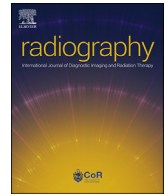




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Assessment of job satisfaction, lifestyle behaviors, and occupational burnout symptoms during the COVID-19 pandemic among radiologic technologists in Saudi Arabia



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ABSTRACT

Introduction: Radiologic technologists (RTs) are among the healthcare staff negatively impacted by job dissatisfaction, occupational stress, and unhealthy lifestyle behaviors, especially during the COVID-19 pandemic. The aim of this study was to assess job satisfaction, lifestyle behaviors, occupational burnout symptoms, and associated factors among RTs in Saudi Arabia.

Methods: A survey study was conducted from January 2021 to February 2022 using a self-administered questionnaire. The questionnaire gathered socio-demographic information, answers to the Minnesota Satisfaction Questionnaire, lifestyle behaviors, and frequency of occupational burnout symptoms. Data were analyzed to obtain descriptive and inferential statistics.

Results: A total of 261 RTs completed the survey. Participants were predominantly male and most were working in public hospitals. The overall mean score for job satisfaction was 3.77 (of 5), indicating moderate job satisfaction, with two items showing low satisfaction— compensation (3.33) and advancement (3.28). The overall mean score for lifestyle behaviors was 2.00 (of 3), indicating moderate lifestyle behaviors, with the lowest scores reported in sleep quality (1.92), healthy diet (1.85), and relaxing and unwinding (1.86). For burnout symptoms, the overall mean score was 2.30, indicating moderate burnout level, with the highest score reported in experiencing physical symptoms (2.72). There were significant relationships between job satisfaction, lifestyle behaviors and burnout symptoms. A positive and moderate relationship, $r = 0.53$ ($p < 0.05$), was found between job satisfaction and healthy lifestyle behaviors. The burnout relationships with job satisfaction, $r = -0.615$ ($p < 0.05$), and healthy lifestyle behaviors, $r = -0.524$ ($p < 0.05$), were negative and moderate relationships.

Conclusion: The interrelationships between job satisfaction, lifestyle behaviors, and occupational burnout symptoms suggest that improving lifestyle behaviors and managing burnout symptoms could contribute to higher job satisfaction.

Implications for practice: Policymakers should focus their efforts in the workplace health promotion programs to play essential roles in promoting healthy lifestyle behaviors and occupational stress management, as well as, improvements of RTs career advancement and compensation.

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Introduction

The COVID-19 pandemic has impacted most life domains and sectors, including healthcare workers. The negative effects of job dissatisfaction, occupational stress, and unhealthy lifestyle behaviors have been recognized before and after the pandemic on both

organizations and individuals, which can result in reduced productivity, compromised levels of healthcare quality, and the individuals' wellbeing.¹ Ensuring high-quality services is an ethical obligation of healthcare providers, including radiologic technologists (RTs). As frontline service providers, RTs play an important role in determining the quality of service delivered.²

The concept of job satisfaction defines employees' positive impression of their job, gratification from fulfilling their requirements, and a positive return resulting from it.³ The level of job satisfaction of healthcare providers has a significant impact on

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employee motivation and efficiency, as well as on their performance and ultimately on patient satisfaction.⁴ Dissatisfaction at work may favor the onset of illnesses associated with occupational burnout, stress, and behavioral and mental health conditions. These undesirable consequences are influenced by factors such as accumulated work load, low pay, and intense demands for medical care during long working hours, shortages of materials and human resources, and exposure to the suffering and death of patients.⁵

Diagnostic radiography is a demanding specialty characterized by a high-intensity working environment, which places heavy physical and emotional burdens on the RTs involved. Occupational stress can arise from discrepancies between the demands on staff and their ability to cope.⁶ The stress created by the imbalance between the demand and the ability to cope will manifest as emotions such as anxiety and will inevitably lead to burnout.^{7,8} The impact of stress can also manifest as physical effects on the body, such as fatigue, changes in sex drive, upset stomach, and sleep problems, and/or emotional effects, such as anxiety, restlessness, lack of motivation or focus, irritability, sadness, and depression.⁹ These physical and emotional effects could be aggravated with unhealthy lifestyle behaviors.¹⁰

