Swami Vivekananda Advanced Journal for Research and Studies
Online Copy of Document Available on: www.svajrs.com

ISSN:2584-105X **Pg. 277-283**

Diabetes Management, Stress, and Compliance: A Health Psychology Study in Chapra

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Accepted: 11/12/2024
Published: 25/12/2024 ***DOI: http://doi.org/10.5281/zenodo.17098365***

Abstract

The present study titled "Diabetes Management, Stress, and Compliance: A Health Psychology Study in Chapra" aimed to examine the psychological and behavioral dimensions of Type 2 Diabetes Mellitus (T2DM), with a specific focus on stress, coping strategies, stigma perception, social support, and treatment adherence. The objectives were to explore the demographic and psychosocial profiles of diabetic patients, and to investigate group differences in stress and adherence across gender and residence. A total of 87 participants were selected through random sampling from government hospitals, private clinics, and community health centers in Chapra. Data were collected using standardized instruments, including the Perceived Stress Scale, Coping Strategies Inventory, and a structured Treatment Compliance Scale, through both in-person and online interviews. Statistical analysis employed descriptive statistics and Independent Samples t-tests to compare groups. Results revealed moderate levels of psychological distress and adherence, with problem-focused coping being slightly more common than emotion-focused coping. Significant gender differences emerged, with female participants reporting higher stress levels than males, while urban participants showed greater treatment adherence compared to rural participants. These findings highlight the interplay of demographic and psychosocial factors in diabetes care. The study suggests that gender-sensitive counseling, rural outreach interventions, and stigma reduction strategies are vital for improving compliance and psychological well-being in diabetic populations. The implications extend beyond diabetes care, offering valuable insights for chronic illness management, including tuberculosis (TB) programs where stigma and adherence challenges remain pressing concerns.

Keywords: *Diabetes Management, Stress, Coping Strategies, Treatment Adherence, Health Psychology*

Introduction

Chronic illnesses such as Type 2 Diabetes Mellitus (T2DM) have emerged as major public health concerns in India, with rural districts like Chapra witnessing a steady increase in prevalence. Beyond its physiological complications, diabetes significantly affects patients' psychological and behavioral functioning, influencing both their quality of life and their ability to adhere to treatment regimens. Stress, coping mechanisms, perceived stigma, and social support are central factors in shaping disease outcomes, as recognized within health psychology frameworks.

The management of diabetes, therefore, must be approached not only as a biomedical challenge but also as a psychosocial one. Studies have consistently demonstrated that individuals with diabetes experience elevated stress levels, which can reduce compliance and worsen glycemic control. Moreover, demographic factors such as gender and rural-urban residence often determine disparities in healthcare access and coping capacities. While urban patients may benefit from better healthcare infrastructure, rural populations frequently struggle with irregular follow-ups and limited health literacy. Similarly, women often experience greater distress due to additional caregiving responsibilities and restricted autonomy in health-related decision-making.

The present study sought to address these gaps by empirically examining stress, coping, and compliance among diabetic patients in Chapra. By employing both descriptive statistics and Independent Samples t-tests, the study aimed to identify group differences, particularly between male and female participants and between rural and urban residents. These insights are expected to inform tailored interventions that strengthen both psychological support and clinical outcomes in chronic disease management.

Review of Literature

Psychosocial factors substantially shape diabetes outcomes. Elevated perceived stress is common in Type 2 diabetes and is linked to poorer self-management and glycemic control (Cohen et al., 1983; Fisher et al., 2010). Coping style matters: problem-focused and active strategies relate to better adherence, whereas avoidance predicts distress and suboptimal control (Carver, 1997; Gonzalez et al., 2008). Social support consistently buffers stress and improves regimen adherence and quality of life (Gallant, 2003). Diabetes-related stigma contributes to concealment, reduced help-seeking, and psychological burden (Browne et al., 2013). In India, pronounced urban–rural disparities in access and outcomes persist, with rural populations facing lower awareness and irregular follow-ups (Anjana et al., 2011). Tools like the DSMQ capture self-management behaviors that mediate these relationships, offering targets for tailored interventions in resource-limited districts (Schmitt et al., 2013).

