIDA"** procurarei contribuir para uma melhor compreensão deste processo. Associadamente pretendo, também avaliar a qualidade de vida dos profissionais de saúde do Instituto Português de Oncologia de Coimbra Francisco Gentil, E.P.E.

Venho pedir a sua preciosa colaboração para este estudo, pedindo-lhe que responda a um conjunto de questionários, certificando-se por favor, que não fique nenhuma resposta em branco.

Serão assegurados todos os requisitos éticos, no que se refere ao anonimato e confidencialidade dos dados.

Antecipadamente, grata pela sua colaboração

Florbela Gonçalves

IPO COIMBRA

Qualidade
Um
Compromisso

FORMULÁRIO DE INFORMAÇÃO E CONSENTIMENTO INFORMADO

TÍTULO DO PROJECTO DE INVESTIGAÇÃO: BURNOUT E TRAÇO DE VINCULAÇÃO EM ONCOLOGIA E FIM DE VIDA

PROMOTOR – Florbela dos Santos Gonçalves (no âmbito do Doutoramento em Medicina da Faculdade de Ciências da Saúde da Universidade da Beira Interior)
INVESTIGADOR COORDENADOR CENTRO DE ESTUDO – Florbela dos Santos Gonçalves (Faculdade de Ciências da Saúde da Universidade da Beira Interior)
INVESTIGADOR PRINCIPAL – Florbela dos Santos Gonçalves
MORADA – Av. Mendes Silva, nº67, 4º AP, 3030-193 - Coimbra
CONTACTO TELEFÓNICO - 962906403

NOME DO PARTICIPANTE
(LETRA DE IMPRENSA) _____

É convidado(a) a participar voluntariamente neste estudo porque pretendemos estudar o impacto que o traço de vinculação possa ter na presença de *Burnout* nos profissionais de saúde que lidam com doentes oncológicos.

Este procedimento é chamado consentimento informado e descreve a finalidade do estudo, os procedimentos, os possíveis benefícios e riscos. A sua participação poderá contribuir para melhorar o conhecimento sobre Traço de Vinculação e *Burnout* em Oncologia.

Receberá uma cópia deste Consentimento Informado para rever e solicitar aconselhamento de familiares e amigos. O Investigador ou outro membro da sua equipa irá esclarecer qualquer dúvida que tenha sobre o termo de consentimento e também alguma palavra ou informação

que possa não entender.

Depois de compreender o estudo e de não ter qualquer dúvida acerca do mesmo, deverá tomar a decisão de participar ou não. Caso queira participar, ser-lhe-á solicitado que assine e date este formulário. Após a sua assinatura e a do Investigador, ser-lhe-á entregue uma cópia. Caso não queira participar, não haverá qualquer penalização nos cuidados que irá receber.

1. INFORMAÇÃO GERAL E OBJETIVOS DO ESTUDO

Este estudo irá decorrer no Instituto Português de Oncologia de Coimbra Francisco Gentil, E.P.E. em colaboração com a Faculdade de Ciências da Saúde da Beira Interior, com o objectivo de correlacionar o Traço de Vinculação e o *Burnout* nos profissionais de saúde que trabalham com doentes oncológicos.

Trata-se de um estudo observacional.

Estão assegurados os direitos, segurança e bem-estar de todos os participantes incluídos e garantir prova pública dessa protecção.

Este estudo tem por objectivo correlacionar o Traço de Vinculação com a presença de *Burnout* em Oncologia e Fim de Vida.

Serão incluídos todos os profissionais de Saúde da Instituição que aceitem participar e não sejam portadores de psicopatologia.

2. PROCEDIMENTOS E CONDUÇÃO DO ESTUDO

2.1. Procedimentos

5 Serão distribuídos aos participantes do estudo quatro questionários: estudo sociodemográfico, MBI (Maslach Burnout Inventory), Questionário de Copenhagen Burnout Inventory e EVA (Escala de Vinculação do Adulto).

2.2. Tratamento de dados/ Randomização

O estudo estatístico dos dados terá por base o programa SPSS.

3. RISCOS E POTENCIAIS INCONVENIENTES PARA OS PARTICIPANTES

Não aplicável.

4. POTENCIAIS BENEFÍCIOS

Este estudo tem a vantagem de estudar o impacto do Traço de Vinculação no desenvolvimento de *Burnout* nos profissionais de saúde que trabalham em Oncologia. Além disso, a informação que será recolhida irá identificar indivíduos de risco e o seu encaminhamento terapêutico devido.

5. NOVAS INFORMAÇÕES

Ser-lhe-á dado conhecimento de qualquer nova informação que possa ser relevante para a sua condição ou que possa influenciar a sua vontade de continuar a participar no estudo.

6. SEGURANÇA

Não se esperam consequências da sua participação no estudo

7. PARTICIPAÇÃO/ ABANDONO VOLUNTÁRIO

É inteiramente livre de aceitar ou recusar participar neste estudo. Pode retirar o seu consentimento em qualquer altura sem qualquer consequência para si, sem precisar de explicar as razões, sem qualquer penalidade ou perda de benefícios e sem comprometer a sua relação com o Investigador que lhe propõe a participação neste estudo. Ser-lhe-á pedido para informar o Investigador se decidir retirar o seu consentimento.

O Investigador do estudo pode decidir terminar a sua participação neste estudo se entender que não é do melhor interesse continuar nele. A sua participação pode ser também terminada se não estiver a seguir o plano do estudo, por decisão administrativa ou decisão da Comissão de Ética. O médico do estudo notificá-lo-á se surgir uma dessas circunstâncias, e falará consigo a respeito da mesma).

9. CONFIDENCIALIDADE

Os seus registos manter-se-ão confidenciais e anonimizados de acordo com os regulamentos e leis aplicáveis. Se os resultados deste estudo forem publicados a sua identidade manter-se-á confidencial. Ao assinar este Consentimento Informado autoriza este acesso condicionado e restrito. Pode ainda em qualquer altura exercer o seu direito de acesso à informação. Tem também o direito de se opor à transmissão de dados que sejam cobertos pela confidencialidade profissional.

A Comissão de Ética responsável pelo estudo pode solicitar o acesso aos seus registos para assegurar-se que o estudo está a ser realizado de acordo com o protocolo. Não pode ser garantida confidencialidade absoluta devido à necessidade de passar a informação a essas partes.

Ao assinar este termo de consentimento informado, permite que as suas informações neste estudo sejam verificadas, processadas e relatadas conforme for necessário para finalidades científicas legítimas.

Confidencialidade e tratamento de dados pessoais

Os dados pessoais dos participantes no estudo, incluindo a informação recolhida ou criada como parte do estudo, serão utilizados para condução do estudo, designadamente para fins de investigação científica relacionada com o assunto em estudo.

Ao dar o seu consentimento à participação no estudo, a informação a si respeitante, designadamente a informação, será utilizada da seguinte forma:

1. O promotor, os investigadores e as outras pessoas envolvidas no estudo recolherão e utilizarão os seus dados pessoais para as finalidades acima descritas.
2. Os dados do estudo, associados às suas iniciais ou a outro código que não o (a) identifica diretamente (e não ao seu nome) serão comunicados pelos investigadores e outras pessoas envolvidas no estudo, que os utilizará para as finalidades acima descritas.
3. Os dados do estudo, associados às suas iniciais ou a outro código que não permita identificá-lo(a) directamente, poderão ser comunicados a autoridades de saúde nacionais e internacionais.
4. A sua identidade não será revelada em quaisquer relatórios ou publicações resultantes deste estudo.
5. Todas as pessoas ou entidades com acesso aos seus dados pessoais estão sujeitas a sigilo profissional.
6. Ao dar o seu consentimento para participar no estudo autoriza o promotor ou empresas de monitorização de estudos/estudos especificamente contratadas para o efeito e seus colaboradores e/ou autoridades de saúde, a aceder aos dados constantes do seu processo, para conferir a informação recolhida e registada pelos investigadores, designadamente para assegurar o rigor dos dados que lhe dizem respeito e para garantir que o estudo se encontra a ser desenvolvido correctamente e que os dados obtidos são fiáveis.
7. Nos termos da lei, tem o direito de, através de um dos investigadores envolvidos no estudo/estudo, solicitar o acesso aos dados que lhe digam respeito, bem como de solicitar a retificação dos seus dados de identificação.
8. Tem ainda o direito de retirar este consentimento em qualquer altura através da notificação ao investigador, o que implicará que deixe de participar no estudo/estudo. No entanto, os dados recolhidos ou criados como parte do estudo até essa altura que não o(a) identifiquem poderão continuar a ser utilizados para o propósito de estudo/estudo, nomeadamente para manter a integridade científica do estudo, e a sua informação médica não será removida do arquivo do estudo.
9. Se não der o seu consentimento, assinando este documento, não poderá participar neste estudo. Se o consentimento agora prestado não for retirado e até que o faça, este será válido e manter-se-á em vigor.

10. CONTATOS

Se tiver perguntas relativas aos seus direitos como participante deste estudo, deve contactar: Presidente da Comissão de Ética do Instituto Português de Oncologia de Coimbra Francisco Gentil, E.P.E.

Se tiver questões sobre este estudo deve contatar:

(Florbela dos Santos Gonçalves, Av. Mendes Silva, nº67, 4º AP, 3030-193 – Coimbra, TM - 962906403)

NÃO ASSINE ESTE FORMULÁRIO DE CONSENTIMENTO INFORMADO A MENOS QUE TENHA TIDO A OPORTUNIDADE DE PERGUNTAR E TER RECEBIDO RESPOSTAS SATISFATÓRIAS A TODAS AS SUAS PERGUNTAS.

CONSENTIMENTO INFORMADO

De acordo com a Declaração de Helsínquia da Associação Médica Mundial e suas atualizações:

1. Declaro ter lido este formulário e aceito de forma voluntária participar neste estudo.
2. Fui devidamente informado(a) da natureza, objectivos, riscos, duração provável do estudo, bem como do que é esperado da minha parte.
3. Tive a oportunidade de fazer perguntas sobre o estudo e percebi as respostas e as informações que me foram dadas.

   A qualquer momento posso fazer mais perguntas ao médico responsável do estudo. Durante o estudo e sempre que quiser, posso receber informação sobre o seu desenvolvimento. O médico responsável dará toda a informação importante que surja durante o estudo que possa alterar a minha vontade de continuar a participar.
4. Aceito que utilizem a informação relativa à minha história clínica e os meus tratamentos no estrito respeito do segredo médico e anonimato. Os meus dados serão mantidos estritamente confidenciais. Autorizo a consulta dos meus dados apenas por pessoas designadas pelo promotor e por representantes das autoridades reguladoras.
5. Aceito seguir todas as instruções que me forem dadas durante o estudo. Aceito em colaborar com o médico e informá-lo(a) imediatamente das alterações do meu estado de saúde e bem-estar e de todos os sintomas inesperados e não usuais que ocorram.
6. Autorizo o uso dos resultados do estudo para fins exclusivamente científicos e, em particular, aceito que esses resultados sejam divulgados às autoridades sanitárias competentes.
7. Aceito que os dados gerados durante o estudo sejam informatizados pelo promotor ou outrem por si designado.

   Eu posso exercer o meu direito de rectificação e/ ou oposição.
8. Tenho conhecimento que sou livre de desistir do estudo a qualquer momento, sem ter de justificar a minha decisão e sem comprometer a qualidade dos meus cuidados médicos. Eu tenho conhecimento que o médico tem o direito de decidir sobre a minha saída prematura do estudo e que me informará da causa da mesma.

9. Fui informado que o estudo pode ser interrompido por decisão do investigador, do promotor ou das autoridades reguladoras.

Nome do Participante_____

Assinatura : _____

Data:_____/_____/____

Nome de Testemunha / Representante Legal:_____

Assinatura: _____

Data:_____/_____/____

Confirmo que expliquei ao participante acima mencionado a natureza, osobjectivos e os potenciais riscos do Estudo acima mencionado.

Nome do Investigador:_____

Assinatura: _____

Data:_____/_____/____

Appendix III. Questionnaire layouts

III.1. Sociodemographic questionnaire

QUESTIONÁRIO SOCIO - DEMOGRÁFICO E LABORAL

A equipa de investigação que leva a cabo este trabalho muito agradece a sua colaboração no preenchimento e devolução do presente questionário.

Responda ou coloque uma cruz no quadrado correspondente à sua situação sociodemográfica e laboral:

1 – Idade : _____ anos

2 – Sexo:

☐ Feminino ☐ Masculino

3 - Estado Civil

☐ Solteira(o) € ☐ Divorciada(o) € ☐ Viúva(o) €

☐ Casada(o) ou União de facto €

4 –Número de filhos _____

5 – Carga horária semanal _____ horas

6 - Categoria profissional

☐ Médico

☐ Enfermeiro

☐ Assistente Operacional

☐ Outro

Categoria profissional_____

7 – Serviço da Instituição_____

8- Número de anos de trabalho na Instituição

☐ ≤ 3 anos

☐ > 3 - ≤ 5 anos

☐ > 5 - ≤ 10 anos

☐ > 10 anos

9 - Trabalho nocturno

☐ Sim ☐ Não

10 - Situação Profissional

☐ Com vínculo contratual

☐ Sem vínculo contratual

11 - Envolvimento em Cargos de gestão

☐ Sim ☐ Não

12 - Prática de actividades extra laborais

☐ Sim ☐ Não

13 – Número médio de horas de sono/dia

☐ ≤ 6 horas

☐ > 6 - ≤ 8 horas

☐ > 8 horas

III.2. Maslach Burnout Inventory

Faça um círculo em torno do número que melhor se adequa à sua situação:

Afirmações	Com que frequência:
1. Sinto-me vazio emocionalmente, por causa do meu trabalho.	0 1 2 3 4 5 6
2. No fim do dia de trabalho, sinto-me exausto.	0 1 2 3 4 5 6
3. Sinto-me fatigado quando acordo de manhã e tenho que enfrentar mais um dia de trabalho.	0 1 2 3 4 5 6
4. Consigo compreender facilmente como os meus utentes se sentem acerca das coisas.	6 5 4 3 2 1 0
5. Sinto que trato alguns utentes, como se fossem objectos impessoais.	0 1 2 3 4 5 6
6. Trabalhar com pessoas o dia todo é, de facto, um esforço para mim.	0 1 2 3 4 5 6
7. Lido muito eficazmente com os problemas dos meus utentes.	6 5 4 3 2 1 0
8. Sinto-me esgotado devido ao meu trabalho.	0 1 2 3 4 5 6
9. Sinto que estou a influenciar positivamente a vida de outras pessoas com o meu trabalho.	6 5 4 3 2 1 0
10. Tornei-me mais insensível em relação às pessoas, desde que comecei este trabalho.	0 1 2 3 4 5 6
11. Preocupo-me que este trabalho me esteja a "endurecer" emocionalmente.	0 1 2 3 4 5 6
12. Sinto-me muito enérgico.	6 5 4 3 2 1 0
13. Sinto-me muito frustrado com o meu trabalho.	0 1 2 3 4 5 6
14. Sinto que estou a trabalhar demasiado no meu trabalho.	0 1 2 3 4 5 6
15. De facto, não me interessa o que acontece a alguns utentes.	0 1 2 3 4 5 6
16. Trabalhar directamente com pessoas coloca-me sob demasiada tensão.	0 1 2 3 4 5 6
17. Consigo facilmente criar uma atmosfera relaxada com os meus utentes.	6 5 4 3 2 1 0
18. Sinto-me entusiasmado depois de trabalhar de perto com os meus utentes.	6 5 4 3 2 1 0
19. Consegui realizar muitas coisas importantes nesta profissão.	6 5 4 3 2 1 0
20. Sinto que estou no meu limite ("fim de linha").	0 1 2 3 4 5 6
21. No meu trabalho, lido com os problemas emocionais com muita calma.	6 5 4 3 2 1 0
22. Sinto que os utentes me culpam por alguns dos seus problemas	0 1 2 3 4 5 6

Maslach Burnout Inventory™

Instruments and Scoring Keys

Includes MBI Forms:

Human Services - MBI-HSS
Medical Personnel - MBI-HSS (MP)
Educators - MBI-ES
General - MBI-GS
Students - MBI-GS (S)

Christina Maslach
Susan E. Jackson
Michael P. Leiter
Wilmar B. Schaufeli
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III.3. Copenhagen Burnout Inventory

Questionário de Copenhagen Burnout Inventory – PT (CBI - PT)

As perguntas do questinário de Copenhagen Burnout Inventory - PT (CBI - PT) não devem ser impressas no questionário pela mesma ordem como a apresentada neste documento. As questões podem ser misturadas com os restantes temas, para evitar padrões de respostas estereotipadas.

***Burnout* pessoal**

Avalia o grau de exaustão física, psicológica e da exaustão experienciada pela pessoa.

Burnout pessoal	Sempre	Frequentemente	As vezes	Raramente	Nunca/quase nunca
1. Com que frequência se sente cansado/a?	☐	☐	☐	☐	☐
2. Com que frequência se sente fisicamente exausto/a?	☐	☐	☐	☐	☐
3. Com que frequência se sente emocionalmente exausto/a?	☐	☐	☐	☐	☐
4. Com que frequência pensa: "Eu não aguento mais isto"?	☐	☐	☐	☐	☐
5. Com que frequência se sente fatigado/a?	☐	☐	☐	☐	☐
6. Com que frequência se sente frágil e susceptível a ficar doente?	☐	☐	☐	☐	☐

Pontuação: Sempre – 100; Frequentemente – 75; Às vezes – 50; Raramente – 25; Nunca/quase nunca – 0.

A pontuação total da escala é a média dos scores dos itens.
Se forem respondidas menos de três questões, o questionário é classificado como não respondido.

Considera-se como um elevado nível de *burnout* aos valores iguais ou superiores a cinquenta (50) pontos.

Burnout **relacionado com o trabalho**

Analisa o grau de fadiga física e psicológica e a exaustão que é percebida pela pessoa em relação ao seu trabalho;

Burnout relacionado com o trabalho	**Muito**	**Bastante**	**Assim, assim**	**Pouco**	**Muito pouco**
1. O seu trabalho é emocionalmente desgastante?	☐	☐	☐	☐	☐
2. Sente-se esgotado por causa do seu trabalho?	☐	☐	☐	☐	☐
3. O seu trabalho deixa-o/a frustrado/a?	☐	☐	☐	☐	☐
	Sempre	**Frequentemente**	**As vezes**	**Raramente**	**Nunca/quase nunca**
4. Sente-se esgotado/a no final de um dia de trabalho?	☐	☐	☐	☐	☐
5. Sente-se exausto/a de manhã ao pensar em mais um dia de trabalho?	☐	☐	☐	☐	☐
6. Sente que cada hora de trabalho é cansativa para si?	☐	☐	☐	☐	☐
	Nunca/quase nunca	**Raramente**	**As vezes**	**Frequentemente**	**Sempre**
7. Tem energia suficiente para a família e os amigos durante o tempo de lazer?	☐	☐	☐	☐	☐

Nas primeiras três questões:

Pontuação: Muito– 100; Bastante – 75; Assim, assim – 50; Pouco – 25; Muito pouco – 0.

Nas últimas quatro questões:

Pontuação: Sempre – 100; Frequentemente – 75; Às vezes – 50; Raramente – 25; Nunca/quase nunca – 0.

Na última questão os scores são invertidos.

Pontuação: Nunca/quase nunca – 100; Raramente – 75; Às vezes – 50; Frequentemente – 25; Sempre – 0.

A pontuação total da escala é a média dos scores dos itens.

Se forem respondidas menos de três questões, o questionário é classificado como não respondido.

Considera-se como um elevado nível de *burnout* aos valores iguais ou superiores a cinquenta (50) pontos.

Burnout **relacionado com o Cliente**

Avalia o grau de fadiga física e psicológica e de exaustão que é percebido pela pessoa como relacionado com o trabalho com os utentes.

Burnout relacionado com os clientes	**Muito**	**Bastante**	**Assim, assim**	**Pouco**	**Muito pouco**
1. Acha difícil trabalhar com utentes?	☐	☐	☐	☐	☐
2. Acha frustrante trabalhar com utentes?	☐	☐	☐	☐	☐
3. Trabalhar com clientes deixa-o/a sem energia?	☐	☐	☐	☐	☐
4. Sente que dá mais do que recebe quando trabalha com utentes?	☐	☐	☐	☐	☐
	Sempre	**Frequentemente**	**As vezes**	**Raramente**	**Nunca/quase nunca**
5. Está cansado de trabalhar com utentes?	☐	☐	☐	☐	☐
6. Alguma vez se questiona quanto tempo conseguirá continuar a trabalhar com utentes?	☐	☐	☐	☐	☐

Nas primeiras quatro questões:

Pontuação: Muito– 100; Bastante – 75; Assim, assim – 50; Pouco – 25; Muito pouco – 0.

Nas últimas duas questões:

Pontuação: Sempre – 100; Frequentemente – 75; Às vezes – 50; Raramente – 25; Nunca/quase nunca – 0.

A pontuação total da escala é a média dos scores dos itens.
Se forem respondidas menos de três questões, o questionário é classificado como não respondido.

Nota: o termo cliente pode ser adaptado ao contexto do estudo. Por exemplo, num questinário destinado a enfermeiros o termo "cliente" o termo mais apropriado será utente ou doente; num questionário destinado a professores o termo a empregar será alunos ou estudantes.

Considera-se como um elevado nível de *burnout* aos valores iguais ou superiores a cinquenta (50) pontos.

III.4. Adult Attachment Scale

Escala de Vinculação do Adulto

EVA – M. C. Canavarro, 1995; Versão Portuguesa da *Adult Attachment Scale-R*; Collins & Read, 1990

Por favor leia com atenção cada uma das afirmações que se seguem e assinale o grau em que cada uma descreve a forma como se sente em relação às relações afectivas que estabelece. Pense em todas as relações (passadas e presentes) e responda de acordo com o que geralmente sente. Se nunca esteve afectivamente envolvido com um parceiro, responda de acordo com o que pensa que sentiria nesse tipo de situação.

	Nada característico em mim	Pouco característico em mim	Característico em mim	Muito característico em mim	Extremamente característico em mim
1. Estabeleço, com facilidade, relação com as pessoas.					
2. Tenho dificuldade em sentir-me dependente dos outros.					
3. Costumo preocupar-me com a possibilidade dos meus parceiros não gostarem verdadeiramente de mim.					
4. As outras pessoas não se aproximam de mim tanto quanto eu gostaria.					
5. Sinto-me bem dependendo dos outros.					
6. Não me preocupo pelo facto das pessoas se aproximarem muito de mim.					
7. Acho que as pessoas nunca estão presentes quando são necessárias.					
8. Sinto-me de alguma forma desconfortável quando me aproximo das pessoas.					
9. Preocupo-me frequentemente com a possibilidade dos meus parceiros me deixarem.					
10. Quando mostro os meus sentimentos, tenho medo que os outros não sintam o mesmo por mim.					
11. Pergunto frequentemente a mim mesmo se os meus parceiros realmente se importam comigo.					
12. Sinto-me bem quando me relaciono de forma próxima com as pessoas.					
13. Fico incomodado quando alguém se aproxima emocionalmente de mim					
14. Quando precisar, sinto que posso contar com as pessoas.					
15. Quero aproximar-me das pessoas mas tenho medo de ser magoado(a).					
16. Acho difícil confiar completamente nos outros.					
17. Os meus parceiros desejam frequentemente que eu esteja mais próximo deles do que eu me sinto confortável em estar.					
18. Não tenho a certeza de poder contar com as pessoas quando precisar delas.					

---------- Forwarded message ---------
De: **Stephen Read** <read@usc.edu>
Date: sábado, 18/03/2023 à(s) 23:37
Subject: Re: Fwd: Ask for permission
To: Florbela Gonçalves <77florbela@gmail.com>

Of course you have my permission to publish the results of the scale.
Best, Dr. Read

Stephen J. Read, Mendel B. Silberberg Professor of Social Psychology
Department of Psychology
University of Southern California
Los Angeles, CA 90089-1061
On Mar 18, 2023, 3:33 PM -0700, Florbela Gonçalves <77florbela@gmail.com>, wrote:

> Dear Professor
>
> My name is Florbela Gonçalves and I am doctor in Palliative Care Unit of Instituto Português de Oncologia, Coimbra, Portugal.
>
> I am also PhD student in Faculty of Health Sciences in Covilha.
>
> I used your Adult Attachment Scale in a study about burnout in health professionals. With this work, I intend to relate the burnout levels and attachment in these population, particularly in palliative care professionals.
>
> So, I would like to ask the permission to use this scale in the publication of this study.
>
> Best Regards,
>
> Florbela Gonçalves

III.5. Professional Quality of Life Measure (ProQOL)

ESCALA DE QUALIDADE DE VIDA PROFISSIONAL (PROQOL 5; Stamm, 2009) ©

SATISFAÇÃO POR COMPAIXÃO E FADIGA POR COMPAIXÃO - Versão Portuguesa (Carvalho e Sá, 2011) ©

Quando *[ajuda]* pessoas, fica em contacto directo com as suas vidas. Como pode já ter descoberto, a sua compaixão por aqueles que *[ajuda]* pode afectá-lo(a) de forma positiva ou negativa. Em seguida encontra algumas questões acerca das suas experiências, positivas e negativas, como *[ajudante]*. Considere cada questão de forma pessoal e relacione-a com o seu contexto de trabalho. Seleccione o número que realmente reflecte a frequência com que experienciou cada um destes aspectos ***nos últimos 30 dias***.

1=Nunca	2=Raramente	3=Por Vezes	4=Frequentemente	5=Muito Frequentemente

1.	Sinto-me feliz.	
2.	Estou preocupado(a) com mais de uma pessoa que eu *[ajudo]*.	
3.	Sinto satisfação por poder *[ajudar]* as pessoas.	
4.	Sinto-me ligado(a) aos outros.	
5.	Assusto-me ou fico surpreendido(a) com sons inesperados.	
6.	Sinto-me revigorado(a) depois de trabalhar com aqueles que *[ajudo]*.	
7.	Sinto que é difícil separar a minha vida pessoal da minha vida como *[ajudante]*.	
8.	Não sou tão produtivo(a) no meu trabalho porque perco o sono revivendo as experiências traumáticas de uma pessoa que eu *[ajudo]*.	
9.	Penso que posso ter sido afectado(a) pelo stress traumático daqueles que eu *[ajudo]*.	
10.	Sinto-me encurralado(a) pelo meu trabalho como *[ajudante]*.	
11.	Por causa da minha *[ajuda]*, já me senti "no limite" em relação a várias coisas.	
12.	Gosto do meu trabalho de *[ajudante]*.	
13.	Sinto-me deprimido(a) por causa das experiências traumáticas das pessoas que eu *[ajudo]*.	
14.	Sinto-me como se estivesse a viver o trauma de alguém que tenha *[ajudado]*.	
15.	Tenho crenças que me suportam.	
16.	Estou satisfeito(a) com a forma como sou capaz de manter o uso das técnicas e protocolos de *[ajuda]*.	
17.	Sou a pessoa que sempre quis ser.	
18.	O meu trabalho faz-me sentir satisfeito(a).	
19.	Sinto-me exausto(a) por causa do meu trabalho como *[ajudante]*.	
20.	Tenho pensamentos e sentimentos felizes acerca daqueles que *[ajudo]* e de como os poderia ajudar.	
21.	Sinto-me esgotado(a) porque a minha carga de trabalho parece nunca acabar.	
22.	Acredito que posso fazer a diferença através do meu trabalho.	
23.	Evito certas actividades ou situações porque me fazem relembrar experiências assustadoras vividas pelas pessoas que eu [ajudo].	
24.	Orgulho-me daquilo que posso fazer para *[ajudar]*.	
25.	Como resultado da minha *[ajuda]*, tenho pensamentos invasivos e assustadores.	
26.	Sinto-me limitado(a) pelo sistema.	
27.	Tenho pensamentos de que sou um "sucesso" como *[ajudante]*.	
28.	Não consigo recordar-me de partes importantes do meu trabalho com pessoas traumatizadas.	
29.	Sou uma pessoa muito atenciosa.	
30.	Estou feliz por ter escolhido este trabalho.	

Permission to Use the ProQOL

Thank you for your interest in using the Professional Quality of Life Measure (ProQOL). Please share the following information with us to obtain permission to use the measure:

Please provide your contact information:

Email Address

77florbela@gmail.com

Name

Florbela Gonçalves

Organization Name, if applicable

Faculdade de Ciências da Saúde da Universidade da Beira Interior

Country

Portugal

Please tell us briefly about your project:

Correlate Burnout (MBI) with ProQOL 5

What is the population you will be using the ProQOL with?

Oncologic Health professionals

In what language/s do you plan to use the ProQOL?

Listed here are the languages in which the ProQOL is currently available (see https://proqol.org/ProQol_Test.html). If you wish to use a language not listed here, please select "Other" and specify which language/s.

Portuguese from Portugal

The ProQOL measure may be freely copied and used, without individualized permission from the ProQOL office, as long as:

- **You credit The Center for Victims of Torture and provide a link towww.ProQOL.org;**
- **It is not sold; and**
- **No changes are made, other than creating or using a translation, and/or replacing "[helper]" with a more specific term such as "nurse."**

Note that the following situations are acceptable:

- **You can reformat the ProQOL, including putting it in a virtual format**
- **You can use the ProQOL as part of work you are paid to do, such as at a training: you just cannot sell the measure itself**

Does your use of the ProQOL abide by the three criteria listed above? (If yes, you are free to use the ProQOL immediately upon submitting this form. If not, the ProQOL office will be in contact in order to establish your permission to use the measure.)

Yes

Thank you for your interest in the ProQOL! We hope that you find it useful. You will receive an email from the ProQOL office that records your answers to these questions and provides your permission to use the ProQOL.

We invite any comments from you about the ProQOL and the experience of using it at proqol@cvt.org. Please also contact us if you have any questions about using the ProQOL, even if you noted them on this form. Note that unfortunately, our capacity is quite limited so we may not be able to respond to your note: however, we greatly appreciate your engagement.

Scientific Production

I

Qualidade de vida nos profissionais de saúde de Cuidados Paliativos Oncológicos

Florbela Gonçalves, Ana Rocha, Óscar Vilão

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ENTRADA DO ARTIGO EM FEVEREIRO 2017

QUALIDADE DE VIDA NOS PROFISSIONAIS DE SAÚDE DE CUIDADOS PALIATIVOS ONCOLÓGICOS

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RESUMO

Introdução: os profissionais de saúde dos Cuidados Paliativos são considerados um grupo de risco ao lidarem com o sofrimento e a morte. Com este estudo, procurou-se avaliar a QdV neste grupo de profissionais.

Material e Métodos: recrutou-se uma amostra de profissionais de saúde de Cuidados Paliativos (n=34) aos quais se distribuíram o Instrumento Abreviado de Avaliação da Qualidade de Vida (WHOQOL-Bref) e um questionário sociodemográfico.

Resultados e Conclusão: A qualidade de vida percepcionada foi muito satisfatória.

