

# Health-related quality of life: SF-36 based random survey of adults of Peshawar city, Khyber Pakhtunkhwa, Pakistan

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**ABSTRACT**

**Introduction:** Health-related quality of life (HRQOL) is an individual's satisfaction or happiness with the dimensions of life mentioned above, in the context of being affected by or affecting the individual's health. There have been multiple standardized questionnaires developed to evaluate the HRQOL of people, and the 36-item Short Form Health Survey (SF-36) is one of them.

**Objective:** To assess the health-related quality of life of the general adult population of Peshawar city by use of the SF-36 survey form.

**Materials & methods:** A cross-sectional study was conducted in Peshawar city from March to May 2019. The sample comprised of 263 respondents aged 18 and above. Data were collected by systematic random sampling of households using the SF-36 survey form and analyzed using SPSS version 22.

**Results:** A total of 263 questionnaires were fully filled and valid. Of the 263, 66.9% were male (n=176) and 33.1 % were female (n=87). The age of the participants ranged from 18-70 years, with a mean age of  $30.5 \pm 11.3$  years. The domain value for SF at 67.78, followed closely by BP at 67.54, then MH at 62.69, PF at 61.27, GH at 60.50, VT at 62.69, RP at 57.03, and the lowest value was of RE at 56.52.

**Conclusion:** The study revealed that the HRQOL of the population of Peshawar city was less as compared to other international studies. It showed males had a better HRQOL in all domains except one. The HRQOL also declined with increasing age.

**Keywords:** Quality of Life; Adult; Mental Health; Health Surveys

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**INTRODUCTION**

The definition of health has changed over the decades along with the advancements in healthcare techniques and technology. The current definition of health provided by the constitution of the World Health Organization is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.<sup>1</sup>

Health-related quality of life (HRQOL) is an individual's satisfaction or happiness with the dimensions of life mentioned above, in the context of being affected by or affecting the individual's health. It is a broad-ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment.<sup>2</sup> There have been multiple standardized questionnaires developed to evaluate the HRQOL of people, and the 36-item Short Form Health Survey (SF-36) is one of them. SF-36 was developed from the Medical Outcomes Study or RAND Health Insurance Experiment.<sup>3</sup> It is a shorter version of the original 149-question form and is more accurate than the previously designed SF-20 version.<sup>4</sup> It is a generic tool that can be used to measure the HRQOL of the general population, and not necessarily those specific to any age, disease, or treatment group.<sup>5</sup> It consists of 36 questions that represent eight health concepts, which are physical functioning (PF), bodily pain (BP), role limitations due to physical health problems (RP), role limitations due to personal or emotional problems (RE), emotional well-being or mental health (MH), social functioning (SF), energy/fatigue or vitality (VT), and general health perceptions (GH). It also includes a single item that provides an indication of perceived change in health.

The SF-36 survey has been used across the world and its validity in different countries and populations has been established in various studies.<sup>6-9</sup> In Pakistan, there have been multiple studies done using this questionnaire, but they have mostly been focused on groups having a particular disease or affliction,<sup>10-12</sup> rather than the

general population of an area. Since SF-36 can be extremely helpful in keeping track of the health of a particular population, the spread of diseases, and outcome of clinical practices and treatments, we can use it to analyze the health of the general public, and proper medical treatments and healthcare can be put forth in order to improve the overall quality of life the population.

The objective of this study was to assess the health-related quality of life of the general adult population of Peshawar city. There has been no similar study done previously on this population.

**MATERIALS & METHODS**

A cross-sectional survey was performed in Peshawar city from March 2019 to May 2019. The sample included people who were aged 18 and above, were residents of Peshawar city and were willing to participate in the study. Data were collected through systematic random sampling of households.

Ethical approval was taken from Research Ethics Committee (REC) of Rehman Medical Institute (RMI). The study participants were explained the purpose of the study and informed consent was taken from the participants.

Every unit from the populous city of Peshawar was included during the data collection procedure. The city of Peshawar was divided into two broad units namely Andar Shehar (the walled city) and Gulbahar Area.

Sample size was calculated as 266 through the WHO formula, using  $z=1.96$ ,  $p=0.50$ , and  $e=0.06$ .

Two teams with equal number of forms were created for data collection. A random number of 5 came through lottery and then every 5th household in every street (Mohalla) was used as a sample. Of the 266 forms filled in this way, 3 forms were discarded as they were incomplete.

