

# Assessment of quality of life among medical interns in Saudi Arabia

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## Abstract

**Background:** Internship is a long journey to explore many specialties. No study has been performed in Saudi Arabia to determine the health-related quality of life (HQQOL) of medical interns.

**Objectives:** to assess the HQQOL of medicals interns in KSA and the relation between HRQOL and participants' characteristics.

**Methods:** A cross-sectional study was done on 150 medical interns and the WHO quality of life questionnaire based on a brief version of the World Health Organization Quality of Life Instrument as the study tool. It contains 24 items of satisfaction that are divided into four domains: Physical health, psychological health, social relationships and environmental health.

**Results:** 39.3% and 24.7% of the participants were satisfied and very satisfied with their health respectively. Females had a significantly higher score of Domain 1 (Physical health) compared to males, while married participants had a significantly higher score of Domain 2 (Psychological health). Single participants had a significantly higher score of Domain 4 (Environmental health) and a non-significant relationship was found between domain 4 and domain 3 and other participants' characters. A

significant negative correlation was found between overall WHOQOL-BREF instrument scores, Domain 2, Domain 3 and Domain 4 and participants' age. Females and married participants had a significantly higher score of satisfaction with their health.

**Conclusion:** As the lowest scores in this study were for the Domain of social relationships and environmental health, there is a need to provide support of medical interns to cope with factors influencing their QOL through more assessment and training sessions performed by specialists.

**Key words:** assessment, quality, life, WHOQOL-BREF, interns, Saudi Arabia

## Introduction

During medical education, students are subjected to the pressure of their curriculum and having an expectation to gain a successful medical career and to cope with the future uncertainties regarding medical practice and its associated employment. After completing the course of medical education, medical students will spend an internship year which is 12 months of rotations between the major specialties (1).

Internship is a long journey to explore many specialties and to apply knowledge and skills which were taught in medical school to equip them for good practice. Moreover, it is an opportunity for new graduates to interpret their knowledge in the clinical field, making interns more familiar with the job description and to narrow the gap between medical school and real job practices (2).

The World Health Organization defines quality of life (QOL) as, "an individual's perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards, and concerns" (3).

Internship is a much more stressful year, with more commitments and responsibilities for medical interns, working long hours and on call duties which are similar to those experienced by senior doctors in the same rotation. This puts medical interns under mental stress and sleep deprivation which were not experienced by them at medical school (4). Many studies have shown that depression, sleep deprivation and mental overload decreases quality of life among medical interns which will impact the quality of care (1).

In the Kingdom of Saudi Arabia (KSA), a study was done in 2018 to assess the quality of life-based on WHO-QOL-BREF protocol among medical students studying in Riyadh, Saudi Arabia.

The study found that students staying with family had a higher overall QOL score than those living and scores according to different academic years were significantly different in the environmental health domain. The study concluded that the medical students were found to have a decreased quality of life (5). Another study was done in 2019 to assess the effect of gender, educational level, and academic performance on their QOL, where the WHOQOL-BREF instrument was used. The environmental domain had, and high achievers showed, lower psychological health, while poor academic performance was associated with better psychological health and social relationship QOL scores (6).

A careful literature search has found that no study has been done to assess the health-related quality of life (HQOL) of medical interns during their medical training in Saudi Arabia. So, this study aimed to assess the health-related quality of life of medical interns in KSA and the relation between HRQOL and participants' characteristics.

## Methods

**Study Setting and Population:** Medical interns of Taif medical College, Taif University, from the year 2016 – 2020.

**Study Design and time:** a cross-sectional study was conducted to fulfill the objectives of the study. from February to March 2020.

