

ORIGINAL RESEARCH

PAIN MANAGEMENT

Managing neuropathic pain through hypnosis among diabetics

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ABSTRACT

Background & Objective: The global prevalence of diabetes is increasing with a variety of physiological, psychosomatic, and psychological manifestations. Literature review is evident in favor of modern psychological therapies, including hypnosis with circle therapy, which has been proven effective for the management of many such problems. We aimed to assess the effects of hypnosis on neuropathic pain management among diabetics, for this purpose, a manualized intervention plan was developed comprising hypnosis suggestions using circle therapy.

Methodology: In this study, 20 diabetics (Type-1 and Type-2) ages 40–60 y, were selected through a non-probability purposive sampling technique. One group pre-test/post-test experimental research design was used. A demographic questionnaire, and Douleur Neuropathic pain rating scale (DN-4), was used for pre- and post-assessment of the patients.

Results: Data obtained were analyzed through SPSS-21, t-test was used for the analysis of the results. Pre- and post-session assessment was done. After pre-assessment two hypnosis sessions along with circle therapy were administered to the patient. After the application of therapy, post-assessment was done, and it was seen that the hypnosis along with circle therapy had significant ($P < 0.05$) effect for diabetic neuropathic pain management among diabetics.

Conclusion: From the current study and the literature review, it is concluded that diabetic neuropathic pain is manageable through hypnosis and circle therapy. Hypnosis and circle therapy is an effective technique for psychological pain management as it is a brief and less costly technique that can be applied without any side effects. It showed short-term effects but can be prolonged with multiple sessions of circle therapy.

Abbreviations: DM - Diabetes Mellitus; DN-4 - Douleur Neuropathic Scale-4; DPN – Diabetic Peripheral Neuropathy.

Keywords: Neuropathic Pain; Diabetes Mellitus; Hypnosis; Circle Therapy

Citation: Kubra K, Rafiq M, Adnan M. Managing neuropathic pain through hypnosis among diabetics. *Anaesth. pain intensive care* 2023;27(3):338–342; DOI: [10.35975/apic.v27i3.1720](https://doi.org/10.35975/apic.v27i3.1720)

Received: December 16, 2021; **Reviewed:** January 20, 2022; **Accepted:** February 13, 2023

1. INTRODUCTION

Neuropathic pain is a complex and heterogeneous disorder because approximately 8% of the adult population is estimated to be suffering from it. These patients usually do not accept their illness and continue to be a burden towards their families, friends and the society.¹ Chronic diabetes with neuropathic pain had a

greater effect on the mental health of patients either with type-1 diabetes or type-2.² And it is also considered as ‘depressogenic’.³ It has been associated with multiple factors including biological, psychological, and behavioural factors. Diabetic neuropathic pain is a common complication of diabetes mellitus and is characterized by different clinical aspects, which in 80% of the patients involves a distal symmetrical part of the

body.³ It starts at the foot and goes to the distal part of the upper and lower limbs. Biochemical mutations are related to the endocrinological system and psychological factors are acquired from the environment, and behavioral factors included poor diet or sleep patterns.⁴

Severity of neuropathic pain in patients with diabetic peripheral neuropathy (DPN) triggers the symptoms of anxiety, depression, and sleep disturbance, also disturbing the metabolic functioning of diabetics.⁵ The 'Gate Control Theory' suggested that people with poor attention span can feel hurdles to overcome chronic pain. Hence the perception of pain can either be with strong intensity or stoppable by the help of thoughts transferred from the brain in the form of a message to descending fibers. According to the biopsychosocial model chronic pain is induced by the contribution of both three factors that can be biological, psychological and social, so chronic pain increases or decreases with the perception of pain.⁶ There are different pharmacological methods used to treat pain, but these are all long-term procedures and have many side effects.

