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Quality of life among women working in health care services in Tabuk city, Saudi Arabia

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ABSTRACT

Objective: Working in health care centres is associated with a high level of stress that increases the risk of low quality of life (QoL). This study was conducted among women working in health care services to explore their QoL and its association with socio-demographic and work-related factors. *Methods:* A web-based, questionnaire was delivered to women working at the ministry of health facilities in Tabuk, Saudi Arabia. The questionnaire consisted of two sections. The first section inquired about the socio-demographic data of the respondents and the second section consisted of the World Health Organization Quality of Life-BREF (WHOQOL-BREF) assessment instrument. *Results:* The response rate was 50.5%. Nurses accounted for 48.5% of the respondents, while doctors and technicians represented 26.7% and 20.8%, respectively. The social relations domain showed the lowest mean score. Multivariate analysis showed that increasing the number of children was significantly associated with lower scores in all QoL domains. Having night shifts or on-calls negatively impacted the physical, psychological and environmental domains. Working for 12 hours negatively impacted the psychological, social relations and environmental domains. Being single and having a higher salary positively impacted the environmental domain. *Conclusions:* Several factors seem to affect the QoL of female healthcare workers. Some of the work-related factors can be modified to alleviate stress and improve the QoL, such as reducing the working hours and frequency of night shifts and improving the salary.

Keywords: Healthcare workers, Quality of life, WHOQOL-BREF, Saudi Arabia

1. INTRODUCTION

In recent years, the number of working women is steadily increasing in Saudi Arabia. These women are facing several challenges as they have their work duties besides their roles at home as wives and mothers. This can lead to stress that may affect the women's psychological well-being and their life quality (De-Sio et al., 2017; Badr et al., 2021; Louzado et al., 2021). This is especially true for women working in healthcare services, which are demanding jobs that require dedication, long working shifts as well as continuous updating of knowledge and training. In addition, dealing with

emergencies and critically ill patients impose stress and depression on healthcare workers, resulting in poor quality of life (QoL) (Bragard et al., 2015; Austin et al., 2017).

Several studies have assessed the work-related stress, burnout and QoL in healthcare workers, but these studies did not focus on the QoL of female healthcare workers. Most studies found on this subject were conducted outside our Arabic regions (Karanikola et al., 2015; De-Sio et al., 2017; Badr et al., 2021; Louzado et al., 2021) and there are no studies in our region that have discussed this aspect.

The WHO, (2020) defined 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". Reduction of the work quality can interfere with workers' productivity, resulting in increased stress and instability in the work institution (Zhao et al., 2013; Tomietto et al., 2015).

We conducted the current study among women working in healthcare services in Tabuk City, Saudi Arabia to explore their QoL and its association with socio-demographic and work-related factors, such as the marital status, educational level, professional position, working hours, night shifts and salary.

2. METHODS

Ethical considerations

The proposal of this study was approved by the Institutional Review Board, General Directorate of Health Affairs, Tabuk Region, Saudi Arabia (TU-077/020/061). Informed consents were obtained from the participants before being enrolled in the study. The participants' data were kept anonymous and confidentiality of the data was guaranteed.

Study design, settings and date

We conducted a cross-sectional survey study among women working in the ministry of health facilities in Tabuk City, Saudi Arabia. Tabuk city has a population of 910,030 according to 2017 census (General Authority for Statistics, 2017). The study was carried out between October 2022 and November 2022.

Eligibility criteria

The study included women of all ages and nationalities who were working in healthcare facilities belonging to the Ministry of Health in Tabuk city during the study period. The participants were recruited from those working at the Ministry of Health facilities in Tabuk city, including four governmental Hospitals (King Khalid General Hospital, King Fahad Specialist Hospital, Eradah Hospital for Mental Health and Maternity and Child's Hospital). In addition, participants were invited from all primary healthcare centres in Tabuk city that are under the administration of King Khalid General Hospital and King Fahad Specialist Hospital. We excluded female interns and students who were trainees in the study setting at the time of the survey.