**Sample size estimation:** The sample size formula used is as follows

$$n = Z^2pq/d^2$$

n = minimum sample size

Z = standard normal deviation set at 95% confidence limit = 1.96

p = number of medical student in internship year

q = 1p (complementary probability)

D = margin of error = 5% =0.05

Prevalence of clinical procedures that required informed consent used in this study is 0.67 (67%), therefore P = 0.67

$$q = 1 - 0.67 = 0.33$$

$$n = (1.96)^2 \times 0.67 \times 0.33 / (0.05)^2 = 339.72$$

So, the minimum sample size is 340 medical interns.

**Sampling method:** A simple random sampling was done until the required sample size was achieved.

The inclusion criteria were male and female medical interns of medical college of Taif University from the year 2016-2020. And the exclusion criteria were under graduated medical Students and medical interns outside the time (2016-2020).

**Data collection tools:** A predesigned questionnaire that included items on the participants' characteristics was used. A version of the WHO quality of life questionnaire based on a brief version of the World Health Organization Quality of Life Instrument was the study tool (7). This instrument is derived from the WHOQOL 100. The WHOQOL BREF questionnaire and contains two items from the Overall QOL and General Health and 24 items of satisfaction divided into four domains: Physical health with 7 items (DOM1), psychological health with 6 items (DOM2), social relationships with 3 items (DOM3) and environmental health with 8 items (DOM4). Five hundred and thirty-five Neyshabur health care staff filled out the Iranian version of the WHOQOL BREF questionnaire. Each item is rated on a 5 point Likert scale. Each item of the WHOQOL BREF is scored from 1 to 5 on a response scale. Raw domain scores for the WHOQOL were transformed to a 0-100 score according to guidelines (8). Domain scores are scaled in a positive direction (i.e., higher scores denote higher QOL). The mean score of items within each domain is used to calculate the domain score. After the scores were computed, they were transformed linearly to a 0-100 scale (9,10,11).

**Ethical considerations:** This study was approved by the institutional ethical committee of Taif University, KSA.

All medical interns were informed about the purpose of the study and informed written and verbal consent was taken.

**Statistical analysis:** Data were analyzed using (SPSS) version 24. Qualitative data was expressed as numbers and percentages. Quantitative data was expressed as mean and standard deviation (Mean  $\pm$  SD), where Mann-Whitney and Kruskal Wallis tests were applied for non-parametric variables. Correlation analysis using the Spearman's test was done, and a p-value of  $<0.05$  was considered as statistically significant.

## Results

Table 1 shows that the mean age of the participants was  $24.43 \pm 0.85$  years, 60.7% were males, 90.7% were single, and 76.7% had an urban residence. Most of the participants (83.3%) graduated in 2020.

Figure 1 shows that 33.3% and 49.5% of the participants rate their quality of life as very good and good respectively. Figure 2 shows that 39.3% and 24.7% of the participants were satisfied and very satisfied with their health respectively.

Table 2 shows that the mean scores of Domain 1, 2, 3 and 4 were  $62.69 \pm 16.92$ ,  $68.69 \pm 14.16$ ,  $42.24 \pm 10.18$  and  $55.65 \pm 20.24$  respectively. And the mean scores of participants' rating of their quality of life and satisfaction with their health were  $4.13 \pm 0.76$  and  $3.73 \pm 1.01$  respectively.

Table 3 shows that females had a significantly higher score of Domain 1 (Physical health) compared to males ( $66.19 \pm 15.91$  vs  $57.28 \pm 17.13$ ) ( $p < 0.05$ ). While married participants had a significantly higher score of Domain 2 (Psychological health) compared to participants with other marital status ( $p < 0.05$ ). On the other hand, a non-significant relationship was found between domain 1 and 2 according to other participants' characteristics ( $p > 0.05$ ).

Table 4 shows that single participants had a significantly higher score of Domain 4 (Environmental health) compared to participants with other marital status ( $p < 0.05$ ). A non-significant relationship was found between domain 4 and other participants' characteristics ( $p > 0.05$ ). A non-significant relationship was found between domain 3 and all participants' characters ( $p > 0.05$ ).

