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

Ashwini Shivakumar Bidnurmath, Chythra Raghavendra Rao, Avinash Shetty, Asha Kamath, Lavya Shetty
Department of Community Medicine, Kasturba Medical College, Manipal Academy of Higher Education, 1Department of Data Science, Prasanna School of Public Health, Manipal Academy of Higher Education, 2Division of Yoga, Centre for Integrative Medicine and Research, Manipal Academy of Higher Education, Manipal, Karnataka, India

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 sympathetic-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).[1] In addition, there is a strong link between mental well-being and overall health.

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.

Access this article online

Quick Response Code: www.ijcm.org.in

DOI: 10.4103/ijcm.IJCM_487_19

Address for correspondence: Dr. Chythra Raghavendra Rao, Department of Community Medicine, Kasturba Medical College, Manipal Academy of Higher Education, Manipal - 576 104, Karnataka, India. E-mail: chythra.ra@manipal.edu

How to cite this article: Bidnurmath AS, Rao CR, Shetty A, Kamath A, Shetty L. Epidemiological determinants of mental well-being and quality of life among homemakers with hypertension: A cross-sectional analysis. Indian J Community Med 2020;45:448-53.

Received: 29-11-19, Accepted: 01-07-20, Published: 28-10-20
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.[3]

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 Centres (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, \(q = p - 1\), 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.[9] Mental well-being was assessed and classified using the Cohens’ Perceived Stress Scale-10 (PSS-10).[10] 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).

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/m². 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. As demonstrated by previous studies across India, good blood pressure control (66.4%) was seen among the study participants. The prevalence of overweight and obesity in the present study was also comparable to studies done by Bhansali et al.[29] 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, whereas a low prevalence of 19.3% was reported from Iran.[22]
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.\textsuperscript{[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.\textsuperscript{[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.\textsuperscript{[19]} Mental well-being was not dependent on HTN duration and blood pressure control which correlated with studies from Seychells and Spain.\textsuperscript{[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.\textsuperscript{[7,25,26]} but contrasted with the results of Chamik et al.\textsuperscript{[24]}

Shetty et al. reported that the QoL of women aged <60 years was significantly better compared to the elderly.\textsuperscript{[27]} In Nigeria,
Adedapo et al. reported that increasing age was a positive predictor of only the environmental QoL.[20] 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 Ugwa 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.

Acknowledgments
We are grateful to the Indian Council of Medical Research (ICMR) for extending support to the study through the ICMR PG Thesis grant. We would like to thank all the research participants and acknowledge the invaluable help of the ANMs for data collection.

Financial support and sponsorship
The study was supported by ICMR under postgraduate dissertation grant.

Conflicts of interest
There are no conflicts of interest.

