

# Quality of life and its determinants among hypertensive patients in a rural area of district Gautam Buddha Nagar, Uttar Pradesh – A community-based cross-sectional study

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## ABSTRACT

**Context:** Hypertension is the leading cause of mortality and disability-adjusted life year (DALY) all over the world. 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. **Aims:** The study was aimed to compare the the QOL of adult hypertensive patients with healthy study subjects and to determine the factors associated with poor QOL among the hypertensive subjects. **Materials and Methods:** A community-based cross-sectional study was conducted from January 2021 to June 2022 in Gautam Budh Nagar District. The study was carried out among 250 hypertensive patients and 50 healthy persons based on World Health Organization-Quality of Life-BREF questionnaire Manual. **Statistical Analysis Used:** Data collected were entered and statistically analyzed using statistical software (SPSS-22). **Results:** Overall QOL and general health scores were significantly lower among hypertensive subjects showing worsening of QOL among diseased persons ( $P$  value  $<0.001$ ). Factors significantly associated with poor overall QOL were low educational status ( $P$  value  $<0.001$ ), home makers ( $P$  value  $<0.001$ ), lower socio-economic class ( $P$  value  $<0.001$ ), and subjects with co-morbidities ( $P$  value  $<0.001$ ). **Conclusion:** The findings revealed that QOL was poor among the hypertensive subjects as compared to healthy subjects.

**Keywords:** Hypertension, quality of life, rural

## Introduction

Among the non-communicable diseases, hypertension (HTN) is one of the most common life-threatening diseases. It significantly

increases the risks of cardiovascular, renal, and neurological disorders. Hypertension is a major contributor to mortality and disability-adjusted life year (DALY) all over the world.<sup>[1]</sup>

Hypertension is the leading cause of pre-mature death globally.<sup>[2]</sup> Out of all the deaths worldwide, hypertension accounts for 12.8% deaths, that is, 7.5 million deaths annually.<sup>[3]</sup> According to National Family Health Survey-5 (NFHS-5)<sup>[4]</sup> in India, the overall prevalence of hypertension in men was found to be

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24.0% and among women, it was 21.3%. As per NFHS-5 data, the prevalence of hypertension in Uttar Pradesh among men was 21.7% and 18.4% among women and the data of prevalence of high blood pressure in Gautam Buddha Nagar as per available NFHS-4 were 9.5% in men and 5% in women.<sup>[5]</sup>

World Health Organization (WHO) 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 concerning their goals, expectations, standards, and the concerns.<sup>[6]</sup> Among hypertensive patients, QOL is determined by a number of factors such as age, gender, raised lipid levels, obesity, raised glucose levels, smoking, and terminal organ damage such as renal disease and retinopathy.<sup>[7]</sup> Studies have revealed that QOL in a patient with hypertension can be influenced by the patient's awareness about disease, monitoring of blood pressure, and adherence to treatment.<sup>[8]</sup>

The World Health Organization-quality of life-BREF (WHOQOL-BREF) questionnaire includes a total of 26 questions. For comprehensive assessment, one item from each of the 24 facets contained in the WHOQOL-100 has been included. Along with this, two items from the overall Quality of Life and General Health facet have been included in the questionnaire.<sup>[9,10]</sup>

Health-related QOL of hypertensive patients has become an important aspect in the field of primary health care. This is because primary health care providers and family physicians are the first point of contact for the majority of hypertensive patients and they play a pivotal role in management of hypertension, which eventually will improve the QOL of these patients. Moreover, very few studies have been conducted in rural areas of northern India on the QOL among the adult hypertensive population. Hence, this study was conducted with the objectives to assess the QOL among adult hypertensive patients in a rural area of District Gautam Buddha Nagar, Uttar Pradesh, to compare the QOL of hypertensive patients with normal subjects and to determine the factors associated with poor QOL among the hypertensive subjects.

## Materials and Methods

### Study design

A community-based cross-sectional study was conducted in the rural field practice area of Rural Health Training Centre (RHTC), Panchayatan, under the Department of Community Medicine of the institute. The study area consists of eight villages.

### Study period

The study was conducted throughout one and a half years from January 2021 to June 2022.

