

Quality of Life Among Postgraduate Medical Residents in Oman: A Cross-sectional Survey

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Received: 26 February 2023

Accepted: 23 May 23, 2023

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DOI 10.5001/omj.2023.115

Abstract

Objective: Quality of life (QOL) is a multidimensional construct referring to an individual's perception of the state of their life. This study aimed to assess the QOL of postgraduate medical residents enrolled in various programs at the Oman Medical Specialty Board (OMSB) in Muscat, Oman. **Methods:** This cross-sectional study took place between January to June 2022. All postgraduate residents enrolled in any of the 19 OMSB training programs during the study period were targeted. An online English version of the validated 36-Item Short Form Health Survey (SF-36) was used to assess self-reported QOL. **Results:** A total of 425 OMSB residents participated in the study (response rate: 72.9%), of which the majority were female (n = 289; 68.0%), married (n = 259; 60.9%), and enrolled in medical specialties (n = 295; 69.4%). The mean age was 29.6 ± 2.2 years. Overall, female residents reported statistically significantly poorer QOL compared to male residents in all SF-36 subscales ($p = 0.001$). Moreover, married residents reported lower bodily pain scores compared to unmarried residents ($p = 0.005$), although the latter reported higher physical functioning, general health, and mental health scores. Finally, residents enrolled in laboratory specialties reported higher scores compared to those in medical and surgical specialties with regards to various QOL dimensions, including physical health, role functioning, energy/fatigue, emotional wellbeing, bodily pain, and general health ($p = 0.001$). **Conclusions:** Postgraduate medical residents in Oman reported statistically significant variations in QOL based on specialization, gender, and marital status. These findings underscore the need for additional interventions to tackle health inequalities and improve the QOL of this population.

Keywords: Quality of Life; Graduate Medical Education; Internship and Residency; Health Status; Sex Factors; Oman.

Introduction

Quality of life (QOL) is a subjective, multidimensional construct that attempts to measure an individual's overall wellbeing by assessing their self-perceptions of the state of their life in various domains.¹ While perception of health and QOL in patients has been the subject of extensive investigation in recent years, there is a need for additional research focusing on QOL among healthcare personnel. Currently, the emphasis in the literature remains on the importance of QOL in terms of its consequences on disease course and effect of treatment as well as other related health issues. Nonetheless, the QOL of physicians has a considerable impact on the quality and safety of the healthcare provided.²⁻⁴ It is therefore important to understand the ways in which specific characteristics influence QOL among healthcare personnel and relationships between job burden, psychosocial aspects of work, and QOL parameters.

Research has shown that postgraduate medical residents are subject to higher levels of stress compared with other people of the same age enrolled in other programs.^{2,3} Moreover, the process of participating in a medical residency program necessarily influences the participating resident's health and QOL because of the stressful, rigorous, and demanding nature of the program. Various studies have indicated that medical education and residency training are

linked with deficits in sleep, physical activity, and social interaction, with reports of links with work stress, burnout, and depression in these populations.⁴⁻⁶ Thus, an understanding of aspects that influence residents' QOL during medical training can help to facilitate healthcare promotion activities and psychopedagogical services to better support residents during their training.

Prior research has been conducted to evaluate the relationship between social life and work in healthcare professions, with researchers concluding that poor QOL can have a long-term negative effect on the health of healthcare workers.⁵⁻⁷ However, such studies tend to be performed in single, localized centers and therefore do not reflect the experiences of healthcare workers in general. Moreover, while various studies have addressed causes of burnout, they have only minimally explored impacts on the social life of medical residents. Hence, the main objective of this study was to assess the QOL of postgraduate medical residents in Oman and to determine relationships between QOL parameters and sociodemographic characteristics.

