Original Article

Epidemiological Determinants of Mental Well-Being and Quality of Life among Homemakers with Hypertension: A Cross-Sectional Analysis

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Abstract

Background: Stress is a major contributor to the physiology of hypertension (HTN) and is linked closely to mental well-being and overall quality of life (QoL). Health issues pertaining to women's health have usually focused on reproduction, while mental well-being has largely been neglected. **Objectives:** The objective of the study was to assess the perceived stress and QoL among homemakers with HTN. **Materials and Methods:** A community-based cross-sectional study was carried out, among 426 homemakers with HTN residing in Udupi, Karnataka. The sociodemographic and disease characteristics, Cohen's Perceived Stress Scale-10, World Health Organization QoL Brief Questionnaire (WHOQOL-BREF), anthropometry, and vitals were measured. **Results:** Of the study participants, 245 (57.5%) were aged ≤60 years and 317 (74.4%) had been diagnosed with HTN in the past decade. Low and high perceived stress was seen among 306 (71.8%) and 120 (28.2%) women, respectively. Among the four domains of WHOQOL-BREF, the physical domain had the highest mean (±standard deviation) score of 67.44 (±16.50), whereas the lowest score of 54.49 (±19.75) was observed in the social domain. The odds of high stress among single women and those with a pill burden of >2/day were 1.93 (*P*=0.004, 95% CI=1.228, 3.054) and 1.77 (*P*=0.038, 95% CI CI=0.962, 3.270) respectively. The QoL was significantly better among those aged <60 years, married, and literate women. **Conclusions:** Mental well-being among the hypertensive homemakers was good, with low perceived stress and high mean scores of QOL domains.

Keywords: Homemakers, hypertension, mental wellbeing, perceived stress, quality of life

Introduction

Stress is defined as a situation which tends to disturb the equilibrium between living organisms and the environment.[1] Stressful situations cause the simultaneous activation of the sympatho-adrenomedullary system and the pituitary adrenal cortical system, leading to a change in the hormone levels of the body.[2] There is an increase in catecholamines which causes an increase in cardiac output, increased skeletal muscle blood flow, sodium retention, and vasoconstriction, thereby increasing blood pressure. It may be the repeated activation of this system and its failure to return to resting levels following stressful events and failure to accustom to repeated stressors of the same type, which are responsible for the development of hypertension (HTN).[3] In addition, there is a strong link between mental well-being and overall health.

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Stress is linked closely to mental well-being and overall quality of life (QoL) and is affected by a persons' physical health, psychological state, social relationships, personal beliefs, and relationship with their environment.[4] QoL is poor in those with a chronic illness like HTN and worse in those with associated comorbidities such as diabetes mellitus (DM) and cardiovascular diseases.

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With a shift from communicable to noncommunicable diseases worldwide, HTN has become a major health concern. The number of adults with raised blood pressure increased worldwide from 594 million in 1975 to 113 billion in 2018.[5]

The general consensus is that gender roles contribute to poorer mental health, and studies have identified women to have poorer mental well-being than men, with a stress prevalence of 28% versus 20%.[6,7] Whenever women's health issues have been addressed in the population, the activities have usually focused on issues associated with reproduction rather than mental health, and overall well-being has largely been neglected.

Stress due to day-to-day activities or aggravated by chronic diseases like HTN could alter the course and prognosis of the disease with respect to treatment adherence, follow–up, or development of complications. With this background, this study was designed to assess the perceived stress levels and the QoL among homemakers with HTN in a community-based setting.

Objective of the study

The objective of the study was to assess the mental well-being and its determinants among homemakers aged ≥30 years with HTN with respect to perceived stress levels and QoL.

