INTRODUCTION

Health professionals (HPs) play a fundamental and vital role in improving access and quality healthcare for a population.[1] They expressively provide essential healthcare services that uphold good health status and prevent illness to individuals and communities. They involve in both pharmacological and nonpharmacological management of a disease for their patients.[2-4] HPs play several professional roles to improve the overall well-being of their patients and a population.[2,3,5] From the paramedic staff who responds to an emergency call to the lab assistants who perform and verify the results of a medical test, every HP works to find the cause of a patient’s condition and for the betterment of their disease clinical state.[3,4,6-8]

According to the Alma-Ata declaration by the World Health Organization (WHO), primary health care (PHC) services and facilities should be accessible to every individual and their families worldwide.[7-9] While achieving the goal of PHC such as the provision of basic healthcare facilities and fulfilling the healthcare needs, the quality of life (QoL) of HPs could be compromised and affect their health status and professional performance.[8-11] QoL is a multidimensional aspect that can be used to assess the general well-being of individuals and societies.[12] Health-related quality of life (HRQoL) represents the health state of an individual and a society that primarily focuses on all aspects of physical and mental health and its impact on QoL.[12]

Previous studies have reported that a decrease in HRQoL among HPs can indirectly affect their...
professional practice that may result in undesirable patient outcomes such as medication errors, dispensing errors, or even inappropriate prescribing patterns.[13-15] A study conducted in Taiwan found that 47% of the healthcare staff, especially nurses and pharmacists, had a minor psychiatric or depressive disorder.[16] In contrast, in Greece, nurses reported a high level of job dissatisfaction with an averagely low health state.[17] Another study among Spanish healthcare providers found that physicians had better perceived health in the dimensions of the physical component than nurses, especially in the mental attributes.[18] On the other hand, in Saudi Arabia, only 50% of the nurses working in a famous public hospital were satisfied with their general health.[19] This decreased HRQoL among HPs can lead to decreased work capacity, the unnecessary burden of work, negative therapeutic outcomes, and unwanted conflicts with peers.[16,20,21] Skevington et al.[22] detected a positive relationship between the WHOQOL-BREF domains and overall HRQoL among different age groups Colby et al. (2018)[23] also found an association between HRQoL and medical students' work burnout. However, these studies were limited to physicians and medical students rather than all HPs.

The WHOQOL-BREF, like the majority of HRQoL tools, measures different health states including the health, psychological, social relationships, and environmental domains.[24] Similarly, socio-demographic and socioeconomic changes, varied professional responsibilities, and diverse treatment outcomes can also affect HRQoL of HPs.[18-24] To date, HRQoL among HPs in Pakistan has not been explored. This study was specially designed to fill this gap and the need for published literature about overall HRQoL among HPs in Pakistan. This study also determined the overall HRQoL of HPs and its relationship with some socio-demographic variables such as gender, age, marital and working status, educational level, practice sites, and nature of the job.

**Materials and Methods**

**Study design, setting, and sampling**

A cross-sectional study was conducted among HPs in Pakistan. Though there is no ethical approval requirement for nonclinical and observational studies in Pakistan to date,[25] this study was performed in accordance with the international clinical guidelines and to the principles of the Helsinki Declaration, version 2013.[26] All aspects of the study protocol including information on individuals’ backgrounds were strictly confidential and only used for research purposes. A stratified convenience sampling method was used to get the sample size of the study, where a written consent form along with the research tools was given to all available participants in the specific study location in Pakistan. Participants were also assured of the confidentiality of their personal information and properly guided about their right to withdraw from the study at any time. Those who were unable to give consent for any reason were excluded from the study. Participants aged 18 years and older and familiar with Urdu (the national language of Pakistan) were included in the study, and those from other countries (immigrants without Pakistani background) and pregnant women were excluded from the study.

HRQoL was assessed using the WHO’s “WHOQOL-BREF” research tool. This 26-item HRQoL self-administered tool is cross-culturally sensitive that has shown good to excellent psychometric properties.[24] In the WHOQOL-BREF tool’s 26 questions, 2 questions assess the perception of QoL and overall health satisfaction status, whereas the other 24 questions comprise the physical, psychological, social, and environmental domains. The WHOQOL-BREF tool’s 26 questions explain how respondents attribute to each aspect of their life and how problematic or satisfactory they perceive them to be for their total HRQoL.[24] Demographic characteristics measured were gender, marital status, educational level, job nature, experience, practicing area and attending CPDs or CMEs. The score of each question for each domain was used to obtain as summarized domain score, and finally, all the scores were transformed linearly according to the provided guidelines of the WHOQOL-BREF questionnaire (0–100 scale). Higher scores indicate higher levels of HRQoL and vice versa. The prevalidated WHOQOL-BREF questionnaire was obtained from the World Health Organization, Quality of Life Group.[24] This study was novel among its types as there was no study evident so far which measured HRQoL among HPs using the WHOQOL-BREF in Pakistan.