Palavras-chave: Cuidados Paliativos, Qualidade de Vida

ABSTRACT

Introduction: Health professional in palliative care are considered a group of risk by dealing with suffering and death. Whit this study, we aimed to evaluate the quality of life in this health professional group.

Material and Methods: We recruited a sample of health professionals in Palliative Care (n=31), to whom were distributed the Abbreviated Instrument of Quality of Life (WHOQOL - BREF) and sociodemographic questionnaire.

Results an Conclusion: The quality of life is perceived as very satisfactory.

Key Words: Palliative Care, Quality of life, Health Professional

Introdução

A filosofia dos Cuidados Paliativos, pela sua abordagem holística da dor e do sofrimento, requer dos profissionais a aquisição de um conjunto de competências sobretudo ao nível relacional e emocional.

Verifica-se que estes profissionais de saúde representam um grupo de risco cujas consequências se podem refletir na qualidade dos serviços prestados aos doentes, bem como na QdV e bem-estar dos profissionais.

O conceito de QdV tem evoluído. No entanto, dada a complexidade de variáveis que incidem sobre a diversidade conceptual individual que ela pode significar para cada pessoa, não há ainda um consenso sobre a sua definição. O conceito de QdV utiliza-se em diferentes contextos e situações, estendendo-se a todos os sectores da sociedade. Atendendo ao atual contexto de mudança nas organizações, e especificamente nos serviços de saúde (sobrecarga de trabalho, insegurança, mudanças frequentes nas equipas, conflito e ambiguidade de papéis), os fatores de natureza humana em contexto organizacional podem traduzir-se em fatores de resiliência ou risco para o bem-estar dos indivíduos.

Perante o exposto, considerando a escassez de estudos que abordam a QdV em profissionais dos Cuidados Paliativos, particularmente em contextos oncológicos, procura-se neste estudo explorar esta lacuna.

Quadro teórico:

O conceito de QdV pode ser definido de diversas formas e ter diferentes significados para diferentes pessoas. Não há uma definição universalmente aceite, uma vez que é um conceito multidimensional importante que procura atender a uma perspetiva holística a natureza biopsicossocial do ser humano (Canavarro & Serra, 2010). Envolve dimensões objetivas (condições de vida, situação profissional, salário) e subjetivas (bem-estar, amor, realização pessoal).

Nos Cuidados Paliativos, a interação prolongada com os doentes e seus familiares, o contacto frequente com o sofrimento e a morte, por se tratar de um contexto que exige um cuidar de doentes com doença crónica e terminal, envolvendo muitas vezes a comunicação e transmissão de más notícias e os vários dilemas éticos associados, podem resultar num impacto significativo para os profissionais que trabalham em contextos paliativos.

A vivência de situações limite na prestação de cuidados médicos em contexto de Cuidados Paliativos, pode levar a problemas de comunicação com doentes e seus familiares, o que agravado pela pouca disponibilidade de tempo para cada doente, pode originar situações de conflito. Também a ambiguidade e conflito de papéis pode desencadear relações interpessoais conflituosas com a equipa de saúde, logo, com maior frequência podem surgir problemas de comunicação e coesão de grupo. Assim, a relação interpessoal que se impõe constitui uma fonte de stresse que, no decorrer do tempo, poderá contribuir para o desenvolvimento de burnout e para uma menor QdV.

O profissional de saúde que desempenha funções em Cuidados Paliativos deve ser detentor de competências específicas, que resultam de formação avançada e aprendizagens específicas.

Metodologia:

1 – Amostra

No presente estudo foi usada uma amostra de conveniência constituída por um grupo de 34 profissionais de saúde a trabalhar em contexto hospitalar de Cuidados Paliativos oncológicos, Instituto Português de Oncologia de Coimbra Francisco Gentil, E.P.E.

2 - Procedimentos de recolha e análise de dados

A metodologia adotada neste estudo de natureza quantitativa, descritiva, correlacional e transversal, passou pelo recrutamento de profissionais de saúde a trabalhar na unidade de Cuidados Paliativos oncológicos do IPO de Coimbra. Para a realização deste trabalho foram respeitadas as normas inerentes ao protocolo de Helsínquia e à Convenção de Oviedo.

Os dados foram recolhidos através de um protocolo de investigação previamente desenhado e que incluiu um questionário sociodemográfico e uma escala de avaliação de Qualidade de vida (QdV). Os instrumentos de medição e recolha dos dados foram enviados individualmente, acompanhados de uma carta explicando a natureza do estudo e assegurando a confidencialidade dos dados. Foi igualmente solicitado o consentimento informado de participação. O tratamento estatístico dos dados foi realizado através do programa estatístico Statistical Package for Social Sciences (SPSS), versão 21,0.

Resultados e Discussão:

Neste estudo foi usada uma amostra constituída por um grupo de profissionais de saúde a exercer funções no Serviço de Cuidados Paliativos do Instituto Português de Oncologia de Coimbra Francisco Gentil, E.P.E. Da totalidade dos profissionais, que integram o serviço, 34 aceitaram voluntariamente participar.

Caracterização da amostra

Na tabela 1 são apresentadas as características socio-demográficas da amostra. Verifica-se o predomínio do género feminino (79,4%), a média de idades foi de 43,2 anos (desvio padrão = 10,8), a maioria da população era casada (67,6%) e possuía formação universitária (70,5%).

Quanto às características profissionais e laborais da população, verificou-se que em média, os profissionais de saúde trabalham 39,1 horas por semana com um desvio padrão de 5,7. A Instituição foi considerada pública para a maioria, mas quem exerce as funções profissionais através de recrutamento por empresas prestadoras de serviços considerou-a privada.

Como se pode observar, maioritariamente a amostra foi constituída por enfermeiros. A maioria dos indivíduos possui vínculo laboral à instituição, onde trabalham há mais de 10 anos e não exercem qualquer cargo de gestão/chefia. Verificou-se igualmente que a generalidade exerce trabalho noturno.

Em relação à QdV, verificaram-se as seguintes pontuações nas 2 primeiras perguntas do questionário:

1 (G1) – como avalia a sua Qdv? BOA (4)

2 (G4) – até que ponto está satisfeito com a sua saúde? SATISFEITO (4)

Em todas as dimensões verifica-se uma distribuição homogénea de respostas, obtidas na amostra estudada. Assim, no gráfico 1 (diagrama de dispersão) podemos observar as respostas obtidas individualmente, as quais apresentam uma pontuação muito satisfatória nas várias facetas da qualidade de vida. A tabela 2 corrobora a informação dada pelo diagrama de dispersão, considerando-se a QdV global uma média das 4 dimensões.

Tabela 1. Características sociodemográficas da amostra.

Características	N	Média	Desvio padrão
Idade	34	43,2	10,8
Género			
Masculino	7	20,6	
Feminino	27	79,4	
Estado civil			
Solteiro	6	17,6	
Divorciado	3	8,8	
Viúvo	2	5,9	
Casado ou união de facto	23	67,6	
Escolaridade			
Até 4 anos	1	2,9	
5 a 9 anos	1	2,9	
10 a 12 anos	8	23,5	
Mais que 12 anos	24	70,5	
Instituição			
Público	26		76,5
Privado	8		23,5
Categoria Profissional			
Médico	3		8,8
Enfermeiro	16		47,1
Assistente operacional	9		26,5
Outro	6		17,6
Anos de trabalho			
<3	5		14,7
3-5	1		2,9
6-10	7		20,6
>10	21		61,8
Carga horária semanal	34		39.5
Trabalho nocturno			
Sim	23		67,6
Não	11		32,4
Vínculo laboral			
Sim	29		85,3
Não	5		14,7
Cargo de gestão			
Sim	5		14,7
Não	29		85,3
Horas extra-laborais			
Sim	11		32,4
Não	23		67,6
Horas de sono/dia			
<6	10		29,4
6 a 8	24		70,6
Mais de 8	0		0,0

Em relação à QdV, verificaram-se as seguintes pontuações nas 2 primeiras perguntas do questionário:

1 (G1) – como avalia a sua Qdv? BOA (4)

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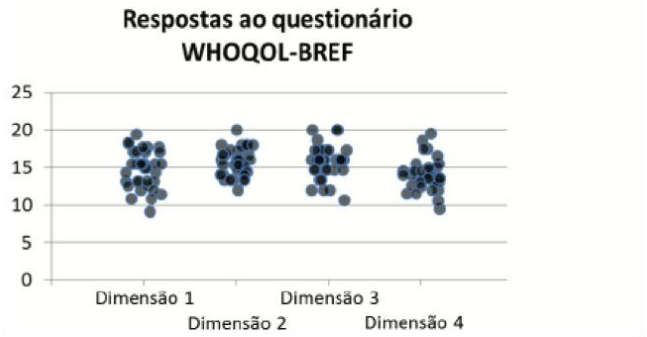
Tabela 2. Média e desvio padrão das 4 dimensões da Qualidade de Vida

	Físico	Psicológico	Relações Sociais	Ambiente	QdV global
Média	14,7	15,6	15,7	14,0	15,2
N	34	34	34	34	34
Desvio padrão	2,5	1,8	2,2	2,1	2,6

Figura 1- Diagrama de dispersão. Distribuição das respostas relacionadas com as diferentes dimensões da Qualidade de Vida. Dimensão 1- Física; dimensão 2 - Psicológico; Dimensão 3 - Relações sociais; Dimensão 4 - Ambiente



Conclusão:

Os cuidados paliativos são cuidados ativos e globais, realizados por uma equipa multidisciplinar, que visam "*melhorar a qualidade de vida dos doentes - e suas famílias - que enfrentam problemas decorrentes de uma doença incurável e/ou grave e com prognóstico limitado, através da prevenção e alívio do sofrimento, com recurso à identificação precoce e tratamento rigoroso dos problemas não só físicos, como a dor, mas também dos psicossociais e espirituais.*"

No presente estudo procurou-se avaliar a QdV de profissionais de saúde em exercício de funções em Cuidados Paliativos oncológicos. Para o efeito, procedeu-se à avaliação de uma amostra de profissionais de saúde a trabalhar em contexto hospitalar de Cuidados

Paliativos, numa unidade de tratamento de doentes oncológicos. Mais especificamente foram avaliadas as características sociodemográficas e a QdV destes profissionais.

Variáveis sociodemográficas como a idade e o sexo, a escolaridade, estado civil, entre outras não demonstraram qualquer influência no burnout e na QdV dos indivíduos estudados, o que, em parte, se explica pela pequenez da amostra.

Relativamente à QdV, os resultados obtidos revelam que esta tem uma pontuação relativamente elevada.

Assim, esta tendência é observada na qualidade de vida em geral (4, isto é, Boa) e na relacionada com a saúde em que a maioria dos indivíduos se sente satisfeito.

O mesmo se passa quando se avalia cada dimensão individuamente. No domínio físico a pontuação é de 14,7, no domínio psicológico de 15,6, no domínio relações sociais d 15,7, no domínio ambiente de 14, isto sempre numa escala da 0 a 20.

Tal pode ser explicado por se tratar de um Serviço constituído por uma equipa coesa, com relações profissionais sólidas e já com uma longa e ampla experiência assistencial, o que pode ter facilitado o desenvolvimento de mecanismos de entreajuda e de coping que impedem que os elevados níveis de burnout, vivenciados pelos seus profissionais, influencie a sua qualidade de vida. Os profissionais da medicina paliativa caracterizam-se pela resiliência, indispensável para enfrentarem os desafios que naturalmente estão associados a esta área. Apesar do sucesso terapêutico curativo ser fruste, aceita-se com naturalidade a "terminalidade", disfrutando de pequenos "grandes" êxitos, tais como uma dor intensa controlada, uma morte tranquila e sem sofrimento, a reconciliação. O reforço positivo de terceiros (amigos e familiares de doentes) faz parte do quotidiano desta equipa e ajuda a que o seu caminho se torne mais fácil.

Nesta amostra verificou-se uma perceção de qualidade de vida muito satisfatória. Isso significa que estes indivíduos já desenvolveram as estratégias adequadas de autoprotecção, impedindo assim que a sua QdV seja, eventualmente, afectada pelo burnout, sentido no seu local de trabalho.

Em conclusão, este estudo prospetivo, permite concluir que na população estudada:

- A maioria das variáveis sociodemográficas, idade, sexo, escolaridade, estado civil, entre outras, não influenciou os níveis de QdV
- A QdV é satisfatória. O facto de se tratar de uma equipa coesa, com relações profissionais sólidas e com uma longa e vasta experiência assistencial e a resiliência que caracteriza os seus elementos pode justificar este achado.
- A perceção de uma boa qualidade de vida na amostra estudada, pode resultar do facto destes indivíduos terem desenvolvido estratégias adequadas de autoproteção, impedindo assim que a sua QdV seja afetada por eventual burnout, desenvolvido em contexto laboral.

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II

Burnout and quality of life in Portuguese healthcare professionals working in oncology and palliative care - a preliminary study

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RESEARCH Open Access

Burnout and quality of life in Portuguese healthcare professionals working in oncology and palliative care—a preliminary study

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Abstract

Background Palliative care is an approach that improves the quality of life of patients and their families who are facing challenges associated with life-threatening illness, through the prevention and relief of suffering. Palliative care health professionals are considered a risk group for the development of burnout, since they live with severe disease and death, on a daily basis. With this work, the authors intend to evaluate the quality of life and risk of b*urnout* in a group of health professionals, who work in a tertiary hospital dedicated to cancer patients.

Material and methods The authors conducted a quantitative, descriptive, correlational and transversal study on palliative care professionals working with cancer patients. The evaluation protocol used to collect data included a sociodemographic questionnaire, WHO Quality of life Assessment instrument and Maslach Burnout Inventory. Statistical analysis was performed using the SPSS®Statistics program.

Results In the sample, there is a predominance of female gender (79,4%) with a mean age of 43,2 ± 10,8 years. The most representative professional group was nursing (47,1%). The sample response rate was 91.9%. Analyzing Maslach Burnout Inventory score, it appears that physicians and nurses have higher levels of exhaustion when compared to the other groups. In relation to quality of life (QoL), it was observed that in all dimensions, there was a homogeneous distribution of responses. It was verified that it was not possible to establish any relationship between the dimensions of burnout and QoL. Thus, the various dimensions behaved independently.

Discussion Physicians and nurses had the highest burnout levels in the most dimensions of Burnout score, in which they were followed by the operational assistants, who had moderate scores. Despite hight prevalence of Burnout, there is no correlation between Burnout and quality of life in this population. The perception of QoL is very satisfactory in the sample studied may result from the fact that these individuals have developed adequate self-protection strategies, thus preventing QoL from being affected by Burnout.

Conclusion Prevention, diagnosis and intervention at burnout level is an important measure to be taken in health organizations, since the consequences that come from the experiences experienced by professionals will be reflected both in the quality of services provided to patients and in the QoL and well-being of professionals. Interventions are needed to promote better coping mechanisms when dealing with stress in this population. After this study, a Burnout Consultation was created at the Institution, to support professionals at risk or already affected.

Keywords Burnout, Professional, Palliative care, Quality of life, Health professions

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Background/introduction

The philosophy and practice of Palliative Care (PC) requires a holistic approach of the patient and the acquisition of a set of emotional, communication and relational skills, as well as, resilience [1, 2].

In 1975, Jean Watson introduced the human caring theory, defining health in different domains—physical, mental and social well-being [3]. According to Watson, care includes looking for the multiple dimensions of human health, trying to practice a supportive, meaningful and compassionate care [4].

For PC professionals, the work of caring for patient with serious and complex illness can put their own well-being at risk [1, 2]. So, these health professionals are therefore one of the professional groups that most face chronic occupational stress, and for this reason more susceptible to developing Burnout syndrome [1, 2].

Burnout is, therefore, a syndrome that is defined by the conjugation of three dimensions: *Emotional exhaustion* (inability to make or give more of himself); *Depersonalization* (reflected in professional and personal relationships, becoming the coldest and most distant individuals) and *Low Personal Achievement* (which leads to loss of self-esteem and motivation, progressing to feeling of inadequacy and failure) [1, 2].

By the negative impact on workers' health, organizations and society in general, burnout syndrome can be considered as a public health problem, which can happen in any profession [5]. However, it is recognized that it can be particularly evident in health professionals, given direct contact with people in distress, excessive work and emotional involvement in the patients' problems, often in an environment of stress and conflict [5].

The presence of *burnout*can have harmful consequences on professional and personal life, affecting the quality of life (QoL) of the health care provider [4, 5]. In recent years there has been a growing interest in this topic, which is, currently, considered a disease [6, 7].

Given the complexity and individual diversity of variables in QoL, there is still no consensus on its definition [8]. The concept of QoL is used in different situations and contexts, extending to all sectors of society [8]. There is no universally accepted definition of quality of life, as it is a multidimensional concept [9]. More recently, with the aim of clarifying this concept, World Health Organization (WHO) debated this issue and defined quality of life as an individual's perception of their position in life, within the context of the culture and value systems in which they live [10]. So, quality of life involves objective dimensions (living conditions, professional situation and salary) and subjective dimensions (well-being, family, love and personal fulfillment) [9].

The current situation of change in organizations, particularly in health services, where work overload, frequent changes and conflicts in teams contribute to insecurity and instability [8]. So, these situations can lead to attitudes of resilience or risk to the well-being and QoL of individuals [8].

Regarding the impact of the working conditions in burnout and QoL of health professionals, the studies that have been done in this area revealed that a non-ethical work environment can correlate with the burnout triad [11].

The relationship between health care providers and patients is also affected [12–14]. The patients and families reported lower satisfaction with the quality of care and support provided by emotionally exhausted and unmotivated professionals [12–14]. There is also a negative impact on the quality of life of professionals [12–14].

Another important aspect to consider is the impact of shift work [15]. Some authors observed that shift work may have direct repercussions on personal and family life, since the number of weekly work hours and the way they are distributed can lead to burnout and, consequently, impair QoL [15].

Palliative care professionals are permanently subject to numerous situations of great emotional demand, either by contact with patients or by the work environment itself [16].

In 2017, 43.9% of United States (US) physicians reported burnout and the prevalence of burnout symptoms across different specialties ranged from 29.6% (occupational medicine) to 54.9% (emergency medicine) [17]. In palliative care physicians, the burnout prevalence have been reported as 32 to 35% [18]. In other countries, the burnout prevalence in palliative care have been reported from 24% (Australia) to 41.9% (Singapore) [19, 20]. Burnout syndrome has a high prevalence among nurses [21]. This healthcare group of professionals is one of the most affected, with sociodemographic (gender, age, marital status), occupational (level of healthcare, work shift and healthcare service areas), psychological factors (neuroticism, agreeability, extraversion and conscientiousness) that can influence its development [21].

In recent years, the interest in study the QoL and risk of burnout in these professional has been arisen, since they constitute a vulnerable group, consequence of the potential chronic stress experienced [16].

Exploring the literature, it appears that in Portugal, there are some studies of burnout in physicians and nurses from different areas [22–25]. Most of the studies have been performed during the COVID-19 pandemic. So, there are some gaps remaining, particularly in the oncology palliative care. In order to address this gap, we conducted a study to better understand the prevalence of

burnout in this population and to examine the relationship between burnout, demographic and job factors, but also, quality of life (QoL).

The aim of the study was to evaluate the burnout and QoL of cancer palliative health care professionals.

Material and methods

The authors conducted a quantitative, descriptive, correlational and transversal study on palliative care professionals working in Portugal in a specific illness context.

Sample

The authors used a convenience sample consisting of 34 health care providers working in the context of cancer palliative care. Regarding the inclusion and exclusion criteria in the study, the authors consider all professionals who worked in the Palliative Care Unit in a tertiary hospital dedicated to cancer patient.

The sample had included 3 physicians, 16 nurses, 2 hospital secretaries; 1 psychologist; 1 social worker and 2 volunteers. This study included professionals who agreed to participated, were able to understand the purpose of the study and gave their consent to participate.

Data collection

Data collection respected the rules of the Helsinki Protocol and the Oviedo Convention, and it was been approved by the ethics and management committee of the hospital.

The data measurement tools were distributed individually, accompanied by a letter explaining the nature and aims of the study and ensuring the confidentiality of the data.

After authorization by informed consent, the data were collected through an evaluation protocol designed for this purpose. The protocol included a sociodemographic questionnaire (*age, gender, marital status, schooling, professional category, years of work, weekly workload, night work, employment link, management position, sleep hours per day*), a QoL assessment questionnaire (WHO Abbreviated Quality of Life Assessment Instrument, WHOQOL-Bref) and a burnout level assessment questionnaire (Maslach Burnout Inventory, MBI, authorized by Mind Garden®), which ranks in high, medium or low, the possible scores.

The Maslach Burnout Inventory (MBI) consists of three dimensions (Emotional Exhaustion, Depersonalization, Personal Accomplishment), defined taking into account different items (Supplementary Data) [26]. The 22 items were recorded as assuming a value between 0 and 6 (Supplementary Data) [26]. There is no recoding of these values. The calculation of the scores for each of the dimensions uses these values [26]. The burnout scale can either be evaluated using continuous values that vary between 0 and 54 in Emotional Exhaustion dimension, 0 and 30 in Depersonalization dimension, 0 and 48 in the Personal Accomplishment dimension (characterized by mean, standard deviation, medians, quartiles and extreme values) [26].

It is also possible to define three levels of burnout in each dimension: Emotional Exhaustion (Low: score ≤ 18; Medium: score 19–26; High: score ≥ 27); Depersonalization (Low: score ≤ 5; Medium: score 6–9; High: score ≥ 10); Personal Accomplishment (Low: score ≤ 33; Medium: score 34–39; High: score ≥ 40) [26]. In this case, burnout is defined as a combination of high levels of emotional exhaustion and depersonalization and low levels of personal accomplishment [27].

The WHOQOL-Bref is a subjective and multidimensional scale designed to assess the quality of life of healthy or unhealthy individuals. It consists of 26 questions (2 of them are related to general aspects; 24 questions are related to specific aspects and organized into four domains: physical, psychological, social relations and environment) [28] (Supplementary Data). For each of the domains, the score varies between 0 and 100, or between 4 and 20, with higher values corresponding to a better perception of quality of life [28]. In the study, the authors used the score between 4 and 20.

Statistical analysis

Before analysis, the database was anonymized. In the sample, the observed variables were characterized taking account the most adequate descriptive statistics.

Categorical and qualitative variables were expressed with absolute and relative frequencies (N and %). Quantitative/continuous variables were characterized by the mean and standard deviation.

Quantitative and qualitative variables were compared with Kruskal–Wallis test.

Before determining Cronbach's alpha indexes [29], the descriptive statistics of each item observed at each scale were determined, namely the mean and the standard deviation. It was necessary to look at the correlation coefficients between each two items of the same dimension. We opted for the Kendall's Tau-b coefficient since each item only takes up to five different values.

Pestana and Gageiro recommend the following criteria for Cronbach's alpha: values above 0.80 are desirable; higher than 0.70 are recommended; and greater than 0.60 should be accepted for research use only [30]. Thus, within the framework of this study, any result greater than 0.60 represents satisfactory internal consistency.

The Cronbach's coefficient for the total of 22 items in the MBI scale is given by ($\alpha = 0.688$) and for the total of 26 items in the WHOQOL Bref scale is given by ($\alpha = 0.879$).

These results indicate satisfactory and desirable indices of internal consistency for each scale respectively.

The database was organized in Microsoft® Excel® program. Statistical analysis was performed using the SPSS®Statistics program (version 21.0 for Windows®, IBM®). The tests were performed at a significance level of 5% ($p < 0.05$).

Results

Sociodemographic characteristics

The sample response rate was 91,9%. The general sociodemographic characteristics of the sample are described in Table 1.

In the sample, there is a predominance of female gender (79.4%) with a mean age of 43.2 ± 10.8 years. Most of the professionals are married (67.6%) and have advanced education (70.5%). The most representative professional group was nursing (47.1%).

Regarding the work characteristics, it was found that the professionals worked 39.2 ± 5.7 h per week. The generality of the population worked at night (67.6%). Most of them had an employment link with the institution (85.3%), where they had worked for more than 10 years (61.8%), and did not hold any management position (85.3%).

Table 1 Sociodemographic characteristics of the sample

VARIABLES		SAMPLE
Age (years)	Median	43.2
	Standard deviation	10.8
Weekly workload	Median	39.2
	Standard deviation	5.7
Gender, n (%)	Male	7 (20.6)
	Female	27 (79.4)
Marital status, n (%)	Single	6 (17.6)
	Divorced	3 (8.8)
	Widow	2 (5.9)
	Married	23 (67.6)
Schooling (years), n (%)	≤ 4 years	1 (2.9)
	5–9 years	1 (2.9)
	10–12 years	8 (23.5)
	> 12 years	24 (70.7)
Professional category, n (%)	Physician	3 (8.8)
	Nurse	16 (47.1)
	Nurse assistant	9 (26.5)
	Others*	6 (17.6)
Years of work, n (%)	< 3 years	5 (14.7)
	3–5 years	1 (2.9)
	6–10 years	7 (20.6)
	> 10 years	21 (61.8)
Night work, n (%)	Yes	23 (67.6)
	No	11 (32.4)
Employment link, n (%)	Yes	29 (85.3)
	No	5 (14.7)
Management position	Yes	5 (14.7)
	No	29 (85.3)
Sleep hours per day, n (%)	< 6 hours	10 (29.4)
	6–8 hours	24 (70.6)

* *2hospital secretaries; 1 psychologist; 1 social worker and 2 volunteers*

Quality of life and burnout assessment

Figure 1 and Tables 2 - 3 show the results of the different burnout dimensions, according to the Maslach Burnout Inventory (MBI) score.

As can be seen in Fig. 1, for the dimension *"Exhaustion"*, 55.9% of the professionals presented high levels, 29.4% medium levels and 14.7% low levels. In the dimension *"Depersonalization"*, the differences between the levels were more relevant in the sample, where 75.8% presented high levels, 21.2% medium levels and only 3% low levels. In the dimension *"Personal achievement/fulfillment"*, the majority of individuals (63.6%) presented a low score (less than 33–34), translating a high negative perception of personal achievement.

In the sample, there is a mean score of 22.2 (± 13.3) in the "Exhaustion" dimension, 6.9 (± 4) in. " Depersonalization" and 33.5 (± 7) in " Personal Achievement" dimension (Table 2).

Analyzing Table 3, it appears that physicians and nurses have higher levels of exhaustion when compared to the other groups. Regarding the " Personal Achievement" dimension, there are practically no differences between the groups. However, in the "Depersonalization" dimension, there are statistically significant differences. The nurses have higher levels of depersonalization, when compared to other groups.

In relation to quality of life (QoL), it was observed that in all dimensions, there was a homogeneous distribution of responses. In Fig. 2 and Table 4, we find the results of the individually obtained responses, which presented a very satisfactory score in the various dimensions of the QoL.

In the sample, there is a mean score of 14.7 (± 2.5) in the Physical dimension of QoL, 15.6 (± 1.8) in Psychological dimension, 15.7 (± 2.2) in Social relation dimension and 14.0 (± 2.1) in Environment (Table 4).

Analyzing Table 5, it appears that physicians and others have higher levels of quality of life in physical dimension. In psychological and social relations' dimension, there are similar results between the professional groups, except the other's group, that present the higher scores. Finally, in the environment's dimension, nurses have lower levels of quality of life, when compared with the

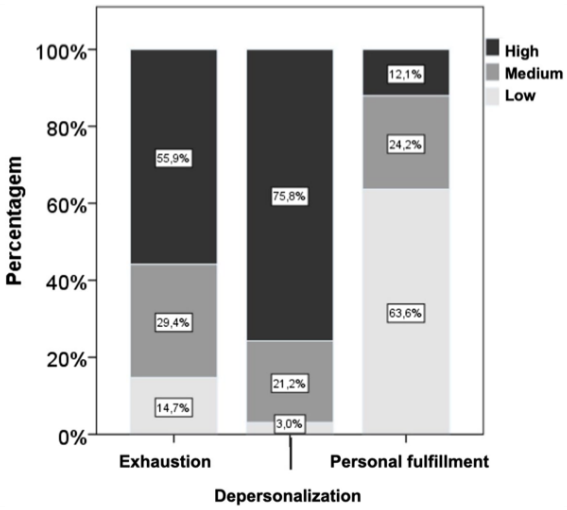

Fig. 1 Burnout dimensions and their predominance in the sample according to the MBI scale score

Table 2 Burnout dimensions in the sample according MBI score (mean and standard deviation)

	Emotional Exhaustion	*Depersonalization*	*Personal Achievement*
Mean	22.2	6.9	33.5
N	34	34	34
Standard deviation	13.3	4.0	7.0

other professional groups. Although, these results were no statistical significants ($p > 0.05$).

By analyzing Table 6, it was verified that it was not possible to establish any relationship between the dimensions of burnout and the dimensions of QoL studied. Thus, the various dimensions behaved independently and do not present any statistical differences. Although there was a high risk of burnout in the sample studied, the results suggest that, in a relatively homogeneous way, individuals had a good perception of their QoL in each of the dimensions, in particular.

Discussion

Palliative care (PC), carried out by a multidisciplinary team, should be provided on the basis of patients' needs, such as the high suffering associated with the disease, and not on the basis of diagnosis [31].

Working in a specialized service as oncological PC, has specificities and needs that impose and require professionals an increased dedication and effort, compared to other health contexts [31].

So, these professionals are exposed to pain and suffering, as well as complex and advanced health problems,

Table 3 The three dimensions of the Burnout survey, MBI, for each of the groups of health professionals (mean ± standard deviation)

	Emotional Exhaustion	*Depersonalization*	*Personal Achievement*
Physician	25.0 (± 22.9)	6.0 (± 4.3)	35.3 (± 16.1)
Nurse	26.7 (± 11.9)	9.0 (± 4.5)	32,9 (± 4.5)
Nurse assistant	18.9 (± 9.9)	6.0 (± 3.0)	32.9 (± 6.0)
Other[a]	12.5 (± 8.2)	3.8 (± 1.9)	34.7 (± 9.9)
P value	*0.102*	***0.03***	*0.715*

[a] *2 hospital secretaries; 1 psychologist; 1 social worker and 2 volunteers*

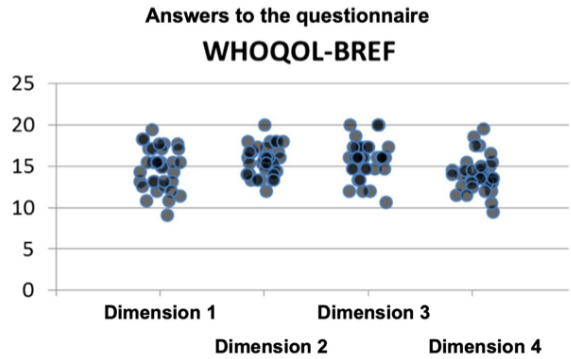

Fig. 2 Scatter diagram—distribution of responses in the different dimensions of QoL

Table 4 The dimensions of Quality of Life (QoL) (mean and standard deviation)

	Physical	*Psychological*	*Social Relations*	*Environment*
Mean	14.7	15.6	15.7	14.0
N	34	34	34	34
Standard deviation	2.5	1.8	2.2	2.1

sometimes with difficult decisions to make, namely with ethical implications [31].

