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# Hypertension, Lifestyle Stress, and Resilience: A Health Psychology Study in Saharsa District

**Dr. Awadh Kishor Singh**
Assistant Professor,
Department of Psychology,
H.P.S. College, Nirmali, Supaul
B.N. Mandal University, Madhepura, Bihar
drawadhkishorsinghblp@gmail.com
**Dr. Ramuday Singh**
Assistant Professor Jagdam College JPU

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**Abstract**

The present study titled "Hypertension, Lifestyle Stress, and Resilience: A Health Psychology Study in Saharsa District" examines the interrelationship between hypertension, psychological distress, coping strategies, and resilience among adults in a semi-rural Indian setting. The primary objectives were to assess levels of perceived stress, anxiety, depression, coping styles, stigma perception, and social support, and to evaluate subgroup differences based on gender and residence. A cross-sectional design was employed, with a randomly selected sample of 78 hypertensive adults (42 males, 36 females) residing in Saharsa district. Standardized tools including the Perceived Stress Scale (PSS), Hospital Anxiety and Depression Scale (HADS), Connor–Davidson Resilience Scale (CD-RISC), and Coping Strategies Questionnaire (CSQ) were administered. Descriptive statistics were computed, and independent samples t-tests were conducted to examine gender differences in psychological distress and coping. Results revealed moderate levels of stress and distress, accompanied by satisfactory resilience and social support. The t-test analysis indicated no statistically significant gender differences in distress or coping, suggesting a broadly shared psychosocial burden across men and women. Findings underscore the critical role of resilience and social networks in managing hypertension-related stress. Implications for clinical psychology practice include the integration of stress-reduction interventions, resilience training, and stigma reduction into community-based chronic illness management. Broader applications to tuberculosis management programs highlight the importance of embedding psychosocial care within medical treatment frameworks to enhance adherence and well-being.

***Keywords***: *Hypertension, Stress, Resilience, Coping Strategies, Health Psychology*

## Introduction

Hypertension, often referred to as the "silent killer," is among the most prevalent non-communicable diseases worldwide, contributing significantly to cardiovascular morbidity and mortality. According to the World Health Organization, more than 1.2 billion people globally suffer from hypertension, with a disproportionately high burden in low- and middle-income countries. In India, the prevalence of hypertension has shown a steady increase over the past two decades, reflecting changing lifestyles, urbanization, dietary patterns, and psychosocial stressors. While biomedical aspects of hypertension such as blood pressure control and medication adherence are well-documented, the psychological dimensions, stress, anxiety, depression, coping, resilience, and stigma, require equal scholarly attention, especially in rural and semi-urban populations.

The district of Saharsa in Bihar presents a unique context for such a study. Located in a region characterized by socio-economic challenges, fluctuating healthcare accessibility, and traditional cultural norms, Saharsa provides insight into how individuals experience and respond to chronic illness within constrained environments. Hypertension management in such settings is not merely a matter of pharmacological adherence but is deeply intertwined with psychological adjustment, family support, and resilience in the face of daily stressors.

Health psychology provides a valuable framework for examining these issues, emphasizing the interplay between biological vulnerability, psychological processes, and socio-cultural environments. Stress models, such as the transactional model of Lazarus and Folkman, highlight that illness experience is shaped not only by objective symptoms but by how individuals appraise, cope, and derive meaning from their condition. Similarly, resilience research underscores the ability to adapt positively despite adversity, which is particularly relevant for chronic disease management.

The present study thus seeks to address two central gaps. First, it aims to provide empirical data on the levels of psychological distress, coping strategies, resilience, stigma perception, and social support among hypertensive patients in Saharsa district. Second, it attempts to assess whether meaningful differences exist across gender and residential groups, using independent samples t-tests for comparative analysis. Understanding whether men and women, or rural and urban residents, differ significantly in their psychological responses has important implications for tailoring interventions.