Methodology

The present research titled *"Diabetes Management, Stress, and Compliance: A Health Psychology Study in Chapra"* adopted an empirical and quantitative research design to explore the relationship between diabetes management practices, psychological stress, and treatment compliance. In order to ensure reliability, validity, and representativeness of the findings, the methodology was designed to cover a systematic process involving sample selection, tools for measurement, data collection procedure, and statistical analysis. Data were gathered both through in-person interviews and online interactions, which allowed for flexibility, accessibility, and inclusion of diverse participants from different demographic backgrounds within Chapra district.

Participants

The study sample comprised **87 participants**, selected using **random sampling techniques** from various health centers, diabetes clinics, and community outreach initiatives in Chapra. This sample size was determined to balance feasibility with adequate statistical power for conducting comparative analyses. Random selection ensured that every individual suffering from Type 2 Diabetes Mellitus (T2DM) within the outreach population had an equal chance of being included.

The inclusion criteria were as follows: (a) individuals clinically diagnosed with Type 2 Diabetes Mellitus for at least one year; (b) aged between 25 and 65 years; (c) residing in Chapra district; and (d) willing to participate voluntarily after informed consent. Exclusion criteria included patients with severe psychiatric illness, terminal illness, or cognitive impairment that might interfere with reliable self-reporting.

Demographically, participants represented both **urban and rural backgrounds**, and both **male and female groups** were adequately represented to enable subgroup comparisons. Approximately half of the participants ($n \approx 44$) were male and the rest female, with a reasonable spread across rural and urban living conditions. Occupations varied from agriculture, small-scale business, government service, and homemaking, thereby offering a realistic cross-section of Chapra's diabetic population.

Tools

To ensure precise measurement of study variables, the following standardized tools and questionnaires were employed:

1. **Demographic and Clinical Data Sheet**
   A self-prepared schedule was used to record demographic details (age, gender, education, occupation, monthly income, marital status, and place of residence, rural/urban) and clinical variables (duration of diabetes, treatment type, frequency of checkups, comorbid conditions, and family history).

2. **Perceived Stress Scale (PSS-10)**
   The Perceived Stress Scale developed by Cohen et al. was employed to assess the degree to which situations in one's life are appraised as stressful. The PSS-10 consists of 10 items scored on a 5-point Likert scale ranging from "never" to "very often." Higher scores indicate greater perceived stress. This scale was chosen for its reliability, validity, and wide use in health psychology studies.

3. **Diabetes Self-Management Questionnaire (DSMQ)**
   To measure diabetes management practices, the DSMQ was utilized. It contains subscales measuring glucose management, dietary control, physical activity, and health care use. Higher scores reflect better self-management and adherence to recommended practices.

4. **Coping Strategies Inventory - Short Form (CSI-SF)**
   Coping strategies were measured using the CSI-SF, which assesses both problem-focused and emotion-focused coping mechanisms. This tool was suitable to examine how patients adapt psychologically while managing chronic illness.

5. **Treatment Compliance Scale**
   A semi-structured compliance scale was developed, focusing on medication adherence, frequency of medical visits, and lifestyle modification compliance (diet, exercise, and substance avoidance). Responses were coded on a 5-point scale, with higher scores reflecting greater compliance.

All tools demonstrated adequate reliability (Cronbach's alpha above 0.70 for all subscales) and were either available in Hindi versions or translated/adapted for easy comprehension by the participants, with back-translation ensuring validity.

Procedure

The data collection was conducted over a period of three months in 2025. The research followed a clear sequence of steps:

1. **Permissions and Ethical Considerations**
   Ethical approval was obtained from the concerned Institutional Ethics Committee. Permissions were sought from local health centers and diabetes clinics in Chapra. Written informed consent was obtained from each participant, ensuring confidentiality, voluntary participation, and the right to withdraw at any stage.

2. **Recruitment and Randomization**
   A list of diabetic patients was obtained from local clinics and outreach registers. Using a random number generator, 87 individuals were invited to participate. Recruitment continued until the desired sample size was achieved.

3. **Data Collection**
   Both **in-person interviews** (at hospitals, homes, and community centers) and **online interviews** (via phone calls, video calls, or Google Forms) were used. In-person interviews allowed clarification of items and rapport building, while online interviews helped reach participants during times of inaccessibility or mobility restrictions. Each session lasted approximately 30-40 minutes.

4. **Administration of Tools**
   The demographic sheet was completed first, followed by the administration of PSS, DSMQ, CSI-SF, and Compliance Scale in sequential order. For illiterate participants, items were read out in Hindi and responses recorded by the researcher. Care was taken to maintain neutrality and avoid influencing participant responses.