For this reason, these professionals constitute a population more vulnerable to Burnout syndrome [31]. Burnout syndrome is related to experiences of stress at work, when the individual is faced with a mismatch between expectations and personal / professional motivations, and the resources that work offers to satisfy them [31].

In the present study, the authors tried to evaluate the risk of burnout and quality of life of health professionals working in cancer PC, in hospital context.

After the evaluation of the dimensions of Burnout, it was observed that most of professionals in this study presented moderate to high levels of "Emotional exhaustion" and "Depersonalization", as well as, low levels of "Personal achievement". So, at the time of the study, these professionals presented high risk of Burnout. These results, although the sample is small, are in agreement with the literature.

According to the different professional groups, it was found that, for the dimension "Emotional exhaustion", higher levels were identified in physicians and nurses. In the group of nurse assistant, the levels of this dimension were low to moderate. In the group designated as "others" (that included social worker and psychologists) the levels were low.

For the dimension "Depersonalization", only the group "others" showed low levels, while physicians, nurses and nurse assistants had moderate levels. However, the group of nurses presented the highest scores, with statistical significance, compared to the others. In the dimension "Personal achievement", there were small differences between professional groups (physicians – moderate levels; nurses—moderate to high levels; nurse assistants-high levels; "other" – moderate levels).

Table 5 The dimensions of QoL scores for each of the groups of health professionals (mean ± standard deviation)

	Physical	*Psychological*	*Social Relations*	*Environment*
Physician	15.43 (± 2.29)	15.56 (± 2.34)	15.11 (± 1.54)	15 (± 3.28)
Nurse	14.36 (± 2.59)	15.41 (± 1.67)	15.42 (± 2.57)	13.81 (± 2.1)
Nurse assistant	14.60 (± 2.71)	15.56 (± 2.29)	15.85 (± 2.35)	14 (± 2.25)
Other[a]	15.62 (± 2.52)	16.29 (± 1.45)	16.89 (± 1.09)	14.18 (± 1.95)
P value	*0.655*	*0.726*	*0.338*	*0.9*

[a] *2hospital secretaries; 1 psychologist; 1 social worker and 2 volunteers*

Table 6 Presence of Burnout and perception of quality of life

Variables	N	Physical	Psychological	Social Relations	Environment
Emotional Exhaustion					
Low	5	13.9 (± 3.1)	15,1 (± 2,1)	15,7 (± 1.1)	14,3 (± 2.7)
Medium	10	15.7 (± 1.8)	15,9 (± 1.6)	16,5 (± 2.2)	14,6 (± 1.4)
High	19	19 (± 2.5)	15,3 (± 1.9)	15,3 (± 2.4)	13,6 (± 2.3)
P value	-	0.250	0.621	0.3	0.279
Depersonalization					
Low	1	15.4	13.3	12.0	13.0
Medium	7	14.8 (± 2.3)	15.8 (± 1.6)	16.5 (± 1.0)	15.0 (± 2.0)
High	25	14.7 (± 2.6)	15.6 (± 1.9)	15.6 (± 2.4)	13.7 (± 2.2)
P value	-	0.944	0.374	0.173	0.268
Personal achievement					
Low	21	14.8 (± 2.2)	15.5 (± 1.5)	15.9 (± 2.2)	14.2 (± 2.2)
Medium	8	14.1 (± 3.2)	16.0 (± 2.5)	16.1 (± 2.4)	13.6 (± 2.6)
High	4	14.4 (± 2.3)	14.3 (± 1.3)	14.0 (± 1.7)	13.7 (± 1.5)
P value	-	0.753	0.289	0.186	0.472

Gómez—Urquiza et al. analize the levels and prevalence of burnout's dimensions in PC nurses [32]. The results of this review and meta-analysis have shown that between 24 and 30% of PC nurses were suffering one of the burnout dimensions [32]. "Depersonalization" was the most affected dimension, because working conditions were harsh and it ends up producing exhaustion and inefficiency with the patient [32].

The results indicate that in the different dimensions of burnout in the group of PC professionals, the scores are relatively high in emotional exhaustion (55.9% had a high score). This can be explained by the fact that, PC professionals are exposed to crisis situations as the transmission of bad news, confrontation with death and suffering, dealing with ambivalent families and the need to deal with their own emotions to help others.

In this study, relatively high levels of depersonalization (75.8%) and low to moderate levels of personal achievement (63.6%) were also observed. Both Metha and Garcia et al. found that nurses working in PC had a reduced personal achievement [33–35]. However, Emold et al. observed that, about 80% of health professionals in cancer units had very satisfactory levels of personal fulfillment [34].

In the study, there was a trend of similar levels in the dimensions of burnout between physicians, nurses and nurse assistants. However, in the group "others", there was an inverse trend (low emotional exhaustion and depersonalization score and moderate personal achievement).

We know that the practice of medicine, particularly in this area, can provide opportunities to develop a career with huge meaning and satisfaction [35–38]. Taking into account the service provided, which requires a different involvement with work and with patients, especially because of the life/death limit situation they experience, it is important to design strategies capable of promoting the development of personal and situational resources capable of facilitating stress management, minimizing their effect on the health status of individuals and their work. These strategies may include meditation and mindfulness, training of effective communication techniques and self-care [39, 40].

Regarding QoL, the results showed that, this was not influenced by the high burnout rates. Although 19 individuals in the sample presented a high burnout score in the dimension "Emotional exhaustion", the perception of quality of life in the different dimensions varied between 13.6 and 19 (scale of 4–20). Regarding "Depersonalization", 25 individuals presented a high score, but their perception of QoL in the various dimensions was from 13.7 to 15.6 on the same scale. In the "Personal achievement", 21 of the elements presented a low score (i.e., a low personal achievement), but the level of QoL perception varied between 14.2 and 15.9. The same trend was observed in quality of life in general (4, i.e., Good) and in health-related conditions in which most individuals felt quite satisfied.

These results may seem contradictory. However, it can be explained by the fact that, these professionals are part of a cohesive team, with solid personal relationships. Furthermore, they have a long and extensive care experience, which may have facilitated the development of mechanisms of inter-help and coping, and thus prevent the high levels of Burnout, experienced by professionals, have a significant impact on QoL.

Pereira et al. developed a study in physicians and nurses who worked at palliative care units in Portugal [25]. This study showed a low risk of burnout (55%). These results were similar with the literature [41, 42].

Palliative medicine professionals are characterized by resilience, indispensable to face the challenges that are naturally associated with this area. Although curative therapeutic success is fruitful, "terminality" is naturally accepted, enjoying "small big" successes, such as controlled intense pain, a quiet and suffering-free death, reconciliation. Positive reinforcement of third parties (friends and family of patients) is part of the daily life of this team and helps make your path easier [43, 44].

Pereira et al. identified some protective factors to burnout, as religious and spiritual dimension, but also, training in palliative care [43, 44].

In this sample, there was a satisfactory perception of QoL. This means that these professionals have already developed the appropriate self-protection strategies, thus preventing their QoL from being affected by burnout. Thus, prevention, diagnosis and intervention at burnout level is an important measure to be taken in health organizations, since the consequences that come from the experiences experienced by professionals will be reflected both in the quality of services provided to patients and in the QoL and well-being of professionals.

The authors recognize some limitations of the present research. One of the limitations was the sample size. However, according to internal consistency, it is a robust sample. This study was carried out in the context of a PC team. Therefore, the sample is so heterogeneous, just like other teams in this area, which must be multidisciplinary. On the other hand, the presence of greater representation of certain professional groups allowed reaching more conclusions.

On the other hand, the fact that this study took place only in one institution, limited the sample size and the type of PC patients observed. The patients in palliative care observed in this study are only oncological patients, not considering non-cancer patients. This fact was explained by the target population of the hospital, where the study took place.

Further studies are needed to complement these results, for example, in the context of hospice and PC community teams. In the near future, it would be interesting to extend this study to other national units.

Conclusion

This study evaluated the quality of life and risk of burnout in cancer palliative health care professionals.

Our findings indicate that, there was no significant differences in quality of life and risk of burnout between professional groups. According to the different dimensions of burnout, it was observed that most of professionals in this study presented high risk of burnout, in agreement with literature.

Burnout leads to absenteeism, ineffective communication, medical errors and job abandonment [43, 44]. Interventions are needed to promote better coping mechanisms when dealing with stress in this population [43, 44].

In the future, it would be advantageous to extend this study to the population of non-cancer palliative healthcare professionals. Future studies could also include other instruments for assessing burnout's risk and quality of life.

After this study, a Burnout Consultation was created at the Institution, to support professionals at risk or already affected.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12904-023-01273-7.

Additional file 1.

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Authors' contributions
Florbela Gonçalves and Margarida Gaudêncio wrote the main manuscript text and prepared the figures and tables. All authors reviewed the manuscript.

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Availability of data and materials
The datasets generated during and analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate
Data collection respected the rules of the Helsinki Protocol and the Oviedo Convention, and it was been approved by the ethics and management committee of Portuguese Institute of Oncology Francisco Gentil Coimbra (president: Manuel António Silva, MD).
The data measurement tools were distributed individually, accompanied by a letter explaining the nature and objectives of the study and ensuring the confidentiality of the data. Informed consent was obtained from all subjects.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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Publisher's Note

III

Burnout and Professional Quality of life assessment in Portuguese Healthcare Professionals working in Oncology and Palliative Care: a cross-sectional study

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Article

Burnout and Professional Quality of Life Assessment in Portuguese Healthcare Professionals Working in Oncology and Palliative Care: A Cross-Sectional Study

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Abstract: Introduction/Background: Burnout is a three-dimensional syndrome characterized by exhaustion that appears when the professional is constantly exposed to a stressful work environment, as well as depersonalization and lower personal accomplishment. Professional quality of life at work can be defined as the satisfaction degree that a person feels when being or going to their workplace. Objective: To evaluate burnout and professional quality of life in healthcare professionals working in oncology and palliative care. Material and methods: A cross-sectional, observational, and descriptive study was carried out in a convenience sample of 337 healthcare professionals from a Portuguese Oncology Hospital. The assessment tools were a sociodemographic questionnaire, the Maslach Burnout Inventory (MBI), and the Professional Quality of Life—version 5 (proQOL-5) scales. Statistical analysis was performed using the IBM SPSS® Statistics program (significance level of 95% ($p \leq 0.05$)). Results: The majority of professionals were female (84%), with a median age of 41 years. Most professionals work in oncological care services (76.8%), with an average of 40 h a week. There were no statistically significant differences in MBI and ProQOL dimensions between the two groups studied (professionals working in oncology vs. palliative care). In the sample and group of professionals working with palliative patients, it was observed that lower levels of compassion satisfaction were related to higher levels of emotional exhaustion ($p < 0.001$). On the other hand, higher levels of satisfaction correlated with a greater sense of personal accomplishment ($p < 0.001$); higher levels of secondary traumatic stress were related to a greater tendency towards emotional exhaustion ($p < 0.001$) and depersonalization ($p = 0.031$). Discussion and conclusions: Working in oncology and palliative care may predispose one to the onset of burnout related to contact with distress and suffering. With this study, the authors intend to demonstrate that both scales (MBI and ProQOL) are complementary in the analysis of the prevalence of burnout and professional quality of life, particularly in the context of oncology and palliative care. The risk of compassion fatigue and burnout highlights the need to develop coping strategies to minimize this risk and improve the quality of life and bonding of health professionals.

Keywords: burnout; compassion fatigue; emotional exhaustion; quality of life; work engagement

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1. Introduction

Burnout is characterized by physical and psychological exhaustion related to chronic exposure to work-related stress [1–4]. The term was first introduced in the 1970s by Freudenberger and was later characterized by Maslach et al. as a three-dimensional syndrome: emotional exhaustion, depersonalization, and low personal accomplishment [1–4]. Burnout can occur in any type of profession [5].

Burnout syndrome is frequently observed in working environments where there is intense involvement with others, such as hospitals [6]. The burnout's costs are growing fast, affecting 13–25% of the working population [7].

Several factors were found to mitigate/prevent burnout, such as co-worker social support, organizational support, positive team dynamics, effective communication, and recognition from a supervisor or manager [8].

Cancer is one of the main causes of mortality globally and is now considered to be a major public health problem worldwide [9]. Health professionals who deal with cancer patients, some of them in the palliative phase, face a highly demanding and stressful job given the suffering and proximity to death that many of these patients face [10].

The term compassion fatigue has emerged in the literature to describe exposure stress related to the suffering of others [11,12]. It is defined as a state of secondary trauma specific to professions in which there are helping relationships [11,12]. This phenomenon was first suggested by Charles Figley in 1995 after studying post-traumatic stress disorder in war veterans [11,12].

An even less studied subject in the literature is compassion satisfaction [13]. It is the opposite of burnout and compassion fatigue and means the satisfaction resulting from caring for others [13]. The prevalence of compassion fatigue varies according to the studies and where they are carried out, reaching values of 7.3% to 40% in Intensive Care Units [14] and around 60% in Palliative Care Units [15].

Quality of life at work can be defined by an employee's level of satisfaction in their corporate environment, that is, the pleasure that a person feels when going to or being at their workplace [16].

In 2005, Stamm developed the Professional Quality of Life Scale (ProQOL), version 5, the most widely used (ProQOL-5) [17]. The ProQOL-5 was designed to assess the perception of quality of life in relation to the work [17]. This self-report instrument consists of three different subscales: burnout, secondary traumatic stress, and compassion satisfaction [15]. The ProQOL scale describes two fundamental aspects: compassion satisfaction, that is, the gratification that an employee feels when helping others, and compassion fatigue, which includes burnout and secondary traumatic stress [18].

Several measuring instruments have been developed to assess burnout and compassion fatigue. Bride et al. found six different scales that assessed the different domains of compassion fatigue [19]. However, only the ProQOL scale assesses all of these domains [17].

However, there are some investigations in which the psychometric validity of the ProQOL scale has been questioned, especially in the burnout dimension [18]. Heritage et al., when using the ProQOL scale on a sample of 1615 Australian nurses, created a revised and shorter version of only 21 items, which also assesses satisfaction and compassion fatigue [20]. Galiana et al. developed and validated a 9-item version of the ProQOL scale (the Short ProQOL) in a population of 1113 palliative care professionals with satisfactory results in monitoring occupational mental health [21].

Although the revised versions of ProQOL are promising, version 5 is still the one with the most evidence for measuring professional quality of life [22,23]. Studies carried out using ProQOL-5 have shown that a higher quality of professional life is associated with a lower prevalence of psychopathological conditions, such as depression and anxiety [22,23].

R

Several researchers have studied the correlation between quality of professional life, burnout, and other psychological aspects, such as depression and anxiety, in the field of oncology and palliative care [24,25].

However, no research has studied burnout (assessed by the Maslach Burnout Inventory—MBI) and professional quality of life (assessed by ProQOL-5) in healthcare professionals exposed to suffering, particularly in the oncological field. Health professionals in the area of oncology and palliative care are exposed to human suffering at different stages of the oncological disease since both areas are a continuum of care. It is thought that professionals linked to palliative care are more exposed to this suffering due to the fact that they come into contact with patients in more advanced stages of cancer. For this reason, the authors decided to develop a study to evaluate burnout and professional quality of life in healthcare professionals working in oncology and palliative care.

The specific objectives were to analyze the burnout and professional quality of life dimensions in healthcare professionals working with oncology patients (in different contexts of disease), particularly in palliative care. On the other hand, the authors tried to understand whether there was any correlation between the different dimensions of burnout and professional quality of life, measured by the MBI and ProQOL scale.

2. Material and Methods

2.1. Study Design

The authors presented a descriptive cross-sectional study among healthcare professionals working with oncology and palliative patients in Portugal.

2.2. Sample, Participants Recruitment Technique and Eligibility Criteria

The authors carried out a convenience sampling technique among healthcare professionals working in a Portuguese Oncological Hospital. Inclusion criteria encompassed professionals aged $\geq$ 18 years (working in this hospital) who consented to participate and comprehended the study's objectives. Excluded were professionals under 18 years old, those unwilling to participate, and those with psychiatric disorders.

The authors suggested that professionals with psychiatric disorders mark the beginning of the questionnaire with a cross. These professionals are able to care for patients. The authors found in the literature that there is a significant level of discussion about the associations and distinctiveness of burnout with other mental health problems [26].

A 2018 systematic review indicated that the heterogeneity of published research does not allow a reliable examination of comorbidities, raising questions about whether it is possible to clearly distinguish burnout as an occupational syndrome from potentially underlying comorbidities [26].

For this reason, the authors decided to exclude the participants with mental health disorders in order to avoid some bias in the results.

2.3. Data Collection Tools

Data collection respected the guidelines outlined in the Helsinki Protocol [27] and the Oviedo Convention [28]. The study received approval from the ethics and management committee of the hospital (opinion n° T1 02/17).

The measurement tools were distributed individually, along with a letter explaining the study's nature, objectives, and data confidentiality. Upon obtaining informed consent, data were collected using a structured evaluation protocol. This protocol included a sociodemographic and professional questionnaire with independent variables. As personal-related characteristics, the authors considered the following variables: gender, age, number of children, and marital status. On the other hand, as work-related characteristics, the

authors considered these variables: a place of work (professionals who work or have worked in oncology departments vs. palliative unit), weekly workload, employment status, professional category, management status, years of experience, weekly workload, sleep duration, and night shifts. Additionally, the burnout and professional quality of life assessments were included, using the Maslach Burnout Inventory (MBI) and Professional Quality of Life—version 5 (proQOL-5) scales.

The authors conducted the assessments to ensure participant anonymity, recognizing the sensitive nature of the questions involved.

2.4. Measures Tools

The Maslach Burnout Inventory (MBI) is a self-reported burnout measure that includes three dimensions: emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PD), each assessed using various items [29]. The authors employed a validated language version (in Portugal) [29].

The emotional exhaustion dimension measures feelings of being emotionally overextended and exhausted by work [29]. On the other hand, depersonalization measures an unfeeling and impersonal response toward care treatment or instruction [29]. Personal accomplishment measures feelings of competence and successful achievement in work [29]. Scores for the 22 items range from 0 to 6, with specific ranges used to calculate scores for each dimension: emotional exhaustion (0–54), depersonalization (0–30), and personal accomplishment (0–48) [29]. MBI levels can be categorized as follows: emotional exhaustion (low: score $\leq$ 13; moderate: score 14–26; high: score $\geq$ 27), depersonalization (low: score $\leq$ 5; moderate: score 6–9; high: score $\geq$ 10), and personal accomplishment (low: score $\leq$ 33; moderate: score 34–39; high: score $\geq$ 40) [29]. The authors decided to present the burnout results according to these levels (categorical variables). Burnout is defined as high levels of emotional exhaustion and depersonalization combined with low levels of personal accomplishment [29].

The Professional Quality of Life Scale, version 5 (ProQOL-5), is a 30-item self-report measure composed of three subscales: compassion satisfaction (questions 3, 6, 12, 16, 18, 20, 22, 24, 27, 30), burnout (1, 4, 8, 10, 15, 17, 19, 21, 26, and 29), and secondary traumatic stress (STS) (questions 2, 5, 7, 9, 11, 13, 14, 23, 25, and 28) [17,30].

According to the definition of the PROQOL scale, compassion satisfaction is "about the pleasure you derive from being able to do your work well" [17,30]. On the other hand, burnout is considered an element of compassion fatigue [15,27]. "It is associated with feelings of hopelessness and difficulties in dealing with work or in doing your job effectively" [17,30]. At last, secondary traumatic stress is the second component of compassion fatigue [15,27]. "It is about your work-related, secondary exposure to extremely or traumatically stressful events" [17,30]. Participants were encouraged to indicate the score of each item in the previous 30 days on a 5-point Likert scale (from 1 = never to 5 = very often) [17,30]. The total score is the sum of the responses for each 10-item subscale [17,30]. The scores can be categorized as follows: STS ($\leq$22 low; 23–41 moderate; $\geq$42 high); CS ($\leq$22 low; 23–41 moderate; $\geq$42 high); and BO ($\leq$22 low; 23–41 moderate; $\geq$42 high) [17].

2.5. Internal Consistency

Descriptive statistics were computed for each item within the scales to demonstrate the reliability of the mean values observed, considering that extreme cases can significantly influence these statistics.

Correlation coefficients between each pair of items within the same dimension were examined using Kendall's Tau-b coefficient, as each item has up to five different response values. In terms of Cronbach's alpha, commonly accepted criteria were followed: values

above 0.80—desirable, above 0.70—recommended, and above 0.60—acceptable. Therefore, within the scope of this study, a Cronbach's alpha result greater than 0.60 indicates satisfactory internal consistency.

Regarding the internal consistency of the items in each dimension of the MBI, Cronbach's coefficients were 0.896 for emotional exhaustion, 0.663 for depersonalization, and 0.874 for personal accomplishment. As for ProQOL-5, Cronbach's coefficients were 0.845 for compassion satisfaction, 0.749 for burnout, and 0.852 for secondary traumatic stress.

2.6. Statistical Analysis

Sample variables were characterized using the most appropriate descriptive statistics available. Data organization was performed using Microsoft Excel® 2013 software.

Descriptive analysis was carried out by calculating absolute and relative frequencies (N and %) of categorical and qualitative variables. Quantitative variables were characterized by mean, quartiles, minimum, and maximum values. The categorical variables were analyzed considering the χ^2 test (comparison test). For continuous variables, the means were analyzed using the *t*-test for independent samples (comparison test). In the case of qualitative variables, the Mann–Whitney test was used to compare the results.

Correlations between quantitative variables were performed using the Spearman correlation coefficient (non-normal distribution of data). Finally, the one-way ANOVA test was performed to better characterize MBI dimensions and their relationship with personal and work-related variables.

Statistical analysis was performed using the IBM SPSS® Statistics program (version 25.0 for Windows®). The tests were performed at a significance level of 95% ($p \leq 0.05$).

2.7. Ethical Consideration

Participation in the study was voluntary. Participants' confidentiality and anonymity were guaranteed at all stages of the study, using exclusive code numbers and storing data on password-protected laptops with access only to researchers. Participants were not directly or indirectly involved in the design, implementation, reporting, or dissemination plans of the investigation.

3. Results

3.1. Participants

The sample selection process and follow-up are described in Figure 1.

This study was conducted at a Portuguese tertiary hospital dedicated to cancer treatment, involving a total population of 1003 professionals. The authors recruited all professionals involved in direct care for cancer patients. Only 337 professionals were included since 40 presented psychopathology, and 626 declined consent or did not respond to the questionnaire. The response rate was 36%.

The authors would like to analyze the group of professionals who did not respond or decline consent, but we were not provided with the professional category of all members of the population (assessed for eligibility). Therefore, we only have the sociodemographic characterization of the professionals who actually participated in the study.

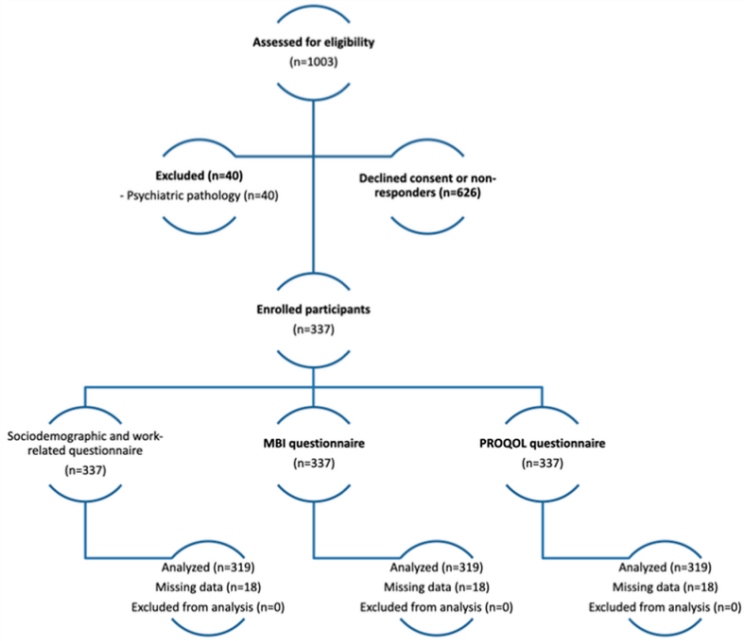

Figure 1. Participants' flow diagram (sample selection process and follow-up).

3.2. Personal and Work-Related Characteristics of the Sample (Sociodemographic Data)

In terms of personal characteristics, the majority of professionals were female (*n* = 269, 84%), with a median age of 41 years (from 20 to 69 years) (Table 1).

Table 1. Personal-related characteristics of the sample.

Variables		Working in Oncology Care * (*n* = 245) †	Working in Palliative Care (*n* = 74)	Total † (*n* = 337)
Age (Years), median [Q1; Q3], min–max		42 [35; 49], 20–69	40 [31; 43], 22–65	41 [34; 49], 20–69
Gender, *n* (%)	Female	205 (83.7)	63 (85.1)	268 (84)
	Male	40 (16.3)	11 (14.9)	51 (16)
Number of children, *n* (%)	0	68 (27.8)	31 (41.9)	99 (31)
	1	76 (31.0)	23 (31.1)	99 (31)
	2	89 (36.3)	17 (23.0)	106 (33.2)
	3	10 (4.1)	3 (4.1)	13 (4.1)
	4	1 (0.4)	0 (0)	1 (0.3)
	5	1 (0.4)	0 (0)	1 (0.3)
Marital status, *n* (%)	Single	60 (24.5)	22 (29.7)	82 (25.7)
	Divorced	24 (9.8)	5 (6.8)	29 (9.1)
	Window	3 (1.2)	1 (1.4)	4 (1.3)
	Married	158 (64.5)	46 (62.2)	204 (63.9)

† Missing—18. * Oncology, surgery, and radiotherapy services.

Most professionals have up to two children (n = 304, 95.2%) (Table 1). Regarding marital status, the majority of professionals were married (n = 204, 63.9%) or single (n = 82, 25.7%) (Table 1).

With regard to professional characteristics, most professionals work in services linked to oncological care (n = 245, 76.8%) (Table 2). These professionals work an average of 40 h a week (Table 2).

Table 2. Work-related characteristics of the sample.

Variables		Working in Oncology Care * (n = 245) †	Working in Palliative Care (n = 74)	Total (n = 337) †
Weekly workload (h), median [Q1; Q3], min–max		40 [35; 49], 28–49	40 [31; 43], 8–42	40 [35; 40], 8–49
Professional Category, n (%) †	Physician	30 (12.2)	8 (10.8)	38 (11.9)
	Nurse	108 (44.1)	41 (55.4)	149 (46.7)
	Operational assistant	52 (21.2)	16 (21.6)	68 (21.3)
	Other **	55 (22.4)	9 (12.2)	64 (20.1) **
Night work, n (%) [1]	Yes	82 (34.0)	44 (59.5)	126 (39.5)
	No	159 (66)	30 (40.5)	189 (59.2)
Years of work, n (%) [2]	≤3 years	24 (9.8)	20 (27)	44 (13.8)
	4–5 years	7 (2.9)	1 (1.4)	8 (2.5)
	6–10 years	41 (16.8)	13 (17.6)	54 (16.9)
	>10 years	172 (70.5)	40 (54.1)	212 (66.5)
Management position, n (%) [3]	Yes	30 (12.5)	8 (11.3)	38 (11.9)
	No	210 (87.5)	63 (88.7)	273 (85.6)
Employment link, n (%) [4]	Yes	229 (96.2)	66 (89.2)	295 (92.5)
	No	9 (3.8)	8 (10.8)	17 (5.3)
Extra-work activities, n (%) [5]	Yes	94 (39.2)	34 (46.6)	128 (40.1)
	No	146 (60.8)	39 (53.4)	185 (58)
Sleep hours per day, n (%) [1]	≤6 h	58 (24.0)	17 (23.3)	75 (23.5)
	>6 h–≤8 h	180 (74.4)	53 (72.6)	233 (73)
	>8 h	4 (1.7)	3 (4.1)	7 (2.2)

* Oncology, surgery, and radiotherapy services. † missing—18. [1] missing—22; [2] missing—19; [3] missing—26; [4] missing—25; [5] missing—24. ** social worker (n = 6), spiritual assistant (n = 1), pharmaceutics and diagnostic technicians (n = 51), secretary (n = 5), director (n = 1).

The sample consists of 38 doctors (11.9%), 149 nurses (46.7%), 68 operational assistants (21.3%), and 64 from other professional categories (social worker (n = 6), spiritual assistant (n = 1), pharmaceutics and diagnostic technicians (n = 51), secretary (n = 5), director (n = 1) (Table 2).

Most professionals do not work night shifts (n = 189, 59.2%) and have been working at this hospital for more than 10 years (n = 212, 66.5%). In relation to the employment link, 295 (92.5%) professionals have a contractual relationship (Table 2). Most professionals presented a sleep time between 6 and 8 h (n = 233, 73%) (Table 2).

3.3. Burnout Assessment Using the Maslach Burnout Inventory (MBI)

There were no statistically significant differences in MBI dimensions between the two groups studied (oncology services vs. palliative care) (Table 3).

Table 3. MBI burnout levels (categorical variables) between the two groups (professionals working in oncology vs. palliative care).

Burnout MBI (Categorical)		Working in Oncology Care (*n* = 245) *,†	Working in Palliative Care (*n* = 74)	*p* **
Emotional exhaustion, *n* (%)	Low (≤13)	65 (29.1)	19 (28.4)	0.743
	Moderate (14–26)	79 (35.4)	27 (40.3)	
	High (≥27)	79 (35.4)	21 (31.3)	
	Total	223 [1]	67 [2]	
Depersonalization, *n* (%)	Low (≤5)	130 (59.6)	34 (50.7)	0.435
	Moderate (6–9)	46 (21.1)	17 (25.4)	
	High (≥10)	42 (19.3)	16 (23.9)	
	Total	218 [3]	67 [2]	
Personal accomplishment, *n* (%)	Low (≤33)	80 (36.9)	23 (34.3)	0.865
	Moderate (34–39)	64 (29.5)	22 (32.8)	
	High (≥40)	73 (33.6)	22 (32.8)	
	Total	217 [4]	67 [2]	
Burnout (High EE, High DP, and Low PA)—28 (8.8)				

* Missing—18; ** The comparison between the two groups was performed using the asymptotic chi-square test. [1]—40 missing; [2]—7 missing; [3]—45 missing; [4]—46 missing; †—oncology, surgery, and radiotherapy services. EE—emotional exhaustion; DP—depersonalization; PA—personal accomplishment.

In the emotional exhaustion dimension, medium and high values are presented in a third of professionals in each group, while approximately the same percentage is found in low levels (30%; $p = 0.743$) (Table 3).

About 20–25% of professionals presented depersonalization's dimension with medium and high values, with around 50% of the sample showing low levels ($p = 0.435$).

As for personal accomplishment, there are no significant differences ($p = 0.865$), with identical values at the three levels in each of the groups (Table 3).

In the sample, 28 professionals presented criteria for burnout (8.8%).

3.4. Professional Quality of Life Assessment Using the Professional Quality of Life Scale (ProQOL)

Analysis of the ProQOL-5 scale dimensions reveals no significant differences between professionals in oncology and palliative care ($p > 0.05$) (Tables 4 and 5).

