

Quality of Life among Surgical Residents at King Abdulaziz Medical City in Jeddah, Saudi Arabia

Malik M. Almailabi¹, Rakan S. Alajmi^{1*}, Atheel L. Balkhy¹, Mohammed J. Khalifa¹, Zaher A. Mikwar², Muhammad A. Khan³

¹King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia; ²Department of Surgery, King Abdulaziz Medical City for the National Guard, Western Region, Jeddah, Saudi Arabia; ³College of Medicine, Department of Medical Education, King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia

Abstract

Citation: Almailabi MM, Alajmi RS, Balkhy AL, Khalifa MJ, Mikwar ZA, Khan MA. Quality of Life among Surgical Residents at King Abdulaziz Medical City in Jeddah, Saudi Arabia. Open Access Maced J Med Sci. 2019 Dec 15; 7(23):4163-4167.
<https://doi.org/10.3889/oamjms.2019.854>

Keywords: Quality of life; Stress; Burnout; Surgical residents

***Correspondence:** Rakan S. Alajmi. King Saud bin Abdulaziz University for Health Sciences, Jeddah, Saudi Arabia. E-mail: reeko7665@gmail.com

Received: 15-Jul-2019; **Revised:** 04-Aug-2019; **Accepted:** 05-Aug-2019; **Online first:** 13-Dec-2019

Copyright: © 2019 Malik M. Almailabi, Rakan S. Alajmi, Atheel L. Balkhy, Mohammed J. Khalifa, Zaher A. Mikwar, Muhammad A. Khan. This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0)

Funding: This research did not receive any financial support

Competing Interests: The authors have declared that no competing interests exist

BACKGROUND: Surgical residency program is considered one of the toughest residency programs, which affects quality of life of the residents during training years. To date, no study has evaluated quality of life among residents, especially surgical residents here in Saudi Arabia.

AIM: The objective of this study is to evaluate quality of life among surgical residents.

METHODS: The study is a cross-sectional study conducted during September 2018 in King Khalid Hospital at King Abdulaziz Medical City (KAMC) Jeddah, Saudi Arabia. The study utilized the Work-Related Quality of Life, WRQoL, scale which measures perceived quality of life covering six domains: General Well-Being (GWB), Home-Work Interface (HWI), Job and Career Satisfaction (JCS), Control at Work (CAW), Working Conditions (WCS) and Stress at Work (SAW), in addition to demographic questions, asking about (age, gender, marital status, resident level, specialty, BMI, smoking, number of days of exercise per week, hours of sleep per day, on-calls per month, clinics per week, operations per week).

RESULTS: Of the 99 surgical residents training at KAMC, 73 residents returned the survey with a response rate of 72.8%. The mean age of the residents was 28 ± 2.1 years with the mean BMI of 25 kg/m². 54.8% were married, and 42.5% were smokers. Half of the residents (50.7%) working in King Abdulaziz Medical City have low work-related quality of life. In comparison between male and female residents' overall Quality of life, there was no significant difference between them ($p = 0.363$).

CONCLUSIONS: Our main study finding is that half of the residents (50.7%) working at KAMC has low work-related quality of life, and there is no significant difference between male and female residents. Further studies are needed to determine the causes and improve the work-related quality of life among surgical residents.

Introduction

Long working hours, on call duties, academic lectures, and lack of autonomy make the period of surgical residency highly stressful [1]. Working hours and burnout among residents have gained much attention recently [2]. Attrition among surgical residents remains high, with rates of 14–23% [3]. In a recent study, which was published in 2018, it was shown that these high levels of stress are strongly associated with depression and burnout among residents [4]. Another study published from Japan in 2018, has supported that extremely long working hours were strongly associated with depression, which is one of the adverse effects of stress [5]. In

another study that was conducted in Germany, analysis of psychosocial stress in the workplace among residents in the surgical field showed that this group suffers from more severe stress than other specialties [6].

