



Impact on mental health of the COVID-19 pandemic in a radiation oncology department

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Abstract

Objective: This study aims to assess the emotional well-being and organizational health of healthcare professionals working in radiation oncology departments during the COVID-19 pandemic.

Methodology: We conducted a survey using three questionnaires: the Impact of Event Scale—Revised (IES-R), the Italian ANAC questionnaire, and the Maslach Burnout Inventory (MBI). Statistical comparisons between groups were performed using Student's t-test.

Results: We analyzed seventy-eight questionnaires from twenty-six healthcare workers. Thirty-three percent of respondents scored high on the IES-R, indicating symptoms of post-traumatic stress. Younger age and lower seniority were associated with higher ANAC scores ($p < 0.5$), reflecting poorer organizational well-being. Regarding the MBI, 27% of participants reported high levels of emotional exhaustion, 50% reported high depersonalization, and 27% reported low personal accomplishment. Lower seniority and male gender were linked to higher scores in personal accomplishment ($p:0.05$; $p:0.03$).

Conclusion: Our findings suggest a need for interventions to enhance mental health and well-being among healthcare professionals in radiation oncology departments during challenging times like the COVID-19 pandemic.

Keywords: Radiotherapy, COVID, Burnout, Stress

Introduction

In December 2019, the identification of a cluster of pneumonia cases marked the emergence of the SARS-CoV-2 virus, leading to the declaration of the COVID-19 pandemic by the World Health Organization in March 2020. This global health crisis has profoundly impacted daily life, with growing evidence indicating that the fear of infection is associated with heightened levels of perceived stress among the general population. (Zhu et al., 2020)

Recent meta-analyses have shed light on the prevalence of psychological symptoms during the COVID-19 era, revealing that 29.6% of individuals report high stress levels, 31.9% experience anxiety, and 33.7% report depression. (Miaskowski et al., 2020)

Healthcare workers, in particular, have faced significant additional stress and psychological challenges, including anxiety, stress, and sleep disturbances, during the pandemic. Various studies have examined the impact on different medical professionals such as physicians, urologists, pharmacists, and general practitioners. (Salari et al., 2020)

The unique nature of caring for oncology patients has further amplified the risk of burnout syndrome, as evidenced by studies and meta-analyses involving radiotherapists and radiation oncologists. However, there remains a gap in understanding the psychological well-being of oncology workers, especially those in radiation oncology departments. (Badahdah et al., 2020)

Against this backdrop, this study aims to assess the emotional state and organizational well-being of healthcare professionals working in an oncology department, with a specific focus on radiation oncology, during the COVID-19 pandemic. (Du et al., 2020)

Methods

A survey was conducted, one year after the initial lockdown, aiming to evaluate the impact of COVID-19 on the mental health of healthcare workers in the Radiation Oncology Department.

Three validated self-report questionnaires were utilized:

1. The Impact of Event Scale—Revised (IES-R) was employed to assess post-traumatic stress symptoms. Significant symptoms were defined as a score exceeding 33.
2. The Italian ANAC questionnaire was used to evaluate organizational well-being. This questionnaire provided insights into employees' opinions regarding the organization and working environment, helping identify potential actions for improvement. It comprises three sections: Organizational well-being (questions A to I), Degree of sharing of the evaluation system (questions L to N), and Evaluation of the hierarchical superior (Questions O and P). Higher scores indicated a well-organized environment.
3. The Maslach Burnout Inventory (MBI) was utilized to evaluate emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA). EE assessed feelings of exhaustion, DP measured a detached and impersonal response toward patients, and PA gauged feelings of competence and desire for success. Scores of ≥ 30 and ≥ 12 for EE and DP, respectively, and scores lower than 33 for PA indicated high burnout symptoms.

Statistical Analysis

The data were presented as means with standard deviations (SD) or percentages. Group comparisons (gender, age, working seniority) were conducted using Student's t-test or chi-squared test, as appropriate, using SPSS version 13.

Results

The response rate for the survey was 100%, with a total of seventy-eight questionnaires and 178 questions analyzed. The sample comprised 26 workers, including five radiation oncologists, three medical physicists, one psych-oncologist, three nurses, nine radiotherapists, four administrative staff members, and one site coordinator. The median age of the sample was 32 years (range 25–44), with 73% being women.

Table 1: Characteristics of the Sample

	N	%
Women	19	73
Men	7	27
Working seniority < 5 years	20	77
Working seniority > 5 years	6	23
Age < 30	11	42.3
Age > 30	15	57.7
Managerial role	9	34.6
No managerial role	17	65.4

IES-R Data

The mean IES-R score is presented in Figure 1. Thirty-three percent of the sample obtained a score indicating higher post-traumatic stress symptoms (> 33). Analysis of characteristics such as age, sex, professional role, and working seniority did not yield statistically significant differences for post-traumatic stress symptoms ($p > 0.5$).