Methods

This cross-sectional study was carried out from January to June 2022 among postgraduate residents enrolled in various training programs at the Oman Medical Specialty Board (OMSB), the sole regulatory body of postgraduate medical training in Oman. The OMSB is an autonomous organization responsible for developing and maintaining postgraduate medical education standards, criteria, and certification for practicing healthcare professionals in defined areas of medical specialization, including anesthesia; biochemistry; dentistry; dermatology; ear, nose, and throat; emergency medicine; family medicine; general surgery; hematology; histopathology; internal medicine; microbiology; obstetrics and gynecology; ophthalmology; oral and maxillofacial surgery; orthopedics; psychiatry; pediatric medicine; and radiology. The total population of postgraduate residents during the study period was approximately 602 distributed between 19 training programs. Of the 602 residents, 19 were excluded as they were either away on long leave, had recently completed their residency training, or were currently undertaking master's degrees and fellowships. Thus, a total of 583 residents were targeted for inclusion in the study.

An electronic, self-administered questionnaire was distributed to all residents using Google forms (Google LLC, Mountain View, CA, USA). Self-reported health status and QOL were determined using an English version of the validated 36-Item Short Form Health Survey (SF-36) which is freely available online.⁸ Although this instrument is usually applied to specific clinical groups or disease populations, the tool itself was designed to be applicable for use as a generic health measure in the general population (among individuals aged ≥ 14 years).⁹⁻¹¹ The SF-36 consists of eight subscales to assess various aspects of health-related QOL, including physical functioning, physical role functioning, bodily pain, general health, vitality (energy/fatigue), social functioning, emotional role functioning, and mental health. Scores for each subscale were determined on a 0–100 scale on the assumption that each question carried equal weight, with weighted sums calculated for the questions in each section. Lower scores were taken to indicate a greater degree of disability. However, as per the questionnaire developers, the SF-36 cannot be used to generate a global measure of health-related QOL.¹² As such, crude estimates were determined using a procedure previously described in other research.¹³

The Statistical Package for the Social Sciences (SPSS) software, version 23 (IBM Corp., Armonk, NY, USA), was used to analyze the collected data. Descriptive findings were reported as means and standard deviations for normally-distributed continuous variables and as frequencies and percentages for categorical variables. Analysis of the associations between the participants' sociodemographic characteristics (categorical variables) was carried out using either an independent t-test or analysis of variance, depending on the number of categories per variable. In addition, Pearson's Chi-squared (χ^2) test was applied to compare categorical variables. Statistical significance was determined at $p \leq 0.05$.

Ethical approval for this study was obtained from the OMSB Research Ethics Committee in 2020. Written informed consent was obtained from all participants prior to the completion of the questionnaire. All participants were informed about the objectives of the study, the voluntary and confidential nature of participation, and their right to withdraw from the study at any time.

Results

A total of 583 residents initially agreed to participate in the study (Total number of female 437 and male 146) , of which 425 returned completed questionnaires (response rate: 72.9%). Overall, 289 residents (68.0%) were female and 136 (32.0%) were male. The mean age was 29.6 ± 2.2 years old (range: 25–35 years). The majority were married (n = 259; 60.9%) and had one or more children (n = 224; 52.7%). More than half of the cohort (n = 295; 69.4%) were enrolled in medical specialties (i.e., anesthesia, dermatology, emergency medicine, family medicine, internal medicine, psychiatry, pediatric medicine, and radiology). The remaining 95 (22.4%) and 35 (8.2%) residents were enrolled in surgical (ear, nose, and throat, general surgery, ophthalmology, oral and maxillofacial surgery, obstetrics and gynecology, and orthopedics) or laboratory (biochemistry, hematology, histopathology, and microbiology) specialties, respectively. There were a relatively equal number of junior (n = 208; 48.9%) and senior (n = 217; 51.1%) residents. Most participants originated from outside of Muscat (n = 257; 60.4%) [Table 1].

Table 1: Sociodemographic characteristics of postgraduate medical residents enrolled at the Oman Medical Specialty Board, Muscat, Oman (N = 425)

Characteristic	n (%)
Age (years)	
Mean \pm SD	29.6 \pm 2.2
Range	25–35
Gender	
Male	136 (32.0)
Female	289 (68.0)
Year of residency	
R1	92 (21.7)
R2	115 (27.1)
R3	99 (23.3)
R4	96 (22.6)
R5	20 (4.7)
R6	3 (0.5)
Residency level	
Junior	208 (48.9)
Senior	217 (51.1)
Specialty	
Medical	295 (69.4)
Surgical	95 (22.4)
Laboratory	35 (8.2)
Marital status	
Single	166 (39.1)
Married	259 (60.9)
Number of children	
0	201 (47.3)
1	138 (32.5)
>1	86 (20.2)
Region of residence	
Muscat	168 (39.6)
Other	257 (60.4)

SD = standard deviation.