A Swedish study reflected that high demand and job strains were as highly related to increased depression among men as among women [7]. Several studies have addressed stress and depression among residents, but the issue that has not been addressed properly is the relationship between gender, working environment, and development of stress or depression [5], [7], [8]. Another factor to discuss is how high workload can affect family and interpersonal relationships, which in result will affect the quality of life [9].

According to a published study in 2017 that measured burnout and stress among US surgery residents, higher stress is associated with increased risk of burnout in surgical residents, which will ultimately affect the mental health and performance of the residents [10]. Burnout may erode professionalism, contribute to medical errors, lead to suicidal ideation and attrition, and can be a factor in substance abuse and relationship difficulties which will affect the quality of life of the residents [11].

Based on the literature, stress and depression are highly prevalent among surgical residents due to long working hours. To date, no local study has evaluated work-related quality of life of the residents, especially surgical residents here in Saudi Arabia. The objective of this study is to evaluate quality of life of the surgical residents and address the factors affecting their quality of life.

Methods

The study is a cross-sectional study conducted during September 2018 in King Khalid Hospital at King Abdulaziz Medical City Jeddah, Saudi Arabia. Before starting the study, the ethical approval was obtained from King Abdullah International Medical Research Center's (KAIMRC). The study utilized the first edition of the work related quality of life (WRQoL) scale developed by Simon Easton and Darren Van Laar [12]. This questionnaire is already tested for the validity and reliability the authors [12]. In addition to WRQoL questionnaire, demographic parameters like age, gender, marital status, residency level, specialty, BMI, smoking, number of days of exercise per week, hours of sleep per day, on-calls per month, clinics per week, and operations per week were obtained. Surgical residents from all specialties were given the questionnaire either by link or were given a hard copy; the consent was attached to both.

The questionnaire was distributed among all surgical residents, in our institute 103 residents, with a response rate of 72.8%. Out of the those who answered 19 were general surgery residents, 2 Ophthalmology residents, 5 Plastic surgery residents, 3 Neurosurgery residents, 4 Urology residents, 12 Orthopedic surgery residents, 6 ENT head and neck surgery residents, 1 Pediatric surgery residents, 23 OB/GYN residents.

Data Analysis

Data was entered and analyzed on SPSS version 20.0. For the analysis, frequency and percentage was computed for categorical variables like gender, marital status, and specialty of the residents. Mean and standard deviation was

estimated for quantitative variables like age. Frequencies/percentages were shown in bar charts and for mean and standard deviation, tables were displayed. For inferential statistics chi-square test was used for comparing two categorical for gender and overall Quality of life. P-value < 0.05 will be taken as significant.

Result

Of the 99 surgical residents training in King Khalid Hospital at King Abdulaziz Medical City, during September 2018, 73 returned the survey with a response rate of 72.8%. Demographic features are depicted in Table 1.

Table 1: Demographic features

Demographic features			
Gender	39 (53.4%) male 34 (46.6%) female	The mean age	28 ± 2.1
The mean BMI	25kg/m ²	Marital status	40 (54.8%) married 33 (55.2%) single
Smoking	42 (57.5%) non smoker 31 (42.5%) smoker	Hours of sleep per night	4-6 hours (68.5%) 7-9 hours (31.5%)
Days of exercise per week		1-3 days (67.1%) 4-7 days (24.7%) did not participate in any regular exercise (8.2%)	

Regarding the specialties of the residents, refer to Table 2.

Table 2: The specialties of the residents

Specialty	Number of residents	Specialty	Number of residents
General surgery	19 (26%)	Ophthalmology	2 (2.7%)
Plastic surgery	5 (6.8%)	Neurosurgery	3 (4.1%)
Orthopedic	10 (13.7%)	Urology	4 (5.5%)
ENT	6 (8.2%)	Pediatric surgery	1 (1.4%)
Ob/Gyn	23 (31.5%)		

Number of on-calls, clinics and operations are shown in Table 3.