**Statistical analysis**

Descriptive statistics were used to evaluate the demographic and personal characteristics of the participants. Percentages and frequencies were used for the categorical variables, while means and standard deviations were calculated for the continuous variables. To check the normality distribution of the data, skewness and kurtosis of the data were plotted.[27] Furthermore, normality confirmation was assessed using the Shapiro–Wilk test and Q–Q plots in Statistical Package for the Social Sciences (SPSS). Independent samples t-test and Spearman’s correlation coefficient were used to evaluate correlations (agreements)
between demographics and domains and to know the differences in overall HRQoL and its domains. Data from the questionnaire were analyzed using Statistical Package for the Social Sciences (SPSS) version 24.0, SPSS Inc., Chicago, IL, USA.

**RESULTS**

The demographic characteristics of the study’s participants are presented in Table 1. There were a total of 336 participants, with more males than females \((n = 268, 79.8\%\) and \(n = 68, 20.2\%,\) respectively). Two hundred and sixty (77.4%) had a bachelor’s level of education and 76 (22.6%) had a post-bachelor’s level education. 113 (33.6%) participants were public and 223 (66.4%) were private sector employees. Three hundred and fourteen (93.5%) participants had never attended continuous professional development (CPD) or continuous medical education (CME) short courses but 22 attended.

Table 2 depicts the participants’ responses against each item of the questionnaire.

Table 3 presents the mean HRQoL scores for all four domains of the WHOQOL-BREF among the participants. The mean score for the physical health domain was 65.18 ± 13.01. Mean scores for the psychological, social relationships, and environmental domains were 68.92 ± 15.53, 70.30 ± 15.90, and 65.10 ± 15.17, respectively.

Table 4 presents the correlations between the four different domains of the WHOQOL-BREF. Based on the observed findings, statistically significant positive correlations were noted between all four domains of WHOQOL-BREF. There was also a statistically significant positive correlation between the first two WHOQOL-BREF questions, that is, QoL and overall health satisfaction status, and scores were obtained from different domains. The strength of correlation between QoL and overall health status was moderately strong (Spearman’s \(r >0.5\)), whereas four domains showed moderately strong and strong correlations (Spearman’s \(r\) ranged from 0.438 to 0.754).

Table 5 presents correlation coefficients and the bivariate relationship between demographic variables and the mean domain scores. Statistically significant differences were observed between the scores for marital status and the social and environmental domains \((P = 0.002\) and 0.027, respectively). Respondents had significantly higher HRQoL scores in the social domain (72.12 ±
has been an emergent concept and an important treatment outcome parameter in assessing individuals’ general health state and monitoring treatment efficacy and overall disease management.[18-21]

Researchers across the globe have explored different aspects of HRQoL among HPs, but there is a lack of evidence in the literature from Pakistan. Frequent access to medication use, annoyance, a variety of treatment regimens, and positive and negative psychological impacts are among the major concerns affecting HRQoL among HPs and sometimes in patients also.[28,29] To the best of our knowledge, to date, this is the first-ever study conducted in Pakistan regarding HRQoL of HPs using the WHOQOL-BREF, thus there are no studies evident as a cross-reference to this study.

In the current study, among the four domains of WHOQOL-BREF, the highest mean score (satisfaction level) was found in the social domain (70.30 ± 15.90), possibly due to social circle satisfactions, body appearance, lesser negative feelings, more positive feelings, a greater level of self-esteem, religious freedom, spiritual applicability, personal beliefs, better memory, less dependence on self-pocket expenses, and acquiring better healthcare needs. Moreover, the lowest mean score (satisfaction level) was observed for the environment domain (65.10 ± 15.17), indicating compromised activities of daily living, overall law and order situations, less mobility and more discomfort, fatigue, and less work capacity. Conversely, better mean scores were observed for the psychological and social domains (68.92 ± 15.53 and 70.30 ± 15.90, respectively) as compared with physical and environmental domains, showing acceptable individual relationships, greater social support and satisfactory sexual activities, average financial means, average healthcare facilities, and availability of cheaper but convenient transportation.[30,31]