Preliminary descriptive findings indicate moderate stress levels and mild distress, with resilience and social support serving as buffers. The absence of significant gender differences in t-test analysis suggests that the psychosocial burden of hypertension transcends gender divisions in this context, reflecting shared community-level challenges. This highlights the need for interventions that are broad-based and culturally sensitive rather than narrowly focused on gendered stereotypes.

Finally, beyond hypertension, the implications extend to chronic illness management more generally, including conditions such as tuberculosis, where stigma and psychological burden are often higher. Lessons from this study reinforce the importance of embedding psychosocial interventions into routine healthcare delivery, thereby enhancing both adherence and overall quality of life.

## Review of Literature

Hypertension is tightly linked to psychosocial stress, with chronic stress elevating risk for both incident hypertension and poorer control (Spruill, 2010). The transactional model of stress and coping explains how appraisal and coping shape downstream anxiety/depression and adherence, making it a useful lens for hypertensive populations (Lazarus & Folkman, 1984). Measurement traditions relevant to community studies include the Perceived Stress Scale for global stress burden (Cohen & Williamson, 1988) and the Hospital Anxiety and Depression Scale for medically ill samples (Zigmond & Snaith, 1983). Resilience functions as a protective factor, buffering stress–symptom links and supporting self-management; the Connor–Davidson Resilience Scale is widely used to quantify this capacity (Connor & Davidson, 2003). Social determinants, education, income, and work conditions, shape both risk and coping resources, especially in low- and middle-income settings (Marmot, 2010; Kearney et al., 2005). Evidence syntheses suggest that adaptive, problem-focused coping and supportive networks are associated with better blood pressure outcomes and quality of life, whereas emotion-focused/avoidant patterns relate to distress and nonadherence (Spruill, 2010). Together, the literature supports integrating stress-reduction, resilience training, and social-support mobilization within community hypertension care.

## Methodology

The present research titled *"Hypertension, Lifestyle Stress, and Resilience: A Health Psychology Study in Saharsa District"* adopts an empirical, mixed quantitative–qualitative approach, with an emphasis on psychological measurement and statistical comparison. The study seeks to explore the

relationship between hypertension, lifestyle stress, and resilience among adults, while further examining gender and residential differences in psychological distress and coping styles. The methodology is designed to ensure systematic data collection, analysis, and interpretation, thereby enabling the generation of reliable and valid findings. Data for the present study were collected through a combination of **in-person and online interviews**, ensuring both accessibility and inclusiveness of respondents in Saharsa district. The methodology is described under the following subheadings.

**Participants**

The participants for this study were 78 adults residing in Saharsa district, Bihar. The sample size was determined keeping in mind the feasibility of data collection, statistical requirements for independent samples t-tests, and representation of the target population. A **random sampling technique** was adopted to reduce selection bias and to increase the representativeness of the sample. The selection process included preparing a list of potential participants from community health records, local clinics, and digital health forums. Random numbers were generated to finalize the participants, ensuring a fair chance of inclusion for each individual within the defined population.

The inclusion criteria were: (i) individuals aged between 25 and 60 years; (ii) diagnosed hypertensive patients or individuals reporting elevated blood pressure on medical advice within the last six months; and (iii) residents of Saharsa district for at least three years. The exclusion criteria included individuals with severe psychiatric illness, those undergoing long-term hospitalization, or individuals unable to provide informed consent. Out of the 78 participants, 42 were male and 36 were female, with adequate representation from both rural (n = 40) and urban (n = 38) localities. This enabled meaningful subgroup comparisons, particularly with respect to **male vs. female** and **rural vs. urban** differences.

**Tools**

A set of standardized tools, along with a demographic information schedule, was used in the study to collect relevant data. These instruments were carefully chosen for their reliability, validity, and applicability in health psychology research.

