



A Survey on Factors Influencing the Work–Family–Health Balance of an Interventional Radiologist

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Abstract

Aim: Burnout and stress-related health disorders are on the rise among physicians. The aim of this study is to report the results of a survey on factors affecting the work–life balance of interventional radiologists (IR).

Material: The survey consisted of 30 questions focusing on work, family, and personal health. The questionnaire addressed knowledge, attitude, and practice. This online survey was sent to IRs across the globe and the responses were analyzed by three IRs (SH, SNK, SK).

Results: On univariate analysis, the major risk factors for burnout were presence of weekend duties ($n=91$, 98.9%, $p=0.02$), absence of support group at workplace ($n=36$, 39.1%, $p=0.005$), having tough time with administration ($n=61$, 66.3%, $p=0.001$), not able to spend quality time on family ($n=30$, 32.6%, $p=0.035$), and inability to find time to do things that one enjoys ($n=53$, 57.6%, $p=0.0002$). However, multivariate analysis revealed that those having tough time with administration (odds ratio = 2.77 [95% confidence interval [CI]: 1.12–6.48], $p=0.02$) and those who could not find time to do things one enjoys (odds ratio = 4.79 [95% CI: 1.42–16.1], $p=0.01$) were only statistically significant.

Conclusion: Burnout is common among IRs and is considered a significant issue that needs to be addressed. Teamwork, a support structure for major events, healthy lifestyle, and dedicated time for family may combat the burnout.

Keywords

- ▶ interventional radiology
- ▶ occupational burnout
- ▶ stress
- ▶ work-family-health

Introduction

The higher incidence of occupational burnout (OB) among various healthcare professionals brings about the need for more studies identifying the reasons and solutions.¹ The World Health Organization's (WHO) 11th revision of international classification of diseases refers burnout as an occu-

pational phenomenon and defines it as a syndrome that results from chronic work-related stress leading to emotional exhaustion, depersonalization, and reduced personal accomplishment in their profession.² Burnout is characterized by blunt emotions in contrast to overreactive emotions seen in stress. The stages of burnout are onset of stress (waning of job satisfaction, inability to focus, being irritable), chronic

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stress (procrastination at work and physical tiredness), burnout (pessimism, self-doubt, self-isolation, and behavioral changes), and habitual burnout (chronic physical and mental fatigue and depression).³ OB among physicians has been widely discussed in the literature. It is reported that medical professionals suffer from a higher rate of burnout. OB leads to reduced professional efficacy.⁴ In general, the incidence of burnout among interventional radiologists (IRs) is more than that of diagnostic radiologists and other medical professionals (71.9 vs. 54–61% vs. 43%).⁵ Few of the main reasons for high burnout among IRs are lack of role clarity and encroachment on IR work by other departments.⁶

Literature focusing on measures to avoid or combat burnout among physicians, especially among IRs, is scarce. Hence, we conducted a survey among IRs focusing on work–family–health (WFH). WFH balance has become an essential component of healthy survival. Maintaining an equilibrium helps to reduce stress, burnout, and mental health problems such as depression and anxiety. In this study, we report the survey results affecting WFH balance among IRs.

Materials and Methods

Data Collection

Since the survey consisted of a set of new questionnaires, it was internally validated by 10 senior IRs who had varying duration of experience (median: 7 years). There were 30 questions covering work, health, family, or a combination of these. The questions also addressed knowledge, attitude, and practice (► **Table 1**). This anonymous survey was created using a Google form (Google Inc., Mountain View, California, United States) and disseminated via social media platforms such as WhatsApp (WhatsApp Inc., Mountain View, California, United States), Telegram (Telegram Messenger Inc.; Dubai, United Arab Emirates), and via e-mail to IRs.

Study Design

The survey consisted 30 questions; 9 were related to work: years of IR practice, presence of night and weekend duties, quality and duration of working hours, rating the level of work-related stress, availability of a support group during difficult times, and presence of turf war with other departments or administration. Questions related to personal health were body mass index (BMI), hours of exercise per week, predominant source of exercise, smoking and drinking habit, time since last formal health checkup and hobbies. There was also a question regarding the presence of occupation related health problems and other chronic health problems necessitating daily medications. Questions related to family management were quantity and quality of time spent with the family, correlation between IR lifestyle, and relationship with partner/spouse or children and responsibility to look after senior citizen at home. Quality questions were rated over a scale of 1 to 10 as mentioned in ► **Table 2**. The most important question regarding the advice to IR colleagues on balancing work, health, and family life was an open ended, free response question.

