

Job Satisfaction of Radiographers in Saudi Arabia

Abdulrahman M Alfuraih, PhD
Mohammed Jayez Alsaadi, PhD
Ali Mohammed Aldhebaib, PhD

Purpose To examine the various facets of job satisfaction among radiographers in Saudi Arabia and compare the influential contributing factors locally and internationally.

Methods A cross-sectional survey was conducted in June and July 2020 with an electronic questionnaire distributed to radiographers in Saudi Arabia. The validated Job Satisfaction Survey was used to measure overall job satisfaction and specific satisfaction regarding pay, promotions, supervision, benefits, contingent rewards, operating conditions, coworkers, nature of work, and communication (total Job Satisfaction Survey score can range from 36 to 216). Additional personal and work-related characteristics were collected as explanatory variables. Data were analyzed with descriptive and inferential statistics, including 1-way analysis of variance, independent sample t test, and Spearman correlation.

Results A total of 412 radiographers in Saudi Arabia completed the survey. The total job satisfaction score was 140.0 (95% confidence interval [CI], 138.7-141.2), showing that 6 respondents (1.5%) were dissatisfied with their job, while the remaining majority were neutral (63%) or satisfied (36%). The radiographers were satisfied with the nature of work, contingent rewards, and coworkers. However, they were less satisfied with promotions, pay, operating conditions, and benefits. The only significant variable in overall job satisfaction was the working sector ($P = .03$), with radiographers working at Ministry of Health hospitals who were more satisfied than were their colleagues who worked at other types of facilities.

Discussion The radiographers in Saudi Arabia had higher overall job satisfaction than had other allied health science professionals in Saudi Arabia. The differences in job satisfaction subscales between radiographers from different countries suggest that their job satisfaction likely is related to culture and socioeconomics. Job satisfaction improvement programs should be tailored for each radiographer's community.

Conclusion Radiographers in Saudi Arabia expressed moderate to high job satisfaction, which is relatively higher than their international peers and national colleagues in physical therapy and nursing. These job satisfaction results call for governmental policymakers to focus their efforts on improving radiographer promotion schemes and career development.

Keywords | *job satisfaction, Saudi Arabia, radiographer, radiologic technologist*

Job satisfaction is a multifaceted construct related to the extent to which workers like or dislike their jobs.¹ Internal factors such as performance and autonomy in the workplace and external factors such as pay, promotion opportunities, and institutional communication could influence job satisfaction.² Building a satisfied and motivated workforce can be challenging, especially for health care systems.³ Previous studies report that two-thirds of health care professionals who plan to leave their current job indicate that job satisfaction is an issue.⁴ Recent studies also

showed high rates of dissatisfaction associated with intentions to leave among health care providers in Saudi Arabia.^{5,6} These worrying rates are an increasing international problem, which can be crippling to health care systems, especially in developing countries.⁷

Health care services are interconnected; radiography is at the core of the system and most departments rely on its services. A satisfied radiography workforce directly translates to improved health care and patient satisfaction.^{8,9} A previous study demonstrated that radiographers appreciate ethical supervision, adequately

equipped and staffed departments, and having a positive contribution in the workplace.¹⁰ Alternatively, a dissatisfied radiography department is linked with increased patient waiting times, low patient satisfaction, and delayed treatment, all of which eventually lead to poor patient outcomes.¹¹ It also can extend to conflicts with fellow professionals outside of radiology.^{11,12}

Numerous factors might negatively affect radiographers' job satisfaction. The advancement in various radiologic technologies has limited the operator's input in several imaging modalities, resulting in a sense of depersonalization and loss of autonomy (eg, radiographers no longer have to input exposure factors or sonographers do not have to adjust time gain compensation).¹³ Radiographers also can be dissatisfied with the recognition they receive from radiologists.¹³ Additional factors influencing low job satisfaction include job characteristics, leadership style, and the level of control technologists have over their job environments.^{14,15} Technologists also face the invisible potential risk of ionizing radiation in some modalities and the physical work of positioning patients who are uncooperative or have limited mobility. A recent study reported that older (> 26 years of age) and more experienced radiographers in Lithuania demonstrated lower overall job satisfaction.¹⁶ Another recent study on magnetic resonance (MR) technologists reported a close correlation between their overall job satisfaction and several effective leadership models.¹⁷ All of these factors highlight the importance of evaluating job satisfaction of the radiography workforce.

Research on job satisfaction among allied health care professionals in Saudi Arabia is scarce. There is no published evidence describing radiographer job satisfaction across the Kingdom of Saudi Arabia. Recent reports indicated moderate to high burnout among radiographers in a single tertiary care hospital in Saudi Arabia.¹⁸ The underlying factors and different aspects of job satisfaction have not been described before. Therefore, this study aimed to answer these research questions:

- What is the level of job satisfaction among radiographers in Saudi Arabia?
- What factors contribute to overall job satisfaction?
- Do job satisfaction and related factors differ from radiographers in other countries?

Methods

This study was conducted as a cross-sectional electronic self-reported survey. Participants provided their consent before starting the survey. The study was reviewed and ethically approved by the author's institutional review board.