1. **Demographic and Clinical Data Sheet**: This schedule was prepared by the researcher to collect socio-demographic and medical details of the participants. Information such as age, gender, marital status, occupation, educational level, family income, place of residence, duration of hypertension diagnosis, medication adherence, and family medical history were recorded. These data were essential for understanding background variables and ensuring group comparisons.
2. **Perceived Stress Scale (PSS)**: The Perceived Stress Scale, developed by Cohen et al., was employed to assess the degree to which participants perceived their life as unpredictable, uncontrollable, and overloaded. It is a widely used psychological instrument for measuring stress and provides a global measure of perceived stress. Responses are scored on a Likert scale, with higher scores indicating greater stress.
3. **Hospital Anxiety and Depression Scale (HADS)**:
   To assess psychological distress, the Hospital Anxiety and Depression Scale was used. This tool measures two dimensions, anxiety and depression, commonly experienced by patients with chronic illnesses, including hypertension. It allows quantification of distress levels and is suitable for both clinical and community settings.
4. **Connor–Davidson Resilience Scale (CD-RISC)**:
   To measure resilience, the CD-RISC was employed. This instrument evaluates the individual's capacity to cope with stress, recover from adversity, and maintain adaptive functioning in challenging situations. It has been extensively validated and is considered an appropriate measure for health psychology research.
5. **Coping Strategies Questionnaire (CSQ)**: A standardized coping inventory was used to assess the different strategies adopted by participants in managing stress associated with hypertension. Both problem-focused and emotion-focused coping strategies were evaluated to examine patterns across gender and residence groups.

All tools were administered in Hindi to ensure clarity and accessibility, with translations cross-checked for linguistic validity.

**Procedure**

The study followed a stepwise procedure, beginning with ethical clearance from the institutional research committee. Prior informed consent was obtained from all participants, with a clear explanation of study objectives, confidentiality assurances, and voluntary participation rights.

Data collection was conducted in **two modes**. First, in-person interviews were carried out in local health

centers, community spaces, and participants' homes for those residing in rural areas. Second, for urban participants and those preferring digital access, structured online interviews were arranged using secure platforms. The dual approach was particularly useful during periods of restricted physical access, while also enhancing participant convenience.

Each participant was first administered the demographic and clinical schedule, followed by the standardized tools in a fixed order: PSS, HADS, CD-RISC, and CSQ. Average time for completion was 45–60 minutes. Trained research assistants were involved to ensure uniform administration and to clarify queries. For participants with limited literacy, tools were administered verbally, maintaining the integrity of the response process.

**Research Design**

The present study employs a **cross-sectional comparative research design**. The independent variables considered for group comparison are gender (male vs. female) and place of residence (rural vs. urban). The dependent variables are (i) psychological distress (as measured by HADS), and (ii) coping levels (as measured by CSQ). The design allows the use of **independent samples t-tests** to assess whether statistically significant differences exist between groups on distress and coping.

This design was chosen because it enables the examination of psychological variations in a specific health population (hypertensive adults) across subgroups. Moreover, t-tests provide a robust statistical method for evaluating mean differences when sample sizes are relatively small but comparable, as in the present study (n = 42 vs. 36 for gender; n = 40 vs. 38 for residence).

**Data Analysis**

The collected data were coded and entered into SPSS for statistical analysis. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were computed to present the socio-demographic and clinical characteristics of the sample, along with distribution patterns of stress, distress, coping, and resilience scores.

The main inferential analysis involved conducting **independent samples t-tests**. Two sets of comparisons were made:

1. **Male vs. Female Participants**: Differences in psychological distress (anxiety and depression scores from HADS) and coping levels (CSQ) were examined to determine whether gender influences the psychological impact of hypertension and stress.
2. **Rural vs. Urban Participants**: Distress and coping levels were compared between rural and urban participants, to assess how environmental and socio-cultural factors contribute to psychological adjustment in hypertension.

The significance level was set at $p < 0.05$ for all statistical tests, ensuring standard thresholds for rejecting null hypotheses. Effect sizes (Cohen's *d*) were also calculated to assess the magnitude of differences, providing meaningful interpretation beyond statistical significance. Where relevant, correlations between perceived stress, resilience, and distress were explored to identify protective or risk factors influencing psychological outcomes.

Data from online and in-person interviews were merged into a single dataset after ensuring consistency. Missing values were checked and treated using mean substitution when less than 5% of the data for a variable were missing.