Adopting and maintaining healthy lifestyle behaviors such as participating in regular physical activity, obtaining adequate sleep and socializing with friends and family was disrupted by COVID-19. Reduced levels of physical activity during the COVID-19 pandemic have been extensively reported.^{11,12} Physical activity can lead to positive health benefits, including weight loss, improved sleep, strengthened immune system and can be considered as a stress management tool.^{13,14} Poor sleep quality and decreased sleep duration are associated with higher levels of perceived stress and have a negative impact on the quality of life.¹¹ Healthcare professionals, including RTs, are considered to be a high-risk population for experiencing poor quality of life.^{15–17}

Employees' job dissatisfaction, occupational stress, and unhealthy lifestyle behaviors have a deleterious effect on both the organizational and the personal level. Most published studies mainly stress the impacts of work and environmentally related factors on job satisfaction and occupational burnout.^{18–20} However, there remains a lack of studies regarding other aspects of job satisfaction and its relationship with burnout symptoms and lifestyle behaviors among RTs, particularly in Saudi Arabia. Therefore, the aim of this study was to assess the extent of job satisfaction, burnout symptoms, lifestyle behaviors, and associated factors among RTs in Saudi Arabia.

Methods

Population and study area

This survey study was conducted in Saudi Arabia, between January 2021 and February 2022. The survey population comprised RTs working full-time in radiology departments in public and private hospitals. Sample size was estimated using a priori power analysis with the $G \times$ Power (version 3.1.9) software to determine the minimum sample size required.²¹ Results indicated the required sample size to achieve 80% power for detecting a medium effect, at a significance criterion of $\alpha = 0.05$, was $N = 130$ for the Independent Sample T-Test. Convenience samples of 260 were collected for this study, which is considered adequate.

Data collection tools and sampling

Data were collected using a self-administered and structured questionnaire. The questionnaire was comprised of four parts. The first part collected socio-demographic variables, such as age, gender, qualification, years of work experience, and specialty. The second part assessed employee satisfaction using the Minnesota Satisfaction

Questionnaire (MSQ), a previously validated questionnaire.²² Using validated instruments facilitates comparison with previously studied cohorts.²³ The MSQ consists of 20 statements, each with a five-point Likert scale ranging from *extremely satisfied* to *not satisfied*. Statements address how satisfied the respondents are with aspects related to ability utilization, achievement, activity, advancement, authority, institutional policies, compensation, co-workers, creativity, independence, moral values, recognition, responsibility, security, social status, social service, supervision—human relations, supervision—technical, variety, and working conditions. Mean scores on job satisfaction below 3 were considered low, mean scores from 3 to 4 were considered moderate, and scores above 4 were considered high.

In the third part, the RTs were asked a series of seven questions about the level of quality of their healthy lifestyle behaviors, each with a three-point scale ranked from *good* to *poor*. The questions included assessing the quality of their sleep habits, physical activity, social life, spiritual and emotional life, healthy dietary habits, relaxation and unwinding, and balancing their priorities in terms of work and personal life. Mean scores below 2 was considered a low level of healthy lifestyle behaviors, scores from 2 to 2.50 were considered moderate, and scores above 2.5 were considered high.

The fourth part consists of five questions about the frequency of occupational burnout symptoms, each with a five-point Likert scale ranging from "Never" to "Always", including the following: 1) becoming cynical about your work, becoming impatient or criticizing co-workers or patients, 2) difficulty in focusing and being productive, 3) experiencing physical symptoms such as lethargy, changes in sleeping habits, unexplained headaches, intestinal problems, or other physical problems, 4) feeling disappointed or dissatisfied with the job, and 5) using escape mechanisms (food, smoking, drugs, and alcohol consumption) to relieve work-related stress. Mean scores on job satisfaction below 2 were considered low, mean scores from 2 to 3.5 were considered moderate, and scores above 3.5 were considered high. The frequency of the answers, "always" and "often", were combined to represent the frequency distribution of the burnout symptoms.