The RAND 36-Item Short Form Survey (SF-36) was used as the evaluation tool. It consisted of the 36 standard questions, and demographic items were added to the beginning of the questionnaire, including name, sex, age, existing comorbidities, medications taken, exercise status and smoking status.

When the questionnaires were filled and collected, an aggregate percentage score was produced for each of the eight domains measured by SF-36. It was done via a two-step procedure.

Firstly, each of the question responses is related to a different pre-coded numeric value. The response to each question is translated into a raw score from 0 to 100, with 0 representing a very low-level quality of life (QoL) and 100 depicting a very positive response to the item or a more favorable state of health.

In the second step, these translated item scores were taken and used to determine the score for the eight domains. This was done by adding scores of the items related to a domain and dividing it by the number of items used. For the domain of PF, we added the scores of items no 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 and divided it by 10. For RP we added scores of items 13, 14, 15 and 16 and divided it by 4. For RE scores of item 17,18,19 were used, for VT scores of item 23, 27, 29 and 31, for MH

scores of items 24, 25, 26, 28 and 30, for SF scores of items 20 and 32, for BP scores of items 21 and 22, and for GH scores of 1, 33, 34, 35 and 36 were used.

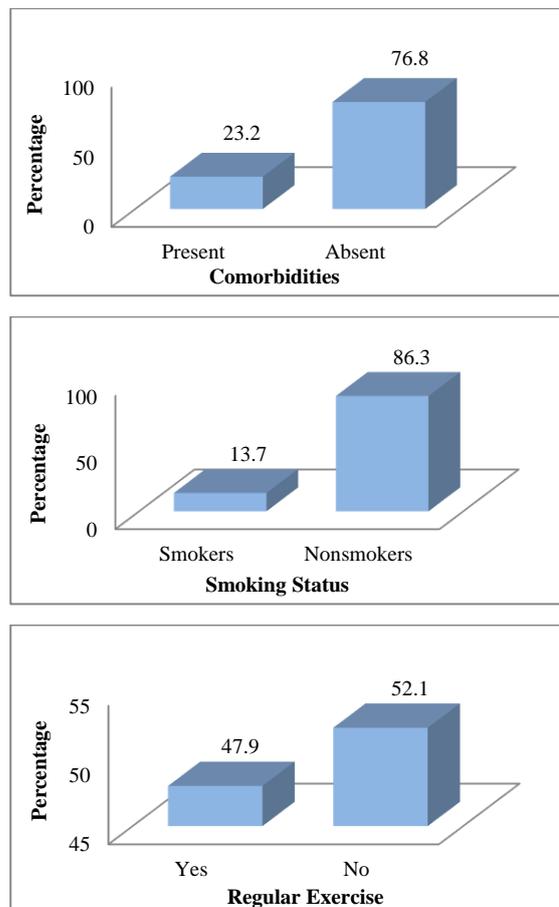
We also calculated Physical Component Summary (PCS) depicting physical QoL by averaging scores of PF, RP, BP and GH, and Mental Component Summary (MCS) representing mental QoL by determining the average of SF, RE, MH and VT.

Data were entered into and analysed via SPSS version 22. Mean was calculated for each of the eight domains, along with standard deviations, for different genders and ages groups. T-tests were done to compare the means of males and females for the domains and the PCS and MCS.

**RESULTS**

A total of 263 questionnaires were fully filled and valid. Of the 263, 66.9% were male (n=176) and 33.1 % were female (n=87). The age of the participants ranged from 18 years to 70 years, with a mean age of  $30.5 \pm 11.3$  years.

Figure 1 (a-c) shows details of demographic data; 23.2% (n=61) of the participants had some type of comorbidity present, including but not limited to diabetes mellitus, hypertension, chronic joint pain, and gastric problems; 13.7% (n=36) were smokers while 86.3% (n=227) were non-smokers; and 47.9% (n=126) of the participants had regular exercise habits, while the remaining 52.1% (n=137) did not partake in regular exercise.



**Figure 1(a-c): Demographic data of participants (n=263).**

Table 1 shows the mean value of each domain for the sample, where 100 is the most favorable state of health and zero is the least favorable. The best value was for SF at 67.78, followed

closely by BP at 67.54, then MH at 62.69, PF at 61.27, GH at 60.50, VT at 62.69, RP at 57.03, and the lowest value was of RE at 56.52.