A reliability analysis was conducted to investigate the internal consistency reliability of each of the SF-36 subscales. Apart from one, all of the SF-36 subscales had Cronbach's alpha values of >0.7 , indicating satisfactory reliability [Table 2]. According to the univariate analysis, male residents reported statistically significantly higher QOL scores

compared to female residents in all SF-36 subscales ($p = 0.001$). In addition, married residents had statistically significantly lower body pain scores compared to unmarried residents (61.6 ± 19.8 vs. 67.4 ± 20.0 ; $p = 0.005$); however, single residents reported statistically significantly higher scores compared to their married counterparts for other QOL domains, including physical functioning (85.1 ± 18.0 vs. 79.6 ± 21.6 ; $p = 0.008$), general health (61.0 ± 12.0 vs. 57.8 ± 13.1 ; $p = 0.014$), mental health (50.4 ± 16.9 vs. 46.7 ± 18.3 ; $p = 0.038$), and emotional role functioning (61.3 ± 41.7 vs. 47.8 ± 40.9 ; $p = 0.001$). Finally, residents enrolled in laboratory specialties demonstrated statistically significantly higher scores across all SF-36 subscales compared to residents enrolled in medical and surgical specialties ($p \leq 0.003$) [Table 3].

Table 2: Reliability and mean scores for each quality of life subscale* among postgraduate medical residents enrolled at the Oman Medical Specialty Board, Muscat, Oman (N = 425)

Subscale	Cronbach's alpha	Mean score \pm SD
Physical functioning	0.913	81.7 ± 20.4
Role functioning/physical	0.808	50.4 ± 39.4
Role functioning/emotional	0.797	52.6 ± 41.7
Energy/fatigue	0.797	61.7 ± 18.4
Social functioning	0.810	58.4 ± 20.8
Bodily pain	0.774	63.8 ± 20.1
General health	0.520	58.8 ± 12.8
Mental health	-	48.0 ± 17.9

*Self-reported by the participants using an English version of the validated 36-Item Short Form Health Survey.⁸

Table 3: Associations between quality of life* and sociodemographic characteristics among postgraduate medical residents enrolled at the Oman Medical Specialty Board, Muscat, Oman (N = 425)

Characteristic	QOL subscale, mean score \pm SD							
	Physical functioning	Role functioning/ physical	Role functioning/ emotional	Energy/ fatigue	Social functioning	Bodily pain	General health	Mental health
Gender								
Male	86.4 ± 19.2	60.8 ± 39.2	69.1 ± 38.6	67.9 ± 17.5	65.0 ± 19.6	69.0 ± 19.2	60.8 ± 12.9	50.7 ± 18.2
Female	79.5 ± 20.5	45.4 ± 38.5	44.8 ± 40.8	58.8 ± 18.0	55.2 ± 20.6	61.3 ± 19.9	57.9 ± 12.0	46.7 ± 17.6
<i>p</i> value	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**
Residency level								
Junior	81.9 ± 19.5	52.1 ± 39.8	52.8 ± 41.9	60.7 ± 19.0	57.9 ± 21.0	63.5 ± 20.2	58.4 ± 12.4	47.8 ± 17.6
Senior	81.5 ± 21.2	48.8 ± 38.9	52.6 ± 41.5	62.8 ± 17.0	58.9 ± 19.0	63.8 ± 19.7	59.2 ± 13.0	48.1 ± 18.2
<i>p</i> value	0.850	0.385	0.974	0.246	0.615	0.893	0.523	0.866
Specialty								
Medical	80.6 ± 21.0	47.7 ± 38.9	49.9 ± 41.8	60.4 ± 18.5	57.0 ± 21.0	62.3 ± 20.1	58.7 ± 13.1	48.0 ± 18.4
Surgical	80.5 ± 19.0	49.2 ± 40.5	49.4 ± 41.7	60.5 ± 18.1	57.3 ± 19.0	63.2 ± 20.0	56.9 ± 11.4	44.1 ± 16.1
Laboratory	93.7 ± 13.1	76.4 ± 31.9	83.3 ± 24.9	75.2 ± 10.0	72.7 ± 12.0	77.4 ± 14.3	65.4 ± 10.2	58.0 ± 13.3
<i>p</i> value	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**	0.003**	0.001**
Marital status								

