Case Report

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ROLE OF DIABETES DISTRESS MANAGEMENT WITH HYPNOTHERAPY IN THE OUTCOME OF DIABETES: A CASE REPORT

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ABSTRACT

The lifestyle modifications in Diabetes Mellitus, including diet restrictions, drug adherence and blood sugar monitoring, contribute to considerable stress and result in adverse psychological reactions, termed as Diabetes Distress (DD) and need psychological support in its management. DD has a positive association with glycaemic levels and negatively affects the Quality of Life (QoL), including physical, psychological, sexual and social events. Interventions include psychiatric medication, with limited outcomes and adverse effects. The paper discusses a case of DD effectively managed with hypnotherapy and Ayurvedic medicines for Diabetes Mellitus. A 44-year-old female presented with complaints of increased tension about her blood sugar level, anxious mood, reduced sleep, frequent and frothy urination and numbness of the big toes of her bilateral foot. The case was diagnosed as Diabetes Mellitus associated with DD. 4 sessions of Hypnotherapy of 45 minutes, weekly once was administered for 4 weeks. There was symptomatic improvement and reduction in blood sugar level. The overall DDS score was reduced from 4 to 1.8, and the quality of sleep and QoL improved on the 30th day. This points to the necessity of addressing DD to enhance the outcome of Diabetes Mellitus.

Keywords: Diabetes Distress, Diabetes Mellitus, Hypnotherapy, DDS 17

INTRODUCTION

Diabetes mellitus is a group of lifestyle metabolic disorders characterized by chronic hyperglycaemia associated with carbohydrate, fat and protein metabolism disturbances due to absolute or relative deficiency in insulin secretion and/or action. Over the past few decades, the global prevalence of Diabetes has been steadily increasing, which makes it a significant public health problem. The global prevalence has risen from 4.7% to 8.5% in the adult population and has created substantial economic loss for people with Diabetes Mellitus and their families[1]. The prevalence of Diabetes in India has risen from 7.1% in 2009 to 8.9% in 2019, while 57% of Diabetes among the adult population are undiagnosed[2].

Diabetes distress is often a hidden emotional burden that the patient experiences while managing a psychologically challenging disease such as Diabetes. DD can be referred to as adverse psychological reactions while managing a problematic disease like Diabetes, which demands the care of a mental health specialist. According to WHO, the global prevalence ranges between 18 and 35%[3]. In India, the prevalence is estimated to be 33%[4]. The patient may seem less motivated with their diabetic regimens, feel guilty, angry, lonely, burned out, etc., which can adversely affect their physical, psychological, familial as well as social aspects of life[5]. Conventional management includes oral hypoglycemic agents, daily insulin injections, exercise, diet etc. This may lead to stress, which in turn exacerbates the condition.

In Ayurveda, stress factors are mentioned in the etiological factors of Prameha by Acharya Charaka. Soka (grief) and udwega (anxiety) are explained among other causes for developing Vatika Prameha[6]. Similarly, srama (mental exertion) and krodha (anger) are explained while describing the nidana of Paittika Prameha[6]. Stress is more prevalent among Vata Paittika Prameha rogi than other types[7]. The management should include measures to address the stress factor, which can improve the overall outcome of Diabetes Mellitus. Internal medicines, which are Vata-Pittahara in action and anxiolytics, antioxidants, and anti-stress, will be beneficial here. Procedures such as sirodhara (pouring warm oil, buttermilk, or decoctions onto the forehead) and nasya (nasal instillation of medicines) could be administered in severe cases.

Psychotherapies are observed to be effective in managing DD by focusing on emotion regulation and behavioural modification. Hypnotherapy is one such therapy that uses hypnosis in the treatment of medical or psychological disorders or concerns. Hypnosis is a state of consciousness with increased focused attention and reduced peripheral awareness where the subject becomes more suggestible. When a person enters hypnosis, the metabolic system improves, and the body is freed from tension. It can change a person's initial behaviour into a new one, according to the given suggestions. The suggestion is according to the person's need for the disease condition. It is a non-pharmacological therapy that reduces blood glucose levels in people with diabetes. Studies have proven that hypnotherapy is effective in addressing stress in Diabetes and reducing blood glucose levels in Diabetes[8].

Instead of an additional medicine for stress management, which can add to their burden, hypnotherapy is feasible to administer in such patients.

