



Received on 11 January 2022; received in revised form, 21 March 2022; accepted, 26 April 2022; published 01 September 2022

KNOWLEDGE, ATTITUDE AND PRACTICE OF NON-PHARMACOLOGICAL INTERVENTIONS IN SUBJECTS WITH CHRONIC NEUROPATHIC PAIN ON TARGETED PHARMACOLOGICAL THERAPY

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Keywords:

Neuropathic Pain, Non-pharmacological therapy, KAP study, Physical therapy, Psychological therapy

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ABSTRACT: Neuropathic pain (NP) is a chronic debilitating condition that affects all dimensions of health. Though pharmacological therapy is the main treatment of varied neuropathic pain conditions, not all neuropathic pain conditions respond well to drug therapies. Therefore, under-utilized non-pharmacological strategies were tried and implemented in chronic neuropathic pain subjects to provide adequate pain relief and restore functionality. This study aimed to assess the awareness of non-pharmacological interventions in neuropathic pain and to determine the attitude and practice towards the actual implementation of non-pharmacological modalities in attenuating pain symptoms of NP subjects. It was a Prospective, Observational study conducted on 100 OPD subjects of either gender aged 18-65 years with newly diagnosed chronic neuropathic pain conditions who agreed to participate in the study from January 2019 to June 2020 in the Pain Super-specialty clinic at Kempegowda Institute of Medical Sciences, Bangalore. Data were collected using a purposive sampling method, using a Self-administered, 14-item Questionnaire. The mean age of the study subjects was 44.68 years. 60.0% were aware of the existing non-drug pain therapies and expressed satisfaction not only with the physical benefits but also with the psychological results to alleviate pain and provide a sense of pain control. The present study gave a positive outlook on knowledge, practice, and actual implementation of various non-pharmacological modalities in managing chronic painful NP along with mainstay pharmacotherapy in relieving pain symptoms effectively.

INTRODUCTION: Pain is defined by the International Association for the Study of Pain (IASP) as “An unpleasant sensory and emotional experience associated with actual or potential tissue damage ^{1,2}.”

Neuropathic pain (NP) is a multi-faceted, debilitating condition, considered an immense global health burden having detrimental effects, affecting all dimensions of health and displaying negative repercussions on one self, social relationships, and family environment causing disability ^{3,4}.

Uncontrolled NP conditions are refractory and are influenced by multiple factors like physical, psychological, genetic, spiritual, economic and environmental with complex interactions making assessment and management of pain an immense

<p>QUICK RESPONSE CODE</p>	<p>DOI: 10.13040/IJPSR.0975-8232.13(9).3600-05</p> <hr/> <p>This article can be accessed online on www.ijpsr.com</p> <hr/> <p>DOI link: http://dx.doi.org/10.13040/IJPSR.0975-8232.13(9).3600-05</p>
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challenge^{5, 6, 7}. The higher prevalence of NP and growing morbidities despite treatment involving costly medications, well-intentioned drug responses are strongly linked to numerous social, economic and personal determinants collectedly, to provide adequate justification to treat NP conditions as a priority/concern⁶. Conventional drug therapy with various classes of drugs stands to be the mainstay in the treatment of NP, even though only a minority of subjects show adequate response to it. A growing realization that only Pharmacological therapy may not suffice or be sufficient to eradicate or reduce the pain symptom completely and thus, further demands an all-around, inter-disciplinary approach or a strategy⁶.

Diverse treatment strategies like Non-invasive methods, including Conventional drug therapy, Non-pharmacological and Alternative therapies, and Invasive surgical techniques, are used for overall pain management in NP cases. Among the above, Non-pharmacological modalities represent a broad forum targeting and modulating the component of pain in many ways⁸. In light of the multi-factorial nature of NP, non-pharmacological modulation strategies like physical (sensory), psychological interventions, and other methods - like spirituality and music therapy^{5, 9} along with the pharmacotherapy are the methods that have been applied and found to be effective, safe and relatively inexpensive. Still, the response is usually subjective (Varies with different modalities and among different ethnicities and cultures and other factors)^{1, 10}.