### Study population

Adult hypertensive patients more than 18 years of age residing in the selected study area for the past 6 months have been included in the study.

### Inclusion criteria

1. Adult hypertensive patients more than 18 years.
2. Residing in the selected area for at least 6 months.

### Exclusion criteria

1. People unwilling to participate in the study
2. Pregnant women
3. Persons with severe mental disability.

### Sample size and sampling technique

The study was carried out among 250 hypertensive patients and 50 healthy persons after obtaining written informed consent. The cases were patients residing in the catchment area of RHTC, Panchayatan. The details of the known hypertensive patients in the study area were obtained through the previous surveys conducted in the area and the OPD register of RHTC, Panchayatan. The healthy subjects were selected from the healthy family members >18 years of age of every fifth patient.

### Survey techniques

The questionnaire collected all the information regarding socio-demographic profile like age, gender, marital status, type of family, socio-economic status (using modified BG Prasad scale), education level, occupation, history of raised blood pressure, suffering from any co-morbidity, and so on. QOL of hypertensive patients was assessed using a modified WHO-QOL-BREF questionnaire.<sup>[6]</sup>

### Statistical analysis

Data collected were entered and statistically analyzed using statistical software (SPSS-22). Descriptive statistics were used to determine the mean scores of different domains of QOL. Different socio-demographic variables were expressed as frequency and percentages, and Chi-square test was applied as a test of significance. The association of the various socio-demographic characteristics with the domain scores of QOL was assessed using an independent *t*-test and ANOVA test.

### Ethical approval

The Ethical approval has been taken from the Institutional Ethics Committee.

## Results

The male and female study subjects were almost equal in proportion in both hypertensive and healthy subjects (*P* value: 0.796). An almost equal proportion of subjects were in the <60 and ≥60 age groups among hypertensive and healthy subjects (*P* value: 0.877). Most of the study subjects were Hindu in both groups (*P* value: 0.231). The majority of study subjects belonged to OBC class (*P* value: 0.944). The educational status of more than half of the study subjects was just literate/primary school (*P* value: 0.994). The majority

of the participants in both groups were either unemployed or homemakers (*P* value: 0.152). Most of them lived in joint/three-generation families (*P* value: 0.830). More than half of the participants belonged to the lower middle of socio-economic status (*P* value: 0.603) according to the modified B.G. Prasad classification [Table 1].

Table 2 depicts a comparison of mean QOL scores between hypertensive and healthy subjects. The overall QOL and General Health score was lower among hypertensive subjects, showing a worsening QOL among diseased persons (*P* value <0.001). The mean scores of all domains were significantly lower in hypertensive subjects as compared to healthy subjects [physical health, psychological health, social relationships, environment (*P* value: <0.001)]

Table 3 shows the effect of gender on mean QOL scores among hypertensive subjects. The overall QOL and General Health score was less among females (*P* value: 0.119) compared to male hypertensive subjects. The domain scores of physical health (*P* value: 0.065), psychological domain (*P* value: 0.186), and environment (*P* value: 0.247) were lower in female

subjects. However, the mean of the social relationships domain score was lower in male subjects as compared to the female subjects (*P* value: 0.438)

Table 4 shows the effect of age on the mean QOL score among hypertensive subjects. The overall QOL and General Health score was better among the younger age group <60 years of age (*P* value: 0.540). There was a large mean score difference in the physical health domain (*P* value: <0.001) and psychological domain (*P* value: <0.015), and the difference is statistically significant. Scores were also higher in social relationships (*P* value: 0.696) and environment domain among the <60 years age group. (*P* value: 0.487).

The overall QOL and General Health score of subjects having middle school and above education was the highest, followed by illiterate and just illiterate/primary, and the difference was found to be statistically significant (*P* value: 0.003). The domain scores of physical health, psychological domain, social relationships, and environment domain were the highest among those having middle school and above education (*P* value: 0.013, 0.006, 0.072, and <0.001, respectively) [Table 5].