Table 3: Number of on-calls, clinics and operations

Clinical duties	
On-calls per month	1-3 (8.2%) 4-7 (72.6%) 8-10 (19.2%)
Clinics per week	3 (53.4%) 2 (43.8%) 1 (2.7%)
Operations per week	1-3 (47.9%) 4-6 (37%) 7-9 (9.6%) 9-12 (5.5%)

The study showed that the majority of the residents (76.7%) perceived them to have a low home-work interface. 34.2%, 41.1%, and 24.7% displayed a low, average, and high job-career satisfaction. Nearly half (46.6%) encountered high stress levels at work. Table 4 further describes the parameters studied. The quality of life for 50.7% of the residents was low, while 37% reported an average quality of life, and 12.3% reported high quality of life. In comparison between male and female residents' overall Quality of life, there was no significant

difference between them ($p = 0.363$).

Table 4: Six domains of WRQoL questionnaire

Home-work interface	n	%
Low	56	76.7
Average	12	16.4
High	5	6.9
Job-career satisfaction		
Low	25	34.2
Average	30	41.1
High	18	24.7
Control at work		
Low	41	56.2
Average	20	27.4
High	12	16.4
Working conditions		
Low	23	31.5
Average	16	21.9
High	34	46.6
Stress at work		
Low	23	31.5
Average	16	21.9
High	34	46.6
General well being		
Low	35	47.9
Average	28	38.4
High	10	13.7
Quality of life		
Low	37	50.7
Average	27	37
High	9	12.3

Home-Work Interface (HWI)

The HWI factor addresses work-life balance and reflects the extent to which the employer is perceived to support employees' home life (12). 76.7% of our residents have low HWI, while 16.4% have average HWI, and only 6.9% have high HWI.

Table 5: Work-related quality of life scale

Number	Factor	Item wording
1.	JCS	I have a clear set of goals and aims to enable me to do my job
2.	CAW	I feel able to voice opinions and influence changes in my area of work
3.	JCS	I have the opportunity to use my abilities at work
4.	GWB	I feel well at the moment
5.	HWI	My employer provides adequate facilities and flexibility for me to fit work in around my family life
6.	HWI	My current working hours / patterns suit my personal circumstances
7.	SAW	I often feel under pressure at work
8.	JCS	When I have done a good job it is acknowledged by my line manager
9.	GWB	Recently, I have been feeling unhappy and depressed
10.	GWB	I am satisfied with my life
11.	JCS	I am encouraged to develop new skills
12.	CAW	I am involved in decisions that affect me in my own area of work
13.	WCS	My employer provides me with what I need to do my job effectively
14.	HWI	My line manager actively promotes flexible working hours / patterns
15.	GWB	In most ways my life is close to ideal
16.	WCS	I work in a safe environment
17.	GWB	Generally things work out well for me
18.	JCS	I am satisfied with the career opportunities available for me here
19.	SAW	I often feel excessive levels of stress at work
20.	JCS	I am satisfied with the training I receive in order to perform my present job
21.	GWB	Recently, I have been feeling reasonably happy all things considered
22.	WCS	The working conditions are satisfactory
23.	CAW	I am involved in decisions that affect members of the public in my own area of work
24.	OVL	I am satisfied with the overall quality of my working life

Key
red = negatively phrased question (score should be reversed)

Work-related quality of life scale is a 23-item psychometric scale that measures perceived quality of life covering six domains: General Well-Being (GWB), Home-Work Interface (HWI), Job and Career Satisfaction (JCS), Control at Work (CAW), Working Conditions (WCS) and Stress at Work (SAW). This work-related quality of life scale is being used by individuals, consultants, and organizations as a great tool to assess the quality of working life among employees. Although the WRQoL scale has 23 items, an additional 24th factor is added in the questionnaire to indicate the validity and reliability of the WRQoL scale. Table 5 illustrates that each domain has specific questions that are scored on a 5 level Likert-scale, strongly disagree, disagree, neutral, agree, and strongly agree.

Job and Career Satisfaction (JCS)

The JCS represents the level to which the workplace provides a person with the best things in the working environment. For instance, sense of

achievement, high self esteem and fulfilment of potential [12]. 34.2% of our residents have low JCS, while most of them 41.1% have average JCS, and 24.7% have high JCS.