Despite the continuing, growing awareness of the modulation of pain and the pharmacological advancement, refractory NP patients still experience, endure and put up with unnecessary pain, which impedes the response to treatment and further adds to the negative impact on Quality of Life (QoL)^{1, 11}. As there is inconsistent data from the developing countries, and very few studies have been reported in Indian literature to assess the awareness and actual implementation of non-drug modalities among subjects with persistent prevailing NP conditions regarding their knowledge, attitude, the practice of non-drug interventions in NP subjects on drug therapy, there is a need for more systematic studies; hence this study is taken up.

MATERIALS AND METHODS: This prospective, observational study was conducted on 100 subjects newly diagnosed with Neuropathic pain attending Pain Super-Specialty Clinic on Out Patient Department (OPD) basis at KIMS Hospital and Research Center, Bangalore by the investigator after coordinating and confirming the diagnosis with a Pain specialist. Study subjects were assessed for their awareness of non-pharmacological intervention in NP and to determine the knowledge, attitude, and practices towards actual implementation of non-pharmacological modalities in alleviating pain in subjects with NP on targeted pharmacological therapy.

After approval and clearance from the Institutional Ethics Committee (KIMS/IEC/D-10/11/2018), subjects were recruited by purposive sampling method from January 2019- to June 2020 (18 months). After fully explaining the study procedure to their satisfaction, written informed consent was obtained from all the study subjects in English and vernacular. Subjects fulfilling the inclusion criteria were included in the study, *i.e.*, Study subjects of either gender, aged 18-65 years, newly diagnosed with neuropathic pain, willing to give written informed consent and on NP-directed Pharmacotherapy. Patients with the following conditions were excluded from the study, *i.e.*, Subjects with acute complications such as cerebrovascular events, injuries, fractures, *etc.*, patients with terminal illnesses, *i.e.*, malignancy, subjects with psychiatric illnesses, severe cognitive impairment, drug addiction, and Pregnant and lactating women.

Detailed demographic data along with the present and past medical/surgical history, personal (including lifestyle), family and drug history were recorded from all the study subjects. The available medical records of the subjects were thoroughly scrutinized to obtain any relevant information about the previous and the ongoing drug therapy. Anonymity, confidentiality, and professional secrecy were maintained for all the study subjects. The pattern of drugs prescribed, like details of the pharmacological therapy for neuropathic pain, including the number of drugs/ drug combinations used, therapeutic class and duration of administration, were documented. Data on Knowledge, Attitude and Practice of Non-

Pharmacological Interventions in subjects with NP was collected using a Self-administered 14 Item Questionnaire, which included non-pharmacological methods and other aspects, *i.e.*, Physical and Psychological therapies in subjects with NP for pain control.

The demographic data and the data collected from the Questionnaire were assessed using a Microsoft Excel datasheet and were analyzed using SPSS software 19.0 version.

All values are expressed using certain descriptive statistics, namely means, proportions and percentages. The results were also depicted in the form of tables and graphs.

RESULTS AND DISCUSSION: Fig. 1 shows the age and gender distribution in the study subjects.

The mean age for males was 44.72 ± 12.48 years, and for females was 44.58 ± 11.28 years. The higher male preponderance in our study *i.e.*, 31% was also observed in another study done by Thomas Eko Purwata¹².