Table 4. Professional quality of life of health professionals working in oncology and palliative care services (PROQOL—continuous variables).

PROQOL (Continuous Variables)	Working in Oncology Care (*n* = 245) *,†	Working in Palliative Care (*n* = 74)	*p*-Value **
PROQOL (compassion satisfaction), median [Q1; Q3], min–max	36 [33; 40], 0–50	37.5 [33; 41], 0–50	0.552
PROQOL (burnout), median [Q1; Q3], min–max	31 [28; 34], 0–45	31 [28; 34], 0–43	0.993
PROQOL (secondary traumatic stress), median [Q1; Q3], min–max	23 [18; 28], 0–48	23 [19.75; 27.25], 0–35	0.701
PROQOL (total score), median [Q1; Q3], min–max	90 [83.5; 98], 0–127	92 [86; 98], 0–118	0.664

* Missing—18; †—oncology, surgery, and radiotherapy services. ** *t*-test for independent samples.

Table 5. Professional quality of life of health professionals working in oncology and palliative care services (PROQOL—categorical variables).

PROQOL (Categorical Variables)		Working in Oncology Care (n = 245) *,†	Working in Palliative Care (n = 74)	p-Value **
PROQOL (compassion satisfaction), n (%)	Low (≤22)	14 (5.7)	3 (4.0)	0.794
	Moderate (23–41)	187 (76.3)	56 (75.6)	
	High (≥42)	44 (17.9)	15 (20.2)	
PROQOL (burnout), n (%)	Low (≤22)	9 (3.6)	2 (2.7)	0.618
	Moderate (23–41)	235 (95.9)	71 (95.9)	
	High (≥42)	1 (0.4)	1 (1.3)	
PROQOL (secondary traumatic stress), n (%)	Low (≤22)	117 (47.7)	35 (47.2)	0.625
	Moderate (23–41)	125 (51.0)	39 (52.7)	
	High (≥42)	3 (1.2)	0 (0.0)	

* Missing—18; †—oncology, surgery, and radiotherapy services.** Mann–Whitney test.

Specifically, for compassion satisfaction, average levels are observed in approximately 75–76% of individuals in both groups, high levels in 4–6%, while low levels are reported by less than 6% (p = 0.794) (Table 5). Burnout is also comparable between the groups, with average levels observed in approximately 96% of professionals and low and high levels in less than 4% of the sample (p = 0.618) (Table 5). Finally, in terms of secondary traumatic stress, there are no significant differences (p = 0.625), with identical results (average and high levels observed in half of the sample and less than 1.2% in both groups) (Table 5).

3.5. Correlation Between the MBI Scale (Burnout) and ProQOL 5 (Professional Quality of Life)

Table 6 shows the correlation between the dimensions of the MBI and ProQOL in the sample and the group of professionals working in oncology vs. palliative care.

Table 6. Spearman correlation between ProQOL and MBI scales in the professionals working in oncology and palliative care and in the total sample—r (p-value).

MBI Dimensions		MBI EE			MBI DP			MBI PA		
Professionals		Work in Oncology	Work in Palliative	Total	Work in Oncology	Work in Palliative	Total	Work in Oncology	Work in Palliative	Total
ProQOL dimensions	PROQOL—CS	−0.131 (0.087)	−0.452 (<0.001)	−0.501 (<0.001)	−0.134 (0.082)	−0.403 (0.001)	−0.498 (0.001)	0.054 (0.485)	0.543 (0.001)	0.546 (<0.001)
	PROQOL—B	−0.039 (0.602)	0.658 (<0.001)	0.690 (<0.001)	0.036 (0.635)	0.504 (0.001)	0.536 (<0.001)	0.036 (0.636)	−0.587 (0.001)	−0.508 (<0.001)
	PROQOL—STS	−0.012 (0.875)	0.499 (<0.001)	0.449 (<0.001)	0.054 (0.484)	0.282 (0.031)	0.337 (<0.001)	0.007 (0.927)	−0.194 (0.142)	−0.274 (<0.001)

EE—emotional exhaustion; DP—depersonalization; PA—personal accomplishment; CS—compassion satisfaction; B—burnout; STS—secondary traumatic stress.

In the sample, it was observed that lower levels of compassion satisfaction are related to higher levels of emotional exhaustion (MBI dimension) ($p < 0.001$) (Table 6). Lower levels of burnout (according to ProQOL) are related to a greater tendency towards emotional exhaustion ($p < 0.001$) and depersonalization ($p < 0.001$), as well as a lower sense of personal accomplishment ($p < 0.001$) (Table 6). Higher levels of secondary traumatic stress are related to a greater tendency to emotional exhaustion ($p < 0.001$) and depersonalization ($p < 0.001$), as well as a lower sense of personal accomplishment ($p < 0.001$) (Table 6).

The correlations between MBI and ProQOL in the group of professionals working in oncology are not statistically significant, contrary to what happens in the population of professionals working in palliative care.

In the group of professionals working in palliative care, the results were similar to those observed in the sample. Lower levels of compassion satisfaction correlate with higher levels of emotional exhaustion ($p < 0.001$) and depersonalization ($p < 0.001$) (Table 6). Higher levels of satisfaction correlate with a greater sense of personal accomplishment ($p < 0.001$) (Table 6). Higher levels of burnout (according to ProQOL) are related to a greater tendency towards emotional exhaustion ($p < 0.001$) and depersonalization ($p < 0.001$), as well as a lower sense of personal accomplishment ($p < 0.001$) (Table 6). Higher levels of secondary traumatic stress are related to a greater tendency towards emotional exhaustion ($p < 0.001$) and depersonalization ($p = 0.031$) (Table 6). There was no statistically significant correlation between secondary traumatic stress and personal accomplishment ($p = 0.142$) (Table 6).

3.6. Determination of Some Potential Predictors of Burnout

In this chapter of the work, the authors decided to correlate the different MBI dimensions with personal and work-related characteristics of the total sample (professionals working in oncology and palliative care) (Table 7).

Table 7. Spearman correlation between burnout (MBI) with personal and work-related characteristics (in total sample)—r (*p*-value).

Personal and Work-Characteristics		Age	Gender	Marital Status	Number of Children	Weekly Workload	Professional Category	Years of Work	Night Work	Employment Link	Management Position	Extra-Work Activities	Sleep Hours Per Day
MBI burnout dimensions	MBI EE	−0.209 (<0.001)	−0.015 (0.807)	−0.129 (0.036)	−0.160 (0.009)	0.092 (0.135)	−0.026 (0.679)	−0.035 (0.569)	−0.062 (0.318)	−0.049 (0.434)	0.110 (0.078)	−0.035 (0.575)	−0.011 (0.861)
	MBI DP	−0.159 (0.011)	−0.003 (0.968)	0.002 (0.977)	−0.070 (0.265)	0.036 (0.561)	−0.006 (0.923)	−0.080 (0.202)	−0.030 (0.638)	−0.044 (0.487)	−0.037 (0.559)	−0.004 (0.953)	−0.105 (0.094)
	MBI PA	0.116 (0.063)	−0.073 (0.246)	0.000 (0.998)	0.019 (0.757)	−0.027 (0.667)	−0.048 (0.445)	0.004 (0.947)	0.043 (0.499)	0.008 (0.895)	0.097 (0.124)	0.028 (0.662)	0.021 (0.734)

EE—emotional exhaustion; DP—depersonalization; PA—personal accomplishment.

With regard to personal-related characteristics, the older the participants, the lower the level of emotional exhaustion ($p < 0.001$) and depersonalization ($p < 0.05$). Emotional exhaustion, depersonalization, and personal accomplishment are equally distributed between genders (Table 7).

On the other hand, the participants' marital status and number of children present significant differences in terms of emotional exhaustion. Married participants perceive greater emotional exhaustion than single participants (Supplementary Table S1). Professionals who have two children perceive a greater level of emotional exhaustion than participants who do not have children (Supplementary Table S2).

With regard to work-related characteristics, there are no significant differences between the MBI dimensions and the following variables: professional category, years of work, employment link, management position, extra-work activities, and sleep hours per day.

So, this means that emotional exhaustion, depersonalization, and personal accomplishment are equally distributed among these professional characteristics.

Furthermore, with regard to weekly workload, there are no significant differences in terms of correlation (Table 7). However, when the authors carried out a more detailed analysis, they observed that professionals who work 40 h perceive greater emotional exhaustion than those who work 35 h (Supplementary Table S3). Professionals who work 40 h perceive greater depersonalization than those who work 35 h, and they perceive greater depersonalization than those who work 30 h (Supplementary Table S4). Finally,

participants who work 22 h perceive greater personal accomplishment than those who work 37 h, and they perceive greater personal accomplishment than those who work 48 h (Supplementary Table S5).

4. Discussion

Burnout syndrome is frequently observed in working environments having intense involvement with others, such as oncology and palliative care [6].

According to the literature, these professionals are deeply affected by the suffering they witness and, over time, can begin to feel emotionally and psychologically exhausted, cynical, apathetic, depersonalized, and dissatisfied with their own work performance [8].

One of the study's objectives was to compare the prevalence of burnout dimensions in the two groups studied (oncology vs. palliative care professionals).

In this investigation, none of the MBI burnout dimensions presented significant results. Both groups showed similar proportions for emotional exhaustion (medium and high values). Depersonalization was less common (20–25% of professionals) in both professionals. Additionally, there were no differences in personal accomplishment values.

Gómez-Urquiza et al.'s meta-analysis presented a prevalence estimation of 24% for emotional exhaustion (95% CI 16–34%), 30% for depersonalization (95% CI 18–44%), and 28% for low personal accomplishment, with a sample of 693 palliative care nurses [31].

Gonçalves et al. investigated the profile of burnout in palliative care professionals (physicians and nurses) during the COVID-19 pandemic using the Copenhagen Burnout Inventory scale [32,33]. Similar results were found in the work, personal, and patient dimensions among doctors (52%, 43%, and 21%) [32] and nurses (46%, 44%, and 22%) [33].

It is important not to forget that the COVID-19 pandemic represented a challenge for mental health on a global scale [34].

In the recent period, due to the COVID-19 pandemic, the world has experienced an unprecedented global public health crisis, with significant pressure on the healthcare system. In fact, the very high number of confirmed cases has had a huge impact on healthcare systems, which have seen the rationing or cessation of routine services, reorientation of clinical areas, redeployment of staff, shortages of personal protective equipment, and extensive responsibilities with medical resources and services pushed to maximum capacity due to unprecedented demands. Frontline healthcare professionals involved in the management and diagnosis of COVID-19 have been exposed to overwhelming pressure with consequent psychological stress. Since the COVID-19 pandemic, a great deal of evidence has been generated on burnout in healthcare professionals, leading to discussion on how to address it in some contexts [34].

So, this study found similar results in burnout dimensions compared to others in the literature. However, in the sample, the authors were able to verify that working exclusively with patients in palliative care does not represent an additional risk factor in relation to other professionals in oncology services. Indeed, in the sample, when the authors add the three dimensions of burnout, 8.8% of professionals experienced high levels of emotional exhaustion, high levels of depersonalization, and low levels of personal accomplishment.

Before continuing to analyze the results obtained, the authors would like to present a study carried out by a Portuguese team that found that working in palliative care was a protective factor for the development of burnout in nurses [35,36]. These professionals had lower emotional exhaustion values compared to their colleagues from other services like hematology and internal medicine [36]. Pereira et al. also found that palliative care professionals had a lower prevalence of burnout than intensive care professionals [35].

Another study's objective was to evaluate the professional quality of life of healthcare professionals working with oncology and palliative patients.

In this research, the two groups (professionals working in oncology care vs. palliative care) do not present significant results regarding professional quality of life (measured by the three dimensions of the ProQOL scale). It was found that moderate levels were the most prevalent, being present in about 76% of compassion satisfaction, 96% for burnout, and about half for secondary traumatic stress in both groups (oncology vs. palliative care professionals).

In the literature, it was found that the prevalence of compassion satisfaction, burnout, and secondary traumatic stress was 22.89%, 62.79%, and 66.84%, respectively [37]. These results were described in a review and meta-analysis of fifteen studies (sample size—2509) [37].

Gerber et al. performed a study with professionals involved in pediatric palliative care [38]. These authors found low to moderate levels of burnout and secondary traumatic stress and moderate to high levels of compassion satisfaction [39].

Arimon-Pagès et al. investigated the emotional impact and compassion fatigue in oncology nurses (a multicenter study) [40]. It was found that of the 297 participants, 18.2% had low levels of compassion satisfaction, 20.2% had high levels of burnout, and 37.4% had high levels of secondary traumatic stress [40].

Frey et al. carried out a study on the nurses' quality of professional life, but now, for those working in palliative care [38]. Around 48.4% of professionals had moderate–high levels of compassion satisfaction [38].

On the other hand, Kaur et al. reported high levels of compassion satisfaction (49.2%) in palliative healthcare professionals [41].

At last, the authors tried to correlate the three dimensions of the two scales (ProQOL and MBI) in the professionals working in oncology and palliative care and in the total sample. Although both scales measure the same concept, the authors sought to understand whether these scales are useful for assessing the prevalence of burnout and professional quality of life in the context of oncology and palliative care.

In the total sample and group of professionals working in palliative care, there was a significant relationship between the prevalence of the MBI dimensions and professional quality of life (ProQOL). The results of this analysis are in line with the authors' expectations. Thus, when professionals are experiencing burnout (defined as high emotional exhaustion, cynicism, and low personal accomplishment), satisfaction with compassion (the pleasure of helping others at work) decreases.

However, in the group of professionals working in oncology care, the correlations between MBI and ProQOL are not statistically significant.

Based on this study, the prevalence of burnout measured by both scales (MBI and ProQOL) has uniform results, especially in the group of professionals who care for palliative patients.

With this analysis, the authors sought to demonstrate that both scales are complementary in the study of the prevalence of burnout and professional quality of life, particularly in the context of oncology and palliative care. Interestingly, it seems to us that using the scales together can improve the assessment of burnout and quality of professional life, particularly in groups of healthcare professionals exposed to more human suffering.

Exposure to traumatic events, such as dealing with patients in intense suffering, predisposes health professionals to become more exhausted and depersonalized. The lack of a statistically significant correlation between secondary traumatic stress and personal accomplishment may mean that these professionals already have effective coping mechanisms.

In this research, we intend to carry out an analysis of the reality of these professional groups. Both burnout and quality of professional life are influenced by individual and

professional factors, which were not analyzed in this study, having already been the subject of a previous study.

In order to identify some potential predictors of burnout among professionals working in oncology and palliative care, the authors decided to correlate the MBI dimensions with personal and work-related characteristics.

With regard to personal-related characteristics, it was found that age, marital status, and participants' number of children influenced the level of emotional exhaustion and depersonalization.

With regard to work and organizational-related characteristics, it was found that weekly workload influenced the different MBI dimensions.

These results are in line with data from the literature. Edú-Valsania et al. performed a review about burnout, where they addressed some factors related to it [42].

Workload, when excessive, requires physiological and psychological effort [42]. So, the working hours conditions (e.g., shift work, long working hours, or a large amount of overtime) that make it difficult to reconcile personal and professional life are an important trigger of burnout [42].

On the other hand, individual factors, such as personality traits and sociodemographic characteristics, could also predispose the development of burnout [42]. However, the results are not always so consistent [42].

In the literature, some strategies were described to help healthcare professionals prevent burnout and worse professional quality of life.

Development of personal skills in mindfulness, meditation, and coping may help fight against emotional exhaustion and burnout [8].

A supportive work environment is important, particularly to healthcare professionals, because positive interdisciplinary team dynamics help mitigate burnout [8].

On the other hand, healthcare organizations must take measures to create a culture of wellness [8]. Some measures should include limiting overtime, strengthening teams, offering stress management/stress inoculation workshops, reducing caseload size or diversity, developing equitable and worker/family-friendly policies, providing adequate payment, role modeling positive communication skills, effective conflict mitigation, responsiveness, and promotion of equity [8].

5. Strengths/Limitations

The authors identify several limitations in this study.

First, the cross-sectional design conditions the ability to examine changes in the variables over time. The research design does not allow causal inferences to be made. This kind of study allows the observation of variables at a single moment, which translates into a greater speed of realization, lower cost, lower losses, and the possibility of direct observation of the phenomena to be analyzed (avoiding the bias arising from memory or registration failures or inadequate or missing further information) and allows a wide variety of alternative methods, which can be used to statistically analyze the data.

So, a longitudinal study is necessary to comprehend the risk and degree of burnout and professional quality of life during a period of time. With a longitudinal perspective, it could measure burnout levels (and associated factors) over time.

Second, the use of a convenience sample could be considered a limitation.

Convenience sampling is based on ease of access and availability of participants. In this case, the authors chose to select a sample in a known workplace and in the context they intended to study in order to observe habits in a more accessible way. Therefore, the authors decided to choose this type of sampling due to its speed, simplicity, low cost, and ease of access to participants.

However, the use of a convenience sample may have introduced selection bias. The heterogeneous sample does not allow for differentiating the prevalence of burnout and the evaluation of the quality of professional life in the different professional groups. However, this study considered that all professionals are in a multidisciplinary team context.

Third, the social desirability bias is not excluded in this study due to the questionnaire's self-reporting by the participants.

Furthermore, the authors recognize that excluding professionals with psychiatric pathology, despite the aim of avoiding bias in the results, poses a risk of them having hidden this fact when responding to the questionnaire.

Despite these limitations, the study has strengths as well. The use of validated instruments to measure both the risk of burnout and professional quality of life has enhanced the comparability of the study's results. This investigation seeks to understand the usefulness of these two scales in the context of oncology and palliative care, particularly in the Portuguese healthcare professional population.

It is also important to highlight that this study is a pioneer in the sense that it seeks to evaluate and understand the usefulness of jointly assessing burnout risk and professional quality of life in healthcare workers exposed to human suffering. The MBI scale is universally validated for studying the prevalence of burnout. On the other hand, the ProQOL scale also assesses the burnout dimension, adding two other dimensions, also important, for determining the healthcare professionals' quality of life.

6. Conclusions

Continuous and prolonged contact with pain and distress conditions has a high negative psychological impact on professionals in the field of oncology and palliative care, which means that they are more susceptible to burnout.

In our study, there were no significant differences between oncology and palliative professionals in terms of the prevalence of burnout and professional quality of life. However, it was observed that there is a correlation between the prevalence of burnout and the quality of professional life in this type of professional exposed to suffering, particularly in the palliative care context.

Compassion fatigue is a progressive and cumulative process, which begins as a discomfort generated by the feeling of compassion, progressing to stress and later to fatigue [43]. It is characterized by the association of low levels of compassion satisfaction, high levels of secondary traumatic stress, and burnout [43].

Compassion satisfaction is a personal trait that has been linked to resilience when working with chronically ill and suffering patients [43]. Professionals with high levels of compassion satisfaction deal better with negative emotions that can arise from empathetic involvement [43].

In the future, the authors consider it beneficial to expand this type of study to a larger population in order to determine more accurately the role of working quality of life and the prevalence of burnout in health professionals exposed to suffering. The risk of compassion fatigue and burnout highlights the need to develop coping strategies to minimize this risk and improve the quality of life and bonding of health professionals. It would be beneficial to study the impact of certain interventions, such as mindfulness or individual/team therapy, on the response to burnout and as a response to improving levels of professional satisfaction, particularly in this context.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/healthcare13010026/s1, Table 1: Relationship between MBI dimensions and personal-characteristics (marital status); Table 2: Relationship between MBI dimensions and personal-related characteristics (number of children); Table 3: Relationship between MBI Emotional exhaustion dimension and work—related characteristics (weekly workload); Table 4: Relationship between MBI Depersonalization and work—related characteristics (weekly workload); Table 5: Relationship between MBI Personal Accomplishment and work-related characteristics (weekly workload).

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Informed Consent Statement: Informed consent was obtained from all subjects.

Data Availability Statement: The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Conflicts of Interest: The authors declare no conflicts of interest.

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IV

Burnout and attachment in Oncology and Palliative Care healthcare professionals

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Burnout and attachment in oncology and palliative care healthcare professionals

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ABSTRACT

Objectives Examine the prevalence of burn-out in health professionals working in a hospital dedicated to patients with cancer. Explore the relationship between attachment style and burn-out in healthcare professionals working in Oncology and Palliative Care.

Methods Cross-sectional descriptive and correlational study with a sample of 337 health professionals working in a tertiary hospital dedicated to oncology care. The evaluation protocol included a sociodemographic questionnaire, two burn-out (Copenhagen Burnout Inventory (CBI) and Maslach Burnout Inventory) and attachment (Adult Attachment Scale) scales. Statistical analysis was performed by IBM SPSS Statistics V.25. The tests were performed at a significance level of 5%.

Results In the sample, there is a predominance of professionals working in oncology services (76,8%). Comparing professionals who work in oncology services and palliative care, it appears that just over half have high levels of personal burn-out, however the groups do not differ significantly (53.5% vs 56.8%, p=0.619); the same is observed in work-related (p=0.626) and patient-related burn-out (p=0.672). The number of hours per week in which one has the perception that is exposed to suffering is positively correlated with personal, work-related burn-out and exhaustion (p<0.05). Correlating the two burn-out scales in the sample, it is observed that higher levels of personal, work-related and patient-related burn-out are associated with higher levels of emotional exhaustion and depersonalisation, as well as lower levels of personal accomplishment (p<0.001). Considering the correlation between the burn-out dimensions and attachment scale, it appears that high levels of exhaustion, depersonalisation, personal, work-related and patient-related burn-out were associated with higher levels of anxiety (p<0.001). Similar results were found in the palliative care professionals sample.

Conclusions The constant exposure to the suffering of others places high emotional demands on oncology and palliative care professionals, making them vulnerable to burn-out. Burn-out is a multifactorial process, that

WHAT WAS ALREADY KNOWN ON THIS TOPIC?

⇒ Burn-out is characterised by physical and psychological exhaustion related to work stress.
⇒ Burn-out has been reported among health professionals who are involved in the assistance of patients with chronic diseases such as cancer.
⇒ Adult attachment style has been in the spotlight as a component of the individual personality related to burn-out .

WHAT THIS STUDY ADDS?

⇒ The constant exposure to the suffering places high emotional demands on oncology and palliative care professionals, making them vulnerable to burn-out .
⇒ This study showed that there are no significant differences between Oncology and Palliative Care professionals.
⇒ Higher levels of personal, work-related and patient-related burn-out are associated with higher levels of anxiety.
⇒ These results suggest that an anxious attachment style increases the risk of burn-out .

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY?

⇒ This work brings the advantage of using two burn-out assessment scales, in addition to correlating the level of burn-out and attachment in professionals exposed to suffering in patients with cancer.
⇒ It would be advantageous to determine the potential role of attachment styles among healthcare professionals at risk of developing burn-out, particularly those who were exposed to suffering.

involves individual characteristics with environmental effects. There are no significant differences between Oncology and Palliative Care professionals. Higher levels of personal, work-related and patient-related burn-out are associated with higher levels of anxiety. These results suggest that an anxious attachment style increases the risk of burn-out . In the sample, the most important predictor of burn-out was the number of hours per week exposed to suffering. In order to prevent burn-out, there is a growing evidence that suggests mindfulness, exercise, high-quality sleep and pursuit of happiness can improve burn-out in healthcare professionals. This work brings the advantage of using two burn-out assessment scales (particularly CBI scale), in addition to trying to correlate the level of burn-out and attachment in professionals exposed to suffering.

INTRODUCTION

The current shortage of health professionals has caused a crisis, which is expected to worsen over time.[1] Burn-out is the main reason for professional abandonment.[1] Traditionally, burn-out has always been associated with poor working conditions, but now personal personality factors are gaining attention, including attachment style.[1]

The term burn-out was introduced by the psychologist Herbert Freudenberger in the 1970s.[2 3] It describes a psychological state characterised by loss of motivation, emotional exhaustion and cynicism related to the clinical workplace environment.[2 3]

Methods to identify and measure burn-out levels have evolved. Maslach devised a validated burn-out measurement scale (Maslach Burnout Inventory (MBI)).[4] According to Maslach, burn-out syndrome is characterised by emotional exhaustion, depersonalisation and low personal accomplishment.[4 5] The MBI has been adopted worldwide, but despite adequate psychometric support, its content validity has been questioned.[6]

Burn-out is characterised by physical and psychological exhaustion, usually related to work stress and dedication to a cause that does not match the person's expectations.[7] Some call burn-out 'getting burned out by work'.[7] Although it seems to be associated with risk factors from a professional environment, this problem may affect any person.[7]

Kristensen *et al* developed the Copenhagen Burnout Inventory (CBI), a free-to-use tool that extends the construct of burn-out syndrome to different domains of workers' lives, such as assessing personal, work-related and client/patient-related burn-out.[8]

The experience of burn-out represents a risk factor for work efficiency, but also, for the onset of health-related problems, such as alcohol abuse, sleep disorders, obesity and depression.[9] The temporal relationship between burn-out experience and these negative outcomes needs to be better clarified.[9]

Burn-out has been frequently reported among health professionals who are involved in the assistance of patients with chronic diseases.[10] The care of a patient suffering from chronic diseases represents a significant challenge, especially in an advanced stage of the disease.[11]

Thus, it is not surprising that some studies have found high prevalence of burn-out in health professionals who deal with patients with advanced diseases.[12] HaGani *et al* found significant proportions of burn-out levels among oncology professionals.[12] However, other studies don't show the same results. Shanafelt *et al* described burn-out rates among oncologists that seem to be similar to those described in US physicians in general.[13]

The increasing need for palliative care related to the high prevalence of chronic diseases often exposes the health professionals to stressful and emotional experiences.[14] The prevalence of burn-out in professionals working in palliative care was varying according to the studies.[7 15] The main findings indicate that burn-out levels in palliative care do not seem to be higher than in other contexts.[7 15]

However, not all individuals who experience the same work environment develop burn-out syndrome, which suggests the importance of individual factors such as personality and work engagement.[16]

Adult attachment style has been in the spotlight as a component of the individual personality related to burn-out.[1] According to certain theories of personality, past experiences are essential towards developing different types of affective bonds.[17] So, attachment theory may be used to understand interpersonal relationships, individual differences, and their impact on work behaviour and attitudes.[17]

Lately, there has been a growing interest in understanding how attachment style predicts individual emotional regulation, intention and behaviour at work.[16 18]

Bowlby's theory has been the springboard for research on the effects of attachment style on various organisational behaviours.[15 18] Positive mood states were found to be positively related to a secure attachment style.[1] Insecure attachment (anxious attachment or avoidant attachment) is known to be associated with poor coping and career burn-out.[1 19] An insecure attachment style can, in fact, help explain why in stressful situations some develop burn-out and others don't.[1] Pines described this association for the first time in 2004, in a sample of Israeli students.[1] The results show that the attachment style influences their performance in stressful situations and the development of coping strategies.[1]

Lenzo *et al* investigated the potential relationship between attachment styles and burn-out dimensions among health professionals working in palliative care, using a sample of 108 palliative care practitioners.[11] The results showed a low burn-out risk.[11] However,

there was a strong correlation between the various dimensions of the MBI Scale and the attachment style questionnaire.[11] Specifically, confidence in self and others was negatively correlated with emotional exhaustion.[16] Discomfort with closeness, need for approval and preoccupation with relationships were all positively correlated with emotional exhaustion.[11]

Care and attachment has become more complex throughout the course of evolution.[18] They include four aspects that may appear independently: protection and safety; provision; expression of affection and validation of feelings; socialisation.[20]

It could be useful to include self-report instruments to assess attachment security in the recruitment procedure of personnel.[11] Psychological interventions aiming to increase relational capacity may be effective in reducing the risk of burn-out.[11] Mindfulness and compassion therapy is key to clarifying and modifying the relationship we have with ourselves and others, and therefore is closely related to attachment styles.[20]

The general aim of the study is to evaluate the relationship between attachment style and burn-out in a sample of healthcare professionals working in a tertiary hospital dedicated to patients with cancer.

The specific aims of the study were:

- To provide detailed information about healthcare professionals' population in terms of demographic data.
- To evaluate the prevalence of burn-out in healthcare professionals working in Oncology and Palliative Care.
- To determine the different attachment styles in healthcare professionals working in Oncology and Palliative Care.
- To explore some potential predictors of burn-out among professionals working in Oncology and Palliative Care.
- To identify the association between burn-out and attachment styles in Oncology and Palliative Care staff.

MATERIAL AND METHODS

The authors conducted a cross-sectional descriptive and correlational study on Portuguese healthcare professionals working in Oncology and Palliative Care.

Sample

The authors conducted this study on a population of 1003 professionals working in a Portuguese tertiary hospital dedicated to patients with cancer.

The inclusion criteria were adult healthcare professionals (≥18 years old) working in this hospital. It included professionals who agreed to participate and were able to understand the purpose of the study and give their consent to participate.

Professionals under the age of 18 years, professionals who were not willing to participate or professionals with any psychiatric disorder were excluded.

From the chosen population, 666 professionals were excluded (40 had psychiatric pathology and 626 did not want to participate in this study). So, the authors used a convenience sample consisting of 337 healthcare professionals. The sample response rate was 36%.

According to Rea and Parker, to detect a significant finding (at 0.05 level) at a required power of 0.8, a minimum of 278 participants were needed.[17] So, the sample size was sufficient to yield adequate statistical power.[21]

Data collection

Data collection respected the rules of the Helsinki Protocol[22] and the Oviedo Convention.[23] The data measurement tools were distributed individually, accompanied by a letter explaining the nature and objectives of the study and ensuring the confidentiality of the data.

After authorisation by informed consent, the data were collected through an evaluation protocol designed for this purpose.

The protocol included a sociodemographic questionnaire (*age, gender, marital status, number of children, professional category, years of work, weekly workload, night work, employment link, management position, sleep hours per day, professional area*), two burn-out-level assessment questionnaires (CBI, MBI) and an attachment questionnaire (Adult Attachment Scale (AAS)).

The assessment was carried out by the authors, ensuring the anonymity of participants, given the sensitivity of the questions examined.