**Ethical Considerations**

The study adhered to ethical principles of psychological research. Participants were informed about the voluntary nature of the study and were assured that they could withdraw at any stage without consequence. Confidentiality was strictly maintained by anonymizing all responses. In cases where high distress scores were observed, participants were provided with referrals to local healthcare providers and counseling resources. Special care was taken to maintain sensitivity while interviewing patients with chronic hypertension, given the vulnerability of the population.

## RESULTS AND DISCUSSION

The present section outlines the empirical findings of the study, beginning with descriptive statistics on socio-demographic and clinical characteristics of the participants. Subsequent sections interpret psychological measures of stress, distress, resilience, coping, stigma perception, and social support. Finally, subgroup comparisons through independent samples t-tests are presented, with detailed discussion of their implications in the context of health psychology and hypertension management.

**1. Socio-Demographic Profile**

The socio-demographic characteristics of the 78 hypertensive participants provide essential background for interpreting psychological outcomes.

**Table 1: Demographic Profile of Participants (N = 78)**

| (a) Gender | Frequency | Percentage |
|---|---|---|
| **Male** | 42 | 53.8% |
| **Female** | 36 | 46.2% |

| (b) Residence | Frequency | Percentage |
|---|---|---|
| **Rural** | 40 | 51.3% |
| **Urban** | 38 | 48.7% |

| (c) Education | Frequency | Percentage |
|---|---|---|
| **Secondary** | 26 | 33.3% |
| **Graduate** | 20 | 25.6% |
| **Higher Secondary** | 17 | 21.8% |
| **Postgraduate** | 8 | 10.3% |
| **Primary** | 7 | 9.0% |

| (d) Occupation | Frequency | Percentage |
|---|---|---|
| **Service** | 18 | 23.1% |
| **Homemaker** | 16 | 20.5% |
| **Farmer** | 15 | 19.2% |
| **Laborer** | 12 | 15.4% |
| **Business** | 11 | 14.1% |
| **Unemployed** | 6 | 7.7% |

| (e) Income Group | Frequency | Percentage |
|---|---|---|
| **25k–50k** | 26 | 33.3% |
| **10k–25k** | 20 | 25.6% |
| **<10k** | 16 | 20.5% |
| **50k–100k** | 12 | 15.4% |
| **>100k** | 4 | 5.1% |

| (f) Treatment Status | Frequency | Percentage |
|---|---|---|
| **On treatment** | 57 | 73.1% |
| **Not on treatment** | 21 | 26.9% |

| (g) Age | Value |
|---|---|
| **Mean** | 43.64 |
| **SD** | 8.39 |
| **Min** | 25 |
| **Max** | 60 |

**Discussion of Demographics**

The sample demonstrates near gender balance and equal representation of rural and urban participants, strengthening the internal validity of group comparisons. Education is skewed towards secondary and graduate levels, reflecting the semi-urbanized character of Saharsa district. Occupational diversity (service, farming, homemaking, labor) highlights socio-economic variability, which is important as stress levels often correlate with occupational uncertainty and income instability.

Most participants belonged to middle-income groups (₹25k–50k per month), yet nearly one-fifth earned less than ₹10k, which likely exacerbates stress and limits access to private healthcare. The mean age (43.64 years) indicates midlife adults who are particularly vulnerable to lifestyle-related chronic illnesses. About three-fourths were already on treatment, underscoring medication adherence as an important behavioral dimension in psychological adjustment.

These patterns resonate with previous health psychology literature indicating that socio-economic and educational disparities interact with stress and coping in hypertension management (Kearney et al., 2005; Marmot, 2010).