Psychological approaches are important for the management of pain; different therapies have been used for this purpose. 'Cognitive Behavior Therapy'²⁶ is talk therapy that emphasizes conscious thoughts and behavior in the modification of our emotional experiences. A 'Commitment and Acceptance' therapy²⁷ is also used for pain management. But these are all long-term methods, that produce exertion and mental exhaustion in the client, so the patient cannot continue for the long term.⁸

A novel therapy "Circle Therapy" along with the Kappasonian model of hypnosis has been effective for the management of different disorders. Hypnosis is a special kind of therapy, and is used to treat biological pains (headaches and migraine) because this technique with circle therapy can decrease chronic pain related to medical procedures.⁹ Hypnosis directly approaches the subconscious mind after shutting the critical mind, it heightened the suggestibility from the external environment and produces a trance state. It easily touches our memories and helps to release bottled-up feelings and emotions. In 'Circle Therapy', the client undergoes a brief state of fight/flight leading to trance that is hyper suggestible state.¹¹ Here message units are important, which are information that disorganizes the critical faculty of the participants and puts the clients in the subconscious mind which is the highly suggestible state of mind. So, circle therapy along with hypnosis is effective for DNP management. The client is asked to draw a circle and keep drawing the circle until pain will be settled, repetition of hypnotic suggestions helps the client to reduce the symptoms of pain. and the data obtained from our study also indicated the significance

of circle therapy in lowering pain. It had been used for both interventions: medical and therapeutic purposes to diminish the pain.¹⁰ We conducted this study to find out the evidence of neuropathic pain and mental health problems through hypnosis and circle therapy among diabetics.

2. METHODOLOGY

2.1. Research Design

The present study was based on an experimental research design, one group pre-test and post-test experimental research design was used. A sample of 20 diabetics, both type-1 and type-2, were selected through non-probability purposive sampling techniques.

2.2. Procedure

Before the application of the hypnosis and circle therapy, the Douler Neuropathic-4 (DN-4) questionnaire was used for pre-and post-assessment of neuropathic pain, and the following parameters were used for further process.¹

2.2.1. Initial interview: First of all, an unstructured clinical interview was conducted with the patient, in which the questionnaire was open-ended, the researcher introduced, and rapport was built with the patient by using matching and mirroring, leading and pacing techniques, and confidentiality was assured. The purpose was to allow the patient to open up about his or her problems and could actively participate in this research. During the interview, the patient was briefly explained the terms and conditions of the research and intervention plan, and the strategy to be used in therapy was also explained. The patient was assured that there are no side effects of hypnosis, it is a short-term process, that can be easily managed and will not harm the patient.

2.2.2. Informed consent: Informed consent is a compulsory element before the start of the intervention, so verbal consent was taken from the patient, and again confidentiality was assured throughout the research process. The patient was allowed to leave the research at any time.

2.2.3. Demographic form: The demographic form consisted of basic demographical variables, including gender, age, marital status, job status, profession, family system, type of disease, methods of treatment, and duration of treatment.

2.2.4. Pre-rating: Pre-rating is a baseline, that is taken from all the participants of the research so that the frequency and intensity of pain can be measured. For this purpose DN-4 was used.

2.2.5. Suggestibility test: It is a message unit, that is received and interpreted by the patient. According to Dr.

Kappa's,¹² there are two kinds of suggestibility; physical and emotional. Emotional suggestible people prefer to listen with an indirectly soft tone, while physically suggestible people prefer to listen directly to loud sounds. There are different techniques to check out the suggestibility of participants.

But in this research, the finger spreading test was used. In this test, the participant was asked to hold his/ her right forearm equal to his eye level, with the palm in the air a 10-inches away, and the clinical researcher used both soft and loud tones suggestions to the patient to spread his/her fingers. The tone to which the patient responded properly indicated the suggestibility of the patient. The same procedure was repeated with the left arm.

2.2.6. General instruction: It included keeping silent during the hypnotic session, and the patient can respond to suggestions by using her index finger. A blank sheet of paper and a pen were also provided to the patient for rough work during therapy.

2.2.7. Hypnotic induction: For induction of hypnosis, the eye fascination technique was used. The eye fascination technique diverts the attention span of the patient and helps to reach the subconscious mind. So, it was suggested to the patient, to focus on the central point of the eye fascination image, and try to find the butterfly in the centre of the picture, focus on the picture and don't blink his eyes. Try to give your full attention, and when you feel heavier in your eyes, then close them, otherwise keep watching until you feel tired and don't speak during the hypnotic session. Soon the patient closed his eyes, which indicated his hypnotic state of mind. After that hypnosis was made deeper by giving suggestions about imagery and the things he liked more, for example, one patient likes to visit the beach in his imagination, so he was suggested the beach of the sea.