Measures

The CBI consists of three dimensions (personal, work-related and patient-related), defined taking into account different items (online supplemental data 1).[8] The 19 items were recorded as assuming a value between 1 and 5.[8] The burn-out scale can either be evaluated using the scale's continuous values that vary between 0 and 100 (characterised by mean, SD, medians, quartiles and extreme values) or be evaluated by transforming them into a binary variable for each dimension that defines the presence or absence of high levels of burn-out.[8] It is assumed that the levels of each of the dimensions are high if their respective value is ≥50.[8] The 19 items were recorded as assuming a value between 1 and 5.[8] The items 1, 2, 3, 4, 5, 6, 10, 11, 12, 18 and 19 have the following correspondence: 1—always; 2—often; 3—sometimes; 4—rarely; 5—never/almost never.[8] Item 13 has an inverted correspondence in relation to the previous: 1—never/almost never; 2—rarely; 3—sometimes; 4—often; 5—always.[8] The items 7, 8, 9, 14, 15, 16 and 17 have the following correspondence: 1—to a very high degree; 2—to a high degree; 3—somewhat; 4—to a low degree; 5—to a very low degree.[8] In this study, a validated Portuguese version of the CBI was used.[24]

The MBI consists of three dimensions (emotional exhaustion, depersonalisation, personal accomplishment), defined taking into account different items (online supplemental data 1).[25] The 22 items were recorded as assuming a value between 0 and 6.[25] The calculation of the scores for each of the dimensions uses these values.[25]

The burn-out scale can either be evaluated using continuous values that vary between 0 and 54 in the emotional exhaustion dimension, 0 and 30 in the depersonalisation dimension, 0 and 48 in the personal accomplishment dimension (characterised by mean, SD, medians, quartiles and extreme values).[23] It is also possible to define three levels of burn-out in each dimension: emotional exhaustion (low: score ≤13; medium: score 14–26; high: score ≥27); depersonalisation (low: score ≤5; medium: score 6–9; high: score ≥10); personal accomplishment (low: score ≤33; medium: score 34–39; high: score ≥40).[25] In this case, burn-out is defined as a combination of high levels of emotional exhaustion and depersonalisation and low levels of personal accomplishment.[25] In this study, a validated Portuguese version of the MBI was used.[25]

The authors decided to evaluate the prevalence of burn-out using these two scales for a more complete assessment. CBI examines the work-related and patient-related aspects of burn-out in addition to the personal aspect.[26] On the other hand, MBI primarily focuses on the emotional aspect of exhaustion.[26]

The AAS-R consists of three dimensions (anxiety, discomfort with closeness and discomfort with dependency), defined taking into account different items (online supplemental data 1).[27] The 18 items were recorded as assuming a value between 1 and 5.[27] The calculation of the scores for each of the dimensions uses these values.[27] This scale can either be evaluated using continuous values that vary between 1 and 5 (characterised by mean, SD, medians, quartiles and extreme values).[27] The items 1, 3, 4, 5, 6, 9, 10, 11, 12, 14 and 15 have the following correspondence: 1—not at all characteristic of me; 2—uncharacteristic of me; 3—characteristic of me; 4—moderate characteristic of me; 5—very characteristic of me.[23] In the case of items 2, 7, 8, 13, 16, 17 and 18, the coding must be reversed: 5—not at all characteristic of me; 4—uncharacteristic of me; 3—characteristic of me; 2- moderate characteristic of me; 1—very characteristic of me.[27] The calculation method for each of the attachment dimensions is as follows: * anxiety=mean of six items (item 3, 4, 9, 10, 11 and 15); * discomfort of closeness=mean of six items (item 1, 6. 8, 12, 13 and 14); * discomfort with dependency=mean of six items (item 2, 5, 7, 16, 17 and 18).[27] In this study, a validated Portuguese version of the AAS-R was used.[28]

Missing data

Regarding the imputation of missing values in the CBI Scale, separately for personal, work-related and patient-related burn-out, for each participant, if up to two items were not answered, the missing item(s) value(s) were assumed to be the average of the items for that same dimension.

For the MBI Scale and the AAS-R Scale, participants who had 20% or more of unanswered items on a given scale should be excluded from the sample. According to this criterion, for the MBI Scale, it was not possible to impute a value to a missing item whenever there was no response for three or more items of the emotional exhaustion and personal accomplishment dimensions, and two or more items of the depersonalisation dimension. For the AAS-R Scale, for the three dimensions, it was not possible to impute a value to a missing item whenever there was no response for two or more items of the respective dimension. When it was possible to impute a value to a missing item, it was obtained by the average of the responses of the remaining dimension items.

Internal consistency

Before determining Cronbach's alpha indexes, the descriptive statistics of each item observed at each scale were determined, namely the mean and the SD. In this way, the reliability of the values of the observed means was demonstrated, because the presence of extreme cases markedly influences these descriptive statistics. It was also necessary to look at the correlation coefficients between each of the two items of the same dimension. The authors opted for the Kendall's Tau-b coefficient since each item only takes up to five different values. Most authors recommend the following criteria for Cronbach's alpha: values above 0.80 are desirable; higher than 0.70 are recommended; and greater than 0.60 should be accepted for research use only. Thus, within the framework of this study, any result greater than 0.60 represents satisfactory internal consistency.

Statistical analysis

In both the total sample and the groups involved in the comparative analyses, the observed variables were characterised taking into account the most adequate descriptive statistics. Categorical variables were characterised using absolute and relative frequencies, while continuous variables were characterised by the sample mean and SD.

In the two comparative analyses between two groups, regarding sociodemographic data, working in healthcare versus palliative care, the categorical variables were compared considering the χ^2 asymptotic test or exact χ^2 test, according to whether or not the assumptions to apply the first one were satisfied. In the case of continuous variables, their means were compared using the t-test for independent samples.

The comparative analyses between two or more groups for continuous scales were performed using one-way multivariate analysis of variance (MANOVA), to test the differences between the means of the various dimensions. The Wilks' Lambda test or the Pillai's Trace test were used when it was not rejected, or was rejected, the homogeneity of the variance-covariance matrix, respectively. Statistically significant differences were found between the groups in each individual dimension, adjusting the level of significance using the Bonferroni method, 5% / 3 = 1.7%. The comparisons of the means of each dimension were performed using the T test in the case of two groups

and using analysis of variance (ANOVA) in the case of more than two groups. In ANOVA, the F test was used when homogeneity of the group variances was verified (evaluated by the Levene test); or the Welch test when homogeneity was not verified. In the first case, multiple comparisons were performed using the Tukey test, and in the second using the Games-Howell test.

Correlations between two continuous variables were performed using the Pearson correlation coefficient.

Statistical analysis was performed by IBM SPSS Statistics V.25. The tests were performed at a significance level of 5%.

RESULTS

Sociodemographic characteristics of the sample

In the sample, there is a predominance of professionals working in oncology services (76.8%). There are no significant differences between professionals working in oncology and palliative care, especially in gender, marital status (single: 24.5% vs 29.7%; married: 64.5% vs 62.2%, p=0.799), number of children (p=0.201), weekly workload (38±4 vs 36±6, p=0.112) and professional category, with 12.2% vs 10.8% of physicians, 44.1% vs 55.4% of nurses, 21.2% vs 21.6% of operational assistants and 22.4% vs 12.2% from other categories (p=0.198) (table 1).

Table 1 Comparative analysis between professionals working in general and palliative care services (sociodemographic characteristics)

Variables		Working in oncology care (n=263)*	Working in palliative care (n=74)	*P* value†
Age (years), mean±SD		42±9	40±10	**0.046**
Gender, n (%)	Female	205 (83.7)	63 (85.1)	0.764
	Male	40 (16.3)	11 (14.9)	
Marital status, n (%)	Single	60 (24.5)	22 (29.7)	0.799
	Divorced	24 (9.8)	5 (6.8)	
	Widow	3 (1.2)	1 (1.4)	
	Married	158 (64.5)	46 (62.2)	
Number of children, n (%)	0	68 (27.8)	31 (41.9)	0.201
	1	76 (31.0)	23 (31.1)	
	2	89 (36.3)	17 (23.0)	
	3	10 (4.1)	3 (4.1)	
	4	1 (0.4)	0 (0.0)	
	5	1 (0.4)	0 (0.0)	
Weekly workload, mean±SD		38±4	36±6	0.112
Professional category, n (%)	Physician	30 (12.2)	8 (10.8)	0.198
	Nurse	108 (44.1)	41 (55.4)	
	Operational assistant	52 (21.2)	16 (21.6)	
	Other	55 (22.4)	9 (12.2)	
Years of work, n (%)	≤3 years	24 (9.8)	20 (27.0)	**0.002**
	4–5 years	7 (2.9)	1 (1.4)	
	6–10 years	41 (16,8)	13 (17.6)	
	>10 years	172 (70.5)	40 (54.1)	
Night work, n (%)	Yes	82 (34.0)	44 (59.5)	**<0.001**
	No	159 (66.0)	30 (40.5)	
Employment link, n (%)	Yes	229 (96.2)	66 (89.2)	**0.035**
	No	9 (3.8)	8 (10.8)	
Management position, n (%)	Yes	30 (12.5)	8 (11.3)	0.781
	No	210 (87.5)	63 (88.7)	
Extra work activities, n(%)	Yes	94 (39.2)	34 (46.6)	0.260
	No	146 (60.8)	39 (53.4)	
Sleep hours per day, n (%)	≤6 hours	58 (24.0)	17 (23.3)	0.459
	>6 hours to ≤8 hours	180 (74.4)	53 (72.6)	
	> 8 hours	4 (1.7)	3 (4.1)	

*Missing—18

†*In the case of categorical variables, the comparison between the two groups was performed using asymptotic χ^2 test or exact χ^2 test, depending on the assumptions for applying the test. In the case of the two continuous variables, the means were compared between the two groups using t-test for independent samples.*

Table 2 Comparative analysis between professionals working in oncology and palliative care services according to burn-out levels (Copenhagen Burnout Inventory (CBI))

CBI (continuous)	Working in palliative care	N	Mean	SD	*P* value*	*P* value†
Personal	No	245[1]	48.98	17.59	-----	-----
	Yes	74	49.44	17.60		
Work	No	244[2]	46.97	18.61	-----	-----
	Yes	74	49.18	18.03		
Patient	No	236[3]	33.42	20.45	-----	-----
	Yes	74	34.85	19.03		
CBI (categorical)		**Working in oncology service**		**Working in palliative care service**		***P* value‡**
Personal, n (%)	No (<50)	114 (46.5)		32 (43.2)		0.619
	Yes (≥50)	131 (53.5)		42 (56.8)		
Related with work, n (%)	No (<50)	120 (49.2)		34 (45.9)		0.626
	Yes (≥50)	124 (50.8)		40 (54.1)		
Related with patient, n (%)	No (<50)	178 (75.4)		54 (73.0)		0.672
	Yes (≥50)	58 (24.6)		20 (27.0)		

1—181—18 missing; 2–19 missing; 3–27 missing.
*T-test.
† Multiple comparisons are not performed because only two groups are compared.
‡The comparison between the two groups was carried out using the asymptotic χ^2 test because the assumptions for its use were satisfied.

The two groups differ in terms of the mean age (on average those working in palliative care are 2 years younger). They also differ in terms of number of years working in the hospital (p=0.002). There are significantly more professionals working in palliative care for less than 3 years (9.8% vs 27.0%) and fewer working for more than 10 years (70.5% vs 54.1%). Regarding night work, it is more frequent to find palliative care professionals working in night shifts (34.0% vs 59.5%, p<0.001). Finally, there are also more people working in palliative care who do not have an employment link (3.8 vs 10.8%, p=0.038) (table 1).

Comparative analysis between working or not in palliative care (burn-out and attachment scales)

The authors evaluated the levels of burn-out in both professionals (working or not in palliative care), using the CBI and MBI Scales.

A MANOVA analysis (one-way MANOVA) was performed to test the differences between professionals, according the three CBI and MBI burn-out dimensions (defined as continuous variables). This test leads us to conclude that there are no differences between genders regarding burn-out (F: p=0.673; partial η^2=0.005 CBI; F: p=0.190; partial η^2=0.017 MBI) (tables 2 and 3).

Comparing professionals who work in oncology services and palliative care, it appears that just over half have high levels of personal burn-out, however the groups do not differ significantly (53.5% vs 56.8%, p=0.619); the same is observed in work-related burn-out (50.8% vs 54.1%, p=0.626). The presence of high levels of patient-related burn-out is observed less frequently in about a quarter of participants (24.6% vs 27.0%, p=0.672) (table 2).

It is verified that the two groups do not differ in relation to all dimensions of the MBI Scale. For emotional exhaustion, medium and high levels are around 35% in both groups and low levels are below 30%, p=0.743. As for depersonalisation, this is also less frequent, observing between 20% and 25% the frequency of medium and high levels, while low levels were observed in more than half of the professionals in both groups (p=0.435). Finally, regarding personal accomplishment, there are also no differences between professionals (p=0.865), observing very similar proportions of low, medium and high levels in the sample (table 3).

At last, a comparative analysis was performed to test the differences between professionals who work in oncology and palliative services, according the three AAS-R dimensions (MANOVA test). It is verified that there are no differences between groups regarding attachment (F: p=0.731; partial η^2=0.004) (table 4).

Determination of some potential predictors of burn-out

In this chapter of the work, it was decided to correlate the different scales with some variables as age, weekly workload, months working in palliative care and number of hours exposed to suffering (table 5).

Age, weekly workload, number of months working in the healthcare and working in palliative care are not significantly correlated with the nine dimensions of burn-out/attachment presented (p>0.05) (table 5).

The number of hours per week in which one has the perception of being exposed to suffering is positively correlated with personal and work-related burn-out, and exhaustion (p<0.05) (table 5). There are no

Table 3 Comparative analysis between professionals working in oncology and palliative care services according to burn-out levels (Maslach Burnout Inventory (MBI))

MBI (continuous)	Working in palliative care	N	Mean	SD	*P* value*	*P* value†
Exhaustion	No	223[1]	21.73	11.62	-----	-----
	Yes	67[2]	21.16	10.57		
Depersonalisation	No	218[3]	5.37	5.10	-----	-----
	Yes	67[2]	6.37	4.63		
Personal accomplishment	No	217[4]	35.22	8.39	-----	-----
	Yes	67[2]	35.79	7.35		
MBI (categorical)		**Working in general services**		**Working in palliative care**		***p* value‡**
Exhaustion, n (%)	Low (≤13)	65 (2911)		19 (28.4)		0.743
	Medium (14–26)	79 (35.4)		27 (40.3)		
	High (≥27)	79 (35.4)		21 (31.3)		
Depersonalisation, n (%)	Low (≤5)	130 (59.6)		34 (50.7)		0.435
	Medium (6–9)	46 (21.1)		17 (25.4)		
	High (≥10)	42 (19.3)		16 (23.9)		
Personal accomplishment, n (%)	Low (≤33)	80 (36.9)		23 (34.3)		0.865
	Medium (34–39)	64 (29.5)		22 (32.8)		
	High (≥40)	73 (33.6)		22 (32.8)		

1—401—40 missing; 2–7 missing; 3–45 missing; 4–46 missing.
*T-test.
† Multiple comparisons are not performed because only two groups are compared.
‡The comparison between the two groups was carried out using the asymptotic χ^2 test because the assumptions for its use were satisfied.

statistically significant correlations with the remaining six dimensions (p>0.05) (table 5).

Correlation between burn-out and attachment scales

First, the authors decided to determine the correlation between the different scales used in the sample, without differentiating between professionals (table 6).

Starting with the correlations between the three dimensions of CBI (cells in blue), it appears that they are all positive and significant (p<0.001) (table 6).

Now considering the correlations between the MBI burn-out dimensions (cells in green), it appears that high levels of exhaustion are related to high levels of depersonalisation (positive coefficient) (p<0.001) (table 6). However, high levels of personal accomplishment are associated with low levels of the other two dimensions (negative coefficient) (p<0.001) (table 6).

In AAS-R (cells in yellow), higher levels of anxiety are related to lower levels of comfort with closeness and comfort with dependency (negative coefficients) (table 6). On the other hand, comfort with dependency and comfort with closeness are positively correlated (table 6).

Correlating the two burn-out scales (cells in pink), it is observed that high levels of personal, work-related and patient-related burn-out are associated with higher levels of emotional exhaustion and depersonalisation, as well as, lower levels of personal accomplishment (p<0.001) (table 6).

On the other hand, correlating CBI dimensions with the attachment scale in the general sample (cells in orange), it is observed that higher levels of personal, work-related and patient-related burn-out

Table 4 Comparative analysis between professionals working in oncology and palliative care services according to attachment (Adult Attachment Scale)

AAS-R (continuous)	Working in palliative care	N	Mean	SD	*P* value*	*P* value†
Anxiety	No	245[1]	2.13	0.69	-----	-----
	Yes	74	2.14	0.71		
Discomfort with closeness	No	245[1]	3.62	0.48	-----	-----
	Yes	74	3.61	0.54		
Discomfort with dependency	No	245[1]	3.23	0.55	-----	-----
	Yes	74	3.29	0.56		

1—181—18 missing.
*T—test.
† Multiple comparisons are not performed because only two groups are compared.

Table 5 Correlation between burn-out /attachment scales with some variables of the sample

Pearson correlation coefficient					
	Age	**Weekly workload**	**Months working in healthcare**	**Months working in palliative care**	**Hours exposed to suffering**
CBI personal	r=−0.019 (p=0.735)	r=−0.063 (p=0.248)	r=−0.005 (p=0.934)	r=−0.027 (p=0.817)	**r=0.163 (p=0.007)**
CBI work	r=−0.038 (p=0.492)	r=−0.011 (p=0.847)	r=−0.005 (p=0.934)	r=0.014 (p=0.904)	**r=0.153 (p=0.012)**
CBI patient	r=−0.072 (p=0.200)	r=−0.058 (p=0.303)	r=−0.039 (p=0.498)	r=−0.027 (p=0.821)	r=−0.017 (p=0.776)
MBI EE	r=−0.070 (p=0.228)	r=−0.006 (p=0.922)	r=0.019 (p=0.752)	r=0.045 (p=0.718)	**r=0.148 (p=0.019)**
MBI DP	r=−0.107 (p=0.065)	r=0.027 (p=0.650)	r=−0.063 (p=0.289)	r=−0.122 (p=0.325)	r=0.083 (p=0.191)
MBI PA	r=0.036 (p=0.534)	r=0.041 (p=0.485)	r=0.039 (p=0.514)	r=−0.159 (p=0.199)	r=−0.089 (p=0.161)

CBI, Copenhagen Burnout Inventory; DP, depersonalisation; EE, emotional exhaustion; MBI, Maslach Burnout Inventory; PA, personal accomplishment.

are associated with higher levels of anxiety and lower levels of comfort with closeness and dependency ($p<0.001$) (table 6).

Now considering the correlations between the MBI burn-out dimensions and attachment scale (cells in purple), it appears that high levels of exhaustion and depersonalisation are related to high levels of anxiety and low levels of comfort with closeness and dependency ($p<0.001$) (table 6). However, high levels of personal accomplishment are associated with low levels of anxiety and high levels of comfort with closeness and dependency ($p<0.001$) (table 6).

Finally, the authors intend to evaluate the correlation between the burn-out/attachment scales in the population of health professionals working in palliative care (table 7).

Starting with the correlations between the three dimensions of the CBI Scale in palliative care professionals (cells in blue), it appears that they are all positive and significant ($p<0.001$), which means that higher levels of one of the dimensions are associated with higher levels of the other two (table 7).

Now considering the correlations between the MBI dimensions (cells in green), it appears that high levels of exhaustion in these professionals are related to high levels of depersonalisation (positive coefficient, $p<0.001$) (table 7). However, high levels of depersonalisation are associated with low levels of personal accomplishment (negative coefficient, $p<0.001$) (table 7). There is no significant relation between emotional exhaustion and personal accomplishment ($p>0.05$) (table 7).

In AAS-R (cells in orange), higher levels of anxiety are related to lower levels of comfort with dependency (negative coefficients, $p<0.001$) (table 7). On the other hand, comfort with dependency and comfort with closeness are positively correlated ($p<0.05$) (table 7). There is no significant relation between anxiety and comfort with closeness ($p>0.05$) (table 7).

Correlating the two burn-out scales (cells in yellow), it is observed that high levels of personal and work-related burn-out are associated with higher levels of emotional exhaustion and lower levels of personal accomplishment ($p<0.001$) (table 7). However, high levels of patient-related burn-out are associated with higher levels of exhaustion ($p<0.001$) (table 7).

On the other hand, correlating CBI dimensions with the attachment scale in this subpopulation (cells in purple), it is observed that higher levels of personal and work-related burn-out are associated with higher

Table 6 Correlation between burn-out and attachment scales in the sample

Pearson correlation coefficient*									
Scales	**CBI Personal**	**CBI Work**	**CBI Patient**	**MBI EE**	**MBI DP**	**MBI PA**	**AAS-R Anxiety**	**AAS-R Closeness**	**AAS-R Dependency**
CBI Personal	1.000	0.825	0.551	0.754	0.374	−0.333	0.293	−0.185	−0.314
CBI Work		1.000	0.647	0.801	0.470	−0.382	0.297	−0.209	−0.304
CBI Patient			1.000	0.637	0.470	−0.456	0.246	−0.215	−0.315
MBI EE				1.000	0.486	−0.350	0.305	−0.152	−0.279
MBI DP					1.000	−0.352	0.209	−0.164	−0.299
MBI PA						1.000	−0.238	0.367	0.209
AAS-R Anxiety							1.000	−0.271	−0.481
AAS-R Closeness								1.000	0.282
AAS-R Dependency									1.000

*All correlations presented in this table are significant with p<0.001.

AAS-R, Adult Attachment Scale; CBI, Copenhagen Burnout Inventory; DP, depersonalisation; EE, emotional exhaustion; MBI, Maslach Burnout Inventory; PA, personal accomplishment.

Table 7 Correlation between burn-out and attachment scales in the group of professionals working in palliative care

Pearson correlation coefficient									
Scales	**CBI Personal**	**CBI Work**	**CBI Patient**	**MBI EE**	**MBI DP**	**MBI PA**	**AAS-R Anxiety**	**AAS-R Closeness**	**AAS-R Dependency**
CBI Personal	1.000	**r=0.805 (p=0.000)**	**r=0.534 (p=0.000)**	**r=0.633 (p=0.000)**	r=0.268 (p=0.028)	**r=−0.437 (p=0.000)**	**r=0.541 (p=0.000)**	r=−0.292 (p=0.011)	**r=−0.407 (p=0.000)**
CBI Work	1000		**r=0.691 (p=0.000)**	**r=0.740 (p=0.000)**	r=0.351 (p=0.004)	**r=−0.453 (p=0.000)**	**r=0.412 (p=0.000)**	r=−0.239 (p=0.04)	r=−0.327 (p=0.004)
CBI Patient		1.000		**r=0.669 (p=0.000)**	r=0.336 (p=0.005)	r=−0.380 (p=0.002)	r=0.306 (p=0.008)	r=−0.235 (p=0.044)	r=−0.389 (p=0.001)
MBI EE				1.000	**r=0.438 (p=0.000)**	r=−0.389 (p=0.001)	r=0.408 (p=0.001)	r=−0.231 (p=0.06)	r=−0.263 (p=0.031)
MBI DP					1.000	**r=−0.434 (p=0.000)**	r=0.193 (p=0.118)	r=−0.267 (p=0.029)	r=−0.396 (p=0.001)
MBI PA						1.000	r=−0.218 (p=0.076)	r=0.395 (p=0.001)	r=0.400 (p=0.001)
AAS-R Anxiety							1.000	r=−0.323 (p=0.005)	**r=−0.543 (p=0.000)**
AAS-R Closeness								1.000	**r=0.327 (p=0.004)**
AAS-R Dependency									1.000

AAS-R, Adult Attachment Scale; CBI, Copenhagen Burnout Inventory; DP, depersonalisation ; EE, emotional exhaustion; MBI, Maslach Burnout Inventory; PA, personal accomplishment.

levels of anxiety (p<0.001) (table 7). Higher levels of personal burn-out are associated with lower levels of comfort with dependency (p<0.001) (table 7).

Considering the correlations between the MBI burn-out dimensions and attachment scale (cells in grey), there is no significant association between them (p>0.05) (table 7).

DISCUSSION

In this sample, there is a predominance of healthcare professionals working in general oncology services. The two groups (Oncology and Palliative care professionals) differ in terms of mean age, number of years working in hospital, night work and employment link (p<0.05). The professionals working in Palliative Care are, on average, 3 years younger. Furthermore, these professionals have more night shifts and do not have an employment link.

One of the authors' objectives was to evaluate the prevalence of burn-out in professionals working in Oncology and Palliative Care. Comparing both professionals, it appears that the two groups do not differ in relation to all dimensions of the CBI and MBI Scales.

It appears that just over half have high levels of personal burn-out in the CBI Scale, however the groups do not differ significantly (53.5% vs 56.8%, p=0.619); the same is observed in work-related burn-out (50.8% vs 54.1%, p=0.626). The presence of high levels of patient-related burn-out is observed less frequently in about a quarter of participants (24.6% vs 27.0%, p=0.672).

Gonçalves *et al* performed a study in physicians and nurses working in Palliative Care during the COVID-19 pandemic, using the CBI Scale.[29 30] In the physicians' population, the prevalence of work-related, personal and patient-related burn-out was 52%, 43% and 21%, respectively.[29] On the other hand, in the nurses' population, the prevalence of personal, work-related and patient-related burn-out were 46%, 44% and 22%, respectively.[30] These studies were carried out in a very specific and special period (COVID-19 pandemic). However, our study was carried out prior to this period. It is necessary to highlight that the prevalence of burn-out varies in studies involving healthcare workers in Oncology and Palliative Care and the majority used the MBI.

In the sample, for the emotional exhaustion dimension of the MBI, medium and high levels are around 35% in both groups (p=0.743). About depersonalisation, this is less frequent, observing medium and high levels in 20%–25% of professionals (p=0.435). Finally, in personal accomplishment, there are also no differences between professionals, observing very similar proportions of low, medium and high levels in the sample (p=0.865).

HaGani *et al* performed a systematic review about burn-out among oncology professionals.[12] The average proportions of emotional exhaustion, depersonalisation and personal accomplishment were 32%, 21%–26% and 26%–25%.[12]

On the other hand, Dijxhoorn *et al* developed a systematic literature review on prevalence of burn-out in palliative healthcare professionals.[15] Symptoms of burn-out measured in the MBI showed wide ranges of high emotional exhaustion (3%–49%), high depersonalisation (1%–48%) and lack of personal accomplishment (3%–85%).[15] Burn-out prevalence among these group of professionals ranged from 3% to 66%, with most studies reporting a prevalence of 18% or higher.[15]

In our study, the results regarding the dimensions of the MBI Scale do not differ from the other studies presented. There were no significant differences between both groups, which leads us to conclude that there is no greater prevalence of burn-out in professionals working in palliative care.

In the literature, we found some studies that were similar with these findings. Gama *et al* described lower symptoms of burn-out in nurses working in palliative care units compared with professionals of other departments.[31] Nurses working in palliative care units had lower levels of emotional exhaustion compared with nurses working in oncology units (m=13.03 vs m=18.4, <0.008), in haematology (m=13.03 vs m=19.03, p<0.001) and in internal medicine (m=13.03 vs m=16.42, p<0.009).[31] Pereira *et al* reported that healthcare professionals working in intensive care and other health units had higher levels of burn-out than palliative care professionals.[7 32–35]

Another objective of the study was to determine the attachment styles in Oncology and Palliative Care staff. A comparative analysis was performed to test the differences between professionals who work in oncology and palliative services, according the three AAS-R dimensions. It is verified that there are no differences between groups regarding attachment.

Attachment can help healthcare professionals to act more effectively to the distress of dying patients and their families, particularly in palliative care.[36] Attachment theory highlights that, particularly in the end of life, patients and families benefit from the secure and safe behaviour of a healthcare professional, who is responsive to their unique needs.[36] In the literature, most studies seek to understand the patient's attachment style. However, this study attempted to understand whether there were differences between healthcare professionals' attachment styles in the context of Oncology and Palliative Care.

In order to explore and identify some potential predictors of burn-out among these professionals, the authors decided to correlate the different scales with variables such as age, weekly workload, number of hours exposed to suffering, and number of months working in healthcare and palliative care. The number of hours per week in which one has the perception of being exposed to suffering is positively correlated with

personal and work-related burn-out, and exhaustion ($p<0.05$).

In other studies performed in healthcare professionals, several risk factors have been identified and included poor control over workload, insufficient documentation time, inefficient teamwork, having a chaotic work atmosphere, lack of value-alignment with leadership.[37]

Yates *et al* performed a systematic review about burn-out in the context of oncology care, identifying the following risk factors: excessive workload, high numbers of patients, dealing with patient suffering, psychosomatic disorders and anxiolytic usage.[38]

Kamal *et al* identified some risk factors among professionals working in hospice and home-based palliative care.[39] Some of these factors were working in smaller organisations, working longer hours, being younger than 50 years and working weekends.[39] Other sources of burn-out included tensions between non-specialists and palliative care specialists, but also, increasing workload.[39]

Gómez-Urquiza *et al* developed a meta-analysis about the prevalence of burn-out in oncology and PC (palliative care) nurses.[40 41] In this study, they identified occupational and psychological factors related to burn-out.[40 41] The occupational factors included workload, commitment, work environment, conciliation, relations with patients and family, the need to cope with death, pain and suffering.[40 41] On the other hand, the psychological factors included extroversion, neuroticism, empowerment, meaning in life and negative affect.[40 41]

Pereira *et al* developed a systematic review about burn-out in the context of Palliative Care, identifying risk and protective factors.[7] The risk factors identified were lack of self-confidence in communication skills, time pressure, difficulty in delivering bad news, dealing with pain, suffering, death and dying, time of professional exercise and the patient's economic resources in order to pay for treatments.[7]

So, in our sample, the most important predictor of burn-out was the number of hours per week exposed to suffering. This result is quite similar to others studies already presented.

To assess the relationship/association between burn-out and attachment, the authors correlated the three scales used in the sample, without differentiating between professionals.

When we correlated the two burn-out scales, it was observed that high levels of personal, work-related and patient-related burn-out were associated with higher levels of emotional exhaustion and depersonalisation, as well as lower levels of personal accomplishment ($p<0.001$). On the other hand, when we correlated CBI dimensions with the attachment scale, it is observed that higher levels of personal, work-related and patient-related burn-out are associated with higher levels of anxiety and lower levels of discomfort with closeness and dependency ($p<0.001$). When we correlated the MBI burn-out dimensions and attachment scale, it appears that high levels of exhaustion and depersonalisation are related to high levels of anxiety and low levels of discomfort with closeness and dependency ($p<0.001$). High levels of personal accomplishment are associated with low levels of anxiety and high levels of discomfort with closeness and dependency ($p<0.001$).

Previous studies suggest that levels of work-related stress are high among oncology professionals, though not necessarily higher than among professionals in other clinical settings.[42]

At last, the authors correlated the three scales in the sample of professionals working in palliative care, in order to assess the association in this subpopulation.

In the subpopulation of professionals working in Palliative Care, it is observed that high levels of personal and work-related burn-out are associated with higher levels of emotional exhaustion and lower levels of personal accomplishment ($p<0.001$). When we correlated the CBI dimensions with the attachment scale in this subpopulation, it was observed that higher levels of personal and work-related burn-out are associated with higher levels of anxiety ($p<0.001$). Higher levels of personal burn-out are associated with lower levels of discomfort with dependency ($p<0.001$). On the other hand, there is no significant association between MBI burn-out dimensions and the attachment scale ($p>0.05$). If the authors intended to validate the CBI, MBI and AAS-R scales in this specific population, the sample will not be enough. For a correlation coefficient of 0–193, at a significant level of 5% and for a power of 80%, we would need a dimension of 208 professionals, which is much smaller than our dimension.