Single	85.1 ± 18.0	61.6 ± 38.5	61.3 ± 41.7	64.0 ± 20.4	61.1 ± 21.6	67.4 ± 20.0	61.0 ± 12.0	50.4 ± 16.9
Married	79.6 ± 21.6	44.4 ± 38.4	47.8 ± 40.9	60.3 ± 17.1	56.8 ± 20.3	61.6 ± 19.8	57.8 ± 13.1	46.7 ± 18.3
<i>p</i> value	0.008**	0.001**	0.001**	0.063	0.042**	0.005**	0.014**	0.038**

SD = standard deviation.

*Self-reported by the participants using an English version of the validated 36-Item Short Form Health Survey.⁸

**Statistically significant at $p \leq 0.05$.

Discussion

The current study sought to assess the QOL of Omani postgraduate medical residents. Overall, gender, specialty, and marital status were the main factors found to influence QOL in the cohort. In particular, gender differences in all QOL subscales were revealed, with male residents scoring statistically significantly higher than female residents in all dimensions. These findings are consistent with those reported by other studies in Italy and the United States.^{14,15} However, gender-related differences in the current study were larger than those observed in Greece.¹⁶ These findings appear to indicate that female medical residents have lower QOL than their male counterparts, although the extent of this disparity remains unclear. According to a previous study, female physicians have a 1.6-times greater risk of reporting burnout compared with male physicians, with the odds of burnout increasing by 12–15% for each additional 5 hours worked per week over 40 hours.¹⁷ This greater burden may be linked to additional nonprofessional responsibilities, such as childcare.^{18,19} Indeed, outside of the healthcare field, Jenkinson *et al.* reported that women of working age have poorer SF-36 scores than men in all general health dimensions.²⁰

There is some evidence to show that women generally report poorer QOL compared to men, regardless of profession or age group.^{11,20,21} Researchers have postulated that this may be related to the influence of gender on decision-making as well as subjective perceptions of health, thereby potentially indicating different ‘benchmarks’ for QOL according to gender.²² Others have suggested that lower QOL among female participants may be due to cross-cultural norms and societal expectations resulting in lower social status, limited income potential, and additional barriers to healthcare access compared to men.^{22,23} However, according to data collected from four nationally representative surveys, certain indicators of socioeconomic status were found to be only partly responsible for gender differences in health-related QOL.²⁴ Given the fact that the majority of healthcare practitioners globally are female, as reflected in the distribution of the current cohort, the considerable discrepancy in QOL between male and female residents is concerning.²⁵ Further research is therefore recommended in order to identify factors responsible for this discrepancy and to help inform additional measures to improve QOL among female postgraduate residents.

The findings of the present study also revealed several other important concerns. In particular, laboratory residents reported statistically significantly better QOL in all SF-36 subscales compared to surgical and medical residents, implying the existence of QOL inequalities in various specialties in the healthcare sector. According to a systematic review and meta-analysis, number of hours worked per week may represent a statistically significant predictor of burnout, decreased career satisfaction, and poorer QOL in surgical residents.²⁶ Additional research is necessary to determine whether number of hours worked plays a role in the QOL of postgraduate medical residents in Oman and how this relates to choice of specialty. Previous research has similarly demonstrated variations between healthcare workers in different roles in terms of physical functioning, physical role functioning, and bodily pain, although other researchers have reported no differences in general health, social functioning, emotional role functioning, or mental health.^{4,27} Finally, we noted that Omani residents’ perceptions of QOL differed depending on marital status, with single residents appearing to outperform their married counterparts in almost all QOL domains. These differences may be due to the additional domestic commitments of married individuals, which may cause greater stress.