Due to the COVID-19 pandemic and to eliminate the geographical boundaries to reach participants from different regions in Saudi Arabia, the questionnaire was a web-based survey utilizing an electronic Google Form (Google, Mountain View, USA) questionnaire. Radiology departments' supervisors facilitated communication with RTs and the survey distribution. The questionnaire link was distributed to RTs by their supervisors via email and through social media platforms, WhatsApp (LLC, California, USA). At the start of the online questionnaire, consent was required to continue.

A pilot study was conducted to test the feasibility and applicability of the questionnaire. Twenty participants were surveyed and took 10–15 min to complete the questionnaire, their responses were excluded from analysis of the main data. Amendments in the questionnaire were not warranted. Cronbach's Alpha coefficient was found to be 0.87–0.94. The coefficient was appropriate and could therefore be used in this study.

Ethical considerations

The Jazan University Research Ethics Committee granted ethics approval prior to data collection. We followed the guidelines specified in the Declaration of Helsinki for Human Studies in this research.

Statistical analyses

The data in the current study were analyzed using the Statistical Package for Social Sciences (SPSS), version 27, (IBM Corp., Armonk,

N.Y., USA). Descriptive statistics were calculated for continuous variables (mean, standard deviation [SD]) and categorical variables (*n*, %). Pearson's chi-square test was performed to test associations between socio-demographics and job satisfaction and lifestyle scores. Spearman's rho correlation analysis was used to determine the association between non-normally distributed variables. A *p*-value of <0.05 was used to determine that the findings of the inferential statistics were statistically significant. The normality of the distribution of quantitative variables was evaluated using the Kolmogorov–Smirnov test. The median values of the variables of two independent samples with distribution that was statistically significantly different from normal were compared by applying the Mann–Whitney U test, and the median values of variables of more than two independent samples were compared using the Kruskal–Wallis test. The strength of the relationship between lifestyle behaviors and job satisfaction was evaluated by calculating Spearman's correlation coefficient (*r*). If $0 < |r| \leq 0.3$, the values were weakly interdependent; if $0.3 < |r| \leq 0.8$, they were moderately interdependent; and if $0.8 < |r| \leq 1$, they were strongly interdependent. The correlation coefficient is positive when one value increases together with the other and negative when an increase in one value causes the other to decrease.

Results

A total of 261 RTs practicing in different radiology units, including x-ray, CT, US, MRI, and NM in Saudi Arabia, responded to the questionnaire used in the current study. A summary of the socio-demographic characteristics of the RTs is shown in Table 1. The majority of the RTs (65%) were male. More than half of the RTs (54%) were in the age group of 22–30 years. In addition, nearly 70% of the RTs had bachelor's degrees, 22% had a diploma, and 9% had master's degrees. While many RTs (*n* = 77) had more than 10 years of working experience in radiology departments, the majority had

Table 1
Summary of socio-demographic characteristics of the RTs and mean scores of job satisfaction, lifestyle behaviors and burnout symptoms.

Items	<i>n</i> (%)	Job satisfaction	Lifestyle	Burnout symptoms
Gender^a (p-value)		0.041	0.065	0.02
Female	92 (35%)	3.65	1.92	2.47
Male	169 (65%)	3.83	2.05	2.22
Age^b (p-value)		0.003	0.005	0.007
22–30	141 (54%)	3.63	1.921	2.45
31–40	90 (34%)	3.91	2.07	2.17
≥41	30 (11.5%)	4.03	2.18	2.03
Qualification^b (p-value)		< 0.001	< 0.001	< 0.001
Diploma	58 (22%)	4.19	2.23	1.838
Bachelor	181 (69%)	3.62	1.90	2.48
Postgraduate	22 (8.4%)	3.85	2.26	2.08
Years of experience^b (p-value)		0.002	< 0.001	0.012
Less than 3 years	98 (38%)	3.61	1.86	2.43
3–5 years	37 (14%)	3.67	2.00	2.5
5–10 years	49 (19%)	3.76	2.06	2.27
More than 10 years	77 (30%)	4.03	2.14	2.07
Specialty^b (p-value)		0.017	0.195	0.381
CT	44 (17%)	3.88	2.01	2.19
General x-ray	148 (57%)	3.79	2.02	2.28
Interventional	6 (2.3%)	4.22	1.98	2.6
MRI	33 (13%)	3.62	2.03	2.26
NM	11 (4.2%)	4.13	2.13	2.38
US	19 (7.3%)	3.24	1.71	2.68
Workplace^a (p-value)		< 0.001	0.003	0.406
Private	42 (16%)	3.42	1.80	2.41
Public	219 (84%)	3.84	2.04	2.28