Statistical Methods

Summary data were presented as mean (standard deviation) for continuous variables and categorical variables as numbers and percentages. The characteristics of burnouts were compared using a *t*-test for continuous data and categorical data were compared using chi-squared/Fisher's exact test as appropriate. Important factors associated with burnouts were explored using logistic regression analysis and expressed as odds ratio with 95% confidence intervals (CI). Statistical significance was defined as *p*-value less than 0.05. All analyses were performed using SPSS v25.

Results and Analysis

The total number of responses was 137. Following the circulation of the survey, there was a rapid response in the first 2 days as compared to the subsequent days. All the participants ($n = 137$, 100%) consented for the survey. Among the respondents, 87% ($n = 119$) were from India, while rest were from USA, UK, Australia, Canada, and UAE. However, almost everyone was of Indian origin.

Work Related

The total number of years of IR experience of the participants ranged from 1 to 40; the majority had an experience of 6 to 10 years with a median of 7 years. Two of our participants had an experience of more than 30 years (► **Fig. 1**).

Approximately 90% ($n = 123$) of the participants reported participating in night and weekend duties. Thirty percent ($n = 41$) of the participants were sole IR practitioners in their clinic/hospital. Almost 31% ($n = 42$) reported having no support during difficult periods such as those in the event of a major complication or patient death. About 56% ($n = 76$) of respondents acknowledged having difficulties with their administration or practice-related turf battles.

We received a heterogeneous response when we asked to rate the quality of work. The quality of work was rated on a scale of 1 to 10, 1 being the worst and 10 being the best. Sixteen percent ($n = 22$) of participants reported a score of less than or equal to 5, indicating a poor quality of work. Questions focusing on work-related stress were rated on a 5-point Likert scale; score of 0 and 1 strongly disagrees the statement that IR work adds significant stress to life, whereas score of 2 and 3 disagrees, score of 4 and 5 is neutral, score of 6 and 7 agrees, and score of 8, 9, and 10 strongly agrees. About 67.1% ($n = 92$) of participants reported a score of more than 5 out of 10, indicating a significant level of stress due to work (► **Fig. 2**).

Of the respondents who indicated they had a stressful time at work, 33% ($n = 45$) sought help from mentors, family, and friends. Others responses included taking a break from work, a vacation, and resorting to hobbies (► **Fig. 3**).

Health Related

Almost 62% ($n = 82$) of the participants were able to meet the WHO recommendation on exercise requirement for a healthy lifestyle. On the contrary, 14% ($n = 19$) of the participants were not able to spend any time on exercise and 24% ($n = 31$) were able to devote only less than 2 hours/week for

Table 1 List of questions in the survey including options for responding, domain being analyzed and components

No	Question	Options for responding	Domain being analyzed Work (W) Health (H) Family (F)	Component Knowledge (K) Attitude (A) Practice (P)
1	Consent: my responses may be included in the analysis and published. I may be contacted for any clarifications by the investigators maintaining the confidentiality	Y/N	-	-
2	In which country do you practice?		-	-
3	Since how many years have you are in IR practice?		W	-
4	Your practice includes night duty	Y/N	W	K
5	Your practice includes weekends	Y/N	W	K
6	Are you the only IR practitioner where you practice?	Y/N	W	K
7	Do you have a support group that can stand by you, if you have a difficult time especially patient death or a major complication?	Y/N	W	K
8	Do you have a difficult time with your administration or difficult turf battles within the hospital you practice?	Y/N	W	K
9	When go through a difficult time how do you relax or get yourself out of this mood?		W	A
10	How do you rate the quality & duration you spend for your work? (10 is the best)	0 1 2 3 4 5 6 7 8 9 10	W	K
11	Rate level of work-related stress (10 is the worst)	0 1 2 3 4 5 6 7 8 9 10	W	K, A
12	When did you have a formal health checkup last?	Never More than 1 year Less than 1 year		K, A, P
13	Are you having any health problem necessitating daily medication?		H	K, P
14	What is your BMI?	Lesser / normal / higher	H	K
15	Your exercise hours per week		H	A
16	Your predominant source of exercise	Walking Running Swimming Cycling Playing games Others None	H	K, A, P
17	If others were the answer to the previous question, please specify		H	K, A, P
18	Smoking habit	Past/present/never	H	A, P
19	Drinking habit	Past/present/never	H	A, P
20	How do you rate the quality and duration of exercise for your health? (10 is the best)	0 1 2 3 4 5 6 7 8 9 10	H	K, A, P
21	If you developed any occupation related health problem(s), please mention below			K
22	Have you heard any IR practitioner landing up in major health problems possibly due to poor balancing between work–health–family life?	Y/N	H	K
23	How do you rate the quality and duration of the time you spend on your family life? (10 is the best)	0 1 2 3 4 5 6 7 8 9 10	F	K, A, P
24	Is your IR lifestyle adding a lot of stress to your family life especially in a relationship with your spouse/children?	Y/N	F	K, A
25	Do you have the responsibility to look after senior citizens at home?	Y/N	F	K