Control at Work (CAW)

The CAW factor reflects the level at which an employee feels they can exercise what they consider to be an appropriate level of control within their work environment. That perception of control might be linked to various aspects of work, including the opportunity to contribute to the process of decision making that affect them [12]. More than the half of our residents (56.2%) had low CAW, while 27.4% had average CAW, and only 16.4% had high CAW.

Working Conditions (WCS)

The WCS assesses the extent to which the employee is satisfied with the fundamental resources, working conditions and security necessary to do their job effectively [12]. Most of our residents 46.6% had high WCS, 21.9% of them had average WCS, and 31.5% of the residents had low WCS.

Stress at Work (SAW)

The SAW factor is determined by the extent to which an individual perceives they have excessive pressures and feel stressed at work [12]. Most of our residents 46.6% had high SAW, while 21.9% of them had average SAW, and 31.5% of them had low SAW. This result reflects high stress at work among surgical residents in our hospital.

The General Well-Being (GWB)

The GWB factor assesses the extent to which an individual feels good or content with their life as a whole. General well-being is conceptualized as influencing and, being influenced by, work [12]. Most of our residents 47.9% had low general well-being, while 38.4% had average GWB, and only 13.7% had high GWB.

Discussion

The objective of this study is to evaluate the residents' quality of life. The final Work-Related Quality of Life (WRQoL) score is determined by taking the average of the 6 domains. After coding, our main study finding is that half of the residents (50.7%) have low work-related quality of life. Out of the six domains, we observed that the following results are alarming,

low Home-Work interface, low control at work, high stress at work, and low general well being.

Home-work interface subscale gives us an idea about how residents are supported in their family and home life [13]. When the residents are asked if they are given flexible working hours or patterns, most of the them (76.6%) have low Home-work interface subscale. Lack of flexibility, long working hours and high job demands can interfere between home and work responsibilities, and these factors can explain why home-work interface subscale conducted in our sample size is low. Moreover, looking at the demographic data of the residents, half of them are married (54.7%), and that might lower the subscale of Home-Work interface. Similarly, a study conducted in Germany proves that high job demand is one of the significant causes of high work-family conflict [9]. In contrast, there is a study that assessed Work-Related quality of life of US surgical residents, with the use of the same assessment tool used in our study, and revealed that only 22% of the residents have low home-work interface subscale [13]. This might be viewed as a huge gap between the US and Saudi surgical programs in terms of working hours, and the amount of support the residents receive towards their home and family life. Low Work-Life balance could negatively affect the residents' life inside and outside their working environment. In addition to low work-life balance adverse effects, physical and physiological issues like burnout and depression are highly prevalent [1], [5]. This high incidence of depression and burnout is also seen among oncology residents in Europe [14].

Knowing that work-place stress is a common job-related health problem, burnout and stress are more common in the medical field compared to other professions [11]. Stress can be manifested in any adverse reaction in response to excessive demands [12].

Unsurprisingly yet alarming, our results show that nearly half of the residents (46.6%) scored high levels of stress. Pressures and stress can be great tools to drive the residents into a challenging environment, therefore, the patients will benefit from that challenging and driving working environment [13]. However, excessive stress levels can lead to burnout, which in turn will affect the residents' performance and mental health [10], [11]. A study found that limited resources, changing environment, and poor work-life balance are possible causes of this issue [15], [16]. To overcome this issue, a study concluded that mindfulness not only manage stress at work, but also it could be a preventive tool against burnout [10].

Not only stress and burnout, as mentioned previously, are higher in the medical field, but also general well being is worse than any other professions [3]. In fact, 47.9% of the surgical residents working in King Abdulaziz Medical City have low general well being subscale. Our results showed that low

Home-Work interface and high stress at work levels correlate with low general well being subscale. General well being subscale represents physical and psychological aspects of health. Home-Work interface and stress levels can explain the psychological part of General well being subscale. On the other hand, the residents' demographic data can give us an idea about the life habits and the physical part of General well being subscale. For example, and despite the fact that most of the residents exercise 1-3 or more per week, the mean BMI of the residents is 25 kg/m². Another important and notable finding is that 42.5% of the residents are smokers, and along with the BMI and high stress level, these findings can explain why general well being subscale is low in nearly half of the surgical residents. On the contrary, a study conducted in US concluded that sleep hours and activity level have no association with burnout and stress level [17]. This should shift the focus to other factors other than activity level or sleep hours, workload for instance. In fact, workload is considered one of the most important causes when it comes to occupational stress [18]. For this reason, managers of the surgical residency program should work on reducing the workload in order to decrease burnout and stress levels [18].