Sampling and Sample Size

The survey was distributed electronically through multiple channels, including specialized social media groups for radiologic technologists in Saudi Arabia on Twitter and Telegram. Participants also were encouraged to share the survey with their peers as a method of snowball sampling. The targeted population was accredited radiographers currently working in the Kingdom of Saudi Arabia. Based on the latest published records in 2018 by the Saudi Commission for Health Specialties, there were 3773 accredited radiologic technologists in Saudi Arabia with a bachelor's, master's, or doctoral degree.¹⁹ For the sample size calculation, the author assumed 1000 additional accreditations in 2019 and 2020 based on recent trends. Another assumption was the inclusion of 2000 other radiologic technologists with diploma qualifications, although there is no data registry for this cohort. Therefore, for a total target population of 6773 practitioners, a sample size of at least 364 respondents was required to achieve results with a 5% margin of error and a 95% confidence level. The assumed population size was later verified by the Saudi Commission for Health Specialties.

Survey

The survey consisted of 2 parts. The first part comprised explanatory variables concerning demographics, education, accreditation, experience, salary, employment, and working hours. The second part included the dependent satisfaction variables from the multidimensional Job Satisfaction Survey by Spector.¹ It is a widely established and validated instrument²⁰ used for several job satisfaction studies involving international and Saudi health care workers.²¹⁻³⁰ The face, discriminant, convergent, and content validity were established previously via multiple methods, including a panel of experts and multitrait-multimethod analysis, which demonstrated reasonable correlations (0.61-0.80).³¹⁻³⁴ It also

has shown high internal reliability, with a Cronbach α between 0.82 and 0.91.³¹⁻³⁴ The Arabic version of the survey was used.³⁵

The Job Satisfaction Survey comprises 36 questions evaluating 9 scales described in **Table 1**. Each question is answered based on a 6-point Likert scale: disagree very much, disagree moderately, disagree slightly, agree slightly, agree moderately, and agree very much. The 6-point scale is appropriate for representing choice intervals that are equal psychologically according to the scale developed by Spector.³⁴ Responses implying the highest job satisfaction score 6 points, while lowest job satisfaction answers score 1 point. Therefore, each 4-item scale score can range from 4 to 24, and the total Job Satisfaction Survey score can range from 36 to 216. Results between 36 and 107 can be interpreted as representing dissatisfaction, while scores of 108 to 143 are neutral and scores of 144 to 216 represent satisfaction.¹

Completed surveys were checked for any spurious entries before data analysis. This included responses with completion times less than 1.5 minutes, repeated answers for all items, and dummy entries. Participants' workplaces were categorized into sectors including private hospital, governmental hospital operated by the Ministry of Health (MOH), or governmental non-MOH hospital (eg, military and university hospitals).

Statistical Analysis

Descriptive statistics were employed to explain the main study variables. Normality was tested using histograms and the Shapiro-Wilk normality test. Inferential statistics included independent samples *t* test and 1-way analysis of variance (ANOVA) to test for differences in job satisfaction based on the explanatory variables. *P* values less than .05 were considered significant. Post hoc Bonferroni-corrected comparison was employed to test for differences between multiple groups. Spearman rho statistic was used to evaluate the association between job satisfaction and demographic variables and tested against a Bonferroni-adjusted α of 0.01 (.05/5). Coefficients from .00 to .30 were interpreted as negligible correlations.³⁶ All statistical analyses were performed using SPSS version 26.0 (IBM).

Table 1

Job Satisfaction Survey Subscales¹

Satisfaction facet	Description
Pay	Salary and raises
Promotions	Promotion opportunities
Supervision	Immediate supervisor
Benefits	Monetary and nonmonetary benefits (eg, sick pay, health insurance, annual leave, continuing professional development opportunities)
Contingent rewards	Rewards, appreciation, and recognition given for adequate work (eg, attending international symposiums, granting flexibility, autonomy in daily tasks)
Operating conditions	Policies, rules, and procedures
Coworkers	People with whom one works
Nature of work	Job tasks, type of work performed
Communication	Communication in the organization

Results

A total of 555 people initiated the survey. Of those, 412 completed it and submitted valid entries. Respondents spent on average 7.2 minutes to answer all questions. The demographics and job-related characteristics are presented in **Table 2**.

No meaningful violations of normality were observed in the data because the histograms showed no apparent skewness and the *P* values for the Shapiro-Wilk test were greater than .05. The total job satisfaction was 140.0 (95% confidence interval [CI], 138.7-141.2), which indicates an average score of upper neutral close to satisfaction. Six respondents (1.5%) were dissatisfied with their job, while most (259, 63%) were neutral, and more than a third (147 participants, 36%) were satisfied. Satisfaction results for each facet are presented and compared with other national and international studies in **Table 3** and **Table 4**, respectively. The promotion facet had the lowest satisfaction of 13.1 (12.7-13.4), while the work's nature was scored highest at 17.5 (17.2-17.8). Spearman rho correlation coefficients demonstrated a negligible correlation between job satisfaction and salary ($r = 0.10$, $P = .04$). This also was the case with age ($r = 0.14$, $P = .04$),