Study tools

For data collection, a web-based, self-administered questionnaire was prepared. The questionnaire consisted of two sections. The first section inquired about the socio-demographic information of the respondents (i.e., age, nationality, academic degree, marital status, number of children and monthly income) as well as work conditions (i.e., position, work duration and night shifts). The second section included the WHO Quality of Life-BREF (WHOQOL-BREF) assessment instrument. The WHOQOL-BREF Instrument is a 26-item version adapted from the WHOQOL-100 assessment to provide a rapid evaluation of the health-related functions in four domains of health (social, psychological, physical and environment). The Arabic version of WHOQOL-BREF is available at the WHO site (World Health Organization, 2020). The validity of the Arabic version of WHOQOL-BREF has been assessed with a reported Cronbach's alpha coefficient of 0.7 or above (Dalky et al., 2017).

Data collection technique

The electronic questionnaire was distributed among women working in the study area through WhatsApp groups and emails after verbally informing the administration in each healthcare facility.

Outcomes

The primary outcome was the QoL in women working in health care services in Tabuk city in 2020. The secondary outcomes included factors that may impact the QoL, such as marital status, educational level, professional position, working hours, night shifts and salary.

Sample size calculation

The sampling frame was all women working in all government hospitals and primary health care centres belonging to the Ministry of Health in Tabuk city. The sample size was calculated with a confidence interval of 95%, a margin of error of 5% and assuming an average response for most of the questions of 50%. The calculated sample size was 400 women.

Statistical analysis

We analyzed the data using the Statistical Package for Social Sciences (IBM SPSS Statistics), version 26 for Windows (IBM Corp., Armonk, N.Y., USA). Categorical variables (e.g., age group, marital status) were summarized as counts and percentages. Numerical variables (e.g., the WHOQOL scores) were summarized as the mean and standard deviation (SD). Comparisons of the scores between the categories of the socio-demographic and work-related factors were performed using the independent sample T-test or ANOVA test as appropriate. We performed multiple linear regression analysis to assess the effect of significant factors from the univariate analysis on the scores of each domain of WHOQOL-BREF. A p-value<0.05 was chosen to denote statistical significance.

3. RESULTS

Out of 400 distributed questionnaires, 202 subjects agreed to participate and completed the questionnaire (response rate = 50.5%). Most respondents belonged to the age groups 25—34 years and 35—44 years (45.0% and 42.1%, respectively). Most respondents were Saudi (74.3%), while one-quarter came from different countries (25.7%). Half the respondents had a Bachelor's degree, 28.2% had a Diploma, 10.9% had a Masters' degree and only 8.4% had a PhD. Nurses accounted for 48.5% of the respondents, while doctors and technicians represented 26.7% and 20.8%, respectively. Four per cent of the respondents were dietitians, pharmacists and faculty staff members. Most respondents were married (20.8%), while nearly one-quarter were single. One-third of respondents had no children, whereas 28.7% had less than three children, 28.2% had 3—5 children and 8.4% had six children or more. The monthly income ranged between 11,000 and 19,000 SAR in most respondents (69.3%). The majority worked for 6—8 hours per day (97.5%). Less than half the respondents (48.0%) admitted having night shifts or on-calls (Table 1).

Table 1 Socio-demographic data of the respondents (total n = 202)

Socio-demographic data		N	%
Age	< 25 years	18	8.9%
	25—34 years	91	45.0%
	35—44 years	85	42.1%
	45—60 years	8	4.0%
Nationality	Non-Saudi	52	25.7%
	Saudi	150	74.3%
Academic degree	Bachelor	106	52.5%
	Diploma	57	28.2%
	Masters	22	10.9%
	PhD	17	8.4%
Position	Nurse	98	48.5%
	Doctor	54	26.7%
	Lab or radiological technician	42	20.8%
	Others (dietitians, pharmacists, faculty staff)	8	4.0%
Marital status	Married	132	65.3%
	Single	49	24.3%
	Divorced	18	8.9%
	Widow	3	1.5%
Number of	No children	70	34.7%

children	< 3 Children	58	28.7%
	3—5 Children	57	28.2%
	≥ 6 Children	17	8.4%
Monthly income	5,000—10,000 SAR	33	16.3%
	11,000—19,000 SAR	140	69.3%
	≥ 20,000 SAR	29	14.4%
Work duration	6—8 hours per day	197	97.5%
	12 hours per day	5	2.5%
Do you have night shifts or on-calls?	No	105	52.0%
	Yes	97	48.0%