Figure 3 shows that a significant negative correlation was found between WHOQOL-BREF instrument scores and participants' age ( $r = -0.249$ ,  $p\text{-value} = 0.002$ ). Table 5 shows that participants who graduated in 2019 had a significantly higher score when rating their quality of life ( $p < 0.05$ ) while female and married participants had a significantly higher score of satisfaction with their health ( $p < 0.05$ ).

Table 6 shows that a significant negative correlation was found between participants' age and Domain 2 (Psychological health), Domain 3 (Social relationships) and Domain 4 (Environmental health) of the WHOQOL-BREF instrument ( $p\text{-value} < 0.05$ ). On the other hand, a non-significant correlation was found between the participants' age and score of Domain 1 (Physical health), rating of participants' quality of life score and satisfaction with their health score ( $p > 0.05$ ).

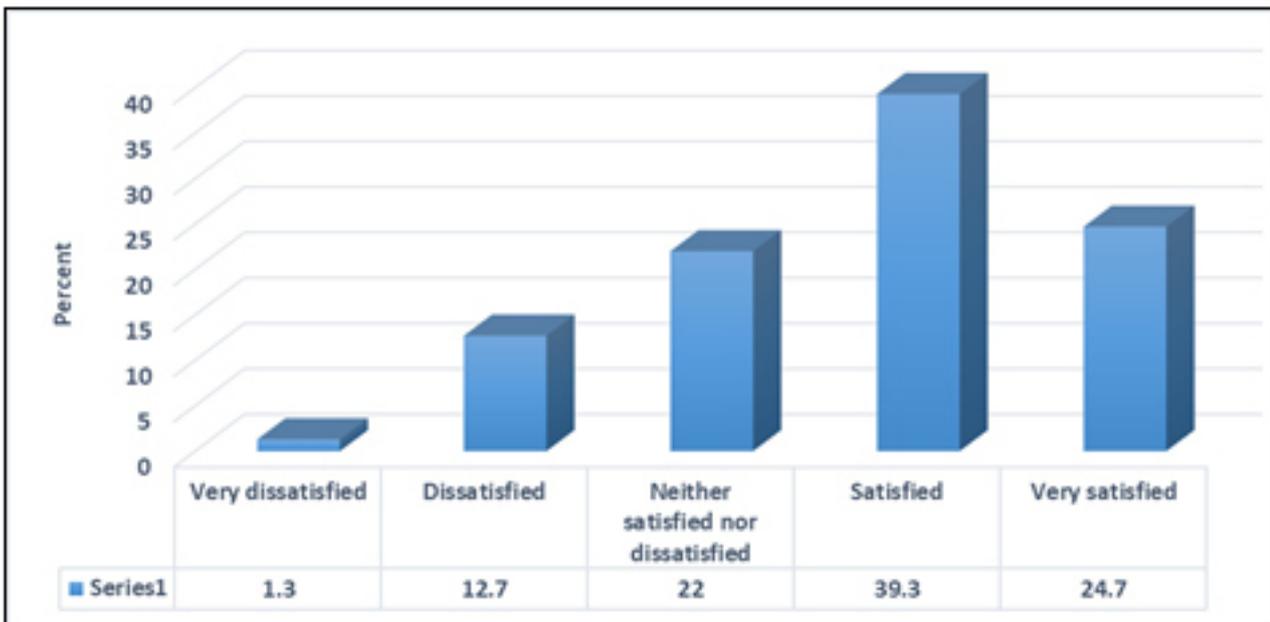
**Table 1. Distribution of the participants according to their characteristics (No.=150)**

| Variable            | No. (%)          |
|---------------------|------------------|
| Age (mean $\pm$ SD) | $24.43 \pm 0.85$ |
| Gender              |                  |
| Female              | 59 (39.3)        |
| Male                | 91 (60.7)        |
| Marital status      |                  |
| divorced            | 3 (2)            |
| married             | 11 (7.3)         |
| single              | 136 (90.7)       |
| Year of graduation  |                  |
| 2018                | 1 (0.7)          |
| 2019                | 24 (16)          |
| 2020                | 125 (83.3)       |
| Residence           |                  |
| Rural               | 35 (23.3)        |
| Urban               | 115 (76.7)       |

Figure 1. Percentage distribution of the participants according to their response to “How would you rate your quality of life?”