**Table 1: Mean of domains of participants (n=263).**

Domains	PF	RP	RE	VT	MH	SF	BP	GH
Mean values	61.27 ± 28.6	57.03 ± 39.2	56.52 ± 41.3	57.98 ± 19.4	62.69 ± 21.2	67.78 ± 25.9	67.54 ± 28.1	60.50 ± 20.2

**Key:** PF - Physical Functioning; RP - Role limitations due to Physical health; RE - Role limitations due to Emotional health; VT - Vitality; MH - Mental Health; SF - Social Functioning; BP - Bodily Pain; GH - General Health

Table 2 shows the means calculated for the overall Physical Component Summary and Mental Component Summary.

**Table 2: Mean values for overall Physical Component Summary and Mental Component Summary (n=263).**

Domains	PCS	MCS
Mean	61.58 ± 20.04	61.24 ± 20.3

Table 3 shows the means of each domain classified by gender. Males had better scores in each of the domains, except in RE (M = 56.44, F = 56.71). After performing t-tests, the difference in male and female quality of life was found to be highly significant (p<0.01) in the domains of VT, MH, BP, GH, and PCS, and significant (p<0.05) in MCS.

**Table 3: Means of domains according to gender (n=263).**

Gender	PF	RP	RE	VT	MH	SF	BP	GH	PCS	MCS
Male	62.41 ± 28.7	57.24 ± 36.9	56.44 ± 41.8	61.39 ± 20.3	66.75 ± 21.3	67.97 ± 26.3	71.93 ± 26.1	64.64 ± 19.3	64.06 ± 18.4	63.14 ± 20.9
Female	58.97 ± 28.46	56.61 ± 43.7	56.71 ± 41.9	51.09 ± 15.5	54.48 ± 18.7	67.39 ± 25.1	58.65 ± 30.0	52.12 ± 19.6	56.59 ± 22.2	57.42 ± 18.4
<b>p value</b>	0.359	0.902	0.961	<0.001	<0.001	0.864	<0.001	<0.001	0.004	0.031

**Key:** PF - Physical Functioning; RP - Role limitations due to Physical health; RE - Role limitations due to Emotional health; VT - Vitality; MH - Mental Health; SF - Social Functioning; BP - Bodily Pain; GH - General Health; PCS - Physical Component Summary; MCS - Mental Component Summary

Table 4 shows the means of the domains classified according to gender and age groups. Besides a few exceptions, within both

genders, the general trend is that scores decrease with increasing age after 40.

**Table 4: Means of domains and PCS and MCS classified by gender and age group (n=263).**

Gender	Age Group (Years)	PF	RP	RE	VT	MH	SF	BP	GH	PCS	MCS	
Male	18 - 30	Mean	63.88 ± 28.52	58.74 ± 34.95	60.19 ± 40.17	61.17 ± 19.78	66.84 ± 19.46	67.35 ± 25.92	73.03 ± 25.51	65.93 ± 17.62	65.40 ± 16.01	63.89 ± 19.30
	31 - 40	Mean	62.38 ± 30.26	61.25 ± 39.61	57.50 ± 46.52	62.63 ± 24.46	67.90 ± 26.28	75.00 ± 26.25	75.56 ± 29.37	65.41 ± 19.67	66.15 ± 22.04	65.76 ± 26.51
	41 - 50	Mean	62.31 ± 28.54	49.04 ± 39.04	41.03 ± 38.07	59.04 ± 17.55	65.54 ± 21.50	62.02 ± 27.95	63.85 ± 25.83	57.31 ± 23.46	58.13 ± 21.54	56.91 ± 17.11
	51 - 60	Mean	47.50 ± 16.58	18.75 ± 23.94	66.67 ± 38.49	63.75 ± 13.15	63.00 ± 11.94	65.63 ± 15.73	70.63 ± 5.15	78.75 ± 20.16	53.91 ± 12.04	64.76 ± 14.85
	>60	Mean	33.33 ± 17.56	75.00 ± 43.30	33.33 ± 57.74	70.00 ± 18.03	64.00 ± 32.00	50.00 ± 33.07	57.50 ± 12.50	55.00 ± 20.00	55.21 ± 14.66	54.33 ± 31.13
Female	18 - 30	Mean	59.22 ± 28.88	58.62 ± 40.97	57.47 ± 38.39	52.67 ± 16.71	54.14 ± 18.67	65.95 ± 25.41	66.29 ± 27.50	54.91 ± 18.00	59.76 ± 21.12	57.56 ± 17.47
	31 - 40	Mean	67.31 ± 22.60	50.00 ± 50.00	64.10 ± 48.04	47.31 ± 08.32	52.92 ± 15.76	72.12 ± 24.02	37.12 ± 28.06	46.54 ± 18.97	50.24 ± 21.13	59.11 ± 17.77
	41 - 50	Mean	52.50 ± 34.33	59.38 ± 49.89	45.83 ± 50.20	48.75 ± 19.78	54.00 ± 24.66	60.94 ± 30.21	36.25 ± 24.20	51.86 ± 22.19	50.00 ± 26.96	52.38 ± 25.59
	51 - 60	Mean	54.29 ± 28.35	57.14 ± 53.45	57.14 ± 53.45	45.71 ± 09.32	57.71 ± 20.38	78.57 ± 21.30	61.07 ± 35.73	35.00 ± 21.60	51.88 ± 28.31	59.79 ± 22.44
	>60 (n=1)	Mean	20.00 ±	0	0	65.00 ±	76.00 ±	62.50 ±	57.50 ±	85.00 ±	40.63 ±	50.88 ±