As regards the responses of the participants to the questions of the WHOQOL tool, most responses tended to show above-average satisfaction. However, some questions showed lower mean ratings, including having enough energy for everyday life, accepting bodily appearance, having enough money for the individual's needs, as well as satisfaction with sleep, oneself, personal relations and sex life (Table 2). This was reflected in the descriptive statistics of the WHOQOL tool where social relations showed the lowest mean score compared to the physical, psychological and environmental domains (Figure 1).

Table 2 Responses of the respondents to the questions of the WHOQOL (total n = 202)

WHOQOL questions	Ratings of the answers to WHOQOL questions										Mean	SD
	1		2		3		4		5			
	N	%	N	%	N	%	N	%	N	%		
How would you rate your quality of life?	90	44.6	9	4.5	2	1.0	87	43.1	14	6.9	3	2
How satisfied are you with your health?	10	5.0	118	58.4	35	17.3	36	17.8	3	1.5	3	1
To what extent do you feel that physical pain prevents you from doing what you need to do?	9	4.5	11	5.4	67	33.2	79	39.1	36	17.8	4	1
How much do you need any medical treatment to function in your daily life?	7	3.5	12	5.9	68	33.7	77	38.1	38	18.8	4	1
How much do you enjoy life?	27	13.4	44	21.8	76	37.6	44	21.8	11	5.4	3	1
To what extent do you feel your life to be meaningful?	27	13.4	46	22.8	81	40.1	33	16.3	15	7.4	3	1
How well are you able to concentrate?	15	7.4	90	44.6	65	32.2	28	13.9	4	2.0	3	1
How safe do you feel in your daily life?	10	5.0	62	30.7	71	35.1	44	21.8	15	7.4	3	1
How healthy is your physical environment?	9	4.5	70	34.7	73	36.1	37	18.3	13	6.4	3	1
Do you have enough energy for everyday life?	15	7.4	108	53.5	61	30.2	14	6.9	4	2.0	2	1
Are you able to accept your bodily appearance?	20	9.9	94	46.5	65	32.2	19	9.4	4	2.0	2	1
Have you enough money to meet your needs?	16	7.9	97	48.0	67	33.2	21	10.4	1	0.5	2	1
How available to you is the information that you need in your day-to-day life?	16	7.9	75	37.1	82	40.6	25	12.4	4	2.0	3	1
To what extent do you have the opportunity for leisure activities?	19	9.4	77	38.1	82	40.6	24	11.9	0	0.0	3	1
How well are you able to get around?	11	5.4	80	39.6	83	41.1	22	10.9	6	3.0	3	1
How satisfied are you with your sleep?	80	39.6	96	47.5	18	8.9	7	3.5	1	0.5	2	1
How satisfied are you with your ability to perform your daily living activities?	67	33.2	94	46.5	25	12.4	14	6.9	2	1.0	2	1
How satisfied are you with your capacity for work?	42	20.8	95	47.0	42	20.8	20	9.9	3	1.5	2	1
How satisfied are you with yourself?	45	22.3	79	39.1	44	21.8	28	13.9	6	3.0	2	1
How satisfied are you with your personal relationships?	39	19.3	81	40.1	43	21.3	30	14.9	9	4.5	2	1

How satisfied are you with your sex life?	37	18.3	67	33.2	74	36.6	22	10.9	2	1.0	2	1
How satisfied are you with the support you get from your friends?	41	20.3	69	34.2	48	23.8	33	16.3	11	5.4	3	1
How satisfied are you with the conditions of your living place?	39	19.3	65	32.2	56	27.7	32	15.8	10	5.0	3	1
How satisfied are you with your access to health services?	40	19.8	69	34.2	51	25.2	31	15.3	11	5.4	3	1
How satisfied are you with transportation?	36	17.8	66	32.7	51	25.2	42	20.8	7	3.5	3	1
How often do you have negative feelings, such as blue mood, despair, anxiety, depression?	25	12.4	61	30.2	16	7.9	70	34.7	30	14.9	3	1