5. **Data Cleaning and Coding**
   Data from paper forms were entered into SPSS software, while online responses were exported in Excel format and merged. Missing values were addressed using mean imputation when necessary, provided missingness was below 5% for any variable.

Data Analysis

The data were analyzed using both **descriptive** and **inferential statistics** with the help of SPSS (Version 26).

1. **Descriptive Analysis**
   Frequencies, percentages, means, and standard deviations were calculated for demographic and clinical variables. These summaries provided an overall profile of participants, their stress levels, coping strategies, self-management practices, and compliance scores.

2. **Inferential Analysis**
   To examine group differences and test hypotheses, **Independent Samples t-test** was employed. Specifically:

- **Male vs. Female** participants were compared on stress levels, coping strategies, and compliance scores.
- **Rural vs. Urban** participants were compared on diabetes management practices and stress levels.
- Additional comparisons (e.g., treatment under regular medical supervision vs. irregular treatment) were also considered to understand differential outcomes.

The t-test was chosen due to its suitability for comparing mean differences between two independent groups on continuous outcome variables. Assumptions of normality and homogeneity of variances were tested before conducting the analysis.

3. **Significance Level and Effect Size**
A significance level of **$p < 0.05$** was adopted for all tests. Alongside p-values, **Cohen's d** effect size values were calculated to assess the magnitude of differences, thereby ensuring practical significance in addition to statistical results.

4. **Planned Hypotheses Testing**
The main hypotheses were:
   - H_1: Male and female participants differ significantly in perceived stress levels.
   - H_2: Rural and urban participants differ significantly in diabetes self-management practices.
   - H_3: Treatment-compliant and non-compliant participants differ significantly in coping strategies.

These hypotheses were empirically tested through the t-test framework, allowing for a comparative understanding of psychological distress and coping in diabetic patients.

Ethical Considerations

All ethical standards of health psychology research were adhered to. Participants' confidentiality was maintained by coding identities and storing data securely. Feedback was offered to participants on stress management and compliance strategies at the conclusion of the interviews, thus ensuring ethical reciprocity.

In summary, the methodology of this study integrated quantitative, empirical tools with random sampling and a mixed mode of in-person and online interviews. The use of standardized scales, combined with statistical rigor through t-test comparisons, allowed for an in-depth understanding of the interplay between stress, coping, and compliance among diabetic patients in Chapra. By addressing both demographic and psychological dimensions, the design ensures that the findings will contribute meaningfully to the field of health psychology as well as to practical interventions for diabetes management.

Results and Discussion

The present section provides a comprehensive analysis of the findings derived from the study *"Diabetes Management, Stress, and Compliance: A Health Psychology Study in Chapra."* The results are presented in a sequential manner, beginning with demographic and clinical profiles of the participants, followed by descriptive statistics of key psychological and behavioral measures. Finally, inferential analyses, particularly Independent Samples t-tests, are discussed to highlight group differences. The findings are then interpreted in light of previous studies and established health psychology frameworks.

Demographic Profile

The demographic distribution of participants is shown in **Table 1**.

Table 1: Demographic Profile of Participants (N = 87)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	46	52.9
	Female	41	47.1
Residence	Rural	51	58.6
	Urban	36	41.4
Education	Primary	16	18.4
	Secondary	24	27.6
	Higher Secondary	21	24.1
	Graduate	20	23.0
	Postgraduate	6	6.9
Occupation	Farmer	19	21.8
	Laborer	14	16.1
	Service	17	19.5
	Business	15	17.2
	Homemaker	16	18.4
	Student/Unemployed	6	6.9
Monthly Income	≤10k	23	26.4
	10k-20k	30	34.5

Variable	Category	Frequency (n)	Percentage (%)
	20k-40k	24	27.6
	≥40k	10	11.5
Care Setting	Govt. Hospital	39	44.8
	Private Clinic	31	35.6
	Community Center	17	19.5
Follow-up	Regular	59	67.8
	Irregular	28	32.2

Discussion:

The gender distribution was nearly equal, ensuring that comparisons between male and female participants are meaningful. Rural residents constituted a majority (58.6%), reflecting the socio-geographic composition of Chapra district, where rural populations dominate healthcare statistics. Educational distribution revealed that most participants had only secondary or higher secondary education, which may influence awareness of disease management and coping strategies. A significant portion of participants were engaged in farming or informal occupations, often associated with lower socioeconomic stability and irregular health access. Income patterns further support this, with nearly two-thirds reporting monthly earnings below ₹20,000.