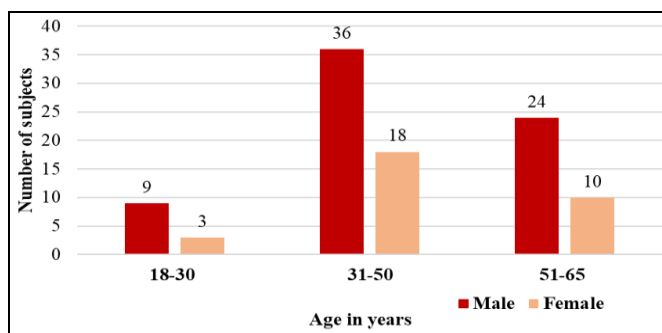


FIG. 1: AGE & GENDER DISTRIBUTION (N=100)

Fig. 2 summarizes the morbidities associated with neuropathic pain and its impact on daily life. 58 % of subjects displayed sleep disturbance and insomnia, most of which complained of painful sensations at night, 45% of subjects were not able to carry out their routine day-to-day activities due to pain, 43% of subjects were constantly anxious about what activity of theirs could trigger the pain symptom, 42% subjects had accepted pain as a part of their lives and 2 subjects gave a history of suicidal tendencies due to constant pain factor in the course of treatment. Similar findings were noted in a few reports from the U.S.

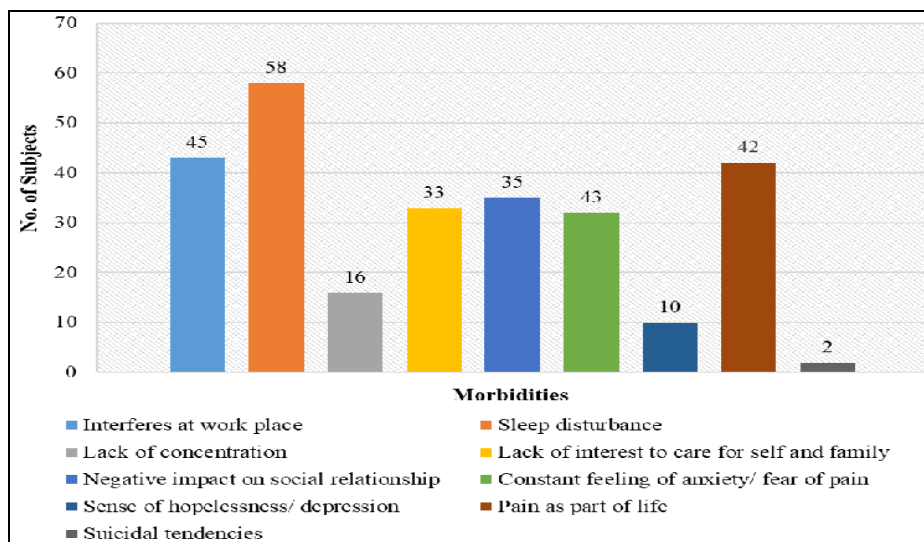


FIG. 2: MORBIDITIES ASSOCIATED WITH NP AND ITS IMPACT ON DAILY LIFE

Food and Drug Administration and study conducted by Ashok Kumar Saxena *et al.*^{13, 14} Fig. 3 shows the various Physical therapies advised in the management of NP. Among all the therapies advised, most of the subjects were benefited with Exercise therapy (71.0%) followed by Physiotherapy (69.0%), Hot/Cold fomentation therapy (52.0 %), Acupuncture therapy (43.0%) and Sunlight therapy (sunlight exposure) in 31.0% as portrayed. Few studies conducted by Ahmed El

Geziry *et al.* and a series of reports by U.S. FDA Administration also displayed similar findings^{9, 13}. Fig. 4 displays the psychological therapy advised to the subjects in the study. Among the psychological therapies advised, 76.0% of subjects were keen on prayer and music therapy, 45.0% of subjects were largely benefited from meditation practices, because religious and traditional concepts like praying, devotion to the Creator / Divine force are a special form of meditation, associated with healing

supported by varying degrees of faith and displayed huge sense of solitude and improvement in mood in our population. The majority of the subjects expressed satisfaction not only to physical benefits but also with the psychological results of the above, as noted in few other studies conducted by Ahmed

El Geziry *et al.* and U.S.FDA Administration case reports which concluded that the methods like meditation, mindfulness-based stress reduction, biofeedback, relaxation techniques and group therapy etc. helped to improve and manage anxiety, depression and coping skills in a better way^{9,13}.