**Table 1: Socio-demographic characteristics of study subjects**

	Hypertensive subjects (n=250)	Healthy subjects (n=50)	Total (n=300)	$\chi^2$ value, df, <i>P</i>
Gender				
Male	130 (52.0)	25 (50.0)	155 (51.7)	0.067, 1, 0.796
Female	120 (48.0)	25 (50.0)	145 (48.3)	
Age groups in years				
<60	123 (49.2)	24 (48.0)	147 (49.0)	0.024, 1, 0.877
≥60	127 (50.8)	26 (52.0)	153 (51.0)	
Religion				
Hindu	243 (97.2)	50 (100)	293 (97.7)	1.433, 1, 0.231
Muslims/Others	7 (2.8)	0 (0.0)	7 (2.3)	
Caste				
General	37 (14.8)	8 (16)	45 (15)	0.114, 2, 0.944
OBC	176 (70.4)	34 (68.0)	210 (70.0)	
SC/ST	37 (14.8)	8 (16.0)	45 (15.0)	
Education				
Illiterate	71 (28.4)	14 (28.0)	85 (28.3)	0.012, 2, 0.994
Just literate/Primary	143 (57.2)	29 (58.0)	172 (57.3)	
Middle school and above	36 (14.4)	7 (14.0)	43 (14.3)	
Occupation				
Unemployed/Homemakers	127 (50.8)	20 (40.0)	147 (49.0)	6.708, 4, 0.152
Un-skilled	30 (12.0)	12 (24.0)	42 (14.0)	
Semi-Skilled/Skilled	5 (2.0)	0 (0.0)	5 (1.7)	
Clerk/Shop/Farm Owner	86 (34.4)	18 (36.0)	104 (34.7)	
Semi-professional/Professional	2 (0.8)	0 (0.0)	2 (0.7)	
Type of Family				
Nuclear	91 (36.4)	19 (38.0)	110 (36.7)	0.046, 1, 0.830
Joint/Three Generation	159 (63.6)	31 (62.0)	190 (63.3)	
Socio-Economic Status				
Upper Class	7 (2.8)	2 (4.0)	9 (3)	2.733, 4, 0.603
Upper Middle	14 (5.6)	2 (4.0)	16 (5.3)	
Middle	26 (10.4)	9 (18.0)	35 (11.7)	
Lower Middle	148 (59.2)	27 (54.0)	175 (58.3)	
Lower	55 (22.0)	10 (20.0)	65 (21.7)	

\*Figures in parenthesis are percentages

**Table 2: Comparison of mean QOL scores between hypertensive and healthy subjects**

Domains	Hypertensive subjects (n=250)	Healthy subjects (n=50)	t, P
Overall QOL and General Health	40.90	75.00	-10.95, <0.001
D1-Physical Health	57.85	69.00	-5.30, <0.001
D2-Psychological	53.15	69.00	-7.92, <0.001
D3-Social relationship	66.82	75.00	-4.45, <0.001
D4-Environment	60.94	69.00	-5.02, <0.001

**Table 3: Effect of gender on mean QOL scores among hypertensive subjects (n=250)**

Domain	Male (n=130)	Female (n=120)	t, P
Overall QOL and General Health	42.98	38.64	1.563, 0.119
D1-Physical Health	59.51	56.05	1.853, 0.065
D2-Psychological	54.28	51.91	1.327, 0.186
D3-Social Relationships	66.20	67.48	-0.776, 0.438
D4-Environment	61.74	60.07	1.161, 0.247

**Table 4: Effect of age on mean QOL score among hypertensive subjects (n=250)**

Domain	<60 yrs (n=123)	≥60 yrs (n=127)	t, P
Overall QOL and General Health	41.76	40.05	0.614, 0.540
D1-Physical Health	61.20	54.61	3.58, <0.001
D2-Psychological	55.35	51.02	2.45, 0.015
D3-Social Relationships	67.15	66.50	0.391, 0.696
D4-Environment	61.45	60.45	0.696, 0.487

The overall QOL and General Health score was maximum among semi-professional and professional and minimum among semi-skilled/skilled, which is statistically significant ( $P < 0.001$ ). Domain scores of physical health, psychological domain, social relationships, and environment domain were the lowest among clerical/farmer/shopkeeper ( $P$  value: 0.001) [Table 6].

The overall QOL and General Health score was the highest among upper-class subjects, and the difference was statistically significant ( $P$  value  $< 0.001$ ). Scores of the physical health domain ( $P$  value: 0.022), psychological domain ( $P$  value: 0.004), social relationships ( $P$  value:  $< 0.001$ ), and environment domain ( $P$  value:  $< 0.001$ ) were the highest among the upper class [Table 7].