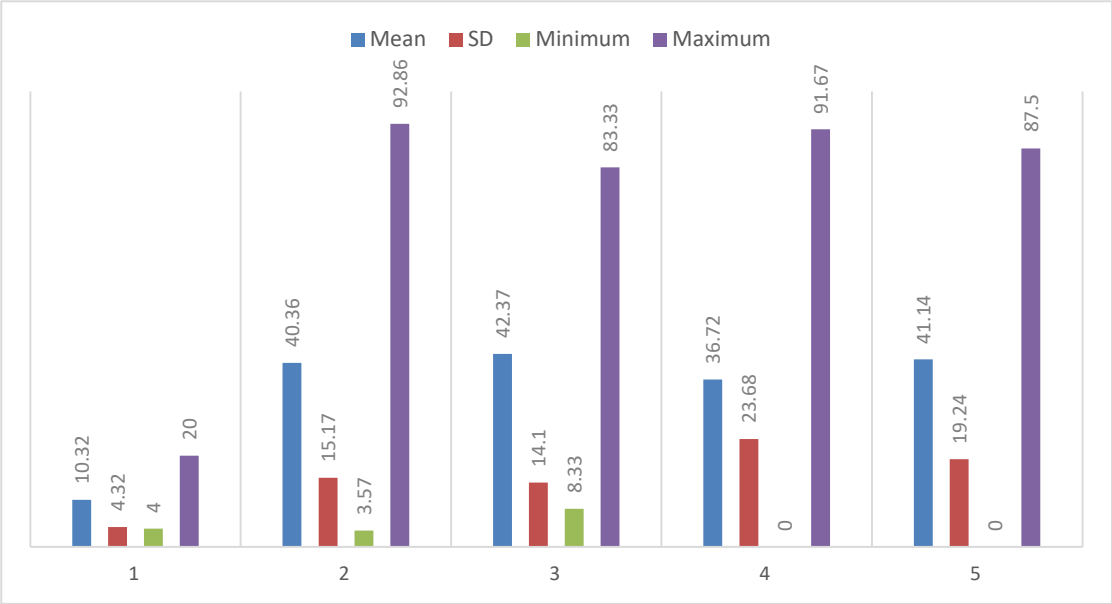

Figure 1 Descriptive statistics of the transformed scores of the WHOQOL tool (total n = 202)

1: Overall QOL and health; 2: Physical; 3: Psychological; 4: Social Relations; 5: Environment

Comparisons were carried out among the categories of the socio-demographic variables of the respondents regarding the scores of the WHOQOL tool and the score from the first two questions regarding the overall QOL and health. Age below 35 years had significantly higher scores in all domains and the overall QOL and health than those aged 35 years or older (all $p < 0.05$). Having a Saudi nationality did not seem to significantly affect any of the scores, except for the overall QOL and health score, which was higher in Saudis than non-Saudis ($p = 0.020$). The scores of all domains and overall QOL and health were significantly lower in participants with a Diploma degree, while they tended to be higher in those with a Masters and PhD compared to those with a Bachelor's degree (all $p < 0.05$). The scores of the physical ($p = 0.042$), social relations ($p = 0.044$) and environment ($p = 0.005$) domains were significantly higher in single respondents than in the divorced/widowed. Increasing the number of children resulted in a significant decrease in the mean scores of all domains (all $p < 0.05$). We noticed higher scores in the overall QOL and health ($p = 0.016$) as well as the psychological ($p = 0.020$) and environment ($p = 0.012$) domains in respondents with a monthly income ≥ 20,000 SAR. Workers for 6–8 hours per day showed significantly higher mean scores of the psychological ($p<0.001$), social relations ($p = 016$) and environment domains ($p = 0.028$). Significantly higher mean scores of the physical ($p = 0.002$), psychological ($p = 0.002$) and environment ($p = 0.017$) domains as well as overall QOL and health ($p<0.001$) were observed in respondents who did not have night shifts or on-calls (Table 3).