Patient information

A 44-year-old female attended the OPD (Kayachikitsa OPD of VPSV Ayurveda College Hospital, Kottakal, Kerala, India) complaining of increased blood sugar levels from the past 2 years. On further interrogation, she also revealed increased tension about high blood sugar levels, frequent and frothy micturition, numbness of big toes of bilateral foot and reduced sleep for the past 6 months. She was a known case of Diabetes Mellitus for 10 years and had a positive family history of Diabetes Mellitus. Initially, she followed regular exercise, diet, and conventional management, and her blood glucose levels were controlled. She switched to Ayurveda medications and was maintaining the glycaemic status. Later, she was not adhering to a particular medicine and lost interest in following the diabetic regimens.

In the past few months, she noticed increased blood sugar levels and developed fear about the same. She was also anxious about the diabetic complications that may happen in future and anticipated the worst to happen to her. She lost motivation to keep up with the regimens, which again resulted in fluctuations in blood glucose levels. Gradually, she developed frequent and frothy urination, numbness of the big toes of the bilateral foot, and reduced sleep with difficulty in maintaining sleep. She attended the OPD of the hospital with complaints of elevated blood glucose levels and took medicines for the same, but glycaemic levels were not under control. Later on, on detailing her history, stress was observed as a causative factor for the uncontrolled sugar levels and other symptoms. A mental status examination was executed to assess the patient's current status (Table 1).

MATERIALS AND METHODS

This treatment protocol obtained approval from the Institutional Review Board. Written consent was obtained from the patient. The patient attended the OPD of VPSV Ayurveda College Hospital, Kottakkal, Kerala, 676501, India.

Ethical consideration: The study was carried out per the International Conference on Harmonization-Good Clinical Practices Guidelines (ICH-GCP) guidelines.

Declaration of patient consent: Authors certify that they have obtained a patient consent form, where the patients are permitted to report the case along with the images and other clinical information in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Current medications

Nisakathakadi kashayam[9] 90 ml, twice daily, before food; Amrithamehari churnam 5 gm, twice daily, after food with lukewarm water; and Niruryadi Gulika[10] 1 tablet twice daily, after food. All the medicines are Pramehahara (reducing the signs and symptoms of Diabetes Mellitus) in action.

Table 1: Mental Status Examination

General appearance and behaviour	
Grooming and dressing	Appropriately dressed
Touch with surrounding	Maintained
Eye-to-eye contact	Maintained throughout the interview
Attitude towards examiner	Co-operative
Comprehension	Intact
Gait and posture	No abnormal gait/posture
Motor activity	Normal
Rapport	Established
Speech	
Voice and speech Intensity and pitch	Normal
Reaction time	Normal
Speed	Reduced
Relevance and coherence	Relevant and coherent
Disorder of volition	Nil
Mood	Anxious
Affect	Happy
Perception	Nil
Thought	
Form/Process	Continuous
Content	Preoccupied with Diabetes Mellitus
Cognitive functions	Intact
Consciousness	Alert and aroused
Attention	Intact
Concentration	Intact
Orientation	Oriented to time, place and person
Memory	Intact
Abstract thinking	Intact
Intelligence	Good
Insight	Grade 1
Judgement	Intact
Impulsivity	Absent

Clinical findings

Table 2: Dasavidha pareeksha (Tenfold examination of patient)

Dooshyam	Dosa: Vata – Pitta Dhathu: Rasa, Raktha
Desham	Bhoomi desa: Jangala Deha desa: Sarva sareera, Manas
Balam	Rogam: Madhyama Rogi: Madhyama
Kalam	Kshanadi: Sarath Vyadhyavastha: Nava
Analam	Vishamagni
Prakrithi	Deha prakrithi: Kapha – Vata Manasa prakrithi: Rajasaa – Tamasa
Vaya	Madhyama
Satvam	Avara
Satmyam	Sarvarasa satmya
Ahara sakthi	Abhyavaharana Sakthi: Madhyama Jarana Sakthi: Madhyama

Dasavidha Pareeksha (Tenfold examination of patient) was done, and the dosha was assessed to be Vata-Pitta with symptoms of frequent and frothy urination, numbness of big toes of bilateral foot, reduced sleep, increased tension, anxious mood. Dhathus affected were Rasa, Raktha and Sukra, with symptoms of irregular appetite, numbness of bilateral big toes of the foot, and reduced interest in sexual life. Bhumi desa is sadharana and deha desa is sarvasareera and manas. Roga bala and rogi bala were madhyama. In kala, kshanadi is sarvarithu, and vyadhyavastha is navam. Anala was assessed to be vishamagni and sareerika prakrithi was Kapha Vata and manasika prakrithi is Rajasa-Tamasa. Vaya is madhyama, sattva is avara, satmya is madhyama. Abhyavaharana sakthi and aharana sakthi are assessed to be madhayama.