^a Mann–Whitney U.

^b Kruskal–Wallis.

Table 2
Variable items and mean scores for job satisfaction, lifestyle behaviors and burnout symptoms.

Variables	Mean score (SD)
Job satisfaction (n of 5)	
Activity	4.03 (0.92)
Independence	3.95 (1.03)
Variety	3.69 (1.18)
Social status	3.96 (1.06)
Supervision-human relations	3.59 (1.27)
Supervisor decisions	3.54 (1.23)
Moral values	4.03 (0.95)
Security	3.97 (1.10)
Social services	4.51 (0.70)
Authority	3.99 (0.96)
Ability utilization	3.72 (1.07)
Institutional policies and practices	3.52 (1.16)
Compensation	3.33 (1.37)
Advancement	3.28 (1.31)
Responsibility	3.71 (1.06)
Creativity	3.87 (1.09)
Working conditions	3.64 (1.26)
Co-workers	3.70 (1.14)
Recognition	3.50 (1.33)
Accomplishment	3.85 (1.14)
Overall mean score	3.77 (0.77)
Lifestyle behaviors (n of 3)	
Sleep quality	1.92 (0.65)
Physical activity	2.00 (0.69)
Social life	2.14 (0.69)
Spiritual and emotional life	2.16 (0.71)
Healthy diet	1.85 (0.68)
Relaxing and unwinding	1.86 (0.66)
Balancing work and personal life	2.08 (0.65)
Overall mean score	2.00 (0.51)
Burnout symptoms (n out of 5)	
Becoming cynical and impatient	2.11 (1.09)
Difficulty focusing, being productive	2.16 (1.05)
Physical symptoms	2.72 (1.16)
Disappointed and dissatisfied with the job	2.30 (1.21)
Using escape mechanisms	2.23 (1.28)
Overall Mean score	2.30 (0.88)

less than 3 years of experience. More than half (nearly 58%) were working in general x-ray departments rather than CT, MRI, and other radiology units. Finally, nearly all (*n* = 219) worked in public (governmental) hospitals.

As shown in Table 2, the overall mean score for job satisfaction was 3.77, which indicates moderate satisfaction. Among the 20 items relating to job satisfaction, nine showed high satisfaction, including activity, independence, social status, moral values, security, social services, authority, creativity, and accomplishment, while two items showed low satisfaction— compensation and recognition. For lifestyle behaviors, the overall mean score was 2.00 (of 3), which suggests moderate lifestyle behaviors with the lowest scores reported in sleep quality (1.92), healthy diet (1.85), and relaxing and unwinding (1.86). For burnout symptoms, the overall mean score was 2.30, indicating moderate burnout level, with the highest score reported in experiencing physical symptoms (2.72).

Table 3 illustrates that the numbers of RTs who reported high job satisfaction, healthy lifestyle behaviors and burnout symptoms were 108 (41%), 47 (18%) and 52 (20%), respectively, while 43 (17%),

Table 3
Individual levels of job satisfaction, lifestyle behaviors and burnout symptoms.