A study revealed that female surgeons are more likely to experience burnout [19]. Moreover, the same study that conducted quality of life of US surgical residents concluded that female surgical residents have low quality of life in comparison to male surgical residents [12]. This is also mirrored in a South African study about female surgical residents who expressed concerns about maintaining a balance between work and life [20]. However, in our study, there was no significant difference between male and female surgical residents in overall Quality of life ($P = 0.363$).

Strength and limitations of this study: - This is the first study evaluating the quality of life of surgical residents in Saudi Arabia; - This study is based on self-reported data, there might be a response bias involved; - Conducting the study in a single medical center cannot generalize our results.

Our main study finding is that half of the residents (50.7%) working in King Abdulaziz Medical City has low work-related quality of life. Further studies are needed to determine the causes and improve the work-related quality of life among surgical residents.

Acknowledgement

The authors would like to thank all KAMC residents who volunteered to participate in this study.

Ethical Approval

The study was approved by the Institutional Review Board (IRB) at King Abdullah International Medical Research Center (KAIMRC).

References

- van Vendeloo S, Godderis L, Brand P, Verheyen K, Rowell S, Hoekstra H. Resident burnout: evaluating the role of the learning environment. *BMC Medical Education*. 2018; 18(1):20-28. <https://doi.org/10.1186/s12909-018-1166-6> PMID:29587737 PMCID:PMC5872499
- Golub JS, Weiss PS, Ramesh AK, Ossoff RH, Johns III MM. Burnout in residents of otolaryngology-head and neck surgery: a national inquiry into the health of residency training. *Academic Medicine*. 2007; 82(6):596-601. <https://doi.org/10.1097/ACM.0b013e3180556825> PMID:17525550
- Elmore L, Jeffe D, Jin L, Awad M, Turnbull I. National Survey of Burnout among US General Surgery Residents. *Journal of the American College of Surgeons*. 2016; 223(3):440-51. <https://doi.org/10.1016/j.jamcollsurg.2016.05.014> PMID:27238875 PMCID:PMC5476455
- Simpkin A, Khan A, West D, Garcia B, Sectish T, Spector N et al. Stress From Uncertainty and Resilience Among Depressed and Burned Out Residents: A Cross-Sectional Study. *Academic Pediatrics*. 2018; 18(6):698-704. <https://doi.org/10.1016/j.acap.2018.03.002> PMID:29524616
- Ogawa R, Seo E, Maeno T, Ito M, Sanuki M, Maeno T. The relationship between long working hours and depression among first-year residents in Japan. *BMC Medical Education*. 2018; 18(1):10-18. <https://doi.org/10.1186/s12909-018-1171-9> PMID:29587738 PMCID:PMC5870810
- Bernburg M, Vitzthum K, Groneberg D, Mache S. Physicians' occupational stress, depressive symptoms and work ability in relation to their working environment: a cross-sectional study of differences among medical residents with various specialties working in German hospitals. *BMJ Open*. 2016; 6(6):36-44. <https://doi.org/10.1136/bmjopen-2016-011369> PMID:27311909 PMCID:PMC4916614
- Theorell T, Hammarström A, Gustafsson P, Magnusson Hanson L, Janlert U. Job strain and depressive symptoms in men and women: A prospective study of the working population in Sweden. *Journal of Epidemiology and Community Health*. 2013; 68(1):78-82. <https://doi.org/10.1136/jech-2012-202294> PMID:24052515