Lenzo *et al* studied the interplay between burn-out risk and attachment styles among palliative care professionals.[11] They found that the burn-out dimensions of emotional exhaustion and personal accomplishment were correlated to different attachment domains.[11]

Higher emotional exhaustion was found to be correlated to higher discomfort with closeness, preoccupation with relationships and need for approval, that are linked to anxious attachment.[11]

The authors acknowledge some limitations of the present research. First, the design of the study does not allow us to make causal inferences. Further longitudinal observations will help to better define the nature of the association between attachment styles and burn-out severity.

The heterogeneous sample did not allow us to differentiate the burn-out severity among the different professional groups, although, our study has considered all the professionals working in multidisciplinary healthcare teams.

Our findings indicate indeed that attachment style domains could contribute to explain burn-out

syndrome among Oncology and Palliative Care professionals. Burn-out is a complex process that appears to depend on both organisational/environment and personal factors.

Second, our study did not evaluate possible interventions in the prevention of burn-out.

This work brings the advantage of using two burn-out assessment scales (particularly the CBI Scale), in addition to trying to correlate the level of burn-out and attachment in professionals exposed to suffering.

CONCLUSION

Burn-out is a multifactorial process that involves individual characteristics with environmental effects.[43]

The current study was additionally conducted to investigate the potential relationship between attachment and burn-out dimensions among healthcare professionals involved in the context of oncology and palliative care.

Our findings indicate that high levels of personal, work-related and patient-related burn-out are associated with higher levels of emotional exhaustion and depersonalisation, as well as lower levels of personal accomplishment, particularly among professionals working in Oncology Care. In PC professionals, high levels of personal and work-related burn-out are associated with higher levels of emotional exhaustion and lower levels of personal accomplishment.

On the other hand, the authors found that higher levels of personal, work-related and patient-related burn-out are associated with higher levels of anxiety among professionals working in Oncology Care. In PC professionals, higher levels of personal and work-related burn-out are associated with higher levels of anxiety. Higher levels of personal burn-out are associated with lower levels of discomfort with dependency. These results suggest that an anxious attachment style increases the risk of burn-out.

In this population, the most important predictor of burn-out was the number of hours per week exposed to suffering. Caring for patients with serious disease involves intense interactions with patients and their families.[43] Emotions run high as patients and families work through intense physical suffering, grief and all the other challenging experiences that may occur at the end life.[43]

According to Pereira *et al*, Palliative Care professionals and units seem to demonstrate some protective factors for burn-out: individual and/or team prevention strategies, having time to spend with patients and families, effective communication, coping strategies for facing the death of a patient, the building up of a sense of understanding about patients' death, personal enrichment, caring for those who are dying as a significant feature, personal gratification and personal/professional satisfaction.[7]

In order to prevent burn-out, there is a growing evidence that suggests mindfulness, exercise, high-quality sleep and pursuit of happiness can improve burn-out in healthcare professionals.[43]

In the future, it would be advantageous to extend this evaluation to a bigger population, in order to determine the potential role of attachment styles among healthcare professionals at risk of developing burn-out, particularly those who were exposed to suffering. The awareness of own attachment style would enhance the professionals' ability to cope with the work-related stress factors and the supervisors' comprehension of individual differences in the development of burn-out.[11]

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Burnout and attachment in healthcare professionals providing Oncology and Palliative Care

Florbela Gonçalves, Margarida Gaudêncio

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BURNOUT AND ATTACHMENT IN HEALTHCARE PROFESSIONALS PROVIDING ONCOLOGY AND PALLIATIVE CARE

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INTRODUCTION

Burnout is characterized by physical and psychological exhaustion, usually related to work stress and dedication to a cause that does not match the person's expectations[1]. Burnout has been frequently reported among health professionals who are involved in the assistance of patients with chronic diseases[2]. The care of a patient suffering from chronic diseases represents a significant challenge, especially in an advanced stage of the disease[3]. HaGani et al described significant proportions of burnout levels among oncology professionals[4]. The increasing need for palliative care related to the high prevalence of chronic diseases often exposes the health professionals to live stressful and emotional experiences[5]. The prevalence of burnout in professionals working in palliative care was varying according to the studies[1,6].

AIM

With this work, the authors have two main objectives. The first aim was to examine the **risk of burnout in a sample of health professionals working in a tertiary hospital dedicated to cancer patients.** The second objective of this study was to **explore the relationship between attachment style and burnout.**

METHOD

The authors conducted a cross-sectional descriptive and correlational study, carried out at the Portuguese Institute of Oncology Coimbra. **The studied group was composed of 337 health professionals working in a tertiary hospital dedicated to oncology patients.** After authorization by informed consent, the data were collected through an evaluation protocol designed for this purpose. The protocol included a sociodemographic questionnaire, two Burnout level assessment questionnaires (Copenhagen Burnout Inventory - CBI; Maslach Burnout Inventory - MBI) and attachment questionnaire (Adult Attachment Scale). The **CBI** consists of three dimensions (personal, work-related and patient-related). The **MBI** consists of three dimensions (Emotional Exhaustion, Depersonalization, Personal Accomplishment). In this case, burnout is defined as a combination of high levels of emotional exhaustion and depersonalization and low levels of personal accomplishment. The **AAS-R** consists of three dimensions (Anxiety, Discomfort with closeness and discomfort with dependency). *Statistical analysis was performed by IBM SPSS Statistics version 25. The tests were performed at a significance level of 5%.*

RESULTS

Sociodemographic characteristics of the sample and comparative analysis between working or not in palliative care (Burnout and Attachment scales

In the sample, there is a predominance of professionals working in oncology services (n=; 76.8%). There are no significant differences between professionals working in oncology and palliative care, especially in gender, marital status, number of children, weekly workload and professional category (Table 1). Although, the two groups differ in terms of the mean age (on average those working in palliative are two years younger) (Table 1). They also differ in terms of number of years working in the hospital (p=0,002) (Table 1).

Comparing professionals who work in oncology services and palliative care, it appears that just over half have high levels of personal burnout, however the groups do not differ significantly (p=0.619); the same is observed in work-related burnout (p=0.626). The presence of high levels of patient - related burnout is observed less frequently in about a quarter of participants (p=0.672). It is verified that the two groups do not differ in relation to all dimensions of the MBI scale. For emotional exhaustion, medium and high levels are around 35% in both groups and low levels are below 30%, p=0,743. As for depersonalization, this is also less frequent, observing between 20 and 25% the frequency of medium and high levels, while low levels were observed in more than half of the professionals in both groups (p=0.435). Finally, regarding personal accomplishment, there are also no differences between professionals (p=0.865), observing very similar proportions of low, medium and high levels in the sample. At last, a comparative analysis was performed to test the differences between professionals who work in oncology and palliative services, according the three AAS-R dimensions (MANOVA test). It is verified that there are no differences between groups regarding attachment (F: p=0.731; partial η2 = 0.004).

Table 1: Comparative analysis between professionals working in general and palliative care services (sociodemographic characteristics)

VARIABLES		Working in Health Service (n=245)	Working in Palliative care (n=74)	p*
Age (years), mean ± standard deviation		42 ± 9	40 ± 10	**0,046**
Gender, n (%)	Female	205 (83,7)	63 (85,1)	0,764
	Male	40 (16,3)	11 (14,9)	
Marital status, n (%)	Single	60 (24,5)	22 (29,7)	0,799
	Divorced	24 (9,8)	5 (6,8)	
	Widow	3 (1,2)	1 (1,4)	
	Married	158 (64,5)	46 (62,2)	
Number of children, n (%)	0	68 (27,8)	31 (41,9)	0,201
	1	76 (31,0)	23 (31,1)	
	2	89 (36,3)	17 (23,0)	
	3	10 (4,1)	3 (4,1)	
	4	1 (0,4)	0 (0,0)	
	5	1 (0,4)	0 (0,0)	
Weekly workload, mean ± standard deviation		38 ± 4	36 ± 6	0,112
Professional Category, n (%)	Physician	30 (12,2)	8 (10,8)	0,198
	Nurse	108 (44,1)	41 (55,4)	
	Operational assistant	52 (21,2)	16 (21,6)	
	Other	55 (22,4)	9 (12,2)	
Years of work, n (%)	<=3 years	24 (9,8)	20 (27,0)	**0,002**
	4-5 years	7 (2,9)	1 (1,4)	
	6-10 years	41 (16,8)	13 (17,6)	
	> 10 years	172 (70,5)	40 (54,1)	
Night work, n (%)	Yes	82 (34,0)	44 (59,5)	**<0,001**
	No	159 (66,0)	30 (40,5)	
Employment link, n (%)	Yes	229 (96,2)	66 (89,2)	**0,035**
	No	9 (3,8)	8 (10,8)	
Management position, n (%)	Yes	30 (12,5)	8 (11,3)	0,781
	No	210 (87,5)	63 (88,7)	
Extra-work activities, n(%)	Yes	94 (39,2)	34 (46,6)	0,260
	No	146 (60,8)	39 (53,4)	
Sleep hours per day, n (%)	<=6h	58 (24,0)	17 (23,3)	0,459
	>6h - <=8h	180 (74,4)	53 (72,6)	
	>8h	4 (1,7)	3 (4,1)	

** In the case of categorical variables, the comparison between the two groups was performed using asymptotic chi-square test or exact chi-square test, depending on whether or not the assumptions for applying the test. In the case of the two continuous variables, their means were compared between the two groups using t-test for independent samples.*

Correlation between Burnout and Attachment scales

Table 2: Correlation between Burnout and Attachment scales in the sample

	Pearson Correlation Coefficient*								
Scales	1.	2.	3.	4.	5.	6.	7.	8.	9.
1.CBI Personal	1,000	0,825	0,551	0,754	0,374	-0,333	0,293	-0,185	-0,314
2.CBI Work		1,000	0,647	0,801	0,470	-0,382	0,297	-0,269	-0,304
3.CBI Patient			1,000	0,637	0,470	-0,456	0,246	-0,215	-0,315
4.MBI EE				1,000	0,486	-0,350	0,305	-0,152	-0,279
5.MBI DP					1,000	-0,352	0,209	-0,164	-0,299
6.MBI PA						1,000	-0,238	0,367	0,209
7.AAS-R Anxiety							1,000	-0,271	-0,481
8.AAS - R Closeness								1,000	0,282
9.AAS - R Dependency									1,000

CBI - Copenhagen Burnout Inventory; MBI - Maslach Burnout Inventory; EE - Emotional Exhaustion; DP - Depersonalization; PA - Personal accomplishment; AAS - R - Adult Attachment Scale; * Correlations presented are significant with p < 0.001

Table 3: Correlation between Burnout and Attachment scales in the group of professionals working in palliative care

	Pearson Correlation Coefficient								
Scales	1.	2.	3.	4.	5.	6.	7.	8.	9.
1.CBI Personal	1,000	**r=0,805***	**r=0,534***	**r=0,633***	r=0,268	**r=-0,437***	**r=0,541***	r=-0,292	**r=-0,407***
2.CBI Work		1,000	**r=0,691***	**r=0,740***	r=0,351	**r=-0,453***	**r=0,412***	r=-0,239	r=-0,327
3.CBI Patient			1,000	**r=0,669***	r=0,336	r=-0,380	r=0,306	r=-0,235	r=-0,389
4.MBI EE				1,000	**r=0,438***	r=-0,389	r=0,408	r=-0,231	r=-0,263
5.MBI DP					1,000	**r=-0,434***	r=0,193	r=-0,267	r=-0,396
6.MBI PA						1,000	r=-0,218	r=0,395	r=0,400
7.AAS-R Anxiety							1,000	r=-0,325	**r=-0,543***
8.AAS - R Closeness								1,000	**r=0,327***
9.AAS - R Dependency									1,000

Starting with the correlations between the three dimensions of Burnout CBI (cells in blue - Table 2), it appears that they are all positive and significant. Now considering the correlations between the MBI Burnout dimensions (cells in green - Table 2), it appears that high levels of exhaustion are related to high levels of depersonalization (positive coefficient). In Adult Attachment scale, higher levels of anxiety are related to lower levels of comfort with closeness and comfort with dependency (negative coefficients). Correlating the two Burnout scales, it is observed that high levels of personal, work and patient-related burnout are associated with higher levels of emotional exhaustion and depersonalization, as well as, lower levels of personal accomplishment.

In the population of health professionals working in palliative care, it is observed that high levels of personal and work-related burnout are associated with higher levels of emotional exhaustion and lower levels of personal accomplishment. However, high levels of patient-related burnout is associated with higher levels of exhaustion (Table 3).

CONCLUSIONS

In this study, it was found that higher levels of personal, work, patient-related burnout, exhaustion and depersonalization are associated with higher levels of anxiety. The authors acknowledge some limitations of the present research. Firstly, the design of the study does not allow us to make causal inferences. The heterogeneous sample did not allow us to differentiate the burnout severity among the different professional groups. Although, our study has considered all the professionals working in multidisciplinary health care team. Secondly, our study did not evaluate possible interventions in the prevention of burnout. Our findings indicate indeed that attachment style domains contribute to explain burnout syndrome among oncology and palliative care professionals. Burnout is a complex process that appears to depend on both organizational/environment and personal factors. The absence of significant differences between groups leads us to conclude that working in palliative care does not increase the risk of burnout, as describe in other studies. **This work brings the advantage of using two burnout assessment scales (particularly CBI scale), in addition to trying to correlate the level of burnout and attachment in professionals exposed to suffering.**

ACKNOWLEDGEMENT

The authors have no conflicts of interest to report. Informed consent was obtained from all the participants. Data collection respected the rules of the Helsinki Protocol and the Oviedo Convention, and it was been approved by the ethics and management committee of the hospital.

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CERTIFICATE OF PRESENTATION

We herewith confirm that

the abstract

1547 – BURNOUT AND ATTACHMENT IN HEALTHCARE PROFESSIONALS PROVIDIN GONCOLOGY AND PALLIATIVE CARE

Prof. Florbela Gonçalves, Prof. Margarida Gaudêncio

was presented as a Poster at the

13th Congress of the European Pain Federation EFIC®,
Held in Budapest, Hungary from September 20 – 22, 2023.

Yours sincerely,

Brona Fullen
President
European Pain Federation EFIC

Esther Pogatzki-Zahn
Chair, Scientific Programme
Pain in Europe XIII

VI

Avaliação de Burnout e qualidade de vida profissional na área da Oncologia e Cuidados Paliativos

Florbela Gonçalves, Margarida Gaudêncio

Oral Communication - 4ªs Jornadas de Investigação da Associação Portuguesa de Cuidados Paliativos


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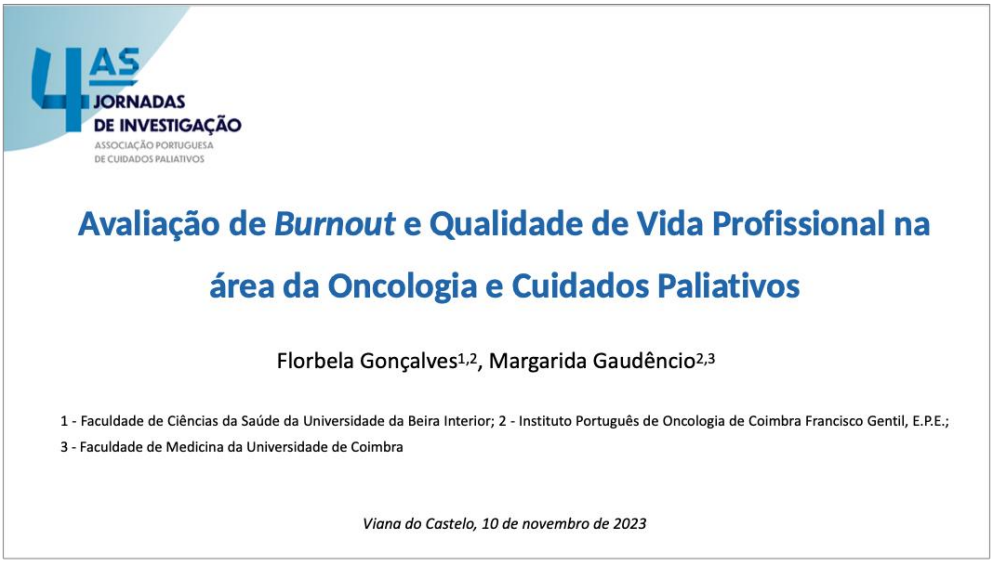
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Avaliação de *Burnout* e Qualidade de Vida Profissional na área da Oncologia e Cuidados Paliativos
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3 - Faculdade de Medicina da Universidade de Coimbra
Viana do Castelo, 10 de novembro de 2023

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INTRODUÇÃO

O conceito ***BURNOUT*** foi introduzido por Herbert Freudenberger no anos 70. Carateriza-se pela exaustão física e psicológica relacionada com o *stress* laboral e dedicação a objetivos que não correspondem às expetativas pessoais.

O ***BURNOUT*** representa um factor de risco para a eficiência no trabalho, estando igualmente relacionada com problemas como abuso de substâncias, alterações do sono, obesidade e depressão

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INTRODUÇÃO

O ***BURNOUT*** surge, frequentemente, em profissionais de saúde com atividade assistencial junto de doentes com patologia crónica. Os cuidados do doente com patologia crónica representam um desafio, especialmente numa fase avançada da doença.

Recentemente, o termo **fadiga de compaixão** tem emergido na literatura para descrever *stress relacionado com a exposição ao sofrimento dos outros*.

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INTRODUÇÃO

Qualidade de vida no trabalho

- nível de satisfação de um funcionário no seu ambiente corporativo
- prazer que uma pessoa sente ao ir ou estar no seu local de trabalho

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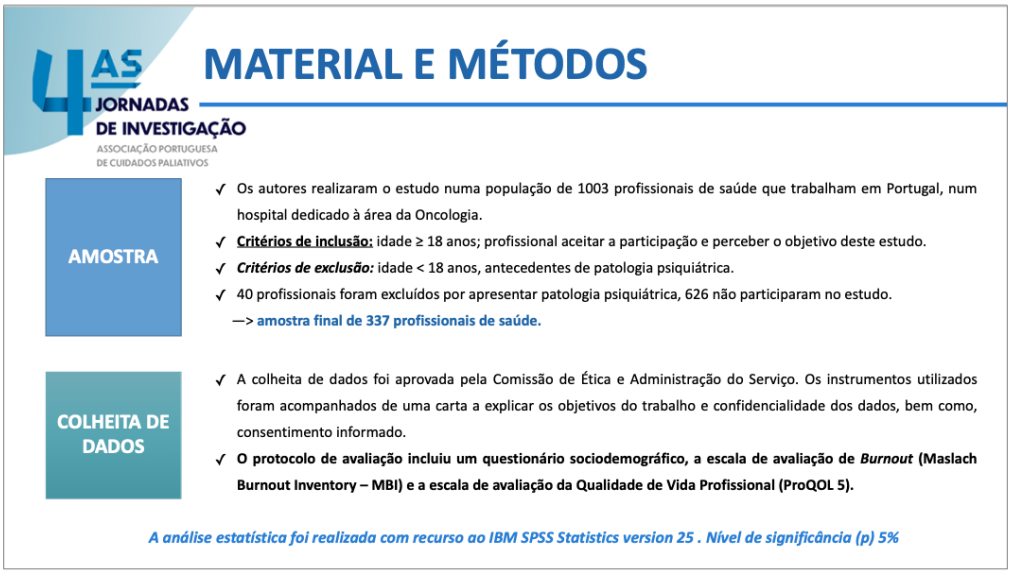
OBJETIVOS

Objetivo principal

Com este trabalho, os autores pretendem avaliar a prevalência de burnout, bem como, a qualidade de vida profissional em profissionais de saúde da área da oncologia e cuidados paliativos.

Objetivos Específicos

- ✓ Caracterizar a população em estudo em termos de dados demográficos.
- ✓ Avaliar prevalência de burnout em profissionais de saúde ligados a área da Oncologia e Cuidados Paliativos.
- ✓ Explorar a qualidade de vida profissional na amostra em estudo.
- ✓ Identificar associação entre burnout e qualidade de vida profissional na amostra.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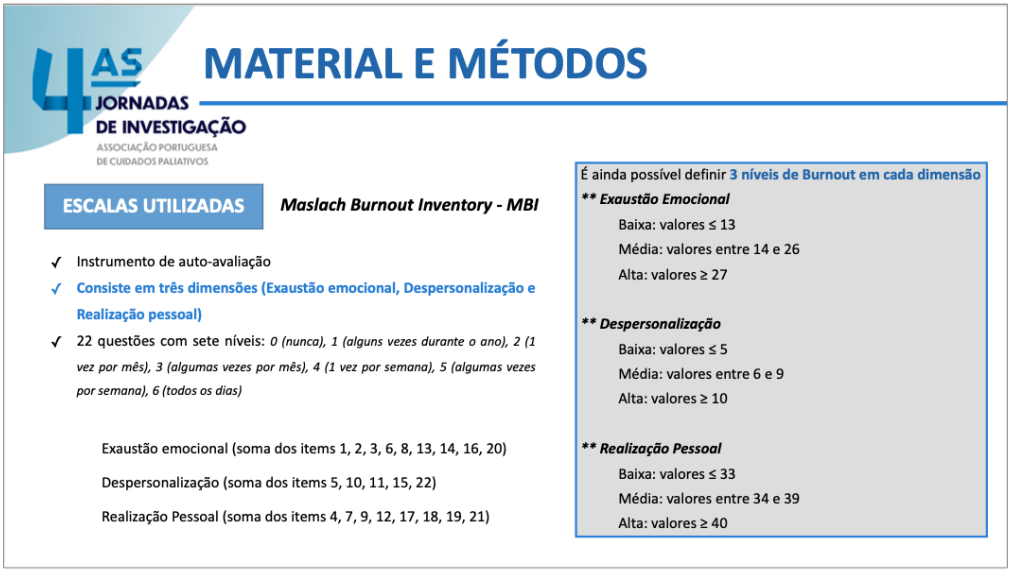
MATERIAL E MÉTODOS
AMOSTRA
✓ Os autores realizaram o estudo numa população de 1003 profissionais de saúde que trabalham em Portugal, num hospital dedicado à área da Oncologia.
✓ Critérios de inclusão: idade ≥ 18 anos; profissional aceitar a participação e perceber o objetivo deste estudo.
✓ Critérios de exclusão: idade < 18 anos, antecedentes de patologia psiquiátrica.
✓ 40 profissionais foram excluídos por apresentar patologia psiquiátrica, 626 não participaram no estudo.
—> amostra final de 337 profissionais de saúde.
COLHEITA DE DADOS
✓ A colheita de dados foi aprovada pela Comissão de Ética e Administração do Serviço. Os instrumentos utilizados foram acompanhados de uma carta a explicar os objetivos do trabalho e confidencialidade dos dados, bem como, consentimento informado.
✓ O protocolo de avaliação incluiu um questionário sociodemográfico, a escala de avaliação de Burnout (Maslach Burnout Inventory – MBI) e a escala de avaliação da Qualidade de Vida Profissional (ProQOL 5).
A análise estatística foi realizada com recurso ao IBM SPSS Statistics version 25 . Nível de significância (p) 5%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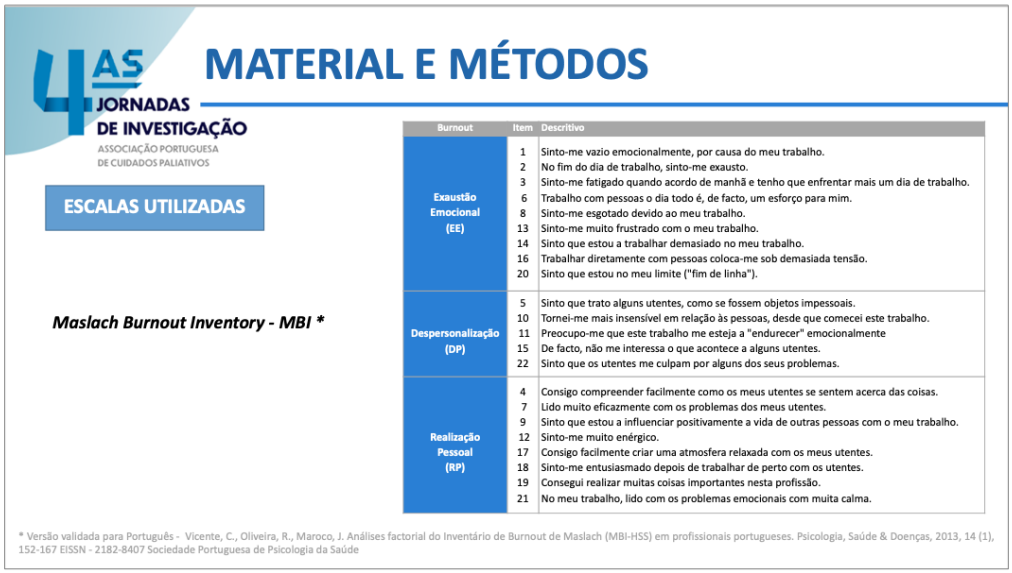
MATERIAL E MÉTODOS
ESCALAS UTILIZADAS
Maslach Burnout Inventory - MBI
✓ Instrumento de auto-avaliação
✓ Consiste em três dimensões (Exaustão emocional, Despersonalização e Realização pessoal)
✓ 22 questões com sete níveis: 0 (nunca), 1 (alguns vezes durante o ano), 2 (1 vez por mês), 3 (algumas vezes por mês), 4 (1 vez por semana), 5 (algumas vezes por semana), 6 (todos os dias)
Exaustão emocional (soma dos items 1, 2, 3, 6, 8, 13, 14, 16, 20)
Despersonalização (soma dos items 5, 10, 11, 15, 22)
Realização Pessoal (soma dos items 4, 7, 9, 12, 17, 18, 19, 21)
É ainda possível definir 3 níveis de Burnout em cada dimensão
** Exaustão Emocional
Baixa: valores ≤ 13
Média: valores entre 14 e 26
Alta: valores ≥ 27
** Despersonalização
Baixa: valores ≤ 5
Média: valores entre 6 e 9
Alta: valores ≥ 10
** Realização Pessoal
Baixa: valores ≤ 33
Média: valores entre 34 e 39
Alta: valores ≥ 40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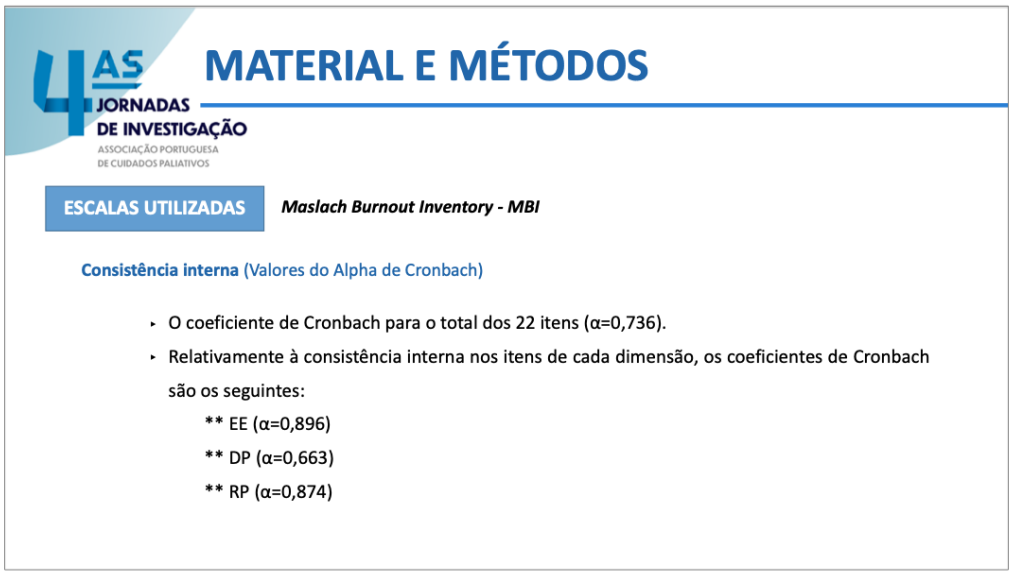
MATERIAL E MÉTODOS
ESCALAS UTILIZADAS
Maslach Burnout Inventory - MBI *
Burnout | Item | Descritivo
Exaustão Emocional (EE) | 1 | Sinto-me vazio emocionalmente, por causa do meu trabalho.
2 | No fim do dia de trabalho, sinto-me exausto.
3 | Sinto-me fatigado quando acordo de manhã e tenho que enfrentar mais um dia de trabalho.
6 | Trabalho com pessoas o dia todo é, de facto, um esforço para mim.
8 | Sinto-me esgotado devido ao meu trabalho.
13 | Sinto-me muito frustrado com o meu trabalho.
14 | Sinto que estou a trabalhar demasiado no meu trabalho.
16 | Trabalhar diretamente com pessoas coloca-me sob demasiada tensão.
20 | Sinto que estou no meu limite ("fim de linha").
Despersonalização (DP) | 5 | Sinto que trato alguns utentes, como se fossem objetos impessoais.
10 | Tornei-me mais insensível em relação às pessoas, desde que comecei este trabalho.
11 | Preocupo-me que este trabalho me esteja a "endurecer" emocionalmente
15 | De facto, não me interessa o que acontece a alguns utentes.
22 | Sinto que os utentes me culpam por alguns dos seus problemas.
Realização Pessoal (RP) | 4 | Consigo compreender facilmente como os meus utentes se sentem acerca das coisas.
7 | Lido muito eficazmente com os problemas dos meus utentes.
9 | Sinto que estou a influenciar positivamente a vida de outras pessoas com o meu trabalho.
12 | Sinto-me muito enérgico.
17 | Consigo facilmente criar uma atmosfera relaxada com os meus utentes.
18 | Sinto-me entusiasmado depois de trabalhar de perto com os utentes.
19 | Consegui realizar muitas coisas importantes nesta profissão.
21 | No meu trabalho, lido com os problemas emocionais com muita calma.
* Versão validada para Português - Vicente, C., Oliveira, R., Maroco, J. Análises factorial do Inventário de Burnout de Maslach (MBI-HSS) em profissionais portugueses. Psicologia, Saúde & Doenças, 2013, 14 (1), 152-167 EISSN - 2182-8407 Sociedade Portuguesa de Psicologia da Saúde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MATERIAL E MÉTODOS
ESCALAS UTILIZADAS
Maslach Burnout Inventory - MBI
Consistência interna (Valores do Alpha de Cronbach)
O coeficiente de Cronbach para o total dos 22 itens (α=0,736).
Relativamente à consistência interna nos itens de cada dimensão, os coeficientes de Cronbach são os seguintes:
** EE (α=0,896)
** DP (α=0,663)
** RP (α=0,874)

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MATERIAL E MÉTODOS

ESCALAS UTILIZADAS — ***Escala de Qualidade de Vida Profissional - ProQOL 5***

- ✓ Escala constituída por **30** itens divididos em **3** subescalas que avaliam **3** fenómenos distintos ***(Satisfação por Compaixão, Burnout e Stress Traumático Secundário).***
- ✓ Cada item equivale a uma afirmação à qual se atribui uma pontuação que varia entre 1 e 5 *(1 - Nunca; 2 - Raramente; 3- Por vezes; 4-Frequentemente; 5- Muito Frequentemente).*
- ✓ O somatório para cada subescala realiza-se através da soma da pontuação de cada um dos 10 itens correspondentes; para realizar o somatório da subescala do *Burnout*, deve-se reverter a pontuação dos itens 1,4,15,17 e 29.