Level	Low	Moderate	High
Job satisfaction	43 (17%)	110 (42%)	108 (41%)
Healthy lifestyle behaviors	161 (62%)	53 (20%)	47 (18%)
Burnout symptoms	71 (27%)	138 (53%)	52 (20%)

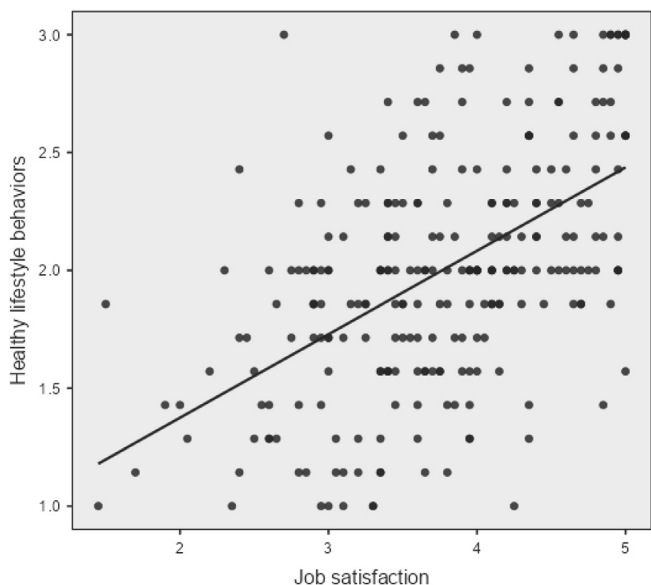


Fig. 1. Relationship between job satisfaction and healthy lifestyle behaviors.

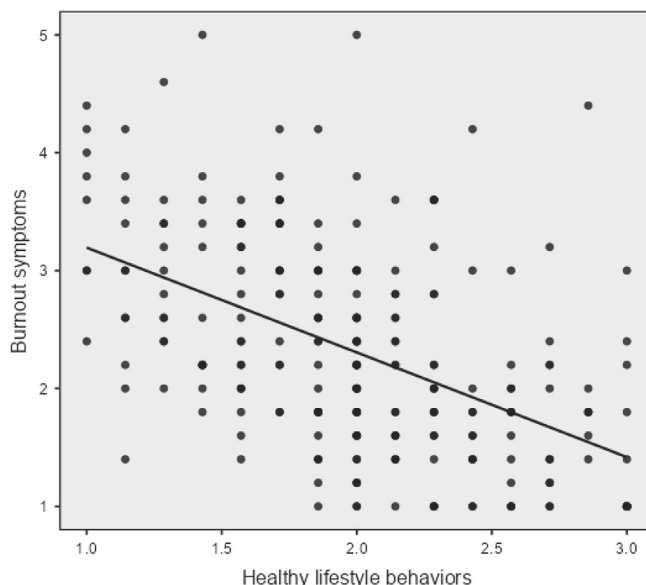


Fig. 3. Relationship between healthy lifestyle behaviors and burnout symptoms.

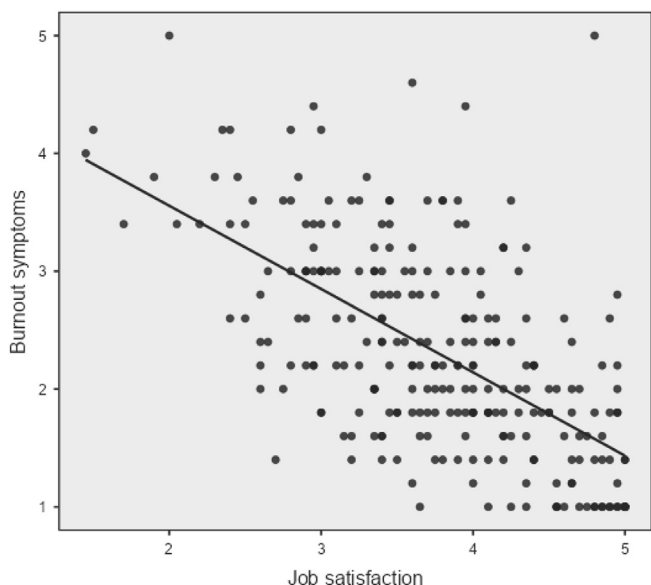


Fig. 2. Relationship between job satisfaction and burnout symptoms.