### Table 3: Mean HRQoL scores for four domains of WHOQOL-BREF

| Domains                  | HRQoL scores (mean ± SD) |
|--------------------------|--------------------------|
| Physical domain          | 65.18 ± 13.01            |
| Psychological domain     | 68.92 ± 15.53            |
| Social relationship domain | 70.30 ± 15.90           |
| Environment domain       | 65.10 ± 15.17            |

### Table 4: Correlation coefficients in overall health and domains of WHOQOL-BREF

| Correlations | QoL       | Overall health | Physical domain | Psychological domain | Social domain | Environmental domain |
|--------------|-----------|----------------|-----------------|----------------------|--------------|----------------------|
| Correlation (r) | 1         |                |                 |                      |              |                      |
| Sig. (two-tailed) |           |                |                 |                      |              |                      |
| Overall health Correlation (r) | 0.596 | 1              |                 |                      |              |                      |
| Sig. (two-tailed) | <0.001   |                |                 |                      |              |                      |
| Physical domain Correlation (r) | 0.438 | 0.485          | 1               |                      |              |                      |
| Sig. (two-tailed) | <0.001   | <0.001         |                 |                      |              |                      |
| Psychological domain Correlation (r) | 0.569 | 0.592          | 0.685           | 1                    |              |                      |
| Sig. (two-tailed) | <0.001   | <0.001         | <0.001          | <0.001               |              |                      |
| Social domain Correlation (r) | 0.439 | 0.461          | 0.503           | 0.623                | 1            |                      |
| Sig. (two-tailed) | <0.001   | <0.001         | <0.001          | <0.001               | <0.001       | <0.001               |
| Environmental domain Correlation (r) | 0.438 | 0.461          | 0.754           | 0.688                | 0.548        | 1                    |
| Sig. (two-tailed) | <0.001   | <0.001         | <0.001          | <0.001               | <0.001       | <0.001               |
It is also a common thought that highly educated HPs have a superior understanding of their patients’ diseased state, drug doses, treatment regimens, and overall disease management. Higher education level often advances self-interest and involvement in improving general health states, which is a key

| Variable | QoL | Health satisfaction | Physical | Psychological | Social | Environmental |
|----------|-----|---------------------|----------|---------------|--------|---------------|
| Gender   |     |                     |          |               |        |               |
| Male     | 4.20 ± 0.69 | 4.01 ± 0.67 | 65.41 ± 13.09 | 68.97 ± 13.50 | 70.37 ± 16.09 | 65.61 ± 15.00 |
| Female   | 4.23 ± 0.64 | 4.00 ± 0.69 | 64.26 ± 12.77 | 68.73 ± 14.73 | 70.00 ± 15.21 | 63.07 ± 15.76 |
| P value  | 0.778 | 0.839               | 0.516    | 0.910         | 0.862   | 0.218         |
| Marital status |     |                     |          |               |        |               |
| Single/separated | 4.30 ± 0.61 | 4.06 ± 0.62 | 65.24 ± 11.99 | 69.36 ± 13.66 | 66.49 ± 16.35 | 62.45 ± 15.45 |
| Married   | 4.17 ± 0.71 | 3.99 ± 0.69 | 65.14 ± 13.50 | 68.71 ± 16.37 | 72.12 ± 15.38 | 66.37 ± 14.90 |
| P value   | 0.102 | 0.354               | 0.949    | 0.719         | 0.002   | 0.027         |
| Highest education |     |                     |          |               |        |               |
| Bachelors | 4.21 ± 0.73 | 3.98 ± 0.72 | 64.26 ± 13.23 | 68.47 ± 16.26 | 69.79 ± 17.17 | 63.81 ± 15.73 |
| Masters   | 4.21 ± 0.49 | 4.10 ± 0.47 | 68.30 ± 11.78 | 70.46 ± 12.67 | 72.03 ± 10.33 | 69.51 ± 12.14 |
| P value   | 0.957 | 0.185               | 0.017    | 0.328         | 0.279   | 0.004         |
| Job nature |     |                     |          |               |        |               |
| Public    | 4.37 ± 0.55 | 4.07 ± 0.65 | 68.81 ± 12.40 | 72.80 ± 16.67 | 75.16 ± 13.66 | 70.19 ± 13.70 |
| Private   | 4.13 ± 0.73 | 3.98 ± 0.68 | 63.34 ± 12.96 | 66.95 ± 14.56 | 67.83 ± 16.40 | 65.22 ± 15.25 |
| P value   | 0.003 | 0.212               | 0.000    | 0.001         | 0.000   | 0.000         |
| Experience (years) |     |                     |          |               |        |               |
| <10       | 4.20 ± 0.78 | 3.98 ± 0.72 | 64.35 ± 12.38 | 67.96 ± 16.52 | 67.24 ± 17.39 | 63.99 ± 15.67 |
| >10       | 4.23 ± 0.47 | 4.06 ± 0.57 | 66.58 ± 13.96 | 70.54 ± 13.60 | 75.46 ± 11.31 | 66.97 ± 14.13 |
| P value   | 0.717 | 0.306               | 0.129    | 0.142         | 0.000   | 0.081         |
| Practicing area |     |                     |          |               |        |               |
| Rural     | 4.26 ± 0.73 | 4.06 ± 0.75 | 66.34 ± 12.75 | 69.76 ± 17.42 | 71.88 ± 15.56 | 68.41 ± 15.48 |
| Urban     | 4.14 ± 0.60 | 3.94 ± 0.84 | 63.56 ± 13.24 | 67.75 ± 12.40 | 68.11 ± 16.16 | 60.51 ± 13.49 |
| P value   | 0.101 | 0.099               | 0.053    | 0.242         | 0.032   | 0.000         |
| Attending CPD/CME short courses |     |                     |          |               |        |               |
| Yes       | 4.40 ± 0.66 | 4.09 ± 0.42 | 64.31 ± 15.88 | 78.68 ± 09.46 | 81.04 ± 15.54 | 69.27 ± 18.93 |
| No        | 4.20 ± 0.68 | 4.00 ± 0.68 | 65.24 ± 12.82 | 68.24 ± 15.65 | 69.54 ± 15.67 | 64.80 ± 14.86 |
| P value   | 0.170 | 0.586               | 0.748    | 0.002         | 0.001   | 0.183         |