Table 2

Demographics and Work-Related Characteristics

Characteristic	n (%)
Sex	
Male	258 (62)
Female	154 (38)
Age, y ^a	29 (26-35)
Marital status	
Single	186 (45)
Married	226 (55)
Highest degree	
Diploma	48 (11.7)
Bachelor's	310 (75.2)
Master's	49 (11.9)
Doctoral	5 (1.2)
Professional classification ^b	
Technician	48 (11.7)
Specialist	314 (76.2)
Specialist I	47 (11.4)
Consultant specialist	3 (0.7)
Job Rank	
Junior	200 (48.5)
Senior	146 (35.4)
Supervisor	30 (7.3)
Head of technologists	26 (6.3)
Manager	10 (2.4)
Experience, y ^a	5 (2-10)
< 1	49 (11.9)
1-2	93 (22.6)
3-5	88 (21.4)
6-10	82 (19.9)
11-20	87 (21.1)
> 20	13 (3.2)
Experience at current job, y ^a	3 (1-8)
< 1	78 (18.9)
1-2	113 (27.4)
3-5	85 (20.6)
6-10	69 (16.7)
11-20	59 (14.3)
> 20	8 (1.9)

Characteristic	n (%)
Salary (Saudi riyals), y ^a	11 500 (9500-13 500)
0-5	9500 (6500-11 250)
6-10	12 250 (10 500-14 500)
11-15	16 500 (12 500-17 500)
> 15	18 500 (17 500-22 500)
Region	
Central	183 (44.4)
Eastern	46 (11.2)
Western	94 (22.8)
Northern	30 (7.3)
Southern	59 (14.3)
Sector	
Not disclosed	32 (7.8)
Governmental MOH	173 (42.0)
Governmental non-MOH	143 (34.7)
Private	64 (15.5)
Department	
General radiography	165 (40.0)
Computed tomography	75 (18.2)
MR imaging	44 (10.7)
Sonography	65 (15.8)
Nuclear medicine	19 (4.6)
Interventional radiology	7 (1.7)
PACS	6 (1.5)
Multimodality	22 (5.3)
Other (administration, quality assurance)	9 (2.2)
Night and on-call shifts per week ^a	2 (0-5)
Daily working hours	8.5 (1.1)
No. of examinations performed per day	
None	31 (7.5)
1-9	101 (24.5)
10-15	122 (29.6)
16-25	93 (22.6)
> 25	65 (15.8)

^a Presented as median and interquartile range.^b Technician: diploma certificate; Specialist: bachelor's degree; Specialist I: master's degree plus 1 year experience; Consultant specialist: doctoral degree plus 3 years experience.

Abbreviations: MOH, Ministry of Health; MR, magnetic resonance.

Table 3

Job Satisfaction Results for Radiographers and Other Health Care Professionals in Saudi Arabia^a

Job satisfaction	Radiographers (N = 412)	Physical therapists (N = 69) ³⁷	ICU nurses (N = 190) ³⁸	ICU nurses (N = 150) ⁶	Nurses (N = 308) ³⁹	Nurses (N = 213) ²⁴
Pay	15.3 (2.7)	12.5	14.8	13.0	15.0	14.2
Promotions	13.1 (3.6)	12.4	15.6	12.8	13.8	13.3
Supervision	14.8 (2.7)	16.3	15.0	15.5	16.8	17.4
Benefits	15.3 (2.7)	12.2	15.3	12.1	11.8	13.3
Contingent rewards	17.0 (3.3)	13.3	15.1	11.7	13.4	13.0
Operating conditions	14.9 (3.4)	12.8	15.4	11.9	13.0	11.4
Coworkers	16.4 (2.8)	16.9	17.0	15.3	16.2	16.9
Nature of work	17.5 (3.2)	18.0	16.5	16.8	19.2	17.8
Communication	15.6 (3.5)	14.8	13.7	12.8	13.6	15.2
Total satisfaction	140.0 (12.8)	129.4	138.2	108.9	132.8	132.4

^a Subscale scores 4-12 represent dissatisfaction, 12-6 are neutral, and 16-24 are satisfaction. Radiographers are reported as mean (SD); all other columns report means only.

Abbreviation: ICU, intensive care unit.

Table 4

Comparison of Job Satisfaction Results Among International Radiographers and U.S. MR Technologists

Job satisfaction	Radiographers in Saudi Arabia (N = 412)	Radiographers in United Kingdom (N = 659) ⁴⁰	Radiographers in Lithuania (N = 127) ¹⁶	MR technologists in United States (N = 855) ¹⁷
Pay	15.3 (2.7)	12.5	14.8	13.0
Promotions	13.1 (3.6)	12.4	15.6	12.8
Supervision	14.8 (2.7)	16.3	15.0	15.5
Benefits	15.3 (2.7)	12.2	15.3	12.1
Contingent rewards	17.0 (3.3)	13.3	15.1	11.7
Operating conditions	14.9 (3.4)	12.8	15.4	11.9
Coworkers	16.4 (2.8)	16.9	17.0	15.3
Nature of work	17.5 (3.2)	18.0	16.5	16.8
Communication	15.6 (3.5)	14.8	13.7	12.8
Total satisfaction	140.0 (12.8)	129.4	138.2	108.9

^a Subscale scores 4 to 12 represent dissatisfaction, 12 to 16 are neutral, and 16 to 24 are satisfaction. Saudi radiographers are reported as mean (SD); all other columns report means only.