Table 1 (Continued)

No	Question	Options for responding	Domain being analyzed Work (W) Health (H) Family (F)	Component Knowledge (K) Attitude (A) Practice (P)
26	Mention your hobby(s)		H	K, A, P
27	Ability to find time to do things that you enjoy (10 is the best)	0 1 2 3 4 5 6 7 8 9 10	H	K, A, P
28	Rate your ability in time management (10 is the best)	0 1 2 3 4 5 6 7 8 9 10	H	K, A, P
29	Your message to your IR colleagues with respect to balancing work-health and family life	Open-ended	W,H,F	K, A, P
30	Your rating regarding this survey (10 is the best)	0 1 2 3 4 5 6 7 8 9 10	W,H,F	K

Abbreviations: BMI, body mass index; IR, interventional radiologist.

Table 2 Percentages of causative factors of stress and burnout reported by IRs

Causative factors of stress and burnout	Percentages of IRs reported
Night and week end duties	90
Sole IR practitioner	30
No support group during major events	31
Issues with administration	56
Occupation related health problem	25
Poor quality of work	16
Poor quality of time spent on family	50
Inability to spend time on things that provide happiness	59

Abbreviation: IR, interventional radiologist.

physical activities (►Fig. 4). The predominant method of exercise was walking (53%, $n = 72$), followed by running (6%, $n = 8$) cycling (4%, $n = 5$), and other form of sports (4%, $n = 5$). The other sources of physical activity to quote few were yoga, gymnasium, and hiking.

We checked two habits that could adversely affect health. Eighty-three ($n = 113$) participants never smoked in the past, 11% ($n = 15$) had quit, and only 6% ($n = 8$) are active smokers. Alcohol was not consumed by 62% ($n = 85$), 8% ($n = 11$), had quit and 30% ($n = 41$) are active consumers.

The BMI distribution was high in 33% ($n = 45$), normal in 61% ($n = 83$), and low in 6% ($n = 8$) of participants. We found that 23% ($n = 31$) were having health problems necessitating daily medication. Twenty-nine percent ($n = 40$) participants had their annual health checkup within the year. Forty-nine participants ($n = 67$) had their health

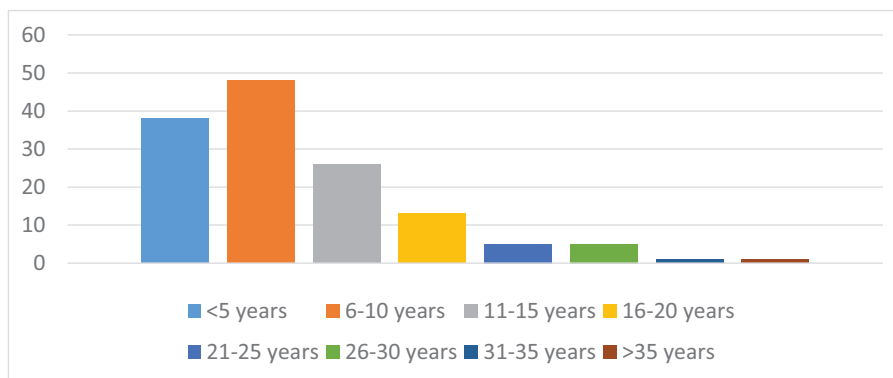


Fig. 1 Number of years of interventional radiology practice of the participants.