References
1. Ranabir S, Reetu K. Stress and hormones. Indian J Endocrinol Metab 2011;15:18-22.  
2. Goldstein DS. Stress-induced activation of the sympathetic nervous system. Baillieres Clin Endocrinol Metab 1987;1:253-78.  
3. Rozanski A, Blumenthal JA, Kaplan J. Impact of psychological factors on the pathogenesis of cardiovascular disease and implications for therapy. Circulation 1999;99:2192-2217.  
4. The World Health Organization Quality of Life Assessment (WHOQOL): Development and general psychometric properties. Soc Sci Med 1998;46:1569-85.  
5. Zhou B, Bentham J, Di Cesare M, Bishy H, Danaei G, Cowan MJ, et al. Worldwide trends in blood pressure from 1975 to 2015: A pooled analysis of 1479 population-based measurement studies with 19·1 million participants. Lancet 2017;389:37-55.  
6. American Psychology Association. Gender and Stress. Available from: https://www.apa.org/news/press/releases/stress/2010/gender-stress. [Last accessed on 2019 Sep 22].  
7. Patel PA, Patel PP, Khadilkar AV, Chiplonkar SA, Patel AD. Impact of occupation on stress and anxiety among Indian women. Women Health 2017;57:392-401.  
8. International Institute for Population Sciences and ORC Macro 2000. National Family Health Survey (NFHS-2), 1998-99. Mumbai: IIPS; 2000.  
9. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav 1983;24:385-96.  
10. Harper A. WHOQOL-BREF Introduction, Administration, Scoring, and Generic Version. Geneva: World Health Organization; 1996. p. 24.  
11. WHO. Physical Status: The use and Interpretation of Anthropometry. Report of a WHO Expert Committee. World Health Organization Technical Report Series. Vol. 854. Geneva: World Health Organization; 1995. p. 452.  
12. WHO Expert Consultation. Waist Circumference and Waist-Hip Ratio Report of a WHO Expert Consultation. Geneva: World Health Organization; 2011. p. 40.  
13. WHO Expert Consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. Lancet 2004;363:157-63.  
14. Screening, Diagnosis, Assessment, and Management of Primary Hypertension in Adults in India. Ministry of Health and Family Welfare; 2016. Available from: https://nhm.gov.in/images/pdfs/guidelines/nhgm-guidelines/stg/Hypertension_full.pdf. [Last accessed on 2019 Sep 22].  
15. National Institute of Health. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure; 2004. Available from: https://www.nhlbi.nih.gov/files/docs/guidelines/jnc7full.pdf. [Last accessed on 2019 Sep 22].  
16. James PA, Oparil S, Carter BL, Cushman WC, Dennison-Himmelfarb C, Handler J, et al. 2014 evidence-based guideline for the management of high blood pressure in adults: Report from the panel members appointed to the Eighth Joint National Committee (JNC 8). JAMA 2014;311:507-20.  
17. Directorate of Census Operations Karnataka. District Census Handbook Udupi. Bengaluru: Ministry of Home affairs; 2011. p. 154.  
18. Gupta R, Pandey RM, Misra A, Agrawal A, Misra P, Dey S, et al. High prevalence and low awareness, treatment and control of hypertension in Asian Indian women. J Hum Hypertens 2012;26:585-93.  
19. Sarkar A, Roy D, Chauhan MM, Dave P, Makwana NR, Parmar DV. A lay epidemiological study on coexistent stress in hypertension: Its prevalence, risk factors, and implications in patients’ lives. J Family Med Prim Care 2019;8:966-71.  
20. Bhanzali A, Dhandania VK, Deepa M, Anjana RM, Joshi SR, Joshi PP, et al. Prevalence of and risk factors for hypertension in urban and rural India: The ICMR-INDIAB study. J Hum Hypertens 2015;29:204-9.  
21. Jadhav SB, Jatti GM, Jadhav AS, Rajderkar SS, Naik JD, Nandimath VA. Stressing ‘mental stress’ in hypertension: a rural background study. J Clin Diagn Res 2014;8:JC04-JC7.  
22. Roohafza H, Kabir A, Sadeghi M, Shokohi P, Ahmadzad-Asl M, Khadem-Maboudi AA, et al. Stress as a risk factor for noncompliance with treatment regimens in patients with diabetes and hypertension. ARYA Atheroscler 2016;12:166-71.  
23. Anjara SG, Nellums LB, Bonetto C, Van Bortel T. Stress, health and quality of life of female migrant domestic workers in Singapore: A cross-sectional study. BMC Womens Health 2017;17:98.
24. Chamik T, Viswanathan B, Gedeon J, Bovet P. Associations between psychological stress and smoking, drinking, obesity, and high blood pressure in an upper middle-income country in the African region. Stress Health 2018;34:93-101.

25. Cuadros JL, Fernández-Alonso AM, Cuadros-Celorrio AM, Fernández-Lazón N, Guadix-Peinado MJ, del Cid-Martín N, et al. Perceived stress, insomnia and related factors in women around the menopause. Maturitas 2012;72:367-72.

26. Parameaswari PJ, Ravan R, Udayshankar PM, Kamini B. Stress among Women in Sub-Urban area of South Chennai, India. J Appl Med Sci. 2015;3 (1C):217–20.

27. Shetty SM, Kundapur R, Ganapathy KK, Kiran NU, Kodyalamoole NK, Kempaller VJ. Quality of life and risk factors in hypertensive individuals in the field practice areas of a tertiary-care hospital in coastal Karnataka. Int J Med Sci Public Health 2016;5:1883-1886.

28. Adedapo AD, Akunne OO, Adedokun BO. Comparative assessment of determinants of health-related quality of life in hypertensive patients and normal population in South-West Nigeria. Int J Clin Pharmacol Ther 2015;53:265-71.

29. Ugwu CI, Suriani I, Rosliza AM. Socio-demographic characteristics associated with health related quality of life among hypertensive patients in federal medical centre Owerri, IMO state, Nigeria. Int J Public Health Clin Sci 2018;5:155-68.

30. Zygmuntowicz M, Owczarek A, Elibol A, Chudek J. Comorbidities and the quality of life in hypertensive patients. Pol Arch Med Wewn 2012;122:333-40.

31. Tripathi N, Balai MK. A Study to assess the quality of life among persons living with hypertension, diabetes mellitus and arthritis in selected village of Ludhiana, Punjab. Int J Nurs Educ Res 2018;6:379-82.