^b Scaled to calculate overall job satisfaction.

work shifts ($r = -0.08$, $P = .86$), work hours ($r = 0.04$, $P = .33$), and patient load ($r = -0.014$, $P = .77$). The lack of linear relationships prevented further advanced regression analysis or constructing multilevel models.

There was no significant difference in job satisfaction based on sex ($P = .27$), marital status ($P = .67$), highest degree ($P = .14$), professional qualification ($P = .21$), job rank ($P = .09$), region of the country ($P = .09$),

department ($P = .41$), years of experience ($P = .13$), number of work shifts ($P = .08$) or number of examinations performed per day ($P = .62$) based on 1-way ANOVA and independent samples t tests. However, there was a significant difference based on the working sector ($P = .03$). Post hoc Bonferroni-corrected multiple comparisons indicated that radiographers working at governmental MOH hospitals had significantly higher total job satisfaction than did those employed at governmental non-MOH hospitals (142 vs 138, $P = .03$). On further analysis, governmental non-MOH radiographers were less satisfied with promotions ($P = .02$) and communication ($P = .04$). Moreover, radiographers at private hospitals were less satisfied with promotions ($P = .001$) and benefits ($P = .02$).

Investigating the job satisfaction subscales showed that radiographers with a master's degree were more satisfied with benefits ($P = .02$) and contingent rewards ($P = .03$) than were those with a diploma or bachelor's degree. Radiographers working in the central region of Saudi Arabia were less satisfied with promotions than were those in the western ($P = .01$) and the southern regions ($P = .02$). In terms of the radiographer's department section, there was no significant difference in job satisfaction subscales ($P > .05$) based on the department in which the radiographers worked. The participants' desire to be transferred to another radiology department is shown in the **Figure**. Excluding participants with less than 1 year of experience from all analyses yielded no significant differences in overall results.

Discussion

To the authors' knowledge, this is the first study evaluating radiographer job satisfaction using a validated survey across Saudi Arabia with a representative sample size. The purpose of this study was to evaluate job satisfaction among radiographers in Saudi Arabia and investigate factors contributing to their scores. The main finding was that radiographers in Saudi Arabia expressed neutral feelings toward their job satisfaction, with most leaning toward higher satisfaction than dissatisfaction. Specifically, they were more satisfied with the nature of work, coworkers, and contingent rewards. They expressed similar levels of overall satisfaction regardless of demographic and workplace variables,

except for the work sector. The differences emerged when investigating their perceptions of specific job satisfaction facets.

Working Sector

Workers in governmental MOH hospitals showed higher satisfaction regarding promotions and benefits. This reflects the higher likelihood of an employee getting a promotion in peripheral governmental MOH hospitals, where it is considered a natural job progression. In contrast, military and university hospitals and medical cities in the most populated regions usually are saturated because of infrequent and few job openings. Hence, opportunities for promotion can be limited. The data in this study showed that it is common to have more than 10 years of experience and not get a noteworthy career promotion at these institutions. Alternatively, private hospitals can be perceived as a stepping-stone for radiographers in Saudi Arabia before moving to governmental jobs where salary and working hours are considered better. Therefore, lack of commitment might be a factor limiting promotion opportunities at private hospitals. Nevertheless, these results highlight the need for amendments to promotion schemes.

Education Level

These results correspond with the literature demonstrating that higher scientific degrees or professional classification do not necessarily improve overall job satisfaction.^{11,21,38} This might correspond with marginal pay raises and scarce promotions after a higher certification in Saudi Arabia, which applies to all applied medical sciences and nursing personnel. Moreover, higher degrees are not commonly followed by advanced radiographic practices (eg, reporting and performing fluoroscopic procedures) according to the standardized radiography workers' job description. These factors could explain the similar job satisfaction scores across undergraduate and graduate degree holders. However, the evidence changes when looking abroad and in other professions where higher education corresponds to higher job satisfaction.^{41,42} The Saudi Board of Radiologic Technology and Medical Imaging is a recently introduced 4-year program of practical training in which the radiographer can graduate and be classified as a consultant