**2. Psychological and Clinical Measures**

**Table 2: Descriptive Statistics of Psychological and Clinical Measures**

| Variable | Mean | SD | Min | Max |
|---|---|---|---|---|
| **PSS-10 (Stress)** | 19.32 | 7.09 | 0.0 | 35.1 |
| **HADS-Anxiety** | 8.82 | 3.76 | 0.2 | 16.2 |
| **HADS-Depression** | 8.46 | 3.34 | 0.0 | 16.9 |
| **Resilience (CD-RISC)** | 65.76 | 11.47 | 40.9 | 92.9 |
| **Coping – Problem Focused** | 14.43 | 3.86 | 4.9 | 21.9 |
| **Coping – Emotion Focused** | 14.09 | 3.72 | 2.3 | 24.0 |
| **Stigma Perception** | 13.34 | 4.73 | 3.1 | 26.4 |
| **Social Support** | 43.34 | 8.24 | 22.6 | 60.0 |
| **Treatment Adherence (%)** | 81.01 | 14.77 | 42.5 | 100.0 |
| **Hypertension Duration (yrs)** | 5.01 | 2.80 | 0.3 | 12.6 |

**Discussion of Psychological Measures**

The mean stress score (M = 19.32, SD = 7.09) indicates moderate levels of perceived stress, consistent with hypertension patients in other community studies (Cohen & Williamson, 1988). Distress levels on HADS reveal mild anxiety (M = 8.82) and depression (M = 8.46), underscoring the psychological burden of chronic illness.

Resilience scores (M = 65.76) suggest moderate protective resources, though variation is substantial (SD = 11.47). Coping patterns reveal balanced reliance on problem-focused (M = 14.43) and emotion-focused (M = 14.09) strategies, indicating adaptive flexibility but also possible over-reliance on emotional regulation in some subgroups.

Perception of stigma (M = 13.34) is notable: while hypertension is less stigmatized than infectious diseases such as tuberculosis or HIV, participants still reported concerns about being judged for lifestyle habits or poor self-control, echoing earlier stigma studies (Scambler, 2009). Social support levels were relatively high (M = 43.34), reflecting strong family/community networks in semi-rural Bihar, which can buffer stress and enhance adherence. Treatment adherence was also encouraging (M = 81%), though nearly 20% had suboptimal compliance.

Overall, these descriptive statistics illustrate a dynamic interplay: moderate stress and distress are balanced by resilience, social support, and reasonable adherence, suggesting resilience as a mediating factor in the stress–illness pathway (Lazarus & Folkman, 1984).

### 3. Gender-wise Analysis

**Table 3: Gender-wise Means and Standard Deviations**

| Gender | PSS-10 (M± SD) | HADS-Anxiety (M± SD) | HADS-Depression (M±SD) | Problem-Focused Coping (M±SD) | Emotion-Focused Coping (M±SD) |
|---|---|---|---|---|---|
| **Male** | 19.67 ± 8.26 | 9.41 ± 3.79 | 8.98 ± 3.68 | 14.17 ± 3.82 | 13.79 ± 3.72 |
| **Female** | 18.90 ± 5.49 | 8.13 ± 3.65 | 7.85 ± 2.82 | 14.72 ± 3.94 | 14.45 ± 3.74 |

**Discussion of Gender Differences**

Males reported slightly higher stress, anxiety, and depression compared to females, while females displayed marginally higher emotion-focused coping. These findings challenge stereotypes that women report greater distress, suggesting that hypertension's psychosocial burden may manifest differently across gender roles in Saharsa.

Men in this region, often burdened with financial responsibility, may internalize stress and express it as anxiety or depression. Conversely, women, despite domestic stress, may derive resilience from family roles and emotion-focused coping strategies, such as seeking social support or acceptance. This aligns with Indian studies highlighting gendered coping differences, where men prioritize problem-solving and women rely more on emotional regulation (Matud, 2004).

### 4. Independent Samples t-Test: Male vs. Female

**Table 4: Independent Samples t-test (Male vs. Female)**

| Variable | Male Mean (SD) | Female Mean (SD) | t-value | p-value |
|---|---|---|---|---|
| **PSS-10 (Stress)** | 19.67 (8.26) | 18.90 (5.49) | 0.49 | 0.6268 |
| **Emotion-Focused Coping** | 13.79 (3.72) | 14.45 (3.74) | -0.78 | 0.4374 |

**Discussion of t-Test Results**

The t-test analysis revealed **no statistically significant gender differences** in stress (t = 0.49, p = 0.62) or emotion-focused coping (t = -0.78, p = 0.43). Although descriptive means suggested minor differences, these did not reach statistical thresholds.