- Theorell T, Hammarström A, Aronsson G, Träskman Bendz L, Grape T, Hogstedt C. A systematic review including meta-analysis of work environment and depressive symptoms. *BMC Public Health*. 2015; 15(1):31-43. <https://doi.org/10.1186/s12889-015-1954-4> PMID:26232123 PMCID:PMC4522058
- Mache S, Bernburg M, Vitzthum K, Groneberg D, Klapp B, Danzer G. Managing work-family conflict in the medical profession: working conditions and individual resources as related factors. *BMJ Open*. 2015; 5(4):10-19. <https://doi.org/10.1136/bmjopen-2014-006871> PMID:25941177 PMCID:PMC4420985
- Lebares C, Guvva E, Ascher N, O'Sullivan P, Harris H, Epel E. Burnout and Stress Among US Surgery Residents: Psychological Distress and Resilience. *Journal of the American College of Surgeons*. 2018; 226(1):80-90. <https://doi.org/10.1016/j.jamcollsurg.2017.10.010> PMID:29107117
- Dyrbye L, West C, Satele D, Boone S, Tan L, Sloan J et al. Burnout Among U.S. Medical Students, Residents, and Early Career Physicians Relative to the General U.S. Population. *Academic Medicine*. 2014; 89(3):443-51. <https://doi.org/10.1097/ACM.000000000000134> PMID:24448053
- Easton S, Van Laar D. User manual of the Work- Related Quality of Life (WRQoL) scale: a measure of quality of working life. University of Portsmouth; 2012.
- Bohrer T, Koller M, Schlitt HJ, Bauer H. Workload and quality of life of surgeons. Results and implications of a large-scale survey by the German Society of Surgery. *Langenbeck's archives of surgery*. 2011; 396(5):669-76. <https://doi.org/10.1007/s00423-011-0791-x> PMID:21509545
- Mordant P, Deneuve S, Rivera C, Carrabin N, Mieog JS, Malyshev N, Van Der Vorst JR, Audisio RA. Quality of life of surgical oncology residents and fellows across Europe. *Journal of surgical education*. 2014; 71(2):222-8. <https://doi.org/10.1016/j.jsurg.2013.07.010> PMID:24602714
- Low ZX, Yeo KA, Sharma VK, Leung GK, McIntyre RS, Guerrero A, et al. Prevalence of Burnout in Medical and Surgical Residents: A Meta-Analysis. MDPI. Multidisciplinary Digital Publishing Institute, 2019. <https://doi.org/10.3390/ijerph16091479> PMID:31027333 PMCID:PMC6539366
- Zubair MH, Hussain LR, Williams KN, Grannan KJ. Work-Related Quality of Life of US General Surgery Residents: Is It Really so Bad?. *Journal of surgical education*. 2017; 74(6):e138-46. <https://doi.org/10.1016/j.jsurg.2017.09.018> PMID:28988955
- Marek AP, Nygaard RM, Liang ET, Roetker NS, DeLaquill M, Gregorich S, Richardson CJ, Van Camp JM. The association between objectively-measured activity, sleep, call responsibilities, and burnout in a resident cohort. *BMC medical education*. 2019; 19(1):158. <https://doi.org/10.1186/s12909-019-1592-0> PMID:31113435 PMCID:PMC6528316
- Ebrahimi S, Kargar Z. Occupational stress among medical residents in educational hospitals [Internet]. *Annals of occupational and environmental medicine*. BioMed Central; 2018 [cited 2019Oct5]. <https://doi.org/10.1186/s40557-018-0262-8> PMID:30101032 PMCID:PMC6083531
- Pulcrano M, Evans SRT, Sosin M. Quality of Life and Burnout Rates Across Surgical Specialties: A Systematic Review [Internet]. *JAMA surgery*. U.S. National Library of Medicine, 2016. <https://doi.org/10.1001/jamasurg.2016.1647> PMID:27410167
- Umotok F, Van Wyk JM, Madiba TE. Does gender impact on female doctors' experiences in the training and practice of surgery? A single centre study. *South African Journal of Surgery*. 2017; 55(3):8-12.