**Key:** PF - Physical Functioning; RP - Role limitations due to Physical health; RE - Role limitations due to Emotional health; VT - Vitality; MH - Mental Health; SF - Social Functioning; BP - Bodily Pain; GH - General Health; PCS - Physical Component Summary; MCS - Mental Component Summary

**DISCUSSION**

This study was the first done in Peshawar district about the health-related quality of life of the general population. The overall means of the domains and summary components of the

sample population are significantly less than the scores of studies conducted elsewhere in the world, including India,<sup>13</sup> Canada,<sup>14</sup> Queensland region of Australia,<sup>15</sup> China,<sup>16</sup> and Iran<sup>17</sup>. This could be due to the low utilization of health facilities in Pakistan<sup>18</sup> as well as lack of awareness of mental health issues<sup>19</sup>.

Most of the findings in this study are consistent with the results of other studies. There was difference among the sexes within the sample, with males scoring better in all domains and summary components except one. This reinforces the finding that men have a better overall quality of life than women, as has been proven previously in multiple studies using the SF-36 tool.<sup>13,14,20-22</sup> There could be a number of explanations for this. Research done show that women are more susceptible to depression as compared to men,<sup>23</sup> which can contribute to a lower score on the mental health domains. It may be that girls experience greater, and/or different, stressors than boys do from adolescence and onwards, when the differing cultural expectations of the two genders become more evident.<sup>22</sup> Various hormonal reductions like estrogen also causes deleterious health effects in women such as reduction in bone density, cardiovascular diseases, and the like. Non-communicable diseases like cardiovascular diseases, cancers and chronic respiratory diseases strike women at an earlier age in less developed countries.<sup>24</sup> These could all contribute to the physical health and functionality domains. Another reason for this difference can be men being more physically active in general compared to females, and exercise has a positive impact on HRQOL.<sup>25</sup>

Another trend observed in this study was the decreasing HRQOL with the increase in age, especially after the age

bracket of 40. This is in line with other studies performed which showed that health scales, particularly physical health components, corresponded strongly with age.<sup>16,26</sup> Health generally declines with age due to increased susceptibility to diseases, lower immunity, the manifestation of chronic conditions, and deteriorating mental health. With ageing, there is a loss of muscle strength which in turn results in frailty and it affects the person from living a full, independent life.

#### LIMITATIONS

There was a difference in response rate between males and females, resulting in more males than females responding to the questionnaires. As males generally seem to report a better HRQOL, this might have had some influence on the result. We also did not measure income that may contribute on HRQOL. Since the population of Peshawar is so vast, a larger sample size would also have led to more accurate results.

#### CONCLUSION

The quality of life of people in the district of Peshawar is mediocre but below average when compared to other researches. On average, men have significantly higher HRQOL scores, which can be explained by sociodemographic and clinical profiles. With progression of age, quality of life scores are reduced.

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