Materials and Methods

A community-based cross-sectional study was carried out in the field practice area of the Department of Community Medicine, attached to a Medical College, in Udupi district of Karnataka. The field practice area caters to a population of 40,000 individuals through a range of primary health-care services provided through five centers: four Rural Maternal and Child Welfare Centre's (RMCW home) and one Urban Health Training Centre (UHTC): each center is manned by two trained auxiliary nurse midwives (ANMs). The centers provide outpatient department services for chronic diseases such as diabetes and HTN, laboratory services, basic medications, health education, physiotherapy clinic, and vaccination for the children.

A cross-sectional study design was employed; hence, the formula $4pq/d^2$ was used for sample size calculation, where p = prevalence of stress among women, $q = p\text{-}1$, and d = level of precision. As there was no reported literature on perceived stress among hypertensive homemakers from the same geographical area, prevalence (p) of 50% was chosen to yield a maximum sample size to address the primary objective of the study.

Considering the prevalence of stress among women (p), as 50% with 10% relative precision (d) at a 95% confidence level, the sample size obtained for the study was 384. After accounting for a 10% nonresponse rate, the final sample size for the study needed was 426.

The study was conducted over a period of 20 months (August 2017–March 2019). All consenting female patients aged ≥30 years, diagnosed with HTN, and on antihypertensive medications for at least one year were included in the study. Pregnant and lactating women were excluded from the study.

Institutional ethical committee clearance (IEC 567/2017) was obtained prior to the initiation of the study. Identification of households having ≥30-year olds homemakers with HTN was done with the help of ANMs. Random sampling technique was employed for selection of participants. Data were collected by carrying out personal interviews using a pretested semi-structured questionnaire after obtaining written informed consent.

The sociodemographic characteristics, lifestyle factors such as diet and physical activity, and details about diagnosis and treatment of HTN and DM (if present) were collected. Socioeconomic status was assessed using the Standard of Living Index.[8] Mental well-being was assessed and classified using the Cohens' Perceived Stress Scale-10 (PSS-10).[9] QOL was assessed under four domains (physical, psychological, social, and environmental) using the World Health Organization QoL Brief (WHOQOL-BREF) Questionnaire.[10] Physical examination was done and anthropometric measurements such as weight, height, and waist circumference were measured using standard protocols.[11,12] Body mass index (BMI) was calculated and classified as per the WHO standards and the South Asian guidelines.[11,13] Blood pressure was measured and classified as per the Joint National Committee-8 (JNC-8) guidelines.[14-16]

Data analysis

The collected data were tabulated and analyzed using software Statistical Package for Social Sciences (SPSS Inc. Released 2006. SPSS for Windows, Version 15.0. Chicago, SPSS Inc). The results are presented in terms of proportions and percentages. Continuous data were summarized using mean and standard deviation (SD). Univariate analysis was performed using the Chi-square test. Unpaired *t*-test was used to find the association between stress and QoL. Logistic regression (odds ratio [OR] with a 95% confidence interval [CI]) was used to determine the association between the risk factors and stress. $p < 0.05$ was considered to be statistically significant.

Results

In the study, a total of 426 participants were interviewed. More than half (245 [57.7%]) of the study participants belonged to the age group of 45–60 years, with a mean (±SD) age of 60.4 (±9.6) years. More than half of the women were married (247 [56.0%]) and half (220 [51.6%]) of them had completed primary and middle school. As per the standard of living index scale, nearly all 420 (98.6%) families had a high standard of living.

Among the women surveyed, some form of substance use was seen in 72 (16.9%), with smokeless tobacco being used by 68 (94.4%) of the women. Most of the participants, 407 (95.5%), adhered to the diet advised by the physician and nearly half 225 (52.8%) were practicing some form of

physical activity, with walking being the most common form of (218 [92.1%]) physical activity.