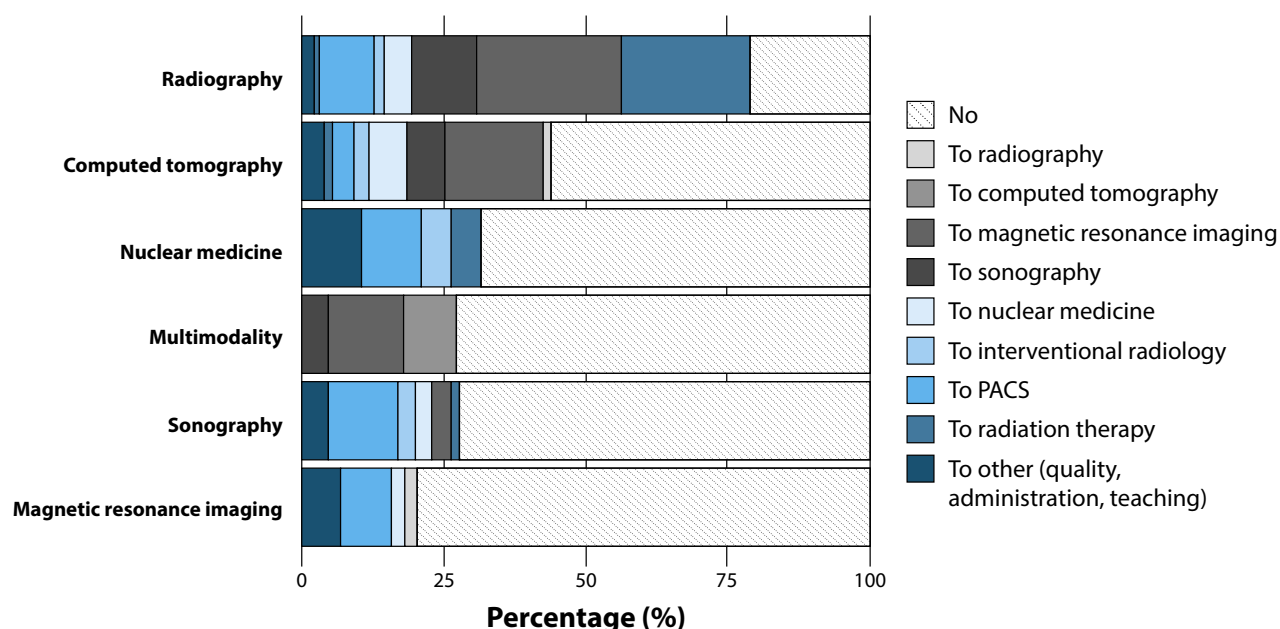


Figure. Percentages of radiographers wishing to transfer to another department. Workers in interventional radiology and PACS were excluded because of small sample sizes. Graph courtesy of the authors.

radiographer after 3 years.⁴³ This program can be a great opportunity to improve career and promotion opportunities for radiographers. However, this is conditional on granting graduates more autonomy in the workplace by advancing their scope of practice (eg, performing fluoroscopy examinations and image reporting) and departmental responsibilities (eg, research, recruitment, service management). Indeed, advanced practice in radiography benefits patient care and improves job satisfaction, workload, and cost.⁴⁴

Working Department

The author initially hypothesized that job subspecialty (department) could be a significant contributor to job satisfaction based on the tasks' varying difficulty. Previous literature reported high rates of emotional exhaustion in sonography departments in Saudi Arabia.¹⁸ However, this was not true regarding the nature of work job satisfaction subscale because no differences were observed among departments. This could indicate that job satisfaction improvement interventions can be employed without considering department-tailored programs.

Comparisons Among Health Care Professionals

The results showed that radiographers were more satisfied than were physical therapists and nurses. These comparisons were limited to previous studies employing the same survey tool. Radiographers had approximately 8% higher job satisfaction scores compared with physical therapists and 1% to 29% higher scores compared with nurses in Saudi Arabia.^{6,24,37-39} Previous evidence also showed that radiographers in Saudi Arabia were more satisfied than were their international peers by 3% to 14%.^{16,17,40} A study on radiographers in Lithuania showed that job satisfaction was higher in young radiographers with higher education.¹⁶ The same pattern was not observed in Saudi Arabia. The overall job satisfaction of Saudi radiographers was close to their peers in the United Kingdom⁴⁰ but significantly higher than magnetic resonance (MR) technologists in the United States.¹⁷

There were noteworthy differences in the job satisfaction subscales. For example, radiographers in Saudi Arabia were significantly less satisfied with supervision and more satisfied with contingent rewards and pay. Similar patterns also are observed with

greater differences in radiographers in Lithuania.¹⁶ Alternatively, MR technologists in the United States and radiographers in the United Kingdom were less satisfied with contingent rewards than were those in Saudi Arabia.^{17,40} The survey on U.S. MR technologists only investigated 4 job satisfaction subscales (supervision, contingent rewards, nature of work, and communication) and reported the lowest job satisfaction scores compared with the present study and other studies.¹⁷ MR technologists in the United States study particularly scored very low on feelings of being appreciated and rewarded for good work. The authors of the survey attributed this to the lack of transactional leadership qualities (in which subordinates are rewarded or punished for compliance and productivity). Radiographers in Lithuania also seemed to experience this problem.¹⁶ Such international comparisons do not account for the relative effect of socioeconomic status and culture on the radiographers' subjective rating of job satisfaction.¹ Nevertheless, a noteworthy finding was that radiographers, regardless of their backgrounds, reported high satisfaction with the nature of work (see Table 4). This also was found in other health care professionals, which might be attributed to the satisfaction derived from the effect on patients' health care and dynamic job tasks involved in allied health care professions.^{6,24,37-39}

Implications

Job satisfaction is multifaceted and depends on the individual, organization, work environment, and socioeconomic conditions.¹ Some facets are more challenging to improve, such as pay, benefits, promotions, and policies to an extent. However, other facets can be directly furthered by organizations and service leaders. This includes improving supervisory roles, instigating contingent reward programs, enhancing management-to-employee communication, and advancing the nature of work tasks for radiographers. Regarding these last facets, the results of this study suggest that focus and efforts should be urgently targeted toward improving supervisors' leadership and organizational communication skills.