Another finding of concern in the current study was the fact that the lowest score out of all QOL domains was for mental health (mean score: 48.0 ± 17.9). Program directors and the relevant authorities at OMSB should be alerted of the need to screen for features of common mental health disorders, such as depression and anxiety, which could adversely affect a resident’s health and increase the risk of accidents. In the United Arab Emirates, a multicenter study indicated that at least one symptom of burnout was evident in up to 70% of medical residents, with the prevalence of depression ranging from 6–22%, depending on specialty.²⁸ In Greece, researchers found that healthcare personnel

exhibited greater mental health impairment and statistically significantly lower SF-36 scores compared to other types of workers like teachers and municipality workers.²⁹ Similarly, another study showed that healthcare personnel are at increased risk of common mental disorders, mostly depression and anxiety.³⁰ We therefore recommend that additional screening and monitoring be implemented to detect mental health disorders and other associated health conditions among postgraduate medical residents in Oman. We also recommend additional follow-up research be conducted in order to compare differences in QOL post-training, as well as interview-guided qualitative research to provide more in-depth data to determine self-reported barriers to QOL among postgraduate residents of various specialities.

As previously mentioned, there is a need to safeguard and improve the mental health and wellbeing of postgraduate residents in order to ensure their ability to function effectively as future healthcare practitioners. Indeed, in order to meet the core competencies outlined by the Accreditation Council for Graduate Medical Education (ACGME), “the goal of any postgraduate medical training program should not merely be to prepare its trainees with medical knowledge and skills to function as independent physicians, but also equip them with the necessary tools to maintain habits of lifelong learning and personal well-being”.^{31,32} Specifically, the ACGME updated their Common Program Requirements to reflect the importance of physician self-care and wellbeing, both with regards to the role that such aspects play in meeting the core competency of ‘professionalism’, as well as in reducing the frequency of burnout and depression.³² To this end, a variety of interventions have been proposed to help improve the mental health and QOL of postgraduate residents and prevent burnout in this population, including ensuring the availability of residency-integrated support services as well as implementing voluntary wellness and resilience programs designed to promote regular exercise, a healthy diet, healthy coping/stress management mechanisms, and good sleep hygiene.^{31,33,34} Future researchers should consider designing and testing the effectiveness of such programs among OMSB residents to determine their feasibility in this setting and their impact on QOL.

In terms of strengths, to the best of the authors’ knowledge, this is the first study of QOL among a large sample of Omani postgraduate medical residents. However, a limitation of this research was that while the cross-sectional design allowed results to be interpreted as associations, it did not allow for determination of causality. Future researchers will need to conduct longitudinal studies to produce broad-ranging results in order to improve the validity of these findings. Moreover, there is some uncertainty as to the appropriateness of applying certain dimensions of HRQOL, such as bodily pain, among non-patient groups who may be presumed to be healthy.

Conclusions

Specialization, gender, and marital status were factors found to statistically significantly influence self-perceptions of QOL among a large cohort of postgraduate medical residents in Oman. In particular, male residents, unmarried residents, and those enrolled in laboratory specialties demonstrated statistically significantly better scores for the majority of QOL domains compared to their respective counterparts. These findings may help to inform the implementation of additional, supportive measures to improve QOL discrepancies and health inequalities among postgraduate medical residents.

Authors’ Contributions

NW, RK, and MH conceived of the research idea and conducted the literature review. NW, under the supervision of RK and MH, designed the research methodology. NW was involved in the data collection and data entry. NW, RK, and MH analyzed and interpreted the results. NW was a major contributor in writing the manuscript in consultation with RK and MH. RK and MH were the research supervisors who guided NW throughout the project. All authors approved the final version of the manuscript.

Acknowledgement

We would like to thank Dr Sachin Jose of the Oman Medical Specialty Board, Muscat, Oman, for their invaluable help with the statistics.

Declaration of Conflicting Interests

The authors declare no conflicts of interest.

Funding

No funding was received for this project.

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