Figure 2. Percentage distribution of the participants according to their response to “How satisfied are you with your health?”



**Table 2. Distribution of the participants according to the mean scores of the four domains of the WHOQOL-BREF instrument and mean score of participants' rating of their quality of life and satisfaction with their health**

| Variable                                | (mean $\pm$ SD)   |
|---|-------------------|
| Domain 1 (Physical health)              | 62.69 $\pm$ 16.92 |
| Domain 2 (Psychological health)         | 68.69 $\pm$ 14.16 |
| Domain 3 (Social relationships)         | 42.24 $\pm$ 10.18 |
| Domain 4 (Environmental health)         | 55.65 $\pm$ 20.24 |
| Rating of participants' quality of life | 4.13 $\pm$ 0.76   |
| Satisfaction with their health          | 3.73 $\pm$ 1.01   |

**Table 3. Relationship between mean scores of Domains 1 and 2 and participants' characteristics**

| Variable           | Domain 1 (Physical health) | Test  | p-value | Domain 2 (Psychological health) | Test  | p-value |
|--------------------|----------------------------|-------|---------|---------------------------------|-------|---------|
| Gender             |                            |       |         |                                 |       |         |
| Female             | 66.19 $\pm$ 15.91          | 3.17* | 0.001   | 69.49 $\pm$ 15.05               | 1.11* | 0.2631  |
| Male               | 57.28 $\pm$ 17.13          |       |         | 67.45 $\pm$ 12.7                |       |         |
| Marital status     |                            |       |         |                                 |       |         |
| divorced           | 52 $\pm$ 0.0001            | 2**   | 0.146   | 44 $\pm$ 0.0001                 | 2**   | 0.02    |
| married            | 56.36 $\pm$ 12.54          |       |         | 70.18 $\pm$ 9.18                |       |         |
| single             | 63.44 $\pm$ 17.26          |       |         | 69.11 $\pm$ 14.17               |       |         |
| year of graduation |                            |       |         |                                 |       |         |
| 2018               | 48 $\pm$ 0.0001            | 2**   | 0.425   | 52 $\pm$ 0.0001                 | 2**   | 0.319   |
| 2019               | 65.16 $\pm$ 15.8           |       |         | 66.33 $\pm$ 14.91               |       |         |
| 2020               | 62.33 $\pm$ 17.16          |       |         | 69.28 $\pm$ 14.01               |       |         |
| Residence          |                            |       |         |                                 |       |         |
| Rural              | 63.2 $\pm$ 17.24           | 0.1*  | 0.917   | 65.25 $\pm$ 16.16               | 1.17* | 0.242   |
| Urban              | 62.53 $\pm$ 16.89          |       |         | 69.73 $\pm$ 13.4                |       |         |