Overall QOL and General Health scores were good if co-morbidities were absent as compared to co-morbidities present ( $P$  value:  $< 0.001$ ). The mean score of all domains was lower among subjects having co-morbidities and association statistically significant ( $P$  value  $< 0.001$ ) [Table 8].

## Discussion

In our study, the overall QOL and General Health score was lower among hypertensive subjects, showing worsening of QOL among diseased persons. The present study depicted on overall low QOL scores among hypertensive persons as

compared to healthy subjects (40.90 vs 75.0). QOL scores across the various component domains were also lower among the hypertensive patients. These findings are similar to those observed by Naik *et al.* in Puducherry (2019).<sup>[11]</sup> In our study, there was a significant association between overall QOL scores and hypertensive status ( $P$  value 0.001). A similar association was also found by Naik *et al.*; however, it stands in contrast to the findings observed by Katsi *et al.*<sup>[12]</sup> in Greece (2017), which reported no association between the hypertension status and QOL scores.

In the present study, the individual mean QOL domain scores of physical health, psychological domain, and environmental domain were also lower in female subjects, whereas the mean of social relationships domain scores was lower in male subjects as compared to the female subjects. These findings were similar to those observed by Oza *et al.*<sup>[13]</sup> in Gujarat (2014), where male study subjects had the higher QOL scores across all component domains. Also, the study conducted by Bhandari *et al.*<sup>[14]</sup> in Nepal (2016) showed statistically significant association between gender (CI: 1.33–5.87,  $P \leq 0.002$ ) and QOL.

In the present study, overall QOL and general health were better among younger age groups  $< 60$  years of age in comparison to older age groups. Findings in our study had similar resemblance with the study of Ezhilarasu. JL *et al.*<sup>[15]</sup> in Tamil Nadu (2020), and it stands in contrast with the study by Kaliyaperumal S<sup>[2]</sup> done in Tamil Nadu (2016), Bardage *et al.*<sup>[16]</sup> in Sweden (2003), and Wang *et al.* in Shanghai, China (2009).<sup>[13]</sup>

In the present study, the overall QOL and General Health scores were found to be the highest in the study subjects having the educational status of middle school and above and association was found to be statistically significant ( $P$  value-0.003). Our study has similar resemblance with the study reported by Satyanarayana PT *et al.*<sup>[17]</sup> in Hoskote (2017) and Bhandari N *et al.*<sup>[14]</sup> in Nepal (2016) ( $P$  value  $< 0.001$ ).

In the present study, overall QOL and General Health scores were maximum among semi-professionals and professionals and minimum among semi-skilled/skilled study subjects, which were statistically significant ( $P < 0.001$ ). Individual QOL scores were the highest among semi-professionals and professionals across all the domains. The current study reported a significant association with occupation and overall QOL scores ( $P$  value  $< 0.001$ ). Similar findings were found in a cross-sectional study conducted by Sheethal MP *et al.* in Karnataka (2015), and significant correlation was found between occupation and psychological

**Table 5: Effect of educational status on mean QOL scores among hypertensive subjects (n=250)**

Domain	Illiterate (n=71)	Just illiterate/primary school (n=143)	Middle school and above (n=36)	F, P
Overall QOL and General Health	42.60	37.50	51.04	5.9991, 0.003
D1-Physical Health	60.45	55.51	62.03	4.406, 0.013
D2-Psychological	54.70	50.96	58.78	5.183, 0.006
D3-Social Relationships	68.51	65.23	69.81	2.663, 0.072
D4 Environment	62.30	58.74	67.00	8.878, <0.001

**Table 6: Effect of Occupation on mean QOL scores among hypertensive subjects (n=250)**

Domain	Unemployed/homemakers (n=127)	Unskilled (n=30)	Semi-skilled/skilled (n=5)	Clerical/farmer/shopkeeper (n=86)	Semi-professional/professional (n=2)	F, P
Overall QOL and General Health	39.27	53.33	37.50	38.08	87.50	5.592, <0.001
D1-Physical Health	56.90	67.50	61.40	55.07	84.50	6.214, 0.001
D2-Psychological	52.02	60.30	48.80	51.92	81.50	4.690, 0.001
D3-Social Relationships	67.65	71.67	73.80	63.02	87.50	4.947, 0.001
D4-Environment	60.77	65.87	66.40	58.60	84.50	5.106, 0.001