As shown in Table 1, 175 (41.2%) of the women were diagnosed with HTN in the past 5 years, with a mean (±SD) duration of 8.3 (±7.5) years. As the study was done in the field practice area of a medical college, nearly half the women (196 [45.6%]) were using RMCW homes for treatment and follow-up. Only 25 (5.9%) women were using government facilities for HTN management. Using the JNC-8 criteria, two-third (283 [66.4%]) of the women had controlled blood pressure, with a mean (±SD) systolic blood pressure and diastolic blood pressure of 136.4 (±14.7) mmHg and 76.3 (±10.1) mmHg, respectively. Most of the participants, 368 (86.4%), were consuming <2 antihypertensive medications a day, with calcium channel blockers (75.4%) being the most common drug being used. More than half, 235 (55.2%), had an associated comorbidity and 51.9% of them had a positive family history of HTN. DM was the most common comorbidity followed by hypercholesterolemia, seen in 142 (33.3%) and 76 (17.8%) participants, respectively.

Using the WHO criteria for BMI, 174 (40.8%) women had a normal BMI range, while 157 (36.9%) were overweight and 71 (16.7%) were obese. On reclassification with the South-Asian criteria, three-quarters of the women were overweight/obese (73.2%) and less than a quarter (21.1%) were normal. Using the WHO South-Asian standards for the classification of waist circumference, more than three-quarter (76.8%) of the homemakers with HTN had waist circumference >80 cm.

A mean (±SD) Cohen's PSS-10 score of 17.22 (±7.0) was obtained, with 28.3% of the homemakers having high perceived stress at the time of the survey. As shown in Figure 1, among the four domains of QoL, the highest mean (±SD) score of 67.5 (±16.5) was obtained in the physical domain, followed by a score of 66.6 (±14.0) in the psychological domain. The social domain had the least domain score of 54.6 (±19.8). The overall QoL for the sample represented by the mean (±SD) score of Q1 of the 26-question scale was 62.8 (±21.2) and a health-related QoL represented by Q2 was 63.6 (±20.6).

Table 1: Hypertension-related characteristics of the study participants (*n*=426)

Variables	Sub-categories	*n* (%)
Duration of HTN (years)	<5	175 (41.2)
	5-10	142 (33.3)
	>10	109 (25.5)
Number of antihypertensive medications consumed per day	≤2	368 (86.4)
	>2	58 (13.6)
Blood pressure as per JNC-8 criteria	Under control	283 (66.4)
	Not under control	143 (33.6)
Any associated comorbidity	Present	235 (55.2)
	Absent	191 (44.8)

JNC: Joint National Committee, HTN: Hypertension

As depicted in Table 2, the odds of single hypertensive woman having higher stress were twice as that of a married woman (unadjusted OR: 1.81, 95% CI: 1.182, 2.773). Age, literacy status, menopause, duration of HTN, blood pressure control, and anthropometry were not significant determinants of stress. The odds of a hypertensive woman with a pill burden of >2 having higher stress were two times more than a woman with a pill burden of <2/day (80.8%) (unadjusted OR: 1.84, 95% CI: 1.033, 3.262).

As shown in Table 3, the QOL across all domains was significantly better among younger women (aged ≤60 years), those with higher literacy status, and low perceived stress. A significantly better physical domain score was obtained among women diagnosed with HTN in the past decade ($P = 0.005$, 95% CI: 8.76, 1.61) and among those with a pill burden of ≤2 a day ($P = 0.001$, 95% CI: 3.17, 12.23). Overweight/obesity was significantly associated with a better QoL, this was reflected by higher psychological, social, and environmental domain scores among those with BMI >23 kg/m^2. The presence of comorbidity and blood pressure control were not significant predictors of QOL.

Discussion

Mental well-being is the common denominator underlying HTN and poor QoL, and hence, the study of determinants of mental well-being and QoL becomes important.