N.B.: \*Mann-Whitney test

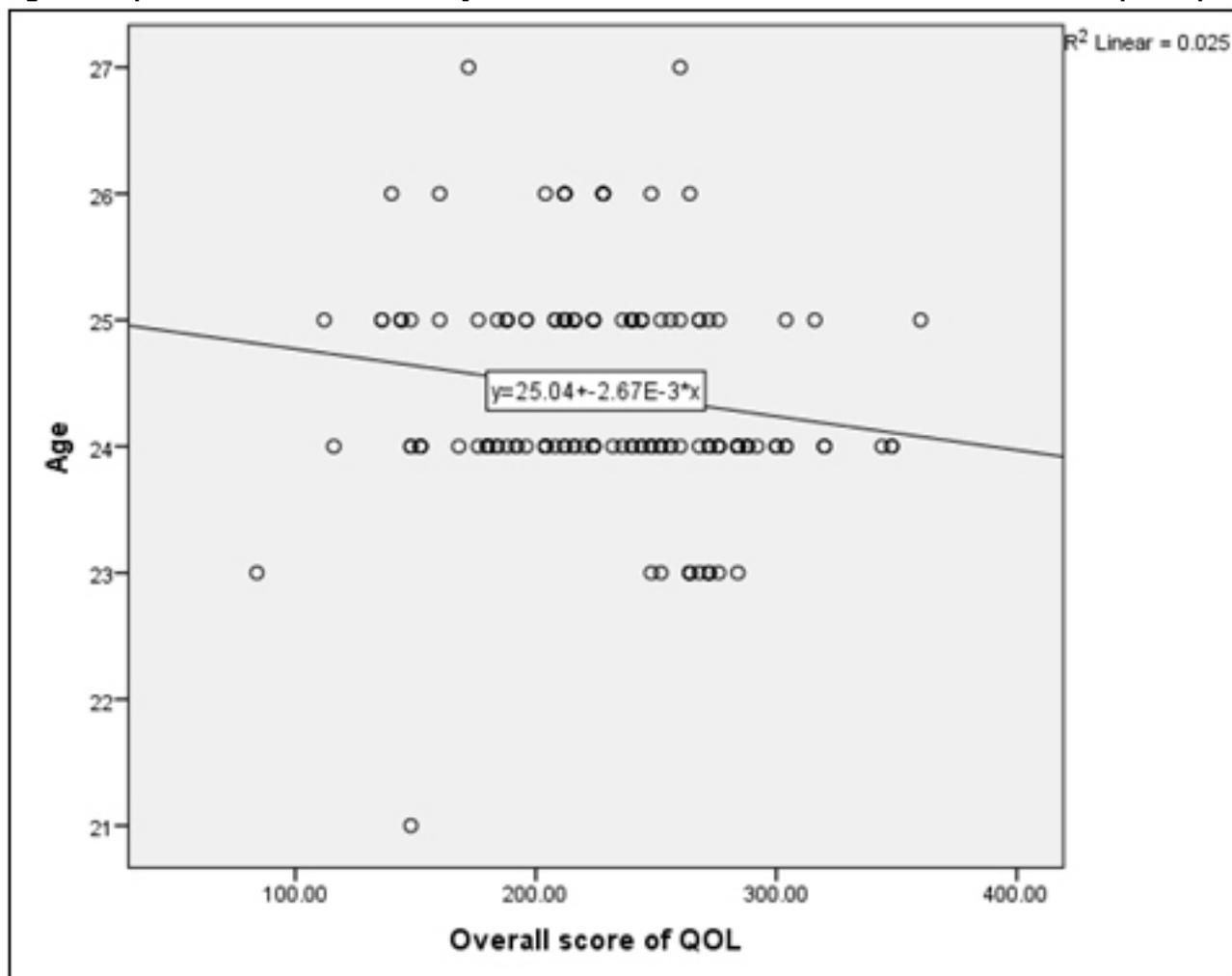
\*\*Kruskal Wallis test

Table 4. Relationship between mean scores of Domains 3 and 4 and participants' characteristics