The findings of this study should attract governmental policymakers' attention to areas where improvements are warranted (eg, promotions, pay,

supervision, and local policies). This can augment radiographers' retention and improve recruitment. The results provide an evidence base for higher administration to develop leadership programs supporting job satisfaction in the workplace. Such interventions should contribute to a better health care and hospital experience for patients, which is documented in the literature.^{8,9} Furthermore, the findings present a prospectus for aspiring radiographers regarding the current job satisfaction of today's radiography workforce.

Limitations

This study has several limitations. Although it included a representative sample size of working radiography professionals in Saudi Arabia, it did not evaluate radiographers at other sectors besides hospitals (eg, radiographers employed by medical imaging vendors, radiographers in the military, or radiographers in academia). The interventional radiology department was slightly underrepresented in the sample, probably because of the relatively smaller number of specialized radiographers in this department. In addition, the survey tool used for this study does not evaluate radiographer-specific job characteristics, such as equipment status and functioning. The possible effect of nonresponse bias in the survey results also must be acknowledged.

Future Recommendations

In future studies, a qualitative research approach could highlight more profound perceptions and feelings toward job satisfaction. Evaluating leadership styles at departmental and institutional scales can shed light on their correlation with job satisfaction. The author recommends that service managers and the general directorate of radiology at MOH conduct regular assessments on the radiography workforce and use the results as a benchmark for future comparisons. This will be essential for monitoring progress and detecting shortfalls.

Conclusions

Overall, radiographers in Saudi Arabia expressed moderate to high job satisfaction. Highest job satisfaction was associated with the nature of work, contingent

rewards, and coworkers. In Saudi Arabia, the job satisfaction of radiographers appears to be relatively higher than for their colleagues in physical therapy and nursing. It also was higher than for MR technologists in the United States and radiographers in the United Kingdom and Lithuania. The working sector was the only independent factor contributing to overall job satisfaction, with radiographers working at governmentally operated hospitals having marginally higher job satisfaction. These results indicate that more efforts should focus on promotion schemes, pay, direct supervision, and local policies to improve radiographers' job satisfaction in Saudi Arabia. Career development and promotion schemes should be of paramount importance for policymakers and organizational planners.

Abdulrahman M Alfuraih, PhD, is an assistant professor for Prince Sattam bin Abdulaziz University in Kharj, Saudi Arabia. He can be contacted at a.alfuraih@psau.edu.sa.

Mohammed Jayez Alsaadi, PhD, works in the Radiology and Medical Imaging Department for the College of Applied Medical Sciences at Prince Sattam bin Abdulaziz University in Kharj.

Ali Mohammed Aldhebaib, PhD, works in the Radiologic Sciences Department for the College of Applied Medical Sciences at King Saud bin Abdulaziz University for Health Sciences.

The authors would like to thank the Deanship of Scientific Research at Prince Sattam bin Abdulaziz University for their support.

Received September 19, 2020; Accepted after revision February 3, 2021.

Reprint requests may be mailed to the American Society of Radiologic Technologists, Publications Department, 15000 Central Ave SE, Albuquerque, NM 87123-3909, or emailed to publications@asrt.org.

© 2022 American Society of Radiologic Technologists.