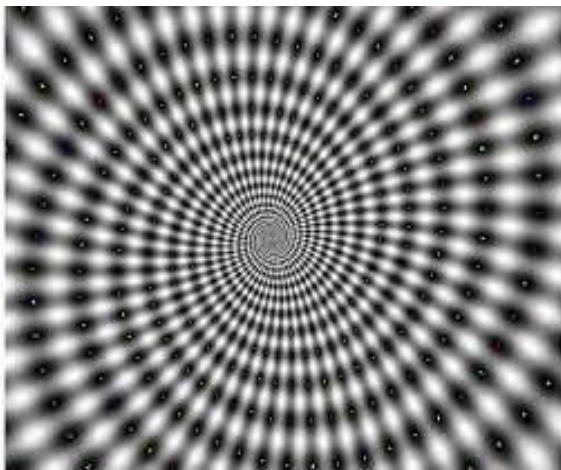


Figure 1: Eye fascination image

2.2.8. Application of the Circle Therapy: Circle therapy is a unique technique that is used in hypnosis induction.

For this purpose, a copy and a pen are provided to the patient and asked to draw the circle during a hypnotic state, so it was suggested that after the eye fascination technique close your eyes and bring the stressor in your mind and try to feel maximum pain and draw the circle as fast as you can, when you feel maximum pain then draw circle more speedily. After that instruction was given that stimulus is getting dimmer and blurrier with each circle draw and clockwise rotation of the circle is reducing the intensity of pain. In the end, he/she was asked to stop the circle when he felt that the image got dimmer. Finally, the pain was reduced, and the patient was asked to open his eyes at the countdown of ten.

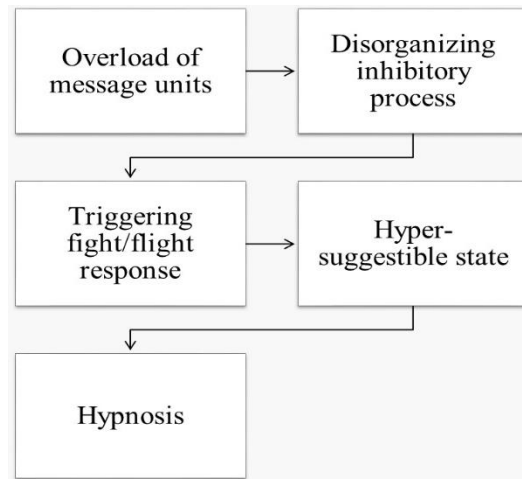


Figure 2: Kappasonian model of hypnosis

2.2.9. Break the state: Break the state is a shifting of the patient's state from a hypnotic state to a normal state through general talks and conversation. This state is cautious and should be dealt with gently. So, to break the state of the patient, the researcher asked the patient: do you smell popcorn, biryani, or any other foodstuff, etc.?

2.2.10. Post-ratings and feedback: Post-rating was taken in the follow-up session, for this purpose Doular Neuropathy Scale was used to check the effects of therapy. After that pre-and post-rating were compared. The patient was advised to have a follow-up session after two days after the first session.

3. RESULTS

3.1. Hypothesis I

It was hypothesized that there would be a significant positive effect of hypnosis with the circle therapy for management of neuropathic pain among diabetics. We assessed the therapeutic effects of hypnosis along with circle therapy. Paired sample *t*-test was used to compare the pre-and post-therapeutic effects of the circle therapy.

Table 1: Compare the before and after circle therapy sessions (N=20)

Variables	Pre- Assessment	Post-Assessment	P-value
DN4	8.2 ± 1.23	4.5 ± 1.27	< 0.001***

Data given as mean ± SD; P < 0.05 considered significant

Table 2: Comparative values of DN-4 in two types of DM

Variable	DM Type-1	DM Type-2	P-value
DN-4 Pre-sessions	8.7 ± 1.43	5.71 ± 0.95	1.55
DN-4 Post-sessions	5.0 ± 1.22	3.57 ± 0.78	2.51

Data given as mean ± SD; P < 0.05 considered significant

Table 3: Comparative values of DN-4 based upon patients gender

Variable	Male	Female	P-value
DN-4 Pre-sessions	8.5 ± 1.51	8.0 ± 1.04	0.165
DN-4 Post-sessions	5.0 ± 1.51	4.16 ± 1.02	0.699

Data given as mean ± SD; P < 0.05 considered significant

The pre-assessment and post-assessment scores of diabetics on the DN-4 scale were 8.2 ± 1.23 vs. 4.5 ± 1.27, (P < 0.001) indicating that the therapy significantly reduced the neuropathic pain (Table 1).