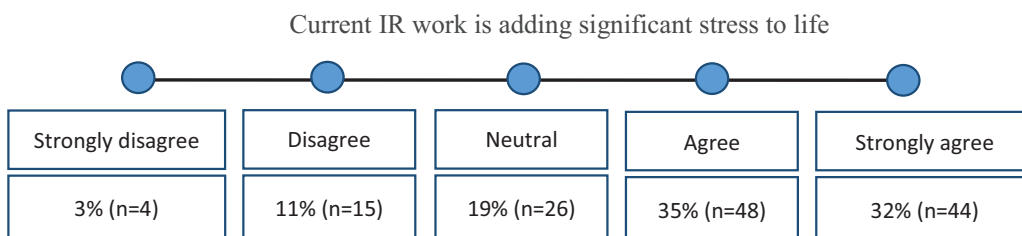


Fig. 2 A 5-point Likert scale demonstrating the level of work-related stress.

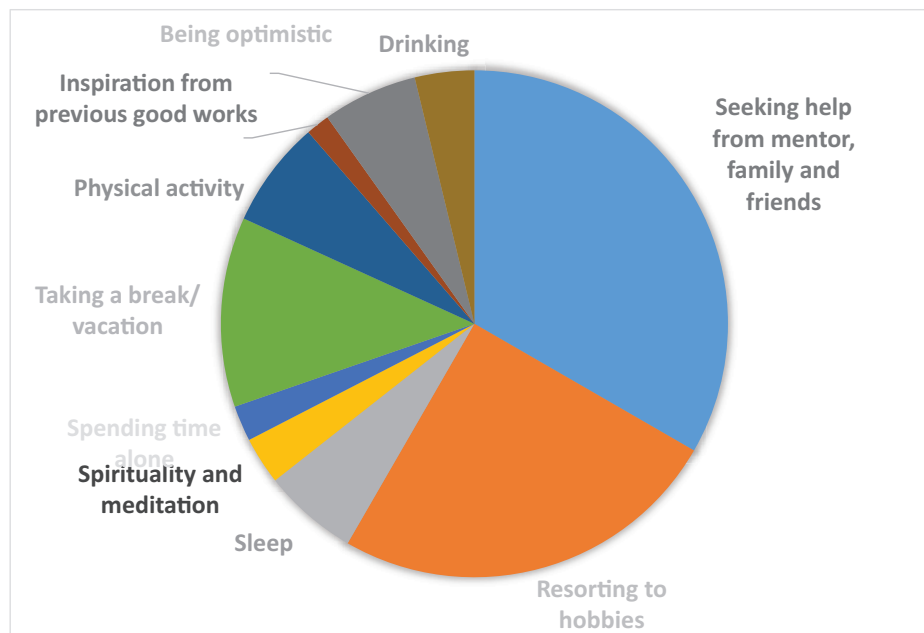


Fig. 3 Different ways of combating difficult times mentioned by the participants.

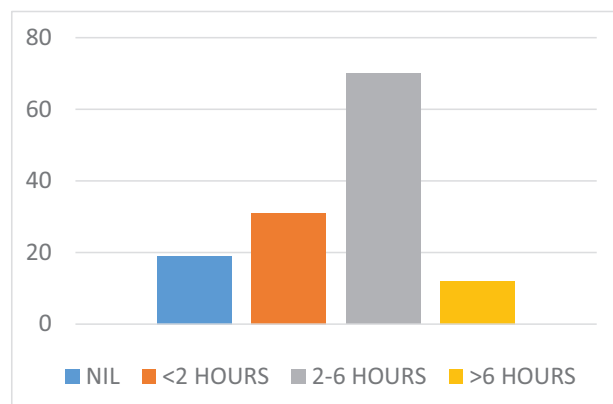


Fig. 4 Approximate hours of exercise per week as mentioned by participants.

checkup more than a year ago and 22% ($n = 30$) never had a health checkup.

Occupation-related health problems were observed in 25% ($n = 34$) of our participants, out of which 30% ($n = 10$) reported backache. A few mentioned hypertension, varicose veins, and hair loss. One of the participants had developed radiation-induced cataract.

When we enquired, “Have you heard any IR practitioner landing in major health problem possibly due to poor balancing of work-health-family life?” 74% ($n = 102$) responded “yes.” Almost all of the participants had a hobby to keep themselves away from the busy and tiring schedule of day-to-day life. Approximately 22% ($n = 37$) of the participants were playing or watching sports or doing exercise as a mode to keep the stress away. Music or singing was able to comfort 21% ($n = 35$) of the participants. Reading and watching movies/television were other common hobbies (19%, $n = 26$

and 16%, $n = 22$, respectively). Other less common hobbies were cooking, dancing, trekking, traveling, photography, walking, gardening, performing yoga activities, hiking, sleep, sketching/drawing, social service, and playing with pets (► Fig. 5).