References

1. Spector PE. *Job satisfaction: Application, assessment, causes, and consequences*. Vol 3: Sage publications; 1997.
2. Parent-Thirion A, Fernández Macías E, Hurley J, Vermeylen G. Fourth European working conditions survey, European foundation for the improvement of living and working conditions. *Luxembourg: Office for Official Publications of the European Communities*. 2007:37-61.
3. Willis-Shattuck M, Bidwell P, Thomas S, Wyness L, Blaauw D, Ditlopo P. Motivation and retention of health workers in developing countries: a systematic review. *BMC Health Serv Res*. 2008;8(1):247. doi:10.1186/1472-6963-8-247
4. Bonenberger M, Aikins M, Akweongo P, Wyss K. The effects of health worker motivation and job satisfaction on turnover intention in Ghana: a cross-sectional study. *Hum Resour Health*. 2014;12(1):43. doi:10.1186/1478-4491-12-43
5. Bawakid K, Abdulrashid O, Mandoura N, et al. Burnout of physicians working in primary health care centers under Ministry of Health Jeddah, Saudi Arabia. *Cureus*. 2017;9(11):e1877. doi:10.7759/cureus.1877
6. Alharbi J, Wilson R, Woods C, Usher K. The factors influencing burnout and job satisfaction among critical care nurses: a study of Saudi critical care nurses. *J Nurs Manag*. 2016;24(6):708-717. doi:10.1111/jonm.12386
7. Abera E, Yitayal M, Gebreslassie M. Turnover intention and associated factors among health professionals in University of Gondar Referral Hospital, Northwest Ethiopia. *Int J Econ Manag Sci*. 2014;03(04):1-4. doi:10.4172/2162-6359.1000196
8. Haas JS, Cook EF, Puopolo AL, Burstin HR, Cleary PD, Brennan TA. Is the professional satisfaction of general internists associated with patient satisfaction? *J Gen Intern Med*. 2000;15(2):122-128. doi:10.1046/j.1525-1497.2000.02219.x
9. Peltier J, Dahl A, Mulhern F. The relationship between employee satisfaction and hospital patient experiences. *Forum*. 2009. https://www.academia.edu/6655340/THE_RELATIONSHIP_BETWEEN_EMPLOYEE_SATISFACTION_AND_HOSPITAL_PATIENT_EXPERIENCES_APRIL_2009
10. Akroyd D, Jackowski MB, Legg JS. Factors affecting radiographers' organizational commitment. *Radiol Technol*. 2007;78(6):467-475.
11. Fultz AR, Walker M, Lengerich A, Bugajski A. Radiologic technologists' job satisfaction: a look at work environment, communication, and leadership. *Radiol Technol*. 2018;89(6):536-540.
12. Watson LM. Leadership's influence on job satisfaction. *Radiol Technol*. 2009;80(4):297-308.
13. Lehmann P, Meystre NR, Mamboury N. Factors for life-long job retention among Swiss radiographers. *Radiography*. 2015;21(2):181-187. doi:10.1016/j.radi.2014.11.002
14. Probst H, Griffiths S. Job satisfaction of therapy radiographers in the UK: results of a phase I qualitative study. *Radiography*. 2009;15(2):146-157. doi:10.1016/j.radi.2008.02.003
15. Grönroos E, Pajukari A. Job satisfaction of the radiological departments' staff. *Eur J Radiol*. 2009;1(4):133-138. doi:10.1016/j.ejradi.2010.03.001
16. Vanckaviciene A, Navickiene R, Vilusiene I, Sakalauskiene Z. Radiographers' job satisfaction: cross-sectional survey in Lithuania. 2018.
17. DeLay L, Clark KR. The relationship between leadership styles and job satisfaction: a survey of MR technologists' perceptions. *Radiol Technol*. 2020;92(1):12-22.