| Variable           | Domain 3<br>(Social relationships) | Test  | p-value | Domain 4<br>(Environmental health) | Test  | p-value |
|--------------------|------------------------------------|-------|---------|------------------------------------|-------|---------|
| Gender             |                                    |       |         |                                    |       |         |
| Female             | 42.94 ± 10.71                      | 1.33* | 0.183   | 57.31 ± 21.2                       | 1.42* | 0.153   |
| Male               | 41.15 ± 9.3                        |       |         | 53.08 ± 18.56                      |       |         |
| Marital status     |                                    |       |         |                                    |       |         |
| divorced           | 28 ± 0.0001                        | 2**   | 0.041   | 20 ± 0.0001                        | 2**   | 0.01    |
| married            | 40.72 ± 9.6                        |       |         | 49.81 ± 14.79                      |       |         |
| single             | 42.67 ± 11.14                      |       |         | 56.91 ± 20.09                      |       |         |
| year of graduation |                                    |       |         |                                    |       |         |
| 2018               | 40 ± 0.0001                        | 2**   | 0.868   | 20 ± 0.0001                        | 2**   | 0.299   |
| 2019               | 41.33 ± 10.12                      |       |         | 54.83 ± 21.86                      |       |         |
| 2020               | 42.43 ± 10.27                      |       |         | 56.09 ± 19.83                      |       |         |
| Residence          |                                    |       |         |                                    |       |         |
| Rural              | 41.82 ± 11.28                      | 0.17* | 0.865   | 48.68 ± 23.47                      | 1.86* | 0.063   |
| Urban              | 42.36 ± 9.88                       |       |         | 57.77 ± 18.76                      |       |         |

N.B.: \*Mann-Whitney test      \*\*Kruskal Wallis test

Figure 3. Spearman's correlation analysis between WHOQOL-BREF instrument scores and participants' age



( $r = -0.249$ ,  $p\text{-value} = 0.002$ )

**Table 5. Relationship between mean scores of participants' rating of their quality of life and satisfaction with their health and their characteristics**

| Variable           | Rating of participants' quality of life | Test  | p-value | Satisfaction with their health | Test  | p-value |
|--------------------|---|-------|---------|--------------------------------|-------|---------|
| Gender             |   |       |         |                                |       |         |
| Female             | 4.21 ± 0.76                             | 1.61* | 0.106   | 3.92 ± 0.88                    | 2.71* | 0.007   |
| Male               | 4.02 ± 0.75                             |       |         | 3.44 ± 1.13                    |       |         |
| Marital status     |   |       |         |                                |       |         |
| divorced           | 5 ± 0.0001                              | 2**   | 0.063   | 2 ± 0.0001                     | 2**   | 0.017   |
| married            | 4 ± 0.44                                |       |         | 3.55 ± 0.68                    |       |         |
| single             | 4.13 ± 0.78                             |       |         | 3.79 ± 1.01                    |       |         |
| Year of graduation |   |       |         |                                |       |         |
| 2018               | 3 ± 0.0001                              | 2**   | 0.046   | 3 ± 0.0001                     | 2**   | 0.629   |
| 2019               | 4.42 ± 0.65                             |       |         | 3.79 ± 1.02                    |       |         |
| 2020               | 4.09 ± 0.77                             |       |         | 3.73 ± 1.01                    |       |         |
| Residence          |   |       |         |                                |       |         |
| Rural              | 3.97 ± 0.82                             | 1.34* | 0.178   | 3.86 ± 1.08                    | 1.02* | 0.305   |
| Urban              | 4.18 ± 0.74                             |       |         | 3.70 ± 0.99                    |       |         |

N.B.: \*Mann-Whitney test      \*\*Kruskal Wallis test

**Table 6. Spearman's correlation analysis between participants' age and mean scores of the four domains of the WHOQOL-BREF instrument and mean score of participants' rating of their quality of life and satisfaction with their health**

| Variable                                | Age   |         |
|---|-------|---------|
|   | r     | p-value |
| Domain1 (Physical health)               | -0.12 | 0.123   |
| Domain2 (Psychological health)          | -0.19 | 0.017   |
| Domain3 (Social relationships)          | -0.32 | < 0.001 |
| Domain4 (Environmental health)          | -0.19 | 0.015   |
| Rating of participants' quality of life | -0.02 | 0.792   |
| Satisfaction with their health          | -0.15 | 0.064   |

## Discussion

The main objective of this study was to assess the HRQOL of medical interns. The result from the survey of 150 medical intern doctors at Taif university, KSA did not support the expected hypothesis which is that the internship year affects negatively the QOL among medical intern doctors. The findings showed that 33.3% and 49.5% of the participants rate their QOL as very good and good respectively. Similarly, in another Saudi study conducted on medical students, 33.6% of the students described their QOL as "very good", 39.7% as "good", and only 2.1% felt it was "very poor" (6). Also, a study done on dental students found that students rated their QOL between very good and good (12).