Table 3: Ayurvedic mental status examination (Ashta Vibhrama)

Faculty	Vibhrama	Features
1. Mana (thoughts/mental faculties)	Present	Unable to control the increased thoughts about Diabetes Mellitus
2. Buddi (intellect)	Present	Could not differentiate or decide over the diabetic regimens to be adopted
3. Samja (awareness/orientation)	Absent	
4. Smriti (memory)	Absent	
5. Bhakti (desire)	Present	Loss of interest in previous activities
6. Seela (habits and temperament)	Absent	
7. Cheshta (psychomotor activities)	Absent	
8. Achara (routine activities of daily living)	Absent	

In Ayurveda psychiatric examination (Ashta vibhrama pareeksha) (Table 3), the domains of Manas (thoughts/mental faculties), budhi (intellect) and bhakti (desire) were affected.

Diagnostic assessment

The symptoms, including increased tension about blood sugar level, anxious mood, reduced sleep, frequent and frothy urination and numbness of big toes of the bilateral foot, were suggestive of Diabetes Mellitus and associated stress. Diabetes Distress Screening Scale (DDS 17)[11] was used to diagnose and assess DD. The mean score of 4 domains in the scales, namely emotional burden, physician-related distress, regimen-related distress, and interpersonal distress, was four, indicating the patient has a high level of distress and needs clinical intervention. Diabetes distress of severe level was the final diagnosis. According to Ayurveda, Prameha Upadrava (Diabetic complications) was the diagnosis.

Therapeutic intervention Hypnotherapy

Hypnotherapy of 45 minutes duration was administered in 4 sessions in the patient. Each session involved five steps: initial rapport creation, relaxation, induction, suggestions, and emerging out. Initial rapport creation is for proper understanding of the subject, the performance of suggestibility tests to assess the hypnotizability of subjects and the recognition of their concerns. Induction followed the progressive muscle relaxation (PMR) method to deepen the relaxation using the countdown method. When the subject enters into a trance state, positive suggestions are administered that are suitable for the condition in the subconscious mind for acquiring desired actions in the future. Then, the patient is brought back from a trance state to a conscious level by emerging out method. Sessions were carried out once a week for four consecutive weeks. The patient was provided with the pre-recorded audio tape of the procedure for autohypnosis at their home

Assessments and outcomes

Assessment of DD was done using DDS 17 (4 domains) 0^{th} day (BT), 30^{th} day (AT1) and 45^{th} day (AT2). PSQI and D39 were assessed on the 0^{th} and 30^{th} day. A reduction of scores in DDS 17, PSQI and D 39 were noted after the intervention. FBS and PPBS were done to assess the blood glucose levels on the 0^{th}, 15^{th}, 30^{th} and 45^{th} days, during which a reduction in values was noticed.

Table 4: Diabetes Distress Screening Scale (DDS 17)

	Emotional burden	Physician related distress	Regimen related distress	Interpersonal distress	Total mean score
BT	5.2	2.25	4.6	3.33	4
AT1	3.8	1.5	2.6	3.33	2.8
AT2	2.4	1	1.4	3	1.88

Table 5: Assessment with PSQI & D 39 scales

Scales	0th day	30th day
PSQI	15	6
D 39	143	60

Table 6: Investigations

	0th day	15th day	30th day	45th day
FBS (mg/dl)	304	257	251	236
PPBS (mg/dl)	492	487	325	276

RESULTS AND DISCUSSION

Assessments were done using the Diabetes Distress Screening Scale (DDS 17) (Table 4), which showed a mean score of 4, Pittsburgh Sleep Quality Index (PSQI) (Table 5) and Diabetes 39 (D 39) (Table 5), which showed a total score of 15 and 143 before intervention and 2, 6, 60 respectively after intervention. FBS (Table 6), which showed a value of 304mg/dl on the 0^{th} day, was reduced to 236mg/dl on the 45^{th} day. PPBS (Table 6), with a value of 492mg/dl, was reduced to 276mg/dl on the 45^{th} day.