The next question was related to their ability to find time to do things that provided joy/happiness to them. Total of 59% ($n = 81$) participants were not able to fulfil that.

Family Related

About 59% ($n = 82$) reported having the responsibility of looking after senior citizens at home. When asked about IR lifestyle adding stress to family life especially in relationships with spouse or children, 44% ($n = 60$) mentioned “yes.” Also 50% ($n = 68$) participants answered that they were not able to spend quality time with family (► Table 2).

WFH Balance

The open-ended question for suggestions to IR colleagues for better lifestyle by balancing WFH was responded by 96% ($n = 131$) of participants. Of these, nearly 19% ($n = 26$) suggested incorporating exercise and focusing on health and 24% ($n = 33$) suggested prioritizing family and friends over work. Interestingly, 25% ($n = 34$) suggested teamwork and hard work. Approximately 42% ($n = 57$) suggested discrete other factors. Certain answers to note were as follows: avoiding ego at workplace, vacations, being grounded, spirituality, and making profession as passion (► Fig. 6).

The last question was on rating the survey itself on a Likert scale, 10 being the best. More than 93% ($n = 127$) rated above 7 (► Table 3).

Univariate and multivariate analysis with burnout:

On univariate analysis, the major risk factors for burnout were presence of weekend duties ($n = 91$, 98.9%,

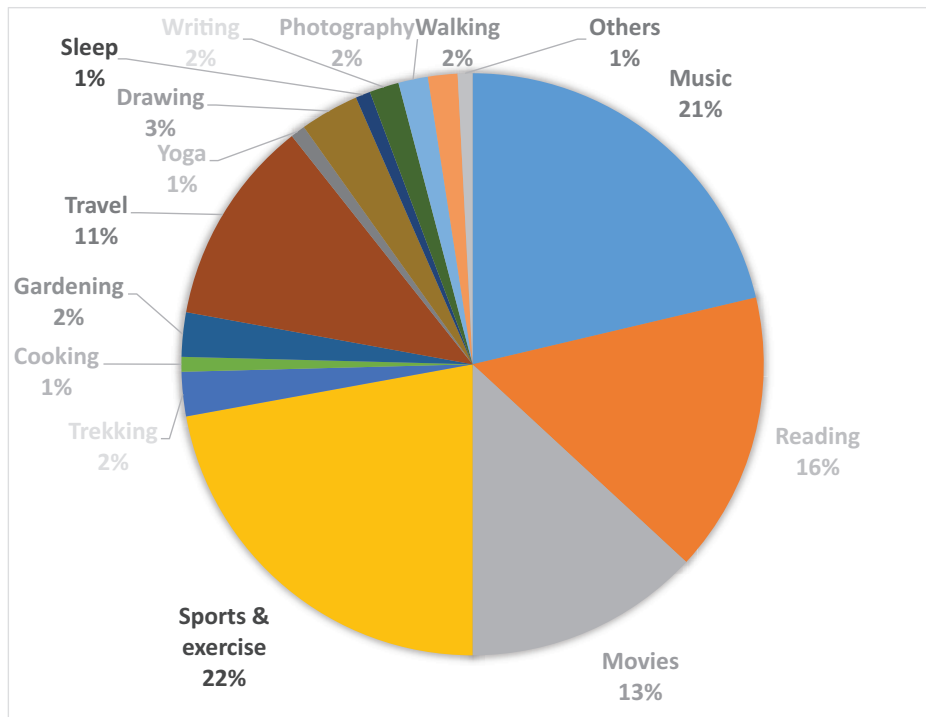


Fig. 5 Various hobbies mentioned by respondents. Some candidates have mentioned more than one hobby.

p-value = 0.02), absence of support group at workplace (*n* = 36, 39.1%, *p* = 0.005), having tough time with administration (*n* = 61, 66.3%, *p* = 0.001), not able to spend quality time on family (*n* = 30, 32.6%, *p* = 0.035), and inability to find time to do things that one enjoys (*n* = 53, 57.6%, *p* = 0.0002). However, multivariate analysis revealed that those having tough time with administration (odds ratio = 2.77, 95% CI: 1.12–6.48, *p* = 0.02) and those who could not find time to do things one enjoys (odds ratio = 4.79, 95% CI: 1.42–16.1, *p* = 0.01) were only statistically significant (► **Table 4**).

