Analysis of Stress in Type 2 Diabetes Mellitus Patients and Its Homeopathic Management

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Abstract—Type 2 Diabetes Mellitus (T2DM) is a chronic metabolic disorder influenced by psychological stress, which adversely impacts glycemic control. The present study aimed to assess stress levels in T2DM patients and evaluate the effectiveness of individualized homeopathic management in reducing stress and improving glycemic control.

A prospective interventional study was conducted among 49 T2DM patients aged 18–70 years, experiencing moderate-to-severe stress. Stress was assessed using the Depression Anxiety Stress Scale (DASS-21), and glycemic control was measured through Fasting Blood Sugar (FBS) and Post-Prandial Blood Sugar (PPBS) levels. Individualized homeopathic remedies were prescribed over 3–6 months, with follow-ups every two weeks. Data were analyzed using descriptive statistics and paired t-tests.

Results revealed significant improvements in glycemic parameters, with mean FBS reduced from 127.27 mg/dL to 113.96 mg/dL ($p < 0.001$) and PPBS from 229.92 mg/dL to 176.20 mg/dL ($p < 0.001$). Depression, anxiety, and stress scores also decreased markedly, with most participants shifting into the normal range.

The findings confirm a strong association between stress and glycemic control, and suggest that individualized homeopathy may be an effective adjunctive therapy in the holistic management of T2DM. Keywords: Type 2 Diabetes Mellitus, Stress, Homeopathy, DASS-21, Glycemic Control, Complementary Medicine

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I. Introduction

Type 2 Diabetes Mellitus (T2DM) is a chronic lifestyle-related metabolic disorder characterized by insulin resistance and hyperglycemia. Globally, the prevalence of diabetes has been rising, with projections indicating a substantial increase in low- and middle-income countries. Psychological stress has been identified as a key factor that exacerbates poor glycemic control, mediated through hypothalamic–pituitary–adrenal (HPA) axis dysregulation and increased cortisol secretion.

Stress worsens depression, anxiety, and overall quality of life in diabetic patients. Therefore, interventions targeting stress reduction have become essential in integrative diabetes care. Homeopathy, with its individualized and holistic approach, offers potential benefits for both physiological and psychological symptoms. This study investigates the association between stress and glycemic control, and evaluates the role of individualized homeopathy in T2DM management.

II. Objectives

1. To assess stress levels in T2DM patients using DASS-21.
2. To analyze the correlation between stress and glycemic control.
3. To evaluate the effectiveness of individualized homeopathic treatment in reducing stress and improving diabetes outcomes.

Hypothesis: Higher stress levels correlate with poor glycemic control, and individualized homeopathic intervention can improve stress and glycemic parameters.

III. Methodology

Design: Prospective interventional study (single-arm pre–post design).
Sample: 49 patients with T2DM (18–70 years) experiencing moderate-to-severe stress.
Setting: Government Homeopathy Medical College and Hospital, Basveshwara Nagar, Bengaluru, and Anika Homeopathy Clinic, RR Nagar, Bengaluru.
Inclusion Criteria: Diagnosed with T2DM >6 months; HbA1c 5–9%; moderate-to-severe stress.
Exclusion Criteria: Severe complications of T2DM (nephropathy, neuropathy, hypoglycemia).

Tools:
- DASS-21 for stress, anxiety, and depression.
- Laboratory investigations for FBS and PPBS.
- Homeopathic case proforma for individualized prescriptions.

Intervention: Individualized homeopathic remedies, prescribed after repertorization, administered over 3–6 months with biweekly follow-ups.

Data Analysis: Descriptive statistics, paired t-tests, and correlation analysis.

IV. Results

- Fasting Blood Sugar (FBS): Reduced from 127.27 mg/dL to 113.96 mg/dL ($p < 0.001$).
- Post-Prandial Blood Sugar (PPBS): Reduced from 229.92 mg/dL to 176.20 mg/dL ($p < 0.001$).
- Depression: Moderate cases reduced from 17 to 4; severe cases eliminated.
- Anxiety: Moderate cases decreased from 20 to 8; severe cases reduced from 4 to 1.
- Stress: Normal range increased from 20 to 41 participants; moderate cases dropped from 15 to 3.

V. Discussion

The results support the association between stress and poor glycemic outcomes in T2DM patients. Significant reductions in stress, anxiety, and depression following homeopathic intervention suggest its effectiveness as a holistic therapy. Improvements in glycemic control confirm the interconnectedness of psychological and physiological health. Homeopathy's individualized approach, focusing on both mental and physical symptomatology, appears to enhance stress resilience and improve metabolic stability.

VI. Conclusion

- Stress significantly impacts glycemic control in T2DM patients.
- Individualized homeopathic treatment effectively reduced stress, depression, and anxiety.
- Improvements in psychological well-being correlated with enhanced glycemic outcomes.
- Homeopathy may serve as a complementary intervention in integrative diabetes management.

VII. Limitations

- Small sample size (n=49).
- Absence of a control group.
- Short follow-up duration (3–6 months).
- Reliance on self-reported measures (DASS-21).

VIII. Recommendations

- Larger randomized controlled trials with long-term follow-up.
- Integration of stress-reduction strategies (e.g., CBT, mindfulness) with homeopathy.
- Use of objective biomarkers such as cortisol for stress assessment.
- Comparative studies of homeopathy with other stress-management modalities.

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