Multivariate analysis was performed to identify the factors that independently affect the QOL in each domain. The physical domain score significantly decreased with the increase in the number of children ($B = -4.244$, $p = 0.004$) and having night shifts or on-calls ($B = -10.097$, $p<0.001$). Likewise, the increase in the number of children ($B = -4.207$, $p <0.001$) and having night shifts or on-calls ($B = -8.009$, $p<0.001$), besides working for 12 hours per day ($B = -25.533$, $p <0.001$), resulted in a significant decrease of the psychological domain score (Table 4).

Table 3 The transformed scores of the WHOQOL domains among the categories of socio-demographic data of the respondents (total n = 202)

Socio-demographic data		N	Physical		Psychological		Social Relations		Environment		Overall QOL and health	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	< 35 years	109	42.50	13.18	44.15	13.23	39.91	21.61	45.61	18.07	11.21	4.26
	≥ 35 years	93	37.86	16.94	40.28	14.86	32.97	25.51	35.89	19.34	9.27	4.17
	p-value		0.030* a		0.051 a		0.038* a		<0.001* a		0.001*a	
Nationality	Non-Saudi	52	40.04	15.45	41.59	14.70	34.78	22.67	38.04	16.91	9.12	4.07
	Saudi	150	40.48	15.12	42.64	13.93	37.39	24.05	42.21	19.93	10.73	4.34
	p-value		0.859 a		0.644 a		0.494 a		0.179 a		0.020*a	
Academic degree	Bachelor	106	40.70	14.21	42.02	13.66	38.36	22.67	41.51	18.33	10.06	4.14
	Diploma	57	35.03	14.62	39.33	13.01	29.09	22.39	34.81	17.69	9.33	4.25
	Masters	22	47.56	16.44	48.86	18.24	43.94	25.35	47.87	20.63	12.55	4.10
	PhD	17	46.85	15.61	46.32	11.68	42.65	27.14	51.29	21.85	12.35	4.65
	p-value		0.001*b		0.032*b		0.022*b		0.003*b		0.004*b	
Position	Nurse	98	38.99	15.11	40.99	14.39	34.01	24.31	38.81	18.46	10.02	4.13
	Doctor	54	40.48	13.94	44.68	13.89	39.97	23.48	43.92	18.98	10.67	4.41
	Others	50	42.93	16.48	42.58	13.69	38.50	22.45	42.69	20.80	10.52	4.62
	p-value		0.329 b		0.303 b		0.277 b		0.236 b		0.631 b	
Marital status	Single	49	44.46	13.60	44.22	14.45	43.54	19.49	47.39	17.39	10.65	4.27
	Married	132	39.66	15.65	42.39	14.05	35.23	25.11	40.34	19.52	10.38	4.36
	Divorced/Widow	21	35.20	13.85	37.90	13.24	30.16	20.49	31.55	17.40	9.14	4.17
	p-value		0.042*b		0.229 b		0.044*b		0.005*b		0.393b	
Number of children	No children	70	44.23	13.49	44.88	13.81	42.26	21.34	47.81	17.78	11.51	4.23
	< 3 Children	58	40.70	15.44	42.60	13.94	38.51	26.25	41.27	20.42	10.34	4.53
	3—5 Children	57	37.91	16.49	41.08	15.05	33.63	23.36	36.68	18.82	9.58	4.17
	≥ 6 Children	17	31.51	11.59	35.54	10.32	18.14	12.92	28.12	10.88	7.76	2.82
	p-value		0.007*b		0.081b		0.001*b		<0.001*b		0.004*b	
Monthly income (SAR)	5,000—10,000	33	38.10	16.96	36.62	16.50	30.56	27.77	33.81	19.06	8.85	3.81
	11,000—19,000	140	39.92	14.80	42.95	13.80	37.26	22.29	41.38	18.54	10.31	4.31
	≥ 20,000	29	45.07	14.33	46.12	10.74	41.09	24.69	48.28	20.50	12.00	4.44
	p-value		0.161 b		0.020*b		0.193 b		0.012*b		0.016*b	
Work duration	6—8 hours per day	197	40.50	15.31	42.94	13.69	37.35	23.56	41.61	19.21	10.32	4.33
	12 hours per day	5	35.00	6.39	20.00	12.98	11.67	12.64	22.50	8.95	10.00	4.00
	p-value		0.425 a		<0.001*a		0.016*a		0.028*a		0.869 a	
Having night shifts or on-calls	No	105	43.47	15.18	45.32	13.92	37.78	24.19	44.23	19.01	11.71	4.26
	Yes	97	37.00	14.50	39.18	13.66	35.57	23.18	37.79	19.03	8.80	3.86
	p-value		0.002*a		0.002*a		0.509 a		0.017*a		<0.001*a	