18. Alyousef K, Alharbi H, Rashed Alkharfi WP. Risk of burnout among radiographers in a large tertiary care hospital in Saudi Arabia. *J Hosp Admin*. 2019;8(4):38-45. doi:10.5430/jha.v8n4p38
19. Saudi Commission for Health Specialties. *The reality of the Saudi healthcare workforce over the next ten years*. 2018.
20. Van Saane N, Sluiter JK, Verbeek J, Frings-Dresen M. Reliability and validity of instruments measuring job satisfaction—a systematic review. *Occup Med*. 2003;53(3):191-200. doi:10.1093/ocmed/kqg038
21. AL-Dossary R, Vail J, Macfarlane F. Job satisfaction of nurses in a Saudi Arabian university teaching hospital: a cross-sectional study. *Int Nurs Rev*. 2012;59(3):424-430. doi:10.1111/j.1466-7657.2012.00978.x
22. Kamal SM, Al-Dhshan M, Abu-Saleme K, Abuadas F, Hassan M. The effect of nurses' perceived job related stressors on job satisfaction in Taif governmental hospitals in Kingdom of Saudi Arabia. *J Am Sci*. 2012;8(3):119-125.
23. M Alshahrani FM, Baig LA. Effect of leadership styles on job satisfaction among critical care nurses in Aseer, Saudi Arabia. *JCPSP*. 2016;26(5):366-370.
24. Saleh AM, Saleh MM, AbuRuz ME. The impact of stress on job satisfaction for nurses in King Fahad Specialist Hospital-Dammam-KSA. *J Am Sci*. 2013;9(3):371-377.
25. Alharbi J, Wilson R, Woods C, Usher K. The factors influencing burnout and job satisfaction among critical care nurses: a study of Saudi critical care nurses. *J Nurs Manag*. 2016;24(6):708-717. doi:10.1111/jonm.12386
26. Alkassabi OY, Al-Sobayel H, Al-Eisa ES, Buragadda S, Alghadir AH, Iqbal A. Job satisfaction among physiotherapists in Saudi Arabia: does the leadership style matter? *BMC Health Serv Res*. 2018;18(1):422. doi:10.1186/s12913-018-3184-9
27. Zahrani F, Ghamdi M, Ahmad R. Job satisfaction among retail pharmacists in eastern region of Saudi Arabia. *J Pharm Res Int*. 2017;19(5):1-12. doi:10.9734/JPRI/2017/37704
28. Alsubaie A, Isouard G. Job Satisfaction and retention of nursing staff in Saudi hospitals. *Asia Pac J Health Manag*. 2019;14(2):68-73.
29. Abualrub RF, Alghamdi MG. The impact of leadership styles on nurses' satisfaction and intention to stay among Saudi nurses. *J Nurs Manag*. 2012;20(5):668-678. doi:10.1111/j.1365-2834.2011.01320.x
30. Mari M, Alloubani A, Alzaatreh M, Abunab H, Gonzales A, Almatari M. International nursing: job satisfaction among critical care nurses in a governmental hospital in Saudi Arabia. *Nurs Adm Q*. 2018;42(3):E1-E9. doi:10.1097/NAQ.0000000000000304
31. Rad AMM, Yarmohammadian MH. A study of relationship between managers' leadership style and employees' job satisfaction. *Leadersh Health Serv*. 2006;19(2-3):xi-xxviii. doi:10.1108/13660750610665008
32. Mosadeghrad AM, Ferlie E, Rosenberg D. A study of relationship between job stress, quality of working life and turnover intention among hospital employees. *Health Serv Manag Res*. 2011;24(4):170-181. doi:10.1258/hsmr.2011.011009
33. AlEisa E, Tse C, Alkassabi O, Buragadda S, Melam GR. Predictors of global job satisfaction among Saudi physiotherapists: a descriptive study. *Annals of Saudi Medicine*. 2015;35(1):46-50. doi:10.5144/0256-4947.2015.46
34. Spector PE. Measurement of human service staff satisfaction: development of the job satisfaction survey. *Am J Community Psychol*. 1985;13(6):693-713. doi:10.1007/BF00929796
35. Spector PE. Job Satisfaction survey, JSS translations. 2020. Updated August 8, 2020. Accessed March 6, 2020. <http://paul.spector.com/scales/our-assessments/job-satisfaction-survey-jss/job-satisfaction-survey-translations/>
36. Hinkle DE, Wiersma W, Jurs SG. *Applied statistics for the behavioral sciences*. Vol 663: Houghton Mifflin College Division; 2003.
37. Alkassabi OY, Al-Sobayel H, Al-Eisa ES, Buragadda S, Alghadir AH, Iqbal A. Job satisfaction among physiotherapists in Saudi Arabia: does the leadership style matter? *BMC health services research*. 2018;18(1):422. doi:10.1186/s12913-018-3184-9
38. Mari M, Alloubani A, Alzaatreh M, Abunab H, Gonzales A, Almatari M. International nursing: job satisfaction among critical care nurses in a governmental hospital in Saudi Arabia. *Nurs Adm Q*. 2018;42(3):E1-E9. doi:10.1097/NAQ.0000000000000304
39. AbuAlrub RF, Alghamdi MG. The impact of leadership styles on nurses' satisfaction and intention to stay among Saudi nurses. *J Nurs Manag*. 2012;20(5):668-678. doi:10.1111/j.1365-2834.2011.01320.x
40. Hutton D, Beardmore C, Patel I, Massey J, Wong H, Probst H. Audit of the job satisfaction levels of the UK radiography and physics workforce in UK radiotherapy centres 2012. *The British journal of radiology*. 2014;87(1039):20130742. doi:10.1259/bjr.20130742
41. Kim SC, Sekol MA. Job satisfaction, burnout, and stress among pediatric nurses in various specialty units at an acute care hospital. 2014.
42. Broxton A. *A quantitative correlational study of job satisfaction and level of income and education among nurses in nursing homes in Central Florida*. Keiser University; 2014.
43. Specialties SCFH. Saudi Board of Radiology Technology & Medical Imaging. Saudi Commission for Health Specialties. 2020. Accessed January 4, 2021. <https://www.scfhs.org.sa/MESPS/TrainingProgs/TrainingProgsStatement/Documents/Radiology%20technology%20and%20Medical%20imaging.pdf>
44. Thom SE. Does advanced practice in radiography benefit the healthcare system? A literature review. *Radiography*. 2018;24(1):84-89. doi:10.1016/j.radi.2017.08.002



Upcoming Changes to **Satisfy Your CE Needs**

We're updating how we deliver continuing education so that every ASRT member is equipped to meet multiple CE requirements – all from one place.

The Online **CE Library**

On Feb. 8, all members will receive access to our online CE Library, filled with more than 450 Directed Readings, articles and webcasts. This change ensures that you can meet your specific CE requirements and preferences, today and in the future.



What This Means **for You**

Each member will have a bank of CE credits. Redeem credits to take courses in the online CE Library. Credits are deducted from your bank after you complete a CE quiz. New credits are added to your bank at the beginning of each membership year.



What This Means **for Your Journal**

New Directed Readings will be published exclusively in our online CE Library. They will no longer appear in ASRT's scientific journals starting with 2022 March/April *Radiologic Technology* and Spring *Radiation Therapist*.

Your journals will continue to arrive in your mailbox following the same publication schedule and will feature the peer-reviewed articles, short reports and case studies you've come to expect.

New Membership **Benefits**

- The number of CE credits included with membership each year has increased from 16 to 17. Credits included with the Premium option will increase from 19 to 20.
- Increased savings for members choosing multiyear membership terms.
- Five 100-question Computed Tomography SEAL exams are now included with membership.



Complete **Details**

Learn about what's changing, what's new and how this update affects members previously registered with the Traditional CE Plan or the Directed Reading Flex Plan®.

asrt.org/uniqueCE