A cada subescala correspondem **10** itens:

* **Satisfação por Compaixão** (itens 3,6,12,16,18,20,22,24,27,30)
* ***Burnout*** (itens 1,4,8,10,15,17,19,21,26,29)
* **Stress Traumático Secundário** (itens 2,5,7,9,11,13,14,23,25,28)

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MATERIAL E MÉTODOS

ESCALAS UTILIZADAS

Escala de Qualidade de Vida Profissional - ProQOL 5

***** Satisfação por compaixão***
Baixa: valores ≤ 22
Média: valores entre 23 e 41
Alta: valores ≥ 42

***** Burnout***
Baixa: valores ≤ 22
Média: valores entre 23 e 41
Alta: valores ≥ 42

***** Stress Traumático Secundário***
Baixa: valores ≤ 22
Média: valores entre 23 e 41
Alta: valores ≥ 42

PROFESSIONAL QUALITY OF LIFE SCALE (PROQOL)

COMPASSION SATISFACTION AND COMPASSION FATIGUE (PROQOL) VERSION 5 (2009)

When you [help] people you have direct contact with their lives. As you may have found, your compassion for those you [help] can affect you in positive and negative ways. Below are some questions about your experiences, both positive and negative, as a [helper]. Consider each of the following questions about you and your current work situation. Select the number that honestly reflects how frequently you experienced these things in the last 30 days.

1=Never 2=Rarely 3=Sometimes 4=Often 5=Very Often

1. I am happy.
2. I am preoccupied with more than one person I [help].
3. I get satisfaction from being able to [help] people.
4. I feel connected to others.
5. I jump or am startled by unexpected sounds.
6. I feel invigorated after working with those I [help].
7. I find it difficult to separate my personal life from my life as a [helper].
8. I am not as productive at work because I am losing sleep over traumatic experiences of a person I [help].
9. I think that I might have been affected by the traumatic stress of those I [help].
10. I feel trapped by my job as a [helper].
11. Because of my [helping], I have felt "on edge" about various things.
12. I like my work as a [helper].
13. I feel depressed because of the traumatic experiences of the people I [help].
14. I feel as though I am experiencing the trauma of someone I have [helped].
15. I have beliefs that sustain me.
16. I am pleased with how I am able to keep up with [helping] techniques and protocols.
17. I am the person I always wanted to be.
18. My work makes me feel satisfied.
19. I feel worn out because of my work as a [helper].
20. I have happy thoughts and feelings about those I [help] and how I could help them.
21. I feel overwhelmed because my case [work] load seems endless.
22. I believe I can make a difference through my work.
23. I avoid certain activities or situations because they remind me of frightening experiences of the people I [help].
24. I am proud of what I can do to [help].
25. As a result of my [helping], I have intrusive, frightening thoughts.
26. I feel "bogged down" by the system.
27. I have thoughts that I am a "success" as a [helper].
28. I can't recall important parts of my work with trauma victims.
29. I am a very caring person.
30. I am happy that I chose to do this work.

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MATERIAL E MÉTODOS

ESCALAS UTILIZADAS ***Escala de Qualidade de Vida Profissional - ProQOL 5***

Consistência interna (Valores do Alpha de Cronbach)

Total da amostra:
** Satisfação por Compaixão: 0.845
** *Burnout*: 0.749
** Stress Traumático Secundário: 0.852

Não trabalham nos cuidados paliativos:
** Satisfação por Compaixão: 0.849
** *Burnout*: 0.737
** Stress Traumático Secundário: 0.866

Trabalham nos cuidados paliativos:
** Satisfação por Compaixão: 0.841
** *Burnout*: 0.765
** Stress Traumático Secundário: 0.748

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RESULTADOS

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Características sociodemográficas da amostra

* Predominância dos professionals que trabalham na área da Oncologia (76.8%).

* Diferenças entre os dois grupos:
  * *Idade média (profissionais dos Cuidados Paliativos em média 2 anos mais novos)*
  * *Número de anos que trabalham na instituição hospitalar*
  * *Trabalho noturno (+ frequente no grupo dos profissionais dos Cuidados Paliativos)*
  * *Vínculo profissional*

** Missing - 18*

VARIÁVEIS		Profissionais de saúde Oncologia (n=245)*	Profissionais de saúde Cuidados Paliativos (n=74)	p
Idade (anos), média ± desvio padrão		42 ± 9	40 ± 10	**0.046**
Género, n (%)	Feminino	205 (83.7)	63 (85.1)	0.764
	Masculino	40 (16.3)	11 (14.9)	
Estado civil, n (%)	Solteiro	60 (24.5)	22 (29.7)	0.799
	Divorciado	24 (9.8)	5 (6.8)	
	Viúvo	3 (1.2)	1 (1.4)	
	Casado	158 (64.5)	46 (62.2)	
Número de filhos, n (%)	0	68 (27.8)	31 (41.9)	0.201
	1	76 (31.0)	23 (31.1)	
	2	89 (36.3)	17 (23.0)	
	3	10 (4.1)	3 (4.1)	
	4	1 (0.4)	0 (0.0)	
	5	1 (0.4)	0 (0.0)	
Horário semanal média ± desvio padrão		38 ± 4	36 ± 6	0.112
Categoria Profissional, n (%)	Médico	30 (12.2)	8 (10.8)	0.198
	Enfermeiro	108 (44.1)	41 (55.4)	
	Assistente Operacional	52 (21.2)	16 (21.6)	
	Outros	55 (22.4)	9 (12.2)	
Anos de trabalho, n (%)	<=3 anos	24 (9.8)	20 (27.0)	**0.002**
	4-5 anos	7 (2.9)	1 (1.4)	
	6-10 anos	41 (16,8)	13 (17.6)	
	> 10 anos	172 (70.5)	40 (54.1)	
Trabalho noturno, n (%)	Sim	82 (34.0)	44 (59.5)	**<0.001**
	Não	159 (66.0)	30 (40.5)	
Vínculo laboral, n (%)	Sim	229 (96.2)	66 (89.2)	**0.035**
	Não	9 (3.8)	8 (10.8)	
Cargos de gestão, n (%)	Sim	30 (12.5)	8 (11.3)	0.781
	Não	210 (87.5)	63 (88.7)	
Atividades extra-laborais, n(%)	Sim	94 (39.2)	34 (46.6)	0.260
	Não	146 (60.8)	39 (53.4)	
Número de horas de sono diárias, n (%)	≤ 6h	58 (24.0)	17 (23.3)	0.459
	>6h - ≤ 8h	180 (74.4)	53 (72.6)	
	> 8h	4 (1.7)	3 (4.1)	

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Avaliação da prevalência de burnout na amostra (escala MBI)

Ausência de diferenças significativas entre os 2 grupos (p > 0.05)

Burnout MBI (contínuas)	Trabalho em Cuidados Paliativos	N	Média	Desvio padrão	p*	p**
Exaustão Emocional	Não	223[1]	21.73	11.62	-----	-----
	Sim	67[2]	21.16	10.57		
Despersonalização	Não	218[3]	5.37	5.10	-----	-----
	Sim	67[2]	6.37	4.63		
Realização pessoal	Não	217[4]	35.22	8.39	-----	-----
	Sim	67[2]	35.79	7.35		

Burnout MBI (Categóricas)		Trabalho em Oncologia (n=245)	Trabalho em Cuidados Paliativos (n=74)	p***
Exaustão Emocional, n (%)	Baixo (≤13)	65 (29.1)	19 (28.4)	0.743
	Médio (14-26)	79 (35.4)	27 (40.3)	
	Alto (≥ 27)	79 (35.4)	21 (31.3)	
Depspersonalização, n (%)	Baixo (≤ 5)	130 (59.6)	34 (50.7)	0.435
	Médio (6-9)	46 (21.1)	17 (25.4)	
	Alto (≥10)	42 (19.3)	16 (23.9)	
Realização Pessoal, n (%)	Baixo (≤ 33)	80 (36.9)	23 (34.3)	0.865
	Médio (34-39)	64 (29.5)	22 (32.8)	
	Alto (≥ 40)	73 (33.6)	22 (32.8)	

* T - test; ** Multiple comparisons are not performed because only 2 groups are compared; *** The comparison between the two group was carried out using the asymptotic chi-square test because the assumptions for its use were satisfied.

1 - 40 missing; 2 - 7 missing; 3 - 45 missing; 4- 46 missing

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Avaliação da qualidade de vida profissional na amostra através da ProQOL 5

Ausência de diferenças significativas entre os 2 grupos (p > 0.05)

	Total da amostra	Profissionais de Oncologia	Profissionais de Cuidados Paliativos
Satisfação por compaixão			
N válido	285	208*	70**
Mediana	49.32	49.32	51.22
Percentil 25	43.63	44.57	43.63
Percentil 75	56.91	55.97	56.91
Burnout			
N válido	291	214***	70**
Mediana	48.87	50.80	48.87
Percentil 25	43.08	43.08	43.08
Percentil 75	56.60	56.60	56.60
Stress Traumático Secundário			
N válido	284	211****	65*****
Mediana	48.93	48.93	48.93
Percentil 25	42.46	42.46	44.08
Percentil 75	57.01	57.01	57.01

** 55 missing; ** 4 missing; *** 49 missing; **** 52 missing; ***** 9 missing*

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Correlação entre a escala MBI (burnout) e ProQOL 5 (qualidade de vida profissional)

Amostra (total)

	MBI EE (p - value)	MBI DP (p - value)	MBI RP (p-value)
Satisfação por Compaixão	- 0.501 (< 0.001)	- 0.498 (0.001)	0.546 (< 0.001)
Burnout	0.690 (< 0.001)	0.536 (< 0.001)	- 0.508 (< 0.001)
Stress Traumático Secundário	0.449 (<0.001)	0.337 (< 0.001)	-0.274 (<0.001)

Grupo dos profissionais de Cuidados Paliativos

	MBI EE (p - value)	MBI DP (p - value)	MBI RP (p-value)
Satisfação por Compaixão	-0.452 (< 0.001)	- 0.403 (0.001)	0.543 (0.001)
Burnout	0.658 (< 0.001)	0.504 (0.001)	- 0.587 (0.001)
Stress Traumático Secundário	0.499 (< 0.001)	0.282 (0.031)	- 0.194 (0.142)

MBI EE – Exaustão Emocional; MBI DP – Despersonalização; MBI RP – Realização Pessoal

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Correlação entre a escala MBI (burnout) e ProQOL 5 (qualidade de vida profissional)

Amostra (total)

* Menores níveis de **satisfação por compaixão (ProQOL)** relacionam-se com maiores níveis de exaustão emocional e despersonalização; maior níveis de satisfação correlaciona-se com maior sensação de realização pessoal
* Maiores níveis de ***burnout*** **(ProQOL)** relacionam-se com maior tendência para exaustão emocional e despersonalização, bem como, menor sensação de realização pessoal
* Maiores níveis de **stress traumático secundário (ProQOL)** relacionam-se com maior tendência para exaustão emocional e despersonalização, bem como, menor sensação de realização pessoal

Grupo dos profissionais de Cuidados Paliativos

* Menores níveis de **satisfação por compaixão (ProQOL)** relacionam-se com maiores níveis de exaustão emocional e despersonalização; maior níveis de satisfação correlaciona-se com maior sensação de realização pessoal
* Maiores níveis de ***burnout*** **(ProQOL)** relacionam-se com maior tendência para exaustão emocional e despersonalização, bem como, menor sensação de realização pessoal
* Maiores níveis de **stress traumático secundário (ProQOL)** relacionam-se com maior tendência para exaustão emocional e despersonalização; ***sem relação com a realização pessoal***

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DISCUSSÃO

✓ **Não se verificam diferenças significativas nas dimensões da escala MBI entre os grupos seleccionados** (profissionais de saúde da área de Oncologia vs Cuidados Paliativos). Estes resultados não diferem de outros estudos presentes na literatura.

✓ HaGani et al realizou uma revisão sistemática sobre *burnout* em profissionais da área da Oncologia. Os níveis elevados de exaustão emocional e despersonalização estão presentes em 32% e 21-26%, respectivamente. Os baixos níveis de realização pessoal correspondem a 25-26%.

✓ Dijxhoorn et al desenvolveram uma revisão sistemática sobre prevalência de *burnout* em profissionais de Cuidados Paliativos. Os níveis elevados de exaustão emocional e despersonalização estão presentes em 3-49% e 1-48%, respectivamente. Os baixos níveis de realização pessoal correspondem a 3-85%.

DISCUSSÃO

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- ✓ **Não se verificam diferenças significativas nas dimensões da qualidade de vida profissional entre os grupos seleccionados (profissionais de saúde da área de Oncologia vs Cuidados Paliativos).**
- ✓ **Na amostra, verificou-se uma correlação significativa entre a prevalência das dimensões da MBI com a qualidade de vida profissional (ProQOL).**
- ✓ Frey et al realizaram estudo sobre qualidade de vida profissional em enfermeiros a trabalhar em Cuidados Paliativos. 48.4% apresentam níveis moderados-elevados de satisfação por compaixão.
- ✓ Kaur, Sharma, and Chaturvedi reportaram níveis elevados de satisfação por compaixão em 49.2% dos profissionais de saúde a trabalhar em Cuidados Paliativos

DISCUSSÃO

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Os autores reconhecem algumas limitações deste estudo:

- ✓ O desenho do estudo não permite fazer inferências causais. São necessários mais estudos longitudinais para definir a natureza da associação entre o grau de burnout e qualidade de vida profissional.
- ✓ Amostra heterogénea não permite diferenciar a prevalência de burnout e avaliação da qualidade de vida profissional nos diferentes grupos profissionais. Este estudo considerou que todos os profissionais estão num contexto de equipa multidisciplinar.

Este trabalho traz a vantagem de correlacionar a prevalência de burnout e a qualidade de vida profissional em trabalhadores expostos ao sofrimento humano.

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CONCLUSÃO

A exposição contínua a dor e sofrimento dos outros condiciona uma elevada carga emocional aos profissionais da área da oncologia e cuidados paliativos, tornando-os vulneráveis ao ***BURNOUT.***

Neste estudo, não se verificaram diferenças significativas entre profissionais ligados apenas a área da oncologia e de cuidados paliativos em termos de prevalência de burnout e pior qualidade de vida profissional.

Contudo, observou-se que existe uma correlação entre a prevalência de burnout e a qualidade de vida profissional neste tipo de profissionais expostos ao sofrimento.

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CONCLUSÃO

A **Fadiga de Compaixão** é um processo progressivo e cumulativo, que se inicia como um desconforto gerado pelo sentimento de compaixão, progredindo para *stress* e posteriormente para fadiga. Caracteriza-se pela associação de baixos níveis de satisfação por compaixão, elevados níveis de stress traumático secundário e *burnout*.

A **satisfação por compaixão (SC)** é uma característica pessoal que tem sido associada à resiliência quando se trabalha com doentes crónicos e em sofrimento. Os profissionais com elevados níveis de SC lidam melhor com emoções negativas que podem surgir do envolvimento empático.

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CONCLUSÃO

Num futuro próximo, será vantajoso extender este tipo de estudos a uma população maior, para determinar com maior precisão o papel da qualidade de vida profissional e a prevalência de *burnout* em profissionais de saúde expostos ao sofrimento.

O risco de fadiga da compaixão e de burnout associado realça a necessidade de desenvolver estratégias de coping para minimizar este risco e melhorar a qualidade de vida e vinculação dos profissionais de saúde.

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CERTIFICADO

O trabalho intitulado

Avaliação de burnout e qualidade de vida profissional na área da Oncologia e Cuidados Paliativos

Autores:

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Catarina Pazes
Presidente da APCP

Sara Pinto
Presidente da Comissão Científica

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ASSOCIAÇÃO PORTUGUESA DE CUIDADOS PALIATIVOS

Associação Portuguesa de Cuidados Paliativos

VII

Burnout protective patterns among oncology nurses: a cross-sectional study using machine learning analysis

Ana Rocha, Cristina Costeira, Raul Barbosa, Florbela Gonçalves, Miguel Castelo-Branco, Joaquim Viana, Margarida Gaudêncio, Filipa Ventura

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RESEARCH Open Access

Burnout protective patterns among oncology nurses: a cross-sectional study using machine learning analysis

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Abstract

Background Oncology nurses face unique and intense demands due to the nature of their work, caring for patients with life-threatening illnesses. The emergence of professional burnout among these nurses is influenced by several factors, highlighting the importance of identifying protective and risk factors to mitigate its impact. This study aims to identify burnout profiles and protective socio-demographic and work-related patterns associated with reduced burnout among oncology nurses.

Methods A cross-sectional study was conducted with 150 oncology nurses at a specialized hospital exclusively dedicated to adult oncology treatment in Portugal. Data collection included a self-administered questionnaire incorporating the validated Portuguese version of Maslach Burnout Inventory (MBI). Statistical analyses were performed using SPSS and machine learning tools, specifically KMeans clustering and Random Forest algorithms.

Results Six protective patterns against burnout were identified, characterized by conditions of permanent contracts, work-life balance, and supportive work environments. Moreover, factors such as holding management roles and being a parent of two or more children might even be protective in some circumstances, suggesting a nuanced relation between personal and professional factors. Machine learning analyses made apparent the unpredictability of burnout and highlighted the critical role of protective factors in mitigating its impact.

Conclusions This study underscores the importance of resilience-building strategies and promoting protective factors, such as job stability, learned experience, and adequate rest, to reduce burnout risk among oncology nurses. Future research should validate these findings through hypothesis-driven analyses to inform targeted and context-specific burnout prevention programs.

Clinical trial number Not applicable.

Keywords Burnout, Oncology nursing, Protective factors, Work environment, Machine learning, Occupational health

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Background

Burnout syndrome is a significant occupational issue for oncology nurses, impacting both their physical and mental health, as well as the quality of care they provide [1]. It is particularly prevalent among healthcare professionals working in emotionally demanding fields, such as oncology [2–4], and is now recognized in the International Classification of Diseases (ICD-11) under the code QD85 [5]. The nature of oncology nursing, which often involves providing care to individuals with advanced or life-threatening illnesses, contributes to sustained emotional strain and psychological fatigue [6, 7]. These demands place oncology nurses at increased risk of developing burnout, underscoring the urgent need for better understanding of how the syndrome manifests in this workforce [8].

Burnout is defined as a psychological syndrome resulting from chronic job-related stress, characterized by emotional exhaustion (EE), depersonalization (DP) (cynicism), and reduced personal accomplishment (PA). This three-dimensional model, as conceptualized by Maslach, reflects the dynamic interaction between individual stress responses and the broader social context [9]. The Maslach Burnout Inventory (MBI), developed to measure this construct, remains the most widely used instrument in healthcare settings [10].

While the prevalence of burnout among oncology nurses has been well-documented, estimates vary substantially depending on the setting, population and instruments used. For a example a meta-analysis of nearly 10,000 oncology nurses reported rates of 30% for emotional exhaustion, 15% for depersonalization, and 35% for low personal accomplishment [3]. In a Portuguese study by Paiva et al. [11], 8.9% of nurses were classified as experiencing burnout using a two-dimensional criterion, while only 1.3% met the full three-dimensional criteria. These disparities reflect the complexity of burnout and its dependence on contextual and methodological factors.

Previous research has primarily focused on identifying risk factors, such as younger age, high workload, and poor communication skills [3, 12]. However, fewer studies have examined the how socio-demographic and work-related variables interact to create profiles of vulnerability and protection. Rather than isolating personal traits, recent perspectives emphasize the importance of structural and contextual dimensions in shaping work environments that are more sustainable and conducive to well-being [13]. Understanding these patterns is essential for developing systems-level strategies to support oncology nurses and reduce burnout risk.

Recent approaches to burnout research also highlight the value of identifying distinct profiles or patterns of vulnerability and protection, rather than relying solely on variable-by-variable associations [14]. Such pattern-based perspective recognizes the complexity of how personal, professional, and organizational factors may interact [15]. In this context, machine learning techniques offer a valuable means of identifying data-driven burnout profiles that may remain undetected through traditional statistical approaches [16]. These methods can help reveal latent configurations of protective characteristics that support the well-being of oncology nurses.

Portuguese adaptation of the Maslach burnout inventory to the Portuguese nursing context

The Maslach Burnout Inventory – Human Services Survey (MBI-HSS) is widely used to measure burnout among healthcare professionals. It assesses burnout across three dimensions and is tailored to human service fields, including healthcare, social work, and education [17].

In Portugal, several studies have assessed the MBI-HSS in contexts. Marôco et al. [18] confirmed its reliability and validity in a national sample, with strong reliability for Emotional Exhaustion ($\alpha = 0.87$), moderate for Depersonalization ($\alpha = 0.72$), and good for Personal Accomplishment ($\alpha = 0.82$). A five-item short version for each sub-scale showed excellent model fit (CFI = 0.957, RMSEA = 0.027).

In the context of nursing, Laranjeira [19] validated 20 of the original 22 items for Portuguese nurses, reflecting some variability. da Fonte [20] reported high consistency for Emotional Exhaustion ($\alpha = 0.905$) though two items from the other subscales were excluded to improve reliability ($\alpha = 0.799$). Santos [21] initially identified seven factors explained 65.9% of the variance, but a forced three-factor solution reaffirmed the original MBI structure, with Emotional Exhaustion ($\alpha = 0.797$) and Depersonalization ($\alpha = 0.763$) showing satisfactory reliability.

Focusing on oncology nurses, Sá [22] found that while the MBI's core dimensions remained relevant, some adjustments were needed. Item 15 from the Depersonalization subscale was removed due to poor performance, reducing the scale to 21 items. Emotional Exhaustion remained the most reliable dimension ($\alpha = 0.85$), while Depersonalization showed lower reliability ($\alpha = 0.52$). These findings underscore the need for context-sensitive applications of the MBI in oncology settings in Portugal.

Research problem

Burnout is widely recognized as a serious concern among oncology nurses, yet how socio-demographic and work-related characteristics contribute to vulnerability or resilience remains insufficiently understood. Variations across care settings, workloads, and personal circumstances, highlight the need for deeper insight into the patterns that may protect against burnout in this workforce. Accordingly, this study aims to identify burnout

profiles among oncology nurses and explore the socio-demographic and work-related characteristics associated with protective patterns that may mitigate burnout. The study's research question is what protective patterns, based on socio-demographic and work-related characteristics, are associated with reduced burnout among oncology nurses?

Methods

The present study resports a secondary analysis of data originally collected within a broader research project on the prevalence of burnout among health professionals, including oncology nurses, working in a hospital dedicated to cancer care in the Centre Region of Portugal. The original project followed a quantitative, exploratory, cross-sectional design.

The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE-Statement) (Supplementary file A) was followed to report this manuscript.

Inclusion and exclusion criteria

Data for this secondary analysis were drawn from a broader study conducted in a Portuguese tertiary hospital dedicated exclusively to adult oncology care. The original study targeted all healthcare professionals in the institution, with inclusion criteria being: aged ≥ 18 years, employed at the hospital, and capable of understanding the study purpose and providing informed consent. Professionals with psychiatric disorders or unwilling to participate were excluded.

The recruitment was conducted during regular staff meetings. The staff meetings were systematically planned department-level gatherings that included all healthcare professionals working in direct patient care at that department. During these meetings, the study was introduced by the research coordinator, who also distributed the data collection materials. Eligibility criteria were verified through hospital staffing records prior to the meetings. Healthcare professionals with a self-reported psychiatric diagnosis or who declined participation were excluded, consistent with the broader project's inclusion criteria. For the current analysis, only nurses working in direct patient care were considered. Of the 216 eligible nurses, 150 completed the survey, yielding a response rate of 69.4%.

Data collection

The study adhered to the principles of the Helsinki Declaration and was approved by the ethics committee of the institution where the research was conducted (Register number TI02/2017). Additionally, appropriate authorization was obtained from the original authors to use the MBI for research purposes. The data collection materials were individually distributed by the project's coordinator during the staff meetings in sealed envelopes, each accompanied by a letter explaining the nature and objectives of the study and ensuring data confidentiality. Participants were given the flexibility to complete the questionnaires during work hours or at home and were instructed to return them in sealed envelopes. This process ensured minimal disruption to their professional duties while maximizing participation and maintaining confidentiality.

After obtaining informed consent, data were collected using a protocol specifically designed for this study. The protocol included a sociodemographic questionnaire covering key participant information such as age, gender, marital status, number of children, education level, professional category, years of work, weekly workload, night shifts, employment contract type, management position, and hours of sleep per day, and the MBI-HSS.

The MBI-HSS consists of 22 items measuring burnout across three dimensions: EE, DP, PA. Responses are given on a 7-point Likert scale ranging from 0 (Never) to 6 (Every day), reflecting the frequency with which the respondent experiences these feelings.

The interpretation of burnout is based on cut-off scores derived from normative data. High levels of burnout are indicated by high scores in EE and DP, and low scores in PA. Conversely, low burnout is characterized by low scores in EE and DP, and high scores in PA.

The cut-offs for each dimension typically divide scores into low, moderate, and high categories. For EE, scores between 0 and 16 are considered low, 17 to 26 are moderate, and scores above 27 are high. In the DP dimension, scores from 0 to 6 are classified as low, PA Personal Accomplishment, low scores are 39 and above, moderate scores range from 32 to 38, and high burnout is indicated by scores between 0 and 31.

Burnout is considered severe when individuals score high in EE and DP, and low in PA. The MBI does not generate a single burnout score but provides a profile across these three dimensions, giving a comprehensive view of the individual's burnout experience [17].

Data analysis

Data were analyzed using SPSS version 24.0. Descriptive statistics were calculated for socio-demographic and work-related variables, and for the items of the Maslach Burnout Inventory (MBI). Missing data analysis was performed for all items.

The software also assisted psychometric assessment of the MBI-HSS. To complement this analysis, machine learning, specifically using Random Forest models, was applied to further examine the MBI structure and assess the relationships between individual items and burnout dimensions, exploring their alignment with theoretical assumptions.

Additionally, machine learning was used to identify the most important socio-demographic and work-related variables contributing to burnout. Moreover, KMeans clustering was employed to group nurses based on their burnout profiles derived from the MBI dimensions, enabling the identification of distinct burnout patterns. No a priori sample size calculation was performed for the purpose of the machine learning analyses.

Assessment of MBI structure in the study sample

Given ongoing evidence of variation in factor structure and item retention depending on the target population, the following procedures were conducted to assess the psychometric properties to confirm the the MBI's dimensional structure and reliability in this sample of oncology nurses.

Reliability analysis was conducted to assess internal consistency, using Cronbach's alpha for the total MBI scale and its dimensions: EE, DP, and PA. Alpha values between 0.70 and 0.79 were considered indicative of acceptable reliability, 0.80 to 0.89 as good, and values ≥ 0.90 as excellent.

Construct validity was evaluated through two methods: (i) item-construct and item-total correlations, and (ii) exploratory factor analysis (EFA). Correlations were categorized as inadequate if they were below 0.20, adequate between 0.20 and 0.34, good within the range of 0.35–0.49, and excellent at 0.50 or above [23].

The suitability of the data for factor analysis was confirmed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett's test of sphericity. The EFA was conducted using Principal Component Analysis with Varimax rotation to extract underlying factors. Factors were retained based on Eigenvalues ≥ 1 and the Scree Plot [24].

Machine learning analyses

To address the research question, we applied two machine learning techniques: KMeans clustering and Random Forest classification. KMeans, an unsupervised learning algorithm, grouped oncology nurses based on their scores in the MBI dimensions, generating distinct burnout profiles without relying on predefined labels.

Following this, the Random Forest algorithm, a supervised learning technique, was used to classify nurses into burnout and non-burnout clusters. Random Forest builds an ensemble of decision trees, allowing for accurate classification by aggregating results across multiple trees. A key feature of a Random Forest is explainability, providing insights into which MBI dimensions contribute most to classifying burnout, by visualizing each individual decision tree.

These methods were chosen due to their increasing application in healthcare research, particularly in exploring complex, non-linear relationships in psychological outcomes and occupational health [25, 26]. Their capacity to reveal latent structures and handle high-dimensional data makes them particularly suitable for exploratory analyses in fields such as burnout and mental health (e.g [27, 28]). In the present study, they offered a data-driven way to identify meaningful profiles that might be missed by traditional statistical approaches.

The decision trees were interpreted based on two main criteria: (1) Cluster Homogeneity – clusters with lower Gini values were considered more homogeneous and distinct, making them more reliable for analysis; and (2) Sample Size – clusters grouping five or more nurses were prioritized to ensure sufficient sample size, reducing the impact of random variation and providing a more stable basis for identifying meaningful patterns within the data.

In a final step, a Random Forest was constructed to analyze, additionally, socio-demographic and work-related variables, to identify potential protective and risk factors associated with burnout. This step provided an understanding of how these variables influence burnout risk. All analyses were conducted on a split sample, with 70% of the data used for training and 30% for testing, ensuring the machine learning algorithm remained unbiased, free from overfitting, and blind to theoretical cut-off values.

Model performance was evaluated using accuracy, sensitivity, and specificity metrics. Accuracy assessed the overall correct classification rate, while sensitivity measured the model's ability to correctly identify cases of burnout. Specificity evaluated the model's effectiveness in correctly identifying non-burnout cases.

To assess clusters' validity, the data from the significant decision trees, cf., the Gini and Sample size criteria, were compared with existing literature and analyzed in Excel against the burnout prevalence within the study sample.

Results

Sample characteristics

The study involved 150 oncology nurses, representing 69,4% of the hospital's nursing staff (Table 1). The sample comprised 123 women, with a mean age of 39.82 years (SD = 8.86), and 59.3% were married. Nurses reported working a mean of 36.47 h per week (SD = 4.18) in oncology services, and the majority (70%) had been employed at the institution for over 10 years. Most participants had a permanent employment contract (96.7%) and worked night shifts (59.3%). Additionally, 44% reported having secondary work activities. Of the total sample, 66% had at least one child, and 76.7% reported sleeping the recommended number of hours per night.

Table 1 Descriptive statistics of oncology nurses

Variable		M	Md	SD	Min	Max
Age (years)		39.82	39	8.86	23	61
Workload (hours *per* week)		36.47	40	4.18	30	42
Number of Children (Son/Daughther)		1.05	1	0.9	0	4
Variable		**n (*N* = 150)**		**%**		
Gender	Female	123		82		
	Male	27		18		
Marital Status	Single	46		30.70		
	Married	89		59.30		
	Divorced	14		9.3		
	Widow	1		0.7		
Be a parent	Yes	99		66		
	No	51		34		
Night Shift	Yes	89		59.3		
	No	60		40		
Permanent Contract	Yes	145		96.7		
	No	5		3.3		
Management Functions	Yes	21		14		
	No	129		86		
Extra work activities	Yes	66		44		
	No	84		56		
Time in Institution (years)	≤ 5	25		16.7		
	6–10	20		13.3		
	> 10	105		70		
Sleeping hours (per day)	≥ 6	31		20.7		
	6–8	115		76.7		
	> 8	4		2.7		

M = Mean; Md = Median; SD = Standard Deviation; Min = Minimum; Max = Maximum; n = Sample size; % = Percentage

Psychometric results

Reliability analysis revealed that the MBI-HSS is a homogeneous and valid instrument for measuring burnout in this sample (Table 2). The Emotional Exhaustion subscale showed strong consistency (α = 0.90), with item-total correlations ranging from 0.579 to 0.811. The highest correlation was for Item 8 ("I feel exhausted by my work"), and its removal would reduce the reliability (α = 0.880). For the Depersonalization subscale, reliability was acceptable (α = 0.78), with correlations between 0.468 and 0.612. Item 5 had the highest correlation, while Item 22 showed the lowest. Yet, removing Item 22 would reduce the alpha to 0.761. The Personal Accomplishment subscale had good consistency (α = 0.85), with correlations ranging from 0.291 to 0.762. Item 18 contributed the most to the scale's reliability, while removing Item 4 would slightly increase the alpha to 0.868.