Discussion

The incidence and prevalence of depression and suicide among various healthcare professionals are increasing at an alarming

rate.⁷ The most important reason is burnout resulting from poor balance between work, health, and family.⁸ Balancing professional and personal life of a healthcare professional is entirely different and difficult as compared to most of the nonhealthcare professionals. IRs are more commonly affected due to their complex working conditions including being available on call after hours. This survey analyzes the predictors of OB, provides a snapshot of personal life focusing on health and family of IR, and provides ideas to master the act of balancing work, family, and health.

There is direct causal association between increased workload and OB.^{9,10} Overload on a daily basis can lead to significant physical and mental strain, further leading to poor balance between professional and personal life. The Yerkes-Dodson law demonstrates a strong relationship between stress and performance. With increase in stress, the performance

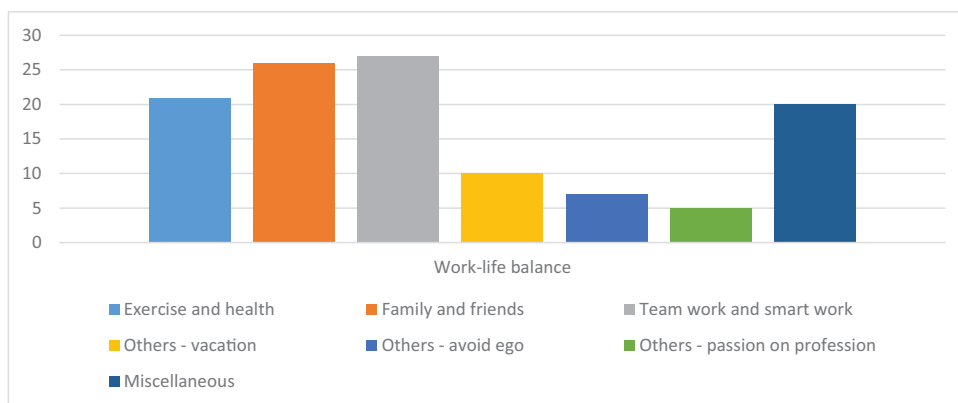


Fig. 6 Area of focus for a better work-life balance suggested by respondents.

Table 3 Different items rated by the participants in the survey

Question number	Items	0	1	2	3	4	5	6	7	8	9	10
10	Quality of work (10 is the best)	0	1	3	1	1	16	20	25	37	21	12
20	Quality time spent on physical health? (10 is the best)	8	13	23	17	8	23	14	9	9	8	3
23	The quality of time spent on family life? (10 is the best)	2	3	11	14	9	30	19	23	16	7	3
27	Ability to find time to do things that you enjoy (10 is the best)	2	10	12	25	13	19	19	17	15	3	2
30	Usefulness of survey (10 is the best)	0	0	0	0	0	3	7	14	44	30	38

Table 4 Results of univariate and multivariate logistic regression analysis of major risk factors influencing work–family–health balance

Sl. No.	Variables	Univariate analysis			Multivariate analysis	
		Burnout		p-Value	Odds ratio (95% CI)	p-Value
		≤ 5 (n, %)	> 5 (n, %)			
1.	Night duty No Yes	6 (13.3) 39 (86.7)	6 (6.5) 86 (93.5)	0.19	1.00 1.19 (0.19–7.62)	0.85
2.	Weekend duty No Yes	6 (13.3) 39 (86.7)	1 (1.1) 91 (98.9)	0.02	1.00 7.84 (0.59–104)	0.12
3.	Sole IR practitioner No Yes	34 (75.6) 11 (24.4)	62 (67.4) 30 (32.6)	0.33	1.00 0.95 (0.36–2.56)	0.92
4.	Support group at work Present Absent	38 (84.4) 7 (15.6)	56 (60.9) 36 (39.1)	0.005	1.00 2.28 (0.82–6.38)	0.12
5.	Tough time with administration No Yes	29 (64.4) 16 (35.6)	31 (33.7) 61 (66.3)	0.001	1.00 2.77 (1.12–6.48)	0.02
6.	Occupation related health problem No Yes	37 (82.2) 8 (17.8)	69 (75.0) 23 (25.0)	0.34	1.00 2.03 (0.68–6.07)	0.20
7.	Quality of time spent on family Good Poor	38 (84.4) 7 (15.6)	62 (67.4) 30 (32.6)	0.035	1.00 0.69 (0.17–2.74)	0.60
8.	Ability to find time to do things that you enjoy Good Poor	36 (80.0) 9 (20.0)	39 (42.4) 53 (57.6)	0.0002	1.00 4.79 (1.42–16.1)	0.01