161 (62%) and 71 (27%) RTs showed low levels of job satisfaction, healthy lifestyle behaviors and burnout symptoms, respectively. To show the relationship between job satisfaction, healthy lifestyle behaviors and burnout symptoms, correlation analysis was performed. According to correlation analysis, there were significant relationships between job satisfaction, lifestyle behaviors and burnout symptoms. A positive and moderate relationship, $r = 0.53$ ($p < 0.05$), was found between job satisfaction and healthy lifestyle behaviors (Fig. 1). The burnout relationships with job satisfaction, $r = -0.615$ ($p < 0.05$), and healthy lifestyle behaviors, $r = -0.524$ ($p < 0.05$), were negative and moderate relationships (Figs. 2 and 3). These results revealed that participants who reported higher job satisfaction scores, reported higher scores of healthy lifestyle behaviors and lower scores of burnout symptoms.

As shown in Fig. 4, the greatest occupational burnout symptoms cited by the RTs in this study, when combining “always” and “often”

answers, were experiencing physical symptoms (57), using escape mechanisms (48), disappointed and dissatisfied with the job (36), becoming cynical and impatient (28), and difficulty focusing, being productive (25).

Discussion

A thorough understanding of employee job satisfaction is a crucial aspect of personnel management. The first and most obvious reason to study job satisfaction is because it influences employees’ output in the workplace. Several studies from Saudi Arabia have investigated job satisfaction. However, our study focuses on a topic that has not previously been investigated in Saudi Arabia—it addresses the assessment of job satisfaction along with the quality of lifestyle and burnout symptoms among RTs who work in radiology departments in Saudi Arabia.

Our findings in this study on job satisfaction across Saudi Arabia revealed that the RTs surveyed were at moderate level (overall mean score = 3.77 of 5), a finding similar to previous studies.^{24,25} Specifically, they were more satisfied with nine of the 20 variables, including social services, activity, and the moral values of the institution. In this study, the RTs were less satisfied with the compensation and advancement they receive in their jobs than previous studies’ results have reported before the COVID-19 epidemic.^{24,25}

Life quality is a broad concept that includes economic situation, psychological and physical health, personal beliefs, and interaction with the environment.²⁶ It also connects an employee’s reaction to work, particularly its essential outcome in relation to psychological and physical health and satisfaction of job needs. Our study revealed that the RTs’ lifestyle score was moderate (overall mean score = 2 of 3). The lowest reported scores were for sleep quality (1.92), healthy diet (1.85), and relaxing and unwinding (1.86).

RTs who have many responsibilities toward radiologists, referring physicians, colleagues, and patients are exposed to occupational burnout and chronic stress.²⁷ Our study evaluated occupational burnout in terms of specific symptoms, and RTs cited the most frequent burnout symptom as experiencing physical symptoms. Several previous studies from different countries have reported an elevated risk of work-related stress due to the impact of the COVID-19.^{28–30}