**Table 7: Effect of socio-economic status on mean QOL scores among hypertensive subjects (n=250)**

Domain	Upper class (n=7)	Upper middle class (n=14)	Middle class (n=26)	Lower middle class (n=148)	Lower class (n=55)	F, P
Overall QOL and General Health	76.78	29.46	37.50	40.28	42.50	6.80, <0.001
D1-Physical health	72.43	52.79	53.08	58.18	58.67	2.913, 0.022
D2-Psychological	73.29	51.07	52.8	52.86	52.15	3.905, 0.004
D3-Social Relationships	78.57	61.64	58.69	67.46	68.76	5.286, <0.001
D4-Environment	78.86	57.29	56.42	61.09	61.33	6.287, <0.001

**Table 8: Effect of the presence of co-morbidities on mean QOL scores among hypertensive subjects (n=250)**

Domain	Co-morbidity present (n=142)	Co-morbidity absent (n=108)	t, P
Overall QOL and General Health	36.00	47.33	-4.171, <0.001
D1-Physical Health	51.09	66.74	-9.666, <0.001
D2-Psychological	47.20	60.96	-8.704, <0.001
D3-Social Relationships	61.65	73.62	-8.118, <0.001
D4-Environment	56.56	66.69	-7.799, <0.001

domains of QOL.<sup>[18]</sup> However, it stands in contrast to the study reported by Oza *et al.*<sup>[13]</sup> in Gujarat (2014).

In the present study, overall QOL and General Health scores were the highest among upper class subjects. Individual domain scores were also the highest for upper socio-economic class subjects. The study found a significant association between socio-economic status and QOL scores (*P* value < 0.001). Similar findings were reported in study by ElShazly HM *et al.*<sup>[19]</sup> in Egypt (2017) with socio-economic status being a strong risk predictor affecting the QOL among hypertensive patients.

In the present study, overall QOL and General Health scores were higher if co-morbidities were absent as compared to co-morbidities present (*P* value: <0.001). The mean score of all domains was lower among subjects having co-morbidities

and association statistically significant. Significant association between QOL scores and co-morbidity status is in line with the findings reported in the study by Ezhilarasu. JL *et al.*<sup>[15]</sup> in Tamil Nadu (2020) and Oza *et al.*<sup>[13]</sup> in Gujarat (2014). However, it differs from the findings reported in the study by Ha NT *et al.*<sup>[7]</sup> done in Vietnam (2014).

The findings of the present study are of utmost significance for primary health care providers and family physicians as they are the immediate care providers for the hypertensive patients. The study revealed that the QOL is poor among hypertensive patients with regard to all the four domains, that is, physical, psychological, social, and environmental domains. Out of the four domains, the lowest mean score of QOL was found in the psychological domain, indicating a greater negative impact of negative feelings on health-related QOL of hypertensive patients. This finding is of utmost importance for the primary health care providers and family physicians as they can play a key role in improving the psychological domain through robust counseling, trust building, and continuous emotional support. These physicians can also make a great impact on the overall QOL and physical health domain of hypertensive patients through proper management, ensuring continuous monitoring of blood pressure and adherence to treatment.

### Conclusion and Recommendations

Patients, primary health care physicians, and policymakers all place a high priority on the QOL, and interest in health-related

QOL has grown significantly in recent years. People with chronic diseases such as hypertension are especially concerned about QOL. People who have a chronic illness should be more focused on functions and well-being than on physiological indicators. The present study showed that the QOL is compromised among the hypertensive rural population. Behavioral change communication strategy should take a vital role in improving the lifestyle of hypertensive patients as modifiable risk factors such as obesity, smoking, and alcohol play important roles in the QOL. There is a need for continuous monitoring of hypertensive patients by the primary health care providers and family physicians to timely detect and intervene to make better QOL of these patients.

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### Conflicts of interest

There are no conflicts of interest.

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