The highest domain score was for Domain 2 (Psychological health) in this study. A previous study found that the environmental domain had the highest mean score, followed by the psychological health domain (12). Another study that included the medical profession found that the

highest and the lowest mean scores of WHOQOL-BREF domains were found for physical and environmental health domains respectively (13).

A study done in Pakistan revealed the same different results where the highest reported mean score was that of the environmental domain and the psychological health domain had the lowest score (14). This disparity can be explained by several factors, such as Saudi Arabia's stable extrinsic climate, both politically and economically, and a well-balanced cohesive society promoting the psychological well-being of students compared to Pakistan's intermittently eruptive background.

In this study, the highest mean scores were found for psychological domain and the lowest was found for social relationships. Different results were found in a previously mentioned study done on dental students, where the mean scores were lowest for the psychological domain and were highest for the physical health domain (12). Previous studies suggested different results, where some

impairment of student's emotional stability occurs in the phase of medical training when students make their first contact with patients and may have intense emotional experiences involving feelings such as anxiety, insecurity, and guilt (15,16).

This work found a significant negative correlation between WHOQOL-BREF instrument scores and participants' age, and between participants' age and Domain 2 (Psychological health), Domain 3 (Social relationships) and Domain 4 (Environmental health) of the WHOQOL-BREF instrument. In contrast, a previous study done on medical students found that the psychological domain of the first-year participants was significantly better than that of fourth-year participants (12).

This work illustrated that single participants had a significant higher score of Domain 4 (Environmental health) compared to participants with other marital status. Different results were revealed from a previous Saudi study which stated that medical students living with their family had a better score of Domain 2 (psychological health (5)).

In this study females and married participants had a significantly higher score of physical health (Domain 1), while a non-significant relationship was found between Domains 2, 3 and 4 and other participants' characteristics.

In a previous Saudi study, no correlation was found between the gender of medical students and their QOL across all domains (6). In some studies, males had higher physical health scores compared to females (10, 14, 17, 18), while males showed better psychological health than females in other studies (10,14). In addition, one Brazilian study found that female students had lower scores in most of the Domains (19). This finding could show that there is no real qualitative difference in Saudi Arabia despite social and cultural norms that place variations on the ways of living of males and females.

### Limitations

The limited application of the study on Taif university medical interns can affect the generalization of the findings. Also, most of the sample was taken from 2020 graduates. So, these limitations make it difficult to be representative of all other universities in Saudi Arabia.

### Conclusion

This study found that 39.3% and 24.7% of the participants were satisfied and very satisfied with their health respectively. Females had a significantly higher score of Domain 1 (Physical health) compared to males, while married participants had a significantly higher score of Domain 2 (Psychological health) compared to participants with other marital status. A non-significant relationship was found between Domain 1 and 2 according to other participants' characteristics. Single participants had a significantly higher score of Domain 4 (Environmental health) and a non-significant relationship was found

between Domain 4 and Domain 3 and other participants' characteristics. A significantly negative correlation was found between overall WHOQOL-BREF instrument scores, Domain 2 (Psychological health), Domain 3 (Social relationships) and Domain 4 (Environmental health) and participants' age. Participants who graduated in 2019 had a significantly higher score when rating their quality of life; females and married participants had a significantly higher score of satisfaction with their health. As the lowest scores in this study were for the Domain of social relationships and environmental health, there is a need to provide support to medical interns to cope with factors influencing their QOL through more assessment and training sessions done by specialists.

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