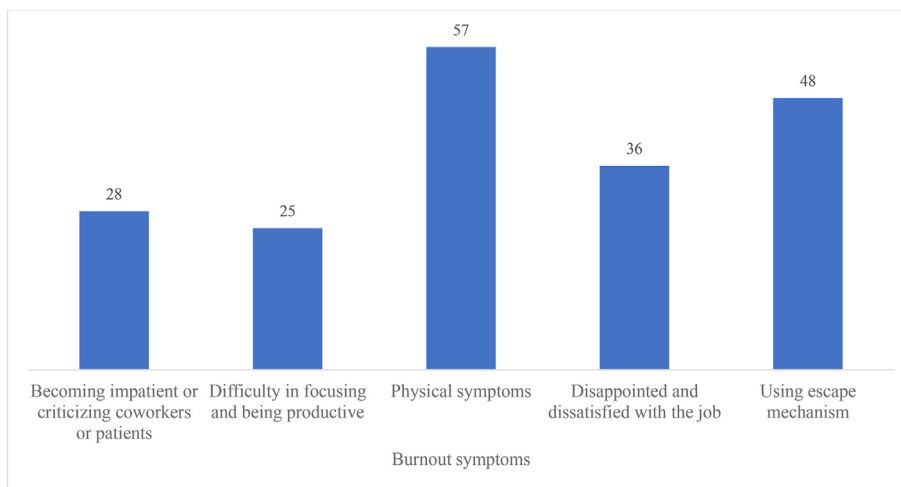


Fig. 4. Frequency distribution (combined “always” and “often”) of burnout symptoms among RTs.

When directly examining the relationship between job satisfaction, lifestyle behavior and burnout symptom, the result revealed that there is a significant positive and moderate relationship between job satisfaction and lifestyle behaviors, and negative and moderate relationships between burnout and job satisfaction and lifestyle behavior. In this study, the RTs reported more frequent physical symptoms as a burnout indicator, while poor lifestyle behaviors were manifested in poor sleep quality, unhealthy diet, and lack of relaxation. The interrelationship between lifestyle behaviors and burnout symptoms has been reported in previous literature.¹⁰ The impact of poor sleep quality, unhealthy diet, and lack of relaxation can induce physical symptoms in workers. On the other hand, the impact of occupational stress may also be manifested as physical effects on the body.⁹ These findings indicate that improving lifestyle behaviors and managing occupational burnout could contribute to higher job satisfaction.

Interestingly, spirituality, physical activity, and mindfulness training can help with burnout and the negative effects of the pandemic in general.^{31,32} These interventions, however, should be part of broader occupational health surveillance or workplace health promotion programs.³³ Chirico et al. discussed how to deal with workplace issues, particularly during the COVID-19 epidemic.³⁴ Specific recommendations on managing the impact of the COVID-19 epidemic on clinical radiography practice were addressed by several previous studies.^{35,36}

To the best of our knowledge, this is the first study to examine job satisfaction, lifestyle behaviors, and burnout symptoms in Saudi Arabia during the COVID-19 pandemic. Nevertheless, some limitations need to be acknowledged, including the small sample size and that the study population was obtained through a convenience sampling method, which might affect the representativeness of our sample and generalizability of results. Larger sample size would serve to confirm aspects of the current study. Also, there was no baseline from before the pandemic against which to compare the interrelationships between job satisfaction, lifestyle behaviors, and burnout symptoms. Moreover, future studies should include a qualitative research approach that could highlight more profound perceptions toward job satisfaction, lifestyle behaviors, and occupational burnout.

Conclusion

This study confirmed that the COVID-19 pandemic imposed a significant physical and psychological burden on RTs in Saudi

Arabia. The extent of job satisfaction, the lifestyle behaviors, and burnout symptoms cited varied between individuals, but overall, their scores showed moderate. The interrelationships between job satisfaction, lifestyle behaviors, and occupational burnout symptoms suggest that improving lifestyle behaviors and managing burnout symptoms could contribute to higher job satisfaction. Policymakers should focus their efforts in the workplace health promotion programs to play essential roles in promoting healthy lifestyle behaviors and occupational stress management, as well as, improvements of RTs career advancement and compensation.

Job satisfaction and burnout depends on work environment along with other individual, organization, and socioeconomic conditions, which can be challenging to improve all their facets. The results of this study provide an evidence base for higher administration to develop leadership programs supporting job satisfaction, and identifying reasons for occupational burnout in workplace to mitigate their impact. Interventions could contribute to a better RTs’ wellbeing, healthcare services and patients’ experience. Regular assessments on the radiography workforce should be conducted periodically and results of such studies should be used a benchmark for future comparisons to track the implemented improvements and identify shortcomings.

Ethical approval

The Jazan University Research Ethics Committee granted ethics approval prior to data collection. We followed the guidelines specified in the Declaration of Helsinki for Human Studies in this research.

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Conflict of interest statement

None.

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