$P < 0.05$

| Variables | Correlations | QoL | Overall health | Physical domain | Psychological domain | Social domain | Environment domain |
|-----------|--------------|-----|---------------|-----------------|---------------------|---------------|-------------------|
| Gender    | Correlation ($r$) | 0.012 | −0.012 | −0.032 | −0.012 | 0.001 | −0.067 |
|           | P value      | 0.826 | 0.830 | 0.554 | 0.829 | 0.988 | 0.221 |
| Marital status | Correlation ($r$) | −0.085 | −0.044 | 0.029 | −0.003 | 0.171 | 0.123 |
|           | P value      | 0.119 | 0.424 | 0.593 | 0.955 | 0.002 | 0.024 |
| Highest education | Correlation ($r$) | −0.045 | 0.053 | 0.127 | 0.031 | 0.026 | 0.158 |
|           | P value      | 0.410 | 0.332 | 0.020 | 0.569 | 0.634 | 0.004 |
| Job nature | Correlation ($r$) | −0.152 | −0.078 | −0.203 | −0.231 | −0.225 | −0.245 |
|           | P value      | 0.005 | 0.154 | 0.000 | 0.000 | 0.000 | 0.000 |
| Experience | Correlation ($r$) | −0.040 | 0.056 | 0.092 | 0.022 | 0.223 | 0.103 |
|           | P value      | 0.466 | 0.304 | 0.094 | 0.684 | 0.000 | 0.059 |
| Practicing area | Correlation ($r$) | −0.130 | −0.118 | −0.105 | −0.062 | −0.124 | −0.262 |
|           | P value      | 0.017 | 0.030 | 0.054 | 0.258 | 0.023 | 0.000 |
| Attending CPD/CME short courses | Correlation ($r$) | −0.083 | −0.019 | −0.012 | −0.187 | −0.182 | −0.083 |
|           | P value      | 0.130 | 0.732 | 0.820 | 0.001 | 0.001 | 0.130 |

$P < 0.05$
determinant of self-satisfaction. In addition, to provide pharmacotherapy, they are more likely to acclimatize their lifestyle and adopt preventive measures, resulting in improvement in overall HRQoL of their patients.\cite{34,35} In both developed and developing countries across the globe, more educated individuals reported to live longer and enjoy better health conditions and status compared to the less educated.\cite{30,35} In our study, highly trained HPs had a better HRQoL that may show their better understanding of disease states, which helps them better comply with the provided guidelines when prescribing medications.\cite{26,36}

Differences were observed between HPs practicing in rural and urban areas in all four domains of the WHOQOL-BREF, but statistically significant differences were found in the social and environmental domains. This finding is particularly important because HPs have demanding job responsibilities especially when they are working in a more competitive environment and the stressed environment, i.e., urban sites than the less demanding and less stressed practice environments, i.e., in far-rural areas. This may be the reason why those HPs who worked in rural areas have comparatively high scores than those working in urban areas. It was also observed that HPs who are single have statistically significant low scores in social and environmental domains when compared to the married HPs. This result validated previous concerns reported by Malik\cite{37} who found that single healthcare professionals experience higher stress levels. Improving the work environment, promoting and presenting healthy activities, and understanding complex social settings may positively improve work performances of such HPs.\cite{38}

The results of this study determined that the social aspect of HRQoL exhibited the highest scores, while the environment domain was the lowest among HPs. Promoting healthy activities and offering CPD or CME short courses inside the healthcare facility might provide an important protective factor for an increased HRQoL among HPs.