Maslach Burnout Inventory (MBI) Data

MBI Data (n = 26)	Age (< 30 vs > 30)	Working seniority (< 5 years vs > 5 years)	Sex	Professional Role
EE; mean (SD)	12.7 (7)	p:0.5	p:0.5	p:0.7
Low (n, %)	18 (69.2%)			
Middle (n, %)	8 (30.8%)			
High (n, %)	0 (0%)			
DP; mean (SD)	9.4 (3.9)	p:0.2	p:0.7	p:0.7
Low (n, %)	2 (7.7%)			
Middle (n, %)	17 (65.4%)			
High (n, %)	7 (26.9%)			
PA; mean (SD)	32.2 (5.9)	p:0.2	p:0.03	p:0.2
Low (n, %)	2 (7.7%)			
Middle (n, %)	11 (42.3%)			
High (n, %)	13 (50%)			

ANAC Data

The mean values of the ANAC questionnaire are depicted in Figure 1. The median scores for all items (A–P) were high. Only age below 30 years and shorter working seniority (less than 5 years) were statistically significant for higher scores across all items ($p < 0.05$).

MBI Data

Regarding the MBI data (Table 2), none of the participants scored high for EE (above 30), while approximately 70% had low scores (below 17). For DP, 27% scored high (above 12), and 65.4% had moderate scores. PA was high in 50% of cases (scores below 33) and low in 7.7% of the sample. Only shorter working seniority (less than 5 years) and male sex were correlated with high levels of PA ($p: 0.05$; $p: 0.03$).

Discussion

Healthcare workers, particularly those in oncology, face increased risks of mental health challenges due to their constant exposure to suffering and death. Studies have consistently shown that a significant number of healthcare professionals in oncology experience burnout symptoms, often stemming from work overload, organizational issues, and emotional strains in patient and colleague interactions. (Lai et al., 2020)

The COVID-19 pandemic has exacerbated these challenges, affecting the daily lives of individuals worldwide. A recent systematic review and meta-analysis highlighted high prevalence rates of stress (29.6%), anxiety (31.9%), and depression (33.7%) among the general population, reflecting the widespread impact of the pandemic on mental well-being. (KangL et al., 2020)

Healthcare workers, including those in radiotherapy, have grappled with organizational changes necessitated by the pandemic. Guidance documents and operational procedures have been developed to manage patient care and ensure safety for both patients and healthcare professionals. The importance of patient-doctor interactions, often overlooked, plays a crucial role in workflow and overall clinical care quality. (Zhang et al., 2020)

The pandemic-related stress, coupled with lockdowns and organizational adjustments, has likely contributed to stress among healthcare personnel in oncology. This study aims to assess the psychological

impact of COVID-19 specifically on workers in radiation oncology departments, focusing on burnout, post-traumatic stress symptoms, and organizational well-being. (Amerio et al., 2020)

To our knowledge, this study represents the first published research on this topic. Self-survey data provide a real-life snapshot of ongoing issues, facilitating discussions and informing tailored interventions. (El-Hage et al., 2020)

Studies on distress and psychological symptoms among healthcare professionals have shown high prevalence rates. For instance, Chinese physicians and nurses reported distress symptoms in over 70% of cases. Similar findings were reported among physicians in Oman, French urologists, and general practitioners, with significant proportions experiencing burnout and post-traumatic stress symptoms. (Lange et al., 2021)

Our findings indicate a high level of post-traumatic stress symptoms, with 33% of workers scoring above the threshold on the IES-R. While no specific factors like age or sex were linked to symptom onset, individual responses to stressors can vary significantly based on cognitive, emotional, and neurobiological processes. (Gregucci et al., 2020)

In terms of burnout, no workers reported high emotional exhaustion, but 27% experienced high depersonalization, and 50% reported low personal accomplishment. Only shorter working seniority and male sex were associated with higher levels of personal accomplishment. (Desideri et al., 2021)

Organizational well-being scores were generally high, indicating that the changes implemented during the pandemic were well-accepted, likely due to their perceived benefits for patient and personal safety. This aligns with previous findings suggesting that organizational changes did not significantly disrupt radiotherapy workflow in specific scenarios. (Abdessater et al., 2020)

Despite study limitations such as sample size and lack of pre-COVID-19 data, these findings underscore the importance of implementing interventions to promote mental health well-being among radiation oncology department workers. (Francolini et al., 2021)

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