Abbreviation: CI, confidence interval.

improves until it reaches a point, after which with further increase in stress, the performance drops steadily.¹¹ IR with night duties, duties during weekend, and being a sole practitioner in the working area can prolong working hours per week. Bundy et al in his survey highlights burnout is high among IRs working more than 80 hours per week.⁵ In our survey, more than 90% of respondents having night and

weekend duties indirectly indicate long working hours. They felt that it was not possible in their profession to avoid night and weekend call. However, they also felt that reducing weekly working hours to offset night and weekend duties could be a solution. Another important aspect of better work life is to have a good social interaction both within the interventional suite and outside, with colleagues from other departments and

administration.¹² Issues with administration can directly affect professional life. More than half of our respondents were found to have difficulties with the administration. Recognition of the problem, finding a solution, opportunity to explain, and implementing solutions can reduce such difficulties. In developing countries such as India, the field of IR is still in slow growing pace due to lack of knowledge among other clinicians about the treatment options that can be availed using image guidance. Hence, the referrals to IR are on the lower side and always an IR feels that they should be successful in procedures being performed to avoid lack of faith in image guided procedures amongst other healthcare professionals. Ultimately, stress and burnout are much higher amongst IR even after many decades of IR being in frontline decision making.

A study by Mensah and Adjei found that there is a strong association between poor work/life balance and health among European working adults.¹³ Poor work-life balance can lead to poor health outcome like stress, depression, and substance abuse.^{14,15} The WHO recommends 150 to 300 minutes of moderate intensity physical aerobic activity per week for a healthy lifestyle in the age group of 18 to 64 years. Approximately 62% of our participants were able to meet this criterion. Almost 14% did not spend any time at all exercising. Lack of exercise can lead to obesity and poor physical health.¹⁶ BMI was high in 33% of our participants. Smoking was observed in only a small percentage and alcohol intake was noted in 33%. Excessive smoking and alcoholism can lead to OB or it can be a result of it. However, we did not evaluate abuse or addiction related to tobacco, alcohol, or other substance as a result of work-related stress. One fourth of our participants have occupation-related health problem and the majority was backache. Presence of physical illness can affect mental peace and produce a negative impact on work.¹⁷ Thorough knowledge of radiation protection and strict adherence to good practice and good ergonomic design in the workplace can help to prevent this occupation related health hazards.

Time spent at workplace and with family is inversely proportional. Stress at either sides can affect each other drastically.¹⁸ In our survey, it is alarming to witness that approximately 40% had stress in family life due to profession. This indicates a strong need to identify solutions like modification in workflow and pattern, so that the quality time spent with family increases. Especially in a country like India, where the concept of old age homes is lower, the responsibility to take care of senior citizens adds further burden to the existing one. More than half of the participants in our study have the responsibility to take care of senior citizens at home. Increase in workload is one of the causes for care giver burnout. Care giver burnout is characterized by physical and mental exhaustion and change in attitude toward the person who needs attention or care.¹⁹ This can be reduced by increasing time spent on family by reducing workload by setting practical work environment, realistic goals to take care of senior citizens, forming social support group, and seeking help from others.

Limitation

This study has some limitations that are similar to most online surveys. The important one is selection bias. Respondents with stress or burnout might select themselves into the sample. The other limitation is most of our participants are from a developing country, where IR is struggling to establish as a radiology sub speciality.

Conclusion

In conclusion, we found that in a cross-sectional group of IR, 67% experienced significant stress related to work, 25% had occupation-related health problem, and 44% experienced poor family life due to work. The results implicate the urgent need for attention toward balancing WFH. Having tough time with administration and inability to find time to do things one enjoys were statistically significant risk factors for burnout on multivariate analysis. Solutions at individual level must be planned to overcome the above-mentioned factors for a healthy balance of work-life. Team-work at workplace, physical exercise, and regular health checkup for a healthy lifestyle should be prioritized. Attempts for a quality family time should top the must to do list. This article quantifies burnout and work-life balance among Indian IR; our results can act as a foundation for any further studies.

Note

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Conflict of Interest

None declared.

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