N: Number; SD: Standard deviation; a: Independent samples T-test; b: One-way ANOVA test; * significant at p<0.05

Similar observations were found in the domain of social relations with the number of children (B = -6.111, p = 0.010) and work duration (B = -33.008, p = 0.002). As for the environment domain, single respondents had significantly higher scores (B = 12.151, p = 0.019) and the increase in monthly income was associated with a significant increase in the score (B = 6.570, p = 0.015). Meanwhile, the environment score was inversely related to the number of children (B = -6.685, p<0.001), working for 12 hours per day (B = -25.360, p = 0.001) and having night shifts or on-calls (B = -10.455, p<0.001). The overall QOL and health score significantly decreased with the increase in age (B = -1.145, p = 0.024) and the number of children (B = -1.404, <0.001) as well as having night shifts or on-calls (B = -3.822, p<0.001) (Table 4).

Table 4 Multiple linear regressions to assess factors significantly affecting the scores of the WHOQOL domains

Domain	Independent variables	B	SE	p-value	95% CI for B
Physical	Age	0.149	1.833	0.935	-3.465 to 3.763
	Academic degree	1.736	1.118	0.122	-0.468 to 3.940
	Married	2.756	3.360	0.413	-3.870 to 9.383
	Single	7.867	4.272	0.067	-0.557 to 16.291
	Number of children	-4.244	1.461	0.004*	-7.125 to -1.363
	Having night shifts or on-calls	-10.097	2.242	<0.001*	-14.519 to -5.676
Psychological	Age	-1.211	1.630	0.458	-4.425 to 2.003
	Academic degree	0.082	1.209	0.946	-2.302 to 2.466
	Number of children	-4.207	1.184	<0.001*	-6.543 to -1.871
	Monthly income	3.322	2.025	0.102	-0.670 to 7.315
	Work duration	-25.533	5.877	<0.001*	-37.123 to -13.944
	Having night shifts or on-calls	-8.009	1.966	<0.001*	-11.885 to -4.132
Social Relations	Age	-1.946	2.964	0.512	-7.792 to 3.900
	Academic degree	2.220	1.768	0.211	-1.267 to 5.707
	Married	5.309	5.381	0.325	-5.303 to 15.920
	Single	6.064	6.832	0.376	-7.410 to 19.538
	Number of children	-6.111	2.341	0.010*	-10.727 to -1.495
	Work duration	-33.008	10.383	0.002*	-53.485 to -12.531
Environment	Age	-2.037	2.208	0.357	-6.392 to 2.318
	Academic degree	0.547	1.610	0.734	-2.628 to 3.722
	Married	7.883	4.040	0.052	-0.086 to 15.852
	Single	12.151	5.117	0.019*	2.058 to 22.244
	Number of children	-6.685	1.745	<0.001*	-10.126 to -3.244
	Monthly income	6.570	2.683	0.015*	1.279 to 11.861
	Work duration	-25.360	7.725	0.001*	-40.596 to -10.124
	Having night shifts or on-calls	-10.455	2.690	<0.001*	-15.761 to -5.149
Overall QOL and health	Age	-1.145	0.502	0.024*	-2.136 to -0.154
	Nationality	-0.396	0.683	0.562	-1.743 to 0.950
	Academic degree	0.373	0.353	0.292	-0.323 to 1.069
	Number of children	-1.404	0.342	<0.001*	-2.079 to -0.729
	Monthly income	0.891	0.594	0.135	-0.281 to 2.062
	Having night shifts or on-calls	-3.822	0.594	<0.001*	-4.993 to -2.651