Diabetes Mellitus is a chronic disease which can be a burden regarding the regimens to be followed by the patient, which in turn results in hyperglycemia. Stress management, in addition to conventional management, is crucial in improving the outcome of Diabetes Mellitus. Diabetes distress, which is often an unidentified cause for the fluctuations in blood glucose levels and poor quality of life of the patient, needs to be addressed. Hypnotherapy, which is a practice to manage stress among diabetic patients, showed promising results in this patient.

The patient was on Ayurveda internal medicines such as Nisakatakadi kashaya, Amritamehari churna, and Niruryadi gulika, Pramehahara. Nisakatakadi kashaya is observed to be beneficial in the management of Prameha by reducing symptoms such as avila mootratha (frothy urine), karpadatala suptatha (numbness/burning sensation in hands and feet), FBS and PPBS levels[12] etc. Niruryadi gulika is observed to be effective in patients presenting with frothiness of urine associated with Diabetes Mellitus. Amritamehari churna also helps regulate blood sugar levels in diabetic patients.

Table 7: Hypnotherapy assessment

Sessions	Observations
1st	She seemed to be restless, moving her head from side to side Reported “freshness of mind” after the session
2nd	Restlessness reduced She reported she was getting “enough sleep.”
3rd	Seemed to be calm
4th	Was calm throughout the procedure Reported “energy level has increased”

After four sessions of hypnotherapy in the patient, the severity of DD has reduced from severe to mild. During the first hypnotherapy session, the patient showed restless movements, moving her head from side to side (Table 7). During the 2^{nd}, 3^{rd} and 4^{th} sessions, she seemed to be comfortable. Scores were reduced in all four domains of the DDS 17 scale after the intervention. The emotional burden domain, which had a score of 5.2, was reduced to 2.4 after the intervention, which was reflected in terms of a reduction in anger, sadness, and irritability, which she felt thinking about living with Diabetes Mellitus. Physician-related and Regimen-related distress scores were reduced from 2.25 and 4.6 to 1 and 1.4, respectively. It was accompanied by motivation to keep up with the regimens she followed. The score of interpersonal distress was reduced from 3.33 to 3, which indicated that the patient was getting less support from her family regarding her health. Overall, the reduction in the score was accompanied by reduced anxious thoughts and decreased tension regarding the diabetic regimens she followed.

Blood sugar levels were observed to be reduced after the intervention. FBS showed a reduction from 304 mg/dl to 257mg/dl and PPBS from 492 mg/dl to 487mg/dl after 15 days of intervention. The FBS value again was reduced to 251 mg/dl and 236 mg/dl, and the PPBS value was 325 mg/dl and 276 mg/dl on the 30^{th} and 45^{th} days, respectively.

Sleep has improved in terms of quality and quantity. The patient was having difficulty in maintaining sleep, which has been relieved after the intervention with hypnotherapy. Quality of life has also improved, and the patient reported enhancing her capacity to handle overall stress in daily life.

HPA axis plays a vital role in stress regulation, and hypnotherapy has the potential to modulate it by influencing the subconscious mind. It regulates the stress hormones[13], including cortisol, which, in turn, reduces stress levels. The induction of hypnosis and modulation with positive suggestions alters the subjective feelings of patients positively. During the therapeutic trance period, the subjects are receptive to other patterns of associations. These positive experiences are responsible for the observed behavioural, emotional, and physiological changes.

CONCLUSION

Stress management and conventional management have enhanced the outcome of Diabetes Mellitus. Hypnotherapy effectively managed stress and reduced DD, which helped lower the increased blood glucose levels. Reduction in blood glucose levels was accompanied by symptomatic relief, such as relief in numbness of bilateral thumbs of foot, frequency and frothiness of urine, and sleep disturbances. The quality of life has been improved. The positive suggestions helped the patient to keep up with her diabetic regimens and also improved their quality of life. Stress screening can be done at routine diabetic consultations. Large sample studies can be undertaken to assess the effect of hypnotherapy on DD and the impact of stress management in improving the outcome of Diabetes Mellitus.

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