In Pakistan, healthcare issues arise every day and the treatment of chronic diseases is limited due to the country’s poor financial, economic, and social conditions.\cite{39} Undeniably, poverty is the supreme reason for poor healthcare facilities. In previous studies, authors have linked healthcare resources and facilities with poverty and have substantively established a strong causal link.\cite{40} The most recent data regarding the Pakistani population indicated that Pakistan has reached a record high populace of 208.8 million, which makes it the fifth-largest country in the world. To manage numerous diseases and address healthcare problems, HPs need to be extremely competent, trustworthy, highly educated, who have access to the latest healthcare facilities, and most importantly, they should build a consistent and esteem relationship with their patients.\cite{41} In Pakistan, due to several reasons, the public usually avoids using state-provided healthcare facilities because of its unreliability and compromised quality.\cite{42} A recent study conducted among Pakistani public hospitals suggested that the unpleasant attitude and behavior of top administration, lack of competence among HPs, and fewer healthcare facilities often deter the Pakistani public from using public hospitals.\cite{43}

On the other hand, Pakistan is currently facing some thwarting challenges in terms of economic, social, and political domains, but lack of these resources does not mean that the entire nation is dying just because of poverty or lack of healthcare facilities. Indeed, the quality healthcare in Pakistan has a high price tag and good quality healthcare facilities are mostly available to the elite class in private healthcare set-ups, but these days much better facilities are being offered in public hospitals and clinics where patients are somehow more satisfied than the past.\cite{44} There are numerous challenges in improving the healthcare system in Pakistan such as the healthcare sector corruption and a growing national population. Both provincial and federal governments are trying their level best to overcome such challenges and to provide optimal healthcare facilities to the public. Definitely, lack of advanced healthcare facilities and less financial resources do have their impact on the overall HRQoL of HPs as well as their patients; but from the results of our study, HRQoL among HPs in Pakistan was not that bad as were the rumors. Moreover, in Pakistan, currently, various policies are also underway for the implementation of Minimum Service Delivery Standards for the provision of safe medicines, better patient care, improving cleanliness and hygiene conditions of the hospitals and clinics, infection control strategies, and provision of the required healthcare staff, which will further improve the HRQoL of the HPs together with their patients.

**Conclusions**

This study confirmed that the WHOQOL-BREF research tool is a reliable instrument to measure HRQoL among HPs in Pakistan. From the obtained data, it is evident that HPs in Pakistan enjoy overall moderately good HRQoL, although in some of the predictors they showed relatively moderate to low HRQoL scores. These lower HRQoL scores are may be due to diverse education levels, nonattendance of the CME short courses, increased living costs, inability to work in a particular environment, and less availability or enjoyment of social activities. The finding of this study is an imperative
contribution in literature for understanding the overall HRQoL among HPs in Pakistan. This study is also novel and first of its kind because few studies are conducted in various countries to measure HRQoL of HPs but nothing is reported in Pakistan using the WHOQOL-BREF. Because most of the information evident in the literature regarding the HRQoL of HPs from other countries, whose extrapolation to the Pakistani society is limited by cultural, religious, and socioeconomic differences and the way the healthcare system is developed and managed in Pakistan.

Limitations of the study
As the majority of the HRQoL questionnaires, the WHOQOL-BREF is also a self-reported study tool. In this scenario, data reporting biases may have acted as confounding factors in our study. Another limitation noted for our study that there was no control group to make applicable comparisons for the findings obtained. Despite some limitations, the findings of this study shed significant light on the overall status of HRQoL among HPs in Pakistan. The findings of this study could help physicians, pharmacists, allied healthcare staff, and the family members of the HPs to better understand the physical, psychological, social, and environmental problems they usually face. This, in return, will definitely help and encourage them to provide more physical, psychological, and social support to their HPs.

Acknowledgement
The author would like to thank the Deanship of Scientific Research at Prince Sattam Bin Abdulaziz University, Al-Kharj, Saudi Arabia for the support in the publication of this manuscript. The author would also like to express their sincere gratitude to all of the participants involved in this study in any capacity.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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