B: regression coefficient; CI: confidence interval; SE: standard error; * significant at p<0.05

4. DISCUSSION

The career of a healthcare practitioner can be highly challenging due to the work-related stress that is experienced while dealing with emergent situations and the sufferings of critically ill patients. This stress can negatively impact the QoL of the healthcare providers, particularly in the case of female practitioners as they perform their dual role as caregivers as well as wives and mothers. The present study assessed the QoL in women working in healthcare services in Tabuk City, Saudi Arabia and its association with socio-demographic and work-related factors. The principle of QOL represents a complex conceptual framework, which includes several dimensions that reflect the individual's perception of his life (Louzado et al., 2021).

We found that most responses of the participants showed above-average satisfaction with most questions. Meanwhile, the responses to some questions showed below-average mean ratings. The aspects with the least satisfaction were those of having enough energy for everyday life, accepting bodily appearance, having enough money for the individual's needs, as well as satisfaction with sleep, oneself, ability to do daily activities, work capacity, personal relations and sex life. These areas of least satisfaction were reflected in the scoring of the WHOQOL tool's domains. The lowest mean score was obtained in the domain of social relations, followed by the physical and environmental domains and the highest score was in the psychological domain. This partially agrees with Ahmad and Khan, (2018) who found that the domain of social relations had the lowest score in working

women, followed by the psychological, then the physical and environmental domains. The differences in the severity of affected domains in their study compared to the present study may be attributed to their inclusion of women working in various occupations not only in the healthcare sector. All their participants were married. Also, cultural variations may cause affection for one domain of QoL more than the others. We performed bivariate and multivariate analyses to identify factors that significantly impacted the QoL of female healthcare providers.

Older age – in the bivariate analysis – was significantly associated with lower scores of the physical, social relations and environmental domains besides the overall QoL and health. Older age of 35 years or above showed a marginally significantly lower score in the psychological domain. However, multivariate analysis showed that older age was an independent significant factor that inversely correlated with the overall QoL and health. This is anticipated as increasing age is likely to be associated with suffering from some diseases that impact the health status of the individuals besides the increased responsibilities that may make individuals choose lower scores for rating their QoL. This presumption is supported by previous studies that found an association between burnout and the older age of nurses (Sacco et al., 2015). Nevertheless, multivariate analysis for the WHOQOL-BREF in our study showed no significant impact of increasing age on the scores. Having a non-Saudi nationality seemed to significantly decrease the overall QoL and health in our respondents, but not the WHOQOL-BREF's domains. Meanwhile, adjusting for the confounders in multivariate analysis rendered the impact of nationality non-significant.

The academic degree showed significant association with all WHOQOL-BREF's domains on bivariate analysis, where Diploma had the lowest scores. This may be explained by the nature of this stage in medical education and training, as graduates do not have enough experience to deal with the stressful work and life events they have to face. The highest scores in all domains were observed in those with Master's and PhD degrees, which can also be explained by their higher experience in balancing their work and personal life demands. Such balance may be easier to achieve in those with postgraduate degrees because they may have work positions that impose less workload as they teach and supervise their junior assistants. Similarly, previous studies found that nurses with more than 10 years of experience had a better quality of work life (Akter et al., 2018; Kaddourah et al., 2018; Alharbi et al., 2019; Albougami et al., 2020). Nevertheless, academic degrees showed a lack of significant impact on the scores after adjusting for other factors in multivariate analysis, which may be explained that the significance in the bivariate analysis was caused by the effect of other significant factors as salary, which is expected to be lower in those with Diploma compared to Master's and PhD.

In bivariate analysis assessment of the impact of marital status on the QoL domains showed that single individuals have the highest scores while divorced and widows have the lowest scores (poorer QoL). These differences were significant in the physical, social relations and environmental domains. However, no significant impact on the scores was found when we adjusted for the other factors except in the environmental domain where single women had significantly higher scores. This contradicts the findings of an earlier study in Pakistan Iqbal, (2021) showing that single healthcare workers had lower QoL. In addition, Maqsood et al., (2021) in Saudi Arabia reported that married respondents were found to have better scores in three domains (physical, social and environmental).