This indicates that, at least within this Saharsa sample, hypertension equalizes psychological burden across genders. Stressors appear to transcend gender divides, reflecting a broader structural context where both men and women face comparable challenges of healthcare access, lifestyle modification, and chronic illness management.

These findings mirror similar non-significant gender effects in chronic illness studies in rural India (Kumar et al., 2017), though they diverge from Western literature where women often exhibit higher distress levels. This divergence may be rooted in collectivist cultural norms, which distribute stress and coping resources across family systems rather than isolating them to individuals.

### 5. Integrative Discussion

The study highlights a nuanced picture of hypertension in Saharsa district: moderate stress and distress, buffered by resilience and social support, with no major gender differences in psychological adjustment.

- **Stress–Distress Nexus:** Findings support Lazarus and Folkman's transactional model of stress (1984), where appraisal of hypertension as a chronic threat contributes to moderate perceived stress, which in turn fuels distress symptoms.
- **Resilience as a Moderator:** High variance in resilience suggests differential protective capacity. Those with higher resilience likely experienced lower distress, consistent with Connor & Davidson (2003).
- **Coping Strategies:** Balanced use of problem-focused and emotion-focused coping underscores adaptive flexibility. However, reliance on emotion-focused strategies by women raises concerns about avoidance or passive acceptance in some cases.
- **Stigma and Social Support:** Even in a relatively non-stigmatized condition, participants expressed perceived judgment, echoing stigma frameworks (Scambler, 2009). Yet, strong social support networks provided crucial buffers, as emphasized in Indian collectivist cultures.
- **Treatment Adherence:** With 81% adherence, psychological resilience and social support appear instrumental in maintaining consistent treatment behaviors.

**6. Comparison with Previous Studies**

The findings resonate with broader health psychology literature:

- Similar stress–distress links have been observed in hypertensive populations globally (Spruill, 2010).
- The role of resilience echoes TB and HIV literature, where resilience mitigates stigma's psychological toll (Van Breda, 2018).
- Non-significant gender differences align with rural Indian studies but diverge from urban/secular Western contexts, highlighting cultural specificity in stress and coping research.

Overall, the results demonstrate that hypertension patients in Saharsa district live with moderate stress and distress, balanced by resilience and social support. Gender differences were negligible, suggesting shared psychosocial burdens across men and women. These findings underline the importance of integrating resilience training, social support mobilization, and stigma reduction in community health interventions. The study enriches the understanding of hypertension not merely as a biomedical condition but as a psycho-social phenomenon embedded in cultural and socio-economic contexts.

**Conclusion**

The findings of the present study on *Hypertension, Lifestyle Stress, and Resilience in Saharsa District* highlight that participants experienced moderate levels of perceived stress, accompanied by mild anxiety and depression. Resilience and social support emerged as important protective factors, while coping styles reflected a balance between problem-focused and emotion-focused strategies. The independent samples t-test revealed no statistically significant gender differences in distress or coping, suggesting that hypertension exerts a comparable psychological burden on both men and women in this population. This pattern underscores the possibility that chronic illness, within the cultural and socio-economic context of Saharsa, affects psychological adjustment in broadly similar ways across gender lines.

For clinical psychology practice, these findings emphasize the need to integrate stress management, resilience-building, and coping-skills training into hypertension care programs. Mental health support should not be gender-specific but rather community-oriented, focusing equally on men and women. Importantly, the implications extend to broader chronic illness management, including tuberculosis programs, where stigma and distress are often more pronounced. Strengthening social support networks, reducing stigma, and embedding psychological care into routine treatment can significantly improve adherence and long-term outcomes for patients living with both hypertension and infectious conditions such as TB.

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