The sociodemographic characteristics of the studied women were comparable to the data of Udupi district as per the Census 2011, indicating the representativeness of the sample population.[17] As demonstrated by previous studies across India, good blood pressure control (66.4%) was seen among the study participants.[18,19] The prevalence of overweight and obesity in the present study was also comparable to studies done by Bhansali *et al*.[20] Use of varied questionnaires for assessment of mental well-being studies among male and female hypertensives, from Jamnagar and Maharashtra, reported high stress prevalence of 84.3% and 54.5%, respectively,[19,21] whereas a low prevalence of 19.3% was reported from Iran.[22]

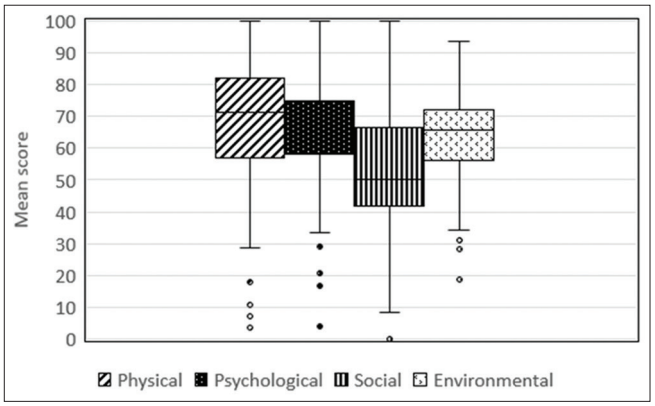

Figure 1: Quality of life domain scores (mean ± standard deviation) of the study participants (n = 426)

Table 2: Association of perceived stress with sociodemographic, disease-related, and anthropometric characteristics among hypertensive women (*n*=426)

Variables	Subcategories	High stress (*n*=120), *n* (%)	Low stress (*n*=306), *n* (%)	*P*-value*	Unadjusted OR (95% CI)
Age groups (years)	≤60	67 (55.8)	178 (58.2)	0.661	1.100 (0.719, 1.684)
	>60	53 (44.2)	128 (41.8)		1
Marital status	Single	63 (52.5)	116 (37.9)	0.006	1.810 (1.182-2.773)
	Married	57 (47.5)	190 (62.1)		1
Education	Illiterate	27 (22.5)	63 (20.6)	0.664	1.120 (0.672-1.865)
	Literate	93 (77.5)	243 (79.4)		1
Menopause attained	No	13 (10.8)	30 (9.8)	0.751	1.118 (0.562-2.224)
	Yes	107 (89.2)	276 (90.2)		1
HTN duration (years)	≤10	38 (31.7)	71 (23.2)	0.072	1
	>10	82 (68.3)	235 (76.8)		1.534 (0.961-2.448)
Blood pressure as per JNC-8 criteria	Not under control	41 (34.2)	102 (33.3)	0.870	1
	Under control	79 (65.8)	204 (66.7)		1.038 (0.665-1.621)
Any associated comorbidity	Present	65 (54.2)	170 (55.6)	0.795	1
	Absent	55 (45.8)	136 (44.4)		1.052 (0.692-1.616)
Antihypertensives consumed (pills/day)	≤2	97 (80.8)	271 (88.6)	0.036	1
	>2	23 (19.2)	35 (11.4)		1.836 (1.033-3.262)

*Using Chi-square test. CI: Confidence interval, OR: Odds ratio, JNC: Joint National Committee, HTN: Hypertension

Table 3: Association of sociodemographic variables with the domain scores of the World Health Organization Quality of Life Brief Questionnaire scale in the study population (*n*=426)