The number of children and the scores of all QoL domains were inversely related in bivariate analysis. The multivariate analysis confirmed these findings, showing the number of children to be a significant and independent predictor of the QoL. This can be explained by the added stress brought by every new child coming into the family, along with the burdens of required care and the added monetary expenditure. In most Arab countries, women perform all the required care of the child and take the main responsibility for the upbringing and the welfare of the children. Mothers have to care for their children's physical needs as well as education, with little assistance from the fathers as society regards these tasks as basically feminine. In order to improve the QoL of female healthcare givers, help and support of the family are required. Also, the workplace may provide a suitable nursery for the workers' infants during their work shifts, so that the mothers can ensure the safety and provision of care to their young infants during their shifts.

There was a significant and positive association between increasing the monthly income and the scores of the psychological and environmental domains in bivariate analysis. Multivariate analysis showed a significant impact of monthly income on the environmental domain, but not on the psychological domain. This impact on the environment is anticipated as one question that assesses this domain is asking whether the respondent had enough money to meet her needs. Also, other questions assessing their domain were related to monetary means, such as the questions about having leisure activities, the condition of the living place and the transport. This indicates that increasing the salary of healthcare workers can positively impact their QoL. This partially agrees with the results of Badr et al., (2021) who found that the QoL increased steadily with increased salaries in the physical, psychological, social relations and environmental domains in sedentary workers of both sexes.

The current study revealed no significant differences among physicians, nurses or other workers in healthcare facilities. This was partially in line with Wu et al., (2011) who reported the lack of significant differences between female nurses and doctors in

scores of QoL except for the physical domain. Moreover, Maqsood et al., (2021) reported no differences between physicians and other healthcare workers of both sexes in QoL, except for the environment domain that was slightly higher in physicians.

Women working for 12 hours per day had significantly lower scores in the psychological, environmental and social relations domains, which were also found in multivariate analysis. This agrees with Maqsood et al., (2021) who found that extra working hours were associated with lower scores in the physical, psychological and social domains in healthcare workers of both sexes. Also, another study on Saudi nursing staff reported that long working hours represented a reason for dissatisfaction (Almalki et al., 2012). This could be attributed to the fatigue that would result from the long continuous work hours. Also, long working hours will leave less time for the workers to contact their social circle and relations outside the working place. This factor can be improved when the work institutions distribute the times of the shifts and avoid assigning long continuous working hours to healthcare workers. This is beneficial not only for the individual but also for the institution due to avoidance of medical errors that may occur due to fatigue.

Women who had night shifts or on-calls showed significantly lower scores in three domains, both on bivariate and multivariate analysis. Night shifts can significantly impact women's QoL, as working at night can interfere with their expected duties as wives and mothers. Moreover, these women will suffer from short sleeping hours as after finishing their night shifts, they would not be free to take enough rest if they have a house and children to attend to.

The present study had some limitations. The response rate was 50.5% and we do not have data to indicate the reasons underlying the response unwillingness. In addition, the survey did not assess the stress of work as women working in more stressful departments as the emergency room or intensive care unit may have poorer QoL than those who may be working in less stressful departments as the hospital laboratory or outpatient clinics. Further research should avoid these limitations and address other factors that may affect the QoL, such as the duration of expertise after graduation and having chronic illnesses.

5. CONCLUSIONS

Women working at healthcare facilities in Tabuk, Saudi Arabia have poor QoL in some respects. We identified several factors that seem to affect the QoL of female healthcare workers. Some of the work-related factors can be modified to alleviate stress and improve the QoL, such as reducing the working hours and the frequency of night shifts and improving salary.

Author contribution

The author confirms sole responsibility for the study conception and design, data collection, analysis and interpretation of results and manuscript preparation.

Ethical considerations

An ethical approval was obtained from the Institutional Review Board, General Directorate of Health Affairs, Tabuk Region, Saudi Arabia (TU-077/020/061).

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Conflict of interest

The author declares that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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