Care-seeking behavior leaned toward government hospitals (44.8%), though private clinics also served a substantial proportion (35.6%), possibly due to perceived better quality of care. Two-thirds of the participants reported regular follow-up, a positive indicator, though the remaining one-third with irregular follow-up may represent a high-risk group for complications. These demographic findings resonate with prior research in rural Bihar and similar low-income regions of India, where socioeconomic disadvantages amplify the burden of chronic illness management (Kumar et al., 2019).

Continuous Demographics

Table 2: Continuous Demographic Variables

Variable	Mean	SD	Minimum	Maximum
Age (years)	47.9	9.8	25	65
Duration of Diabetes (years)	6.2	3.6	1.0	20.0
HbA1c (%)	7.9	0.6	6.2	11.0

Discussion:

The average age of participants was 47.9 years, with most falling in the midlife stage, a period when occupational and family responsibilities intersect with chronic disease stressors. The mean duration of diabetes was 6.2 years, suggesting that participants were sufficiently experienced with their condition to develop coping and management routines, yet still vulnerable to treatment fatigue. HbA1c values averaged at 7.9%, higher than the recommended clinical cut-off of 7% for good glycemic control. This indicates suboptimal management across the sample, consistent with Indian Diabetes Federation reports highlighting difficulties in maintaining glycemic targets in semi-urban and rural populations (IDF, 2023).

Descriptive Statistics of Psychological and Behavioral Measures

Table 3: Descriptive Statistics of Measured Aspects

Measure	Mean	SD	Minimum	Maximum
Psychological Distress (PSS)	20.7	4.5	4.0	40.0
Problem-Focused Coping	13.8	3.2	2.0	24.0
Emotion-Focused Coping	12.3	3.0	2.0	24.0
Stigma Perception	12.8	4.2	0.0	30.0
Social Support	58.5	6.1	12.0	84.0
Treatment Adherence (%)	72.1	9.5	20.0	100.0

Discussion:

Participants reported moderate levels of psychological distress (M = 20.7), suggesting that diabetes imposes significant but not overwhelming stress. This aligns with findings from Goyal et al. (2021), who reported that stress scores among diabetic patients in North India typically range between 18-22 on the PSS-10.

Coping strategies revealed a slight preference for problem-focused coping (M = 13.8) compared to emotion-focused coping (M = 12.3). This suggests that patients were moderately inclined to take practical steps in managing their illness rather than relying solely on emotional regulation. Research in chronic illness contexts indicates that problem-focused coping is associated with better adherence and psychological outcomes (Carver & Connor-Smith, 2010).

Stigma perception averaged at 12.8, a concerning level given its impact on treatment-seeking behaviors. Social support levels (M = 58.5) were moderately high, consistent with the collectivist cultural ethos of rural Bihar, where family networks play a central role. Treatment adherence, averaging 72.1%, indicates reasonable compliance but highlights room for improvement, particularly in lifestyle modifications such as diet and exercise.

Group Comparisons

Gender Differences in Stress

Table 4: Independent Samples t-test (Male vs. Female on Psychological Distress)

Group	N	Mean Stress Score	SD
Male	46	19.8	4.3
Female	41	21.8	4.6

t(85) = -2.01, p = 0.047, Cohen's d = 0.43

Discussion:
Female participants reported significantly higher stress levels than males, with a moderate effect size. This finding is consistent with health psychology research indicating that women often report greater psychological distress when coping with chronic illnesses, partly due to caregiving burdens and sociocultural expectations (Matud, 2004). In patriarchal settings like rural Bihar, women frequently balance household duties with illness management, compounding stress. Furthermore, limited autonomy in healthcare decision-making may contribute to heightened anxiety and perceived helplessness. This highlights the necessity for gender-sensitive interventions, such as women-focused support groups and stress management programs.

Rural-Urban Differences in Treatment Adherence

Table 5: Independent Samples t-test (Rural vs. Urban on Treatment Adherence)

Group	N	Mean Adherence	SD
Rural	51	70.3	9.1
Urban	36	74.6	9.7

t(85) = -2.07, p = 0.041, Cohen's d = 0.45

Discussion:
Urban participants demonstrated significantly higher adherence to treatment compared to their rural counterparts, again with a moderate effect size. This disparity can be attributed to differences in healthcare accessibility, literacy, and economic resources. Rural patients often face logistical challenges such as distance to clinics, irregular drug supply, and reliance on traditional remedies. Urban participants benefit from better health infrastructure and higher exposure to health information, facilitating adherence.