3.2. Hypothesis II

It was hypothesized that there would be a significant positive effect of hypnosis with the circle therapy in the neuropathic pain management among Type-1 and Type-2 diabetics. Table 2 shows the results obtained from the independent t-test estimated that there was no significant difference in therapeutic intervention on Type-1 and Type-2 diabetics after the therapeutic sessions (P = 2.51).

3.3. Hypothesis III

It was hypothesized that the circle therapy with hypnosis would be more effective for neuropathic pain management among female diabetics compared to the male patients.

The results showed that there was no significant difference in pain management based upon the gender

Table 4: Comparative values of DN-4 based upon patients service

Variable	Govt	Private	P-value
DN-4 Pre-sessions	8.3 ± 1.36	8.5 ± 1.13	0.796
DN-4 Post-sessions	4.83 ± 1.32	4.22 ± 1.3	0.562

Data given as mean ± SD; P < 0.05 considered significant

(P = 0.699). Circle therapy plus hypnosis was equally effective for treating neuropathic pain among both genders (Table 3).

3.4. Hypothesis IV

It was hypothesized that there would be a positive effect of hypnotic suggestion with circle therapy among government-employed compared to privately employed diabetics.

Table 4 showed the pre and post-scoring of the DN4 scale, Our results indicated that there was no

significant difference in the DN-4 scores after pain management sessions among both groups and circle therapy under hypnosis was equally effective for neuropathic pain management among both kinds of employees (Table 4).

4. DISCUSSION

This study aimed to check the effectiveness of hypnotic suggestions on diabetic patients for the management of neuropathic pain. From the recent studies it was known that for DNP management, different pharmacological therapies were being used, including tricyclic antidepressants, serotonin-norepinephrine reuptake inhibitors, topical capsi-cum, tramadol and other pain killers.¹³ But hypnosis along with circle therapy was not used till to date to check the effectiveness of DNP management among diabetics. Hypnosis directly approaches the subconscious mind after shutting the critical mind, it heightens the suggestibility from the external environment and produces a trance state, hypnosis easily touches our memories and helps to release bottled-up feelings and emotions.

‘Circle therapy’ is based on the Kappasonian model of hypnosis that is defined as, hypnosis induced by an overload of message units that blocks the critical mind, the patient undergoes a brief state of fight/flight leading to trance that is hyper-suggestible.¹¹ Here message units are important, which are information that disorganizes the critical faculty of the participants and puts the patients in the subconscious mind which is the highly suggestible state of mind. So, circle therapy along with hypnosis is effective for DNP management because when we give suggestions to the patient to draw a circle and keep drawing the circle until the pain will be settled, this

repetition of hypnotic suggestion helps the patient to reduce the symptoms of pain, and the data obtained from our study also indicated the significance of circle therapy in lowering pain.

The current research comprises the intervention plan based upon the hypnotic suggestion for DNP management and mental health problems through hypnosis among diabetics. This intervention plan has no side effects and is culturally acceptable because relaxation exercises are part of this therapeutic session, and they can be self-practised at home after a few sessions. The diabetic patient can practice it before the start of the pain to relieve psychological distress and many other psychological issues and it is a brief intervention plan with long-lasting effects. So, this research will help to deal with neuropathic pain management and psychological issues of diabetics.

5. LIMITATIONS

The major limitation of this study was the COVID disease itself, making it was difficult to communicate with the patients and to have their physical examination; a social distance had to be maintained between the researcher and the patient. Secondly, the sample size was small and comprised of local citizens only.

5. CONCLUSION

We conclude from the results of this study that hypnosis was effective for diabetic neuropathic pain management in both Type-1 and Type-2 diabetics and equally effective for private / government employees and for both genders. Future studies may be conducted with a larger sample size and from within diverse segments of the society.

6. Availability of data

The numerical data generated in this study is available with the corresponding author.

7. Conflict of interest

The authors declare no conflict of interest. No external or industry funding was involved in the study.

8. Authors' contribution

All authors took part in the conduct of study, data acquisition, literature search and manuscript preparation.

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