The sample size adequacy and the sufficiency of the correlations between items to perform factor analysis were determined by the KMO value of 0.887, and a significant Bartlett's test of sphericity (χ^2 = 1,715.309, $p < 0.001$) [24].

Based on eigenvalues greater than 1, a four-factor solution was retained, explaining a total of 62.17% of the variance. Factor 1, primarily representing Emotional Exhaustion, included items with strong loadings, such as Item 8 ("I feel exhausted by my work," loading = 0.859) and Item 2 ("At the end of the workday, I feel exhausted," loading = 0.802). Factor 2, associated with Personal Accomplishment, featured items such as Item 18 ("I feel invigorated after working closely with my patients," loading = 0.805) and Item 17 ("I can easily create a relaxed atmosphere with my patients," loading = 0.761). Factor 3 corresponded to Depersonalization, with Item 5 ("I treat some patients as impersonal objects," loading = 0.735) and Item 11 ("I am worried this job is hardening me emotionally," loading = 0.698) loading strongly.

Item 4 ("I can easily understand how my patients feel") loaded on Factor 4 with a high value of 0.809, but it was the only item loading on this factor. Despite this, the high communality of 0.727 and lack of cross-loadings above 0.3 justified its retention, given its theoretical importance.

The Random Forest model exploring the relationships between individual items and burnout dimensions indicated that the Random Forest analysis effectively replicated the theoretical structure of the MBI.

The results confirmed the robustness of the MBI's theoretical dimensions and their reliability in assessing burnout in oncology nurses, supporting the use of the original structure and corresponding cut-off values in this study. Although the instrument has previously been validated in the Portuguese healthcare context, no item modification or cultural adaptation was applied. The full 22-item version of the MBI was used in its original form.

Burnout profiles and protective and risk factors

From the descriptive statistics performed to analyze burnout among oncology nurses, the MBI subscales revealed significant insights into their emotional well-being (Fig. 1). The mean EE score was 22.99, with 43% of nurses scoring in the high burnout range (EE ≥ 27), 19% in the moderate range, and 39% reporting low emotional exhaustion. DP, which had a mean score of 6.36, was high in 25% of nurses, moderate in 21%, and low in 53%, indicating that most nurses maintained a connection with their patients. PA, with a mean score of 33.68, showed that 25% of nurses had low PA (PA < 34), 30% had moderate PA, and 45% had high PA, suggesting that a significant proportion of nurses still felt competent and effective in their roles.

Based on the established burnout criteria, i.e., high emotional exhaustion and/or high depersonalization, combined with low personal accomplishment, the overall prevalence of burnout in this sample of oncology nurses was 17.3%.

The KMeans algorithm grouped the sample of oncology nurses based on their levels of PA, DP, and EE. Five

Table 2 Item homogeneity statistics and internal consistency coefficients

Dimensions and Items	Mean (SD)[1]	Item-construct correlation	*r*	Cronbach's α if item deleted
Emotional Exhaustion (α = 0,90)				
1. I feel emotionally drained from my work.	1,63 (1,53)	,739*	,502	,892
2. I feel used up at the end of the workday.	3,69 (1,51)	,751*	,580	,893
3. I feel fatigued when I get up in the morning and have to face another day on the job.	2,90 (1,55)	,750*	,613	,891
6. Working with people all day is really a strain for me.	1,99 (1,73)	,676*	,482	,898
8. I feel burned out from my work.	2,91 (1,66)	,861*	,691	,880
13. I feel frustrated by my job.	2,25 (1,66)	,837*	,657	,882
14. I feel I'm working too hard on my job.	3,47 (1,72)	,729*	,502	,895
16. Working with people directly puts too much stress on me.	2,23 (1,69)	,701*	,453	,896
20. I feel like I'm at the end of my rope.	1,91 (1,71)	,737*	,453	,893
Depersonalization (α = 0,78)				
5. I feel I treat some recipients as if they were impersonal objects.	,75 (1,22)	,635*	,413	,726
10. I've become more callous toward people since I took this job.	1,49 (1,76)	,760*	,397	,729
11. I worry that this job is hardening me emotionally.	1,89 (1,76)	,758*	,326	,740
15. I don't really care what happens to some recipients.	,91 (1,29)	,676*	,428	,720
22. I feel recipients blame me for some of their problems.	1,31 (1,48)	,614*	,276	,761
Personal Accomplishment (α = 0,85)				
4. I can easily understand how my recipients feel about things.	4,66 (1,29)	,345*	,228	,868
7. I deal very effectively with the problems of my recipients.	4,19 (1,19)	,650*	,380	,836
9. I feel I'm positively influencing other people's lives through my work.	4,63 (1,39)	,670*	,382	,835
12. I feel very energetic.	3,51 (1,48)	,633*	,389	,850
17. I can easily create a relaxed atmosphere with my recipients.	4,51 (1,33)	,783*	,579	,819
18. I feel exhilarated after working closely with my recipients.	4,15 (1,32)	,818*	,635	,815
19. I have accomplished many worthwhile things in this job.	3,99 (1,47)	,754*	,481	,827
21. In my work, I deal with emotional problems very calmly.	4,04 (1,45)	,762*	,475	,826

[1] SD: Standard Deviation; * The correlation is significant at the 0.01 level (two-tailed)

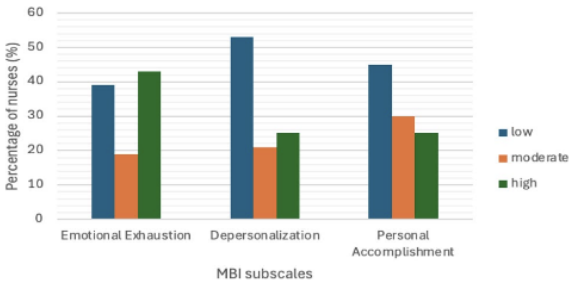

Fig. 1 EE, DP and PA in the study sample

clusters were specified for the KMeans algorithm. Cluster 3 contained 24 nurses whose scores were consistent with the burnout thresholds defined by the theoretical model (i.e., DP > 9.5, PA ≤ 30.5, EE > 20), aligning closely with the established burnout cut-offs (Fig. 2). The remaining four clusters correspond to burnout-free nurses.

Additionally, two other cases were split, with 8.3% ($n = 12$) assigned to Cluster 0 and 14.3% ($n = 7$) to Cluster 2 (Fig. 3). These groupings were based on their burnout profiles, as calculated by KMeans.

Following this, the Random Forest algorithm was used to classify the identified clusters based on socio-demographic and work-related variables, specifically to classify nurses as belonging to Cluster 3 (burnout) or to any of the burnout-free clusters. Model performance showed an accuracy of 78%, with a sensitivity of 0% and a specificity of 100%. This implies that the model was highly effective in identifying non-cases of burnout, correctly classifying all nurses without burnout. These performance metrics indicate that the machine learning model revealed valuable insights into protective factors associated with non-burnout profiles among oncology nurses, while it did not recognize any risk factors contributing to burnout.

Random Forest models consisting of three decision trees were trained. Despite exploring models with higher tree numbers and depths, this ensemble provided the best balance between stability and simplicity, because greater numbers of trees and depths did not improve the accuracy metrics.

Decision tree number one (Fig. 4) reflects two classes: cases of burnout in blue and non-burnout cases in orange. Given the absence of model's sensitivity, only the

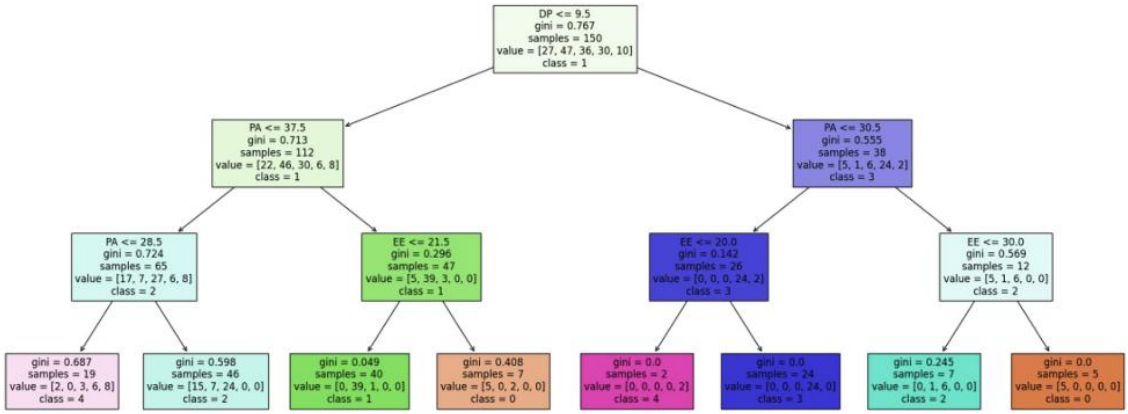

Fig. 2 KMeans clusters interpreted using a Decision Tree model

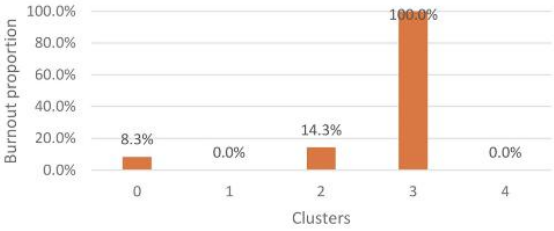

Fig. 3 Burnout proportion in the KMeans clustering

orange class was analyzed. The root node split is based on the *number of children* (QSDL4), with a threshold of 1.5, indicating that this variable plays a critical role in the initial classification. Samples were divided into two groups: those with QSDL4 ≤ 1.5 and those with QSDL4 > 1.5. At the second level, further splits are observed. For instances where QSDL4 ≤ 1.5, the next split occurs on *workload* (QSDL5) with a threshold of 30.5, while for QSDL4 > 1.5, the split is determined by *management duties* (QSDL11), also at 1.5. These subsequent divisions highlight the importance of QSDL5 and QSDL11 in refining the classification further. The terminal nodes of the first decision tree have Gini values close to 0, indicating high purity and well-separated classifications. Specifically, in the case where QSDL4 > 1.5 and QSDL511 ≤ 1.5 and *Age* (QSDL1) > 39.5, the Gini index is 0, indicating no misclassification at that node.

In the second decision tree (Fig. 5), the root node is determined by the *civil status* (QSDL3), with a split at 3.5, suggesting that this variable is central in distinguishing between non-burnout profiles at the top level. For the branch where QSDL3 ≤ 3.5, the next split occurs based on *participation in leisure activities* (QSDL12) at 1.5, indicating its relevance in further distinguishing samples. On the other side, when QSDL3 > 3.5, the model uses QSDL4 at 0.5 to further split the data. Altogether three terminal nodes exhibit low Gini values. Where QSDL3 ≤ 1.5 and QSDL12 ≤ 1.5, the Gini index reaches 0.19. If QSDL3 > 1.5,

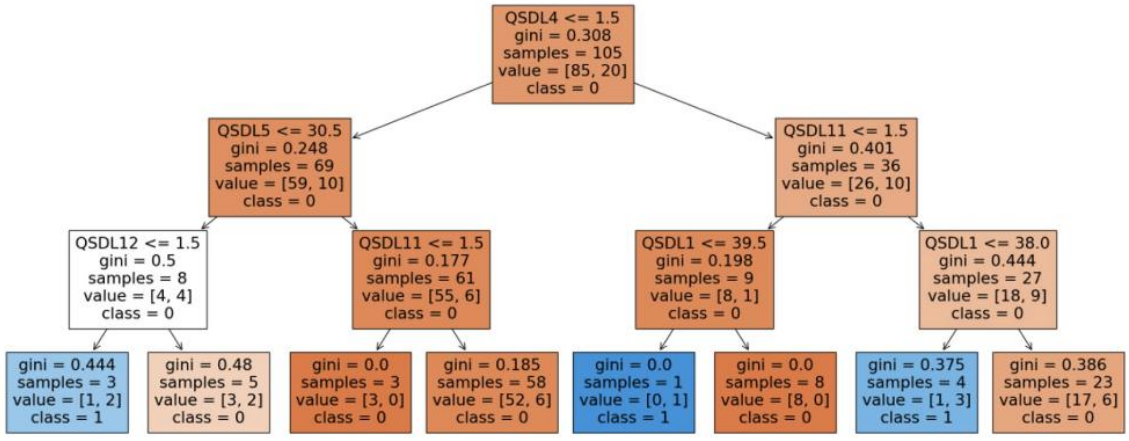

Fig. 4 Decision-tree one, distinguishing the number of children (QSDL4), the workload (QSDL5), Management duties (QSDL 11), and Age (QSDL1)

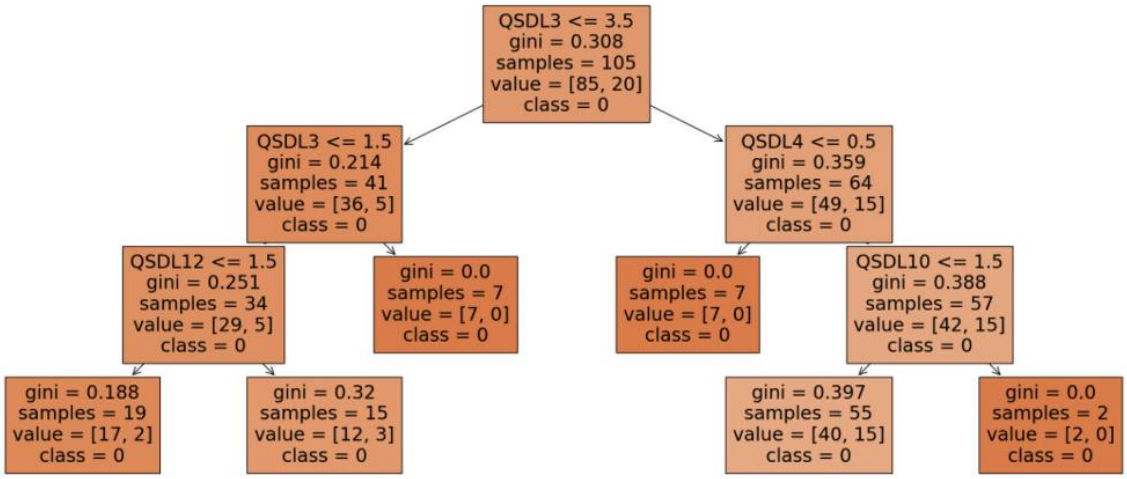

Fig. 5 Decision-tree one, distinguishing the civil status (QSDL3), number of children (QSDL4), Leisure activities (QSDL12) and the type of job contract (QSDL10)

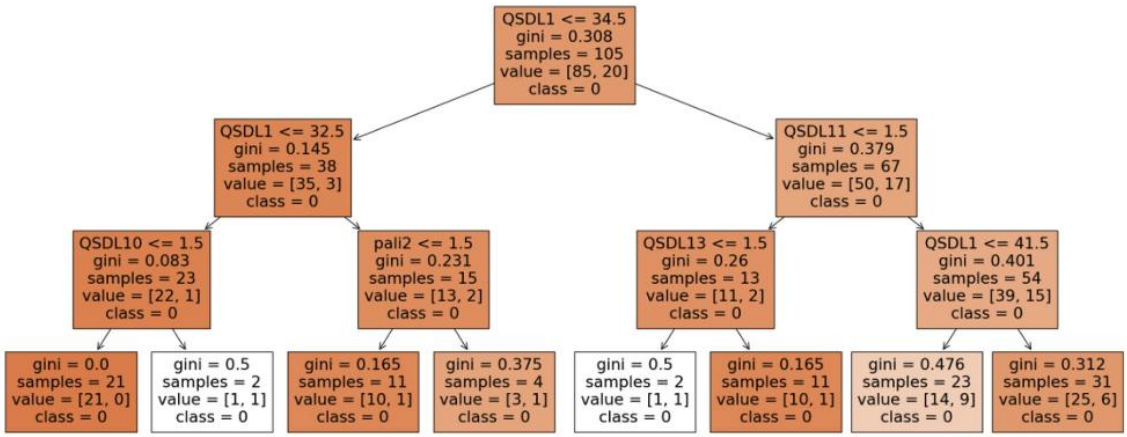

Fig. 6 Decision-tree one, distinguishing Age (QSDL1), the type of job contract (QSDL10), the working setting (pali2), Management duties (QSDL 11), and Sleeping hours (QSDL13)

Gini equals 0. Similarly, when focusing on the right branch split, where of QSDL3 > 3.5 and QSDL4 ≤ 0.5, Gini equals 0. On the other side, if QSDL4 > 0.5, then the *type of job contract* (QSDL10) at 1.5 further distinguishes the classes. Although reaching a Gini of 0, the sample only comprises two nurses.

The third decision tree (Fig. 6) begins with a root node split on QSDL1, with a threshold of 34.5, indicating that *age* is the primary driver of classification in this model. Cases where QSDL1 ≤ 34.5 are split further into two branches. On the left branch, the next critical split is on QSDL10 at 1.5. The terminal right node in this branch demonstrates high classification accuracy, with Gini equalling 0 and a sample of 21 nurses. If QSDL1 greater than 32.5 but lower than 34.5, then the *working setting* (pali2) follows to further split the sample at 1.5, leading to a terminal node of Gini at 0.17 and a sample of 11 nurses. On the right side, for instances where QSDL1 > 34.5, the tree splits again on QSDL11 at 1.5, and further divisions are based on QSDL13 and QSDL1 with thresholds of 1.5 and 41.5, respectively. As with the left branch, the terminal nodes here also exhibit low Gini values, indicating highly effective classifications. For example, where QSDL1 > 34.5, QSDL11 ≤ 1.5 and Sleeping hours (QSDL13) > 6 h (threshold > 1.5), Gini lowers to 0.17 with a sample of 11 nurses.

Proceeding to the validity assessment in Excel, the prevalence of burnout was determined in the clustered samples. Clusters were determined valid if their burnout prevalence was inferior to the overall sample (i.e., ≤

Table 3 Valid clusters of protective patterns based on socio-demographic and work-related variables

Pattern	Model Gini & sample	Cluster size	Burnout Prevalence
Tree 1, *Pattern A*: Number of children ≤ 1.5; workload > 30,5 h; No management duties	0.19; 58	75	12%
Tree 1, *Pattern B*: Number of children > 1.5; Management duties; Age > 39.5	0.00; 8	10	10%
Tree 2, *Pattern C*: Single; Leisure activities	0.19; 19	26	11,5%
Tree 2, *Pattern D*: Married; No children	0.00; 7	9	0%
Tree 3, *Pattern E*: Age ≤ 32.5; Permanent position	0.00; 21	29	3,4%
Tree 3, *Pattern F*: Age > 34.5; Management duties; sleeping hours > 6 h	0.17; 11	15	13,3%

17,3%), given the performance model results showing the absence of predictive burnout capability (cf., sensitivity = 0%) but effective prediction of non-cases of burnout (specificity = 100%).

After determining the prevalence of burnout in the clustered samples, only six patterns were considered valid (Table 3). Two patterns failed validation as their burnout prevalence was greater than the total sample burnout prevalence (17.3%), i.e., 20% and 23%, respectively.

The analysis of the decision trees identified several significant patterns highlighting protective factors of burnout in the current sample of oncology nurses. Pattern A includes half of the total sample (75 nurses). This pattern, characterized by nurses with only one or no children, working more than 30.5 h per week, and holding no management duties, showed a burnout prevalence of 12%. Compared to the overall burnout prevalence of 17.3% in the sample, Pattern A prevalence reveals a reduction of 5.3% points, equivalent to a 30.6% decrease in burnout prevalence in the overall sample. This indicates that specific work and personal characteristics—such as the absence of management duties and certain family structures—may serve as protective factors against burnout within this group.

Furthermore, Pattern D revealed a burnout-free group consisting of 9 nurses who are married and have no children. The 0% burnout prevalence in this cluster suggests protective factors associated with marital status (i.e., being married) combined with the absence of children. It must be highlighted that lacking these protective factors does not necessarily lead to higher burnout risk (for instance, in Pattern B having two or more children is protective). Therefore, Pattern D can be especially helpful in prioritizing other groups for preventive strategies.

Additionally, Pattern E identified younger nurses aged ≤ 32.5 years in permanent positions as another group with low burnout risk. With 29 nurses in this cluster and a burnout prevalence of just 3.4%. Compared to the overall burnout prevalence of 17.3% in the sample, Pattern E demonstrates a difference of 13.9% points, which would be equivalent to an 80.3% reduction in burnout prevalence in the overall sample. This pattern highlights that job stability in younger nurses may serve as a protective factor against burnout.

Pattern B identifies a group of nurses who are in management positions, have two children or more, and are aged over 39.5 years. This cluster, consisting of 10 nurses, has a relatively low burnout prevalence of 10%. Compared to the overall burnout prevalence of 17.3% in the sample, Pattern B shows a decrease of 7.3% points, which would be equivalent to 42.2% reduction in burnout prevalence in the overall sample. This suggests that the age and experience of these nurses may act as protective factors, helping them to manage burnout more effectively.

Pattern C groups 26 nurses who are single and engage in leisure activities, with a burnout prevalence of 11.5%. Compared to the overall burnout prevalence of 17.3% in the sample, Pattern C exhibits a difference of 5.8% points, which would be equivalent to a 33.5% reduction in burnout prevalence in the overall sample. Similarly to Pattern D, this pattern can help prioritizing other groups for burnout prevention while also suggesting a moderate role of leisure activities as a protective factor.

Lastly, Pattern F highlights a cluster of 15 nurses who are aged over 34.5 years, have management duties, and sleep for more than 6 h per night. The burnout prevalence in this group is 13.3%. Compared to the overall burnout prevalence of 17.3% in the sample, Pattern F shows a difference of 4% points, which would correspond to a 23.1% reduction in burnout prevalence in the overall sample. Similarly to Pattern B, these results indicate that the combination of age and experience may help nurses to handle burnout, while also highlighting the importance of sleep.

Discussion

Oncology nurses face the constant challenge of providing emotional support to patients and are frequently exposed to their suffering, leading to chronic stress that may contribute to burnout syndrome [29]. In this study, the machine learning analysis revealed distinct patterns of potential protective factors that appear that appear to shape burnout profiles among oncology nurses. While no clear risk factors emerged, several configurations were identified as significant in reducing burnout risk, offering valuable insights for targeted preventive strategies.

The burnout prevalence identified in our study aligns with other research conducted among Portuguese

oncology nurses, but some variations are evident when comparing findings from studies such Sá [22] and subsequent theses, which reported similar burnout levels but highlighted differences in specific burnout dimensions. For example, Sá [22] found that emotional exhaustion was the most prevalent burnout symptom in oncology nurses, with the depersonalization dimension being less pronounced, possibly reflecting the emotional nature of oncology care. In contrast, other studies conducted among Portuguese nurses, such as those by da Fonte [20] and Santos [21], observed moderate levels of burnout but with significant variability in depersonalization and personal accomplishment scores.

These discrepancies in burnout rates may be attributable to differences in organizational settings and work conditions. It is known that environment where job demands are increasingly disproportionate to job resources, lead to high levels of burnout [30].

Cumbie et al. [31], for instance, noted slightly lower burnout levels in settings where emotional support systems were more robust. Additionally, factors such as workload, nurse-patient ratios, and the availability of coping resources could explain why some studies, including ours, report higher levels of emotional exhaustion [32]. The findings across these studies highlight the need for context-specific interventions tailored to the challenges faced by oncology nurses in Portuguese healthcare settings.

Altogether, the findings drawn from Patterns B and F reinforce that factors like age, experience, and adequate sleep may mitigate burnout. Evidence from a meta-analysis highlighted some factors that predispose to burnout, and are complementary to the findings described, for instance factors related with characteristics of the profession, as rotative shifts, workload, and to sociodemographic variables such as marital status, work experience, age and gender [33]. Although in this study the gender was not a significant variable, other studies also add gender as a predisposing burnout factor, namely belonging to female gender [34].

It is important to emphasize Patterns A, D, and E, which showed some variables that protect from burnout syndrome. In Pattern A (characterized by having one or no children, working > 30.5 h per week, and having no management duties) particularly highlights the absence of managerial roles as a protective factor. Managers are tasked with ensuring high-quality care, which involves relation among these factors is complex, as evidenced by the fact that Pattern B nurses have two or more children as a protective factor. This complexity can be associated to working parents facing numerous demands, including workload, night shifts, physical tiredness, low income, social demands [37–39].

Work and family are typically viewed as distinct yet interdependent domains, with boundaries that allow for some degree of permeability [40]. Studies have recommended the provision of work-life balance programs to improve nurses' psychological well-being [40, 41]. This underscores the critical role of work-family-life balance in nurse's mental well-being. Several factors have been identified as influencing this balance, including working conditions, workload, leave policies, remuneration, career development opportunities, job satisfaction and security, organizational commitment, family and social relationships, self-care, and broader public health challenges [42].

Furthermore, evidence indicate that individuals with strong social support and adaptive coping strategies tend to report lower levels of burnout [43, 44]. This suggests that strategies aiming at strengthening support networks and promote self-care are essential to preserve the mental health of healthcare professionals.

Pattern E, (Age ≤ 32.5; Permanent position) highlights the importance of creating work stability with permanent positions, namely for the youngest nurses. Such job stability may provide nurses with the confidence to invest in their personal lives, underscoring the importance of promoting permanent positions early in their careers. An integrative review [45], highlights the value of supporting nurses during undergraduate training and early professional by fostering realistic expectations and effective coping strategies to address the complex organizational and functional demands of nursing [45]. Additionally, it is further recognized that younger individuals are often the most impacted by shifts in the job market, the instability brought on by career transitions, and uncertainties about future career growth, which may increase their vulnerability to developing burnout [45].

Burnout among oncology nurses is closely linked to the high emotional and physical demands of caring for cancer patients, often resulting in severe emotional exhaustion and depersonalization [4]. The variability in burnout profiles identified in our study underscores the importance of developing interventions that address the unique

in oncology settings where emotional resilience varies widely among nurses [46]. Nurses in high emotional exhaustion groups may benefit more from emotional support systems, while those in low personal accomplishment clusters may require professional development and recognition programs. The effectiveness of such supportive strategies is highly context-dependent, aligning with person-centeredness principles towards individualized plans that reflect both the care environment and the cultural context of the healthcare system [46].

These results align with broader research, which suggests that burnout interventions in oncology care must consider not only the individual nurse experience but also the broader organizational and emotional demands [31, 32]. A scoping review exploring the association between PCC and healthcare providers' job satisfaction and work-related health supports this view, demonstrating that PCC interventions improve job satisfaction and reduce work-related stress through tailored, context-sensitive approaches [47]. As such, implementing person-centered, contextually tailored strategies is crucial to improve the well-being of oncology nurses.

This study has some limitations that should be acknowledged. First, although the MBI is widely used and validated for measuring burnout, it was the sole instrument used in this report. While adequate for measuring the core dimensions of burnout, it does not capture broader elements of occupational well-being, such as work engagement, job satisfaction, or perceptions of organizational culture (e.g. [48, 49]). The inclusion of complementary instruments could have offered a more comprehensive view of protective and contextual factors relevant to oncology nursing.

Secondly, while machine learning methods are well-suited for identifying complex patterns of burnout in multidimensional data [50], their performance can be affected by dataset size and variable distribution. In this study, the model achieved 100% specificity but 0% sensitivity, indicating strong accuracy in identifying non-burnout cases but limited ability to detect actual burnout. Similar limitations have been noted in other psychological studies applying machine learning techniques, where class imbalance or subtle feature differences can hinder sensitivity (e.g. [47, 51]). Although no a priori sample size calculation was conducted, measures such as sample splitting (70/30 train-test), performance evaluation (accuracy, specificity), confusion matrix determination, and Gini index analysis were applied to support the robustness of the exploratory findings. The patterns uncovered in the present study are acknowledge as exploratory and hypothesis-generating in nature.

Together, these limitations underscore the need for future studies to use larger, purposefully designed datasets and integrate complementary methodologies to further clarify and validate the protective factors identified.

Conclusion

The findings of this study highlight the complexity of burnout risk among oncology nurses, demonstrating that burnout is not easily predicted by socio-demographic and work-related variables alone. Machine learning analysis revealed that protective factors seem to play a larger role in shaping burnout than specific risk factors. This suggests a nuanced interplay of individual, social, and professional circumstances that can influence burnout in unexpected ways, underscoring the unpredictability of burnout onset in this population.

Rather than pinpointing clear-cut risk factors, the results emphasize the value of fostering protective factors identified in specific nurse profiles. The presence of these protective elements, such as job stability in younger nurses, learned experience that can be instrumentally shared, and the alleviating effect of adequate sleep and leisure activities, appears pivotal in reducing burnout levels. These insights encourage a shift toward preventive strategies that prioritize protective factors within the work environment and beyond.

Given the unpredictable nature of burnout, these findings advocate for a proactive approach that focuses on reinforcing protective factors within the organizational and work environment. Tailoring systemic interventions to enhance job stability, work-life balance, and supportive workplace conditions offers a promising direction for promoting well-being and reducing burnout in oncology nursing.

Future research should focus on validating the protective patterns identified in this study within broader oncology nursing datasets, using hypothesis-driven statistical analyses. By testing predefined hypotheses concerning each protective factor's impact on burnout, such studies could confirm the significance and generalizability of these findings across diverse nursing populations and settings. This validation step would provide clarity and interpretability, facilitating the translation of the insights on job stability, family support, and work-life balance into actionable strategies that can be systematically integrated into burnout prevention programs for oncology nurses.

Abbreviations

ICD-11	International Classification of Diseases
EE	Emotional exhaustion
DP	Depersonalization
PA	Personal accomplishment
MBI	Maslach Burnout Inventory
MBI-HSS	Maslach Burnout Inventory – Human Services Survey
STROBE-Statement	Strengthening the Reporting of Observational Studies in Epidemiology

Supplementary Information

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Supplementary Material 1

Supplementary Material 2

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Author contributions
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Data availability
The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate
The study was approved by the ethics committee of the institution where the research was conducted (Register number TI02/2017) and all participants consented partcipation in the study. This study was approved by the Ethics Committee of the Portuguese Oncology Institute Coimbra (Register number TI02/2017).

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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