Variables	WHOQOL-BREF domains, mean±SD			
	Physical	Psychological	Social	Environmental
Age groups (years)				
≤60	71.0−14.6	68.0−12.8	58.5−19.8	64.4−10.6
>60	62.8−17.7	64.6−15.3	49.2−18.3	61.7−12.0
P-value, 95% CI*	<0.001 (-11.34, -5.17)	0.014 (−6.06-−0.68)	<0.001 (−13.06-−5.65)	0.017 (−4.80-−0.47)
Marital status				
Married	69.6−16.3	68.7−13.1	62.9−18.5	65.3−10.9
Single	64.6−16.3	63.5−14.6	43.1−15.1	60.4−11.2
P-value, 95% CI*	0.002 (1.86-8.17)	<0.001 (2.52-7.85)	<0.001 (16.49-23.12)	<0.001 (2.76-7.02)
Education				
Illiterate	63.2−17.2	63.6−14.3	46.6−18.9	59.2−11.3
Literate	68.7−16.1	67.3−13.8	56.7−19.4	64.3−11.0
P-value, 95% CI*	0.005 (−9.32-−1.68)	0.026 (−6.96-−0.47)	<0.001 (−14.57-−5.54)	<0.001 (−7.69-−2.50)
Menopause attained				
No	75.1−12.0	69.8−12.3	63.9−21.9	66.21−9.60
Yes	66.7−16.7	66.2−14.1	53.5−19.2	62.97−11.45
P-value, 95% CI*	0.001 (3.30-13.62)	0.105 (−0.78-8.08)	0.001 (4.32-16.58)	0.075 (−0.32-6.80)

*Using independent sample *t*-test. WHOQOL-BREF: World Health Organization Quality of Life Brief Questionnaire, SD: Standard deviation, CI: Confidence interval

The highest WHOQOL-BREF scores were seen in physical followed by the psychological domain, with the lowest score in the social domain. This was comparable to a study done in Singapore where the authors studied female migrant domestic worker in contrast to the present study which was done among homemakers with HTN.[23]

Using varied instruments to assess mental well-being, studies across the world have shown no significant association of age, occupation, literacy status, and menopausal status with perceived stress.[19,24,25] The current study deduced that single woman was twice as likely to have high stress compared to married women, which was contradictory to the studies done by Sarkar *et al*.[19] Mental well-being was not dependent on HTN duration and blood pressure control which correlated with studies from Seychells and Spain.[24,25] Women with abdominal obesity were seen to have similar perceived stress as women without, which coincided with findings of Patel *et al*., Cuadros *et al*. and Parameaswari *et al*.[7,25,26] but contrasted with the results of Chamik *et al*.[24]

Shetty *et al*. reported that the QoL of women aged <60 years was significantly better compared to the elderly.[27] In Nigeria,

Adedapo *et al*. reported that increasing age was a positive predictor of only the environmental QOL.[28] The QOL of literates was significantly better than illiterate women which has also been reported in the literature.[27,29,30] Married women comparable to a study from Nigeria by Ugwu *et al*.,[29] but Adedapo *et al*. illustrated no such difference.[28] Unlike studies done in India, presence of an associated comorbidity was not a determinant of QOL.[27,31] Among Nigerian hypertensives,[28] no association was seen between blood pressure control and QOL and this concurred with the present study findings. Among Polish hypertensives,[30] decreasing BMI resulted in an increase in the health-related QOL using the Medical Outcomes Short Form 12 Scale, while this differed from the present study findings. Studies among women in Singapore and Spain reported significant association of low stress with better QOL.[23,25]

The study population included homemakers, who were always burdened with domestic chores, making it difficult to administer a qualitative questionnaire. Perceived stress and QoL could be affected by factors such as day-to-day life events, social circumstances, family concerns, in addition to the disease condition. As these confounding factors are difficult to quantify and evaluate, they constituted the limitations of the study.

Evaluation of stress and QoL at treatment initiation for HTN would be ideal so that stress reduction strategies could be advised in the beginning. In addition, periodic appraisal and effective management of stress and QOL could improve overall treatment outcomes in HTN.

Conclusions

The mental well-being with respect to QoL across all domains of the WHOQOL-BREF was good and perceived stress was low among the hypertensive homemakers. It was observed that married women and participants with lower pill burden had significantly lower perceived stress. Increasing age, higher education, and being married were associated with significantly better QoL.

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Conflicts of interest

There are no conflicts of interest.

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