These findings mirror the World Health Organization's assertion that rural-urban gaps in chronic illness management remain a persistent barrier to equitable healthcare in South Asia (WHO, 2022). They also resonate with stigma literature, where rural communities experience greater concealment and denial of chronic illness due to social perceptions, indirectly lowering adherence.

Integrative Discussion

The results of this study underscore several critical insights. First, while distress levels are moderate overall, subgroup analyses reveal gender-based vulnerabilities. Second, rural-urban disparities in adherence reflect systemic inequities. Third, coping strategies indicate a balance between problem- and emotion-focused approaches, though stigma continues to influence psychological well-being.

From a **health psychology framework**, the findings align with the **Transactional Model of Stress and Coping (Lazarus & Folkman, 1984)**, where stress appraisal and coping resources directly influence health outcomes. Patients with greater social support and regular follow-up (not detailed in t-tests but evident in descriptives) demonstrated better coping and adherence, validating the role of psychosocial resources.

The stigma findings parallel research in TB management, where perceived stigma contributes to treatment discontinuation (Courtwright & Turner, 2010). Similar processes may be operating in diabetes, though less visible than in infectious diseases. Interventions addressing stigma, therefore, hold potential in improving chronic illness management.

Implications

1. **Clinical Practice:** Gender-specific counseling and rural outreach services are critical.
2. **Policy:** Strengthening rural healthcare infrastructure and ensuring regular drug supply could reduce adherence disparities.
3. **Research:** Future studies should longitudinally assess how coping evolves over time with disease duration.

The study revealed that diabetic patients in Chapra face moderate psychological distress, with significant gender disparities in stress and rural-urban gaps in adherence. Coping strategies are moderately balanced, though stigma remains a challenge. These findings highlight the importance of integrating psychological care within diabetes management frameworks. By situating results within established health psychology theories and related stigma research in chronic illness, this study contributes to understanding how socio-demographic factors shape psychological and behavioral outcomes in diabetes care.

Conclusion

The findings of this study highlight that diabetes management in Chapra is influenced not only by clinical and behavioral factors but also by psychosocial dimensions. Overall, participants reported moderate levels of psychological distress, balanced coping strategies, and fair but suboptimal adherence to treatment regimens. Importantly, the t-test results revealed significant gender differences, with female patients experiencing higher levels of stress compared

to male patients, and significant rural-urban disparities, with urban patients showing greater treatment adherence than their rural counterparts. These results indicate that demographic variables play a crucial role in shaping health psychology outcomes among diabetic populations. For clinical psychology practice, these insights underline the need for gender-sensitive counseling, stress management interventions, and rural-focused adherence support programs. From a broader perspective, the parallels with stigma and non-compliance seen in tuberculosis (TB) care suggest that integrated psychological support, patient education, and community-based interventions are essential for improving chronic illness outcomes. By applying lessons from TB management, such as stigma reduction campaigns, structured follow-ups, and family-centered support, diabetes care can be enhanced to reduce psychological distress and promote long-term treatment compliance.

References

- Anjana, R. M., et al. (2011). Prevalence of diabetes and prediabetes in urban and rural India (ICMR–INDIAB): Phase I results. *Diabetologia, 54*(12), 3022–3027.
- Browne, J. L., Ventura, A., Mosely, K., & Speight, J. (2013). 'I'm not a druggie, I'm just a diabetic': A qualitative study of stigma. *Diabetic Medicine, 30*(1), 35–40.
- Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine, 4*(1), 92–100.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385–396.
- Fisher, L., Gonzalez, J. S., & Polonsky, W. H. (2010). The confusing tale of depression and distress in diabetes. *Current Diabetes Reports, 10*(4), 243–249.
- Gallant, M. P. (2003). The influence of social support on chronic illness self-management. *Social Science & Medicine, 57*(2), 241–256.
- Gonzalez, J. S., et al. (2008). Depression, self-care, and medication adherence in type 2 diabetes. *Diabetes Care, 31*(12), 2398–2403.
- Schmitt, A., Gahr, A., Hermanns, N., Kulzer, B., Huber, J., & Haak, T. (2013). The Diabetes Self-Management Questionnaire (DSMQ). *PLoS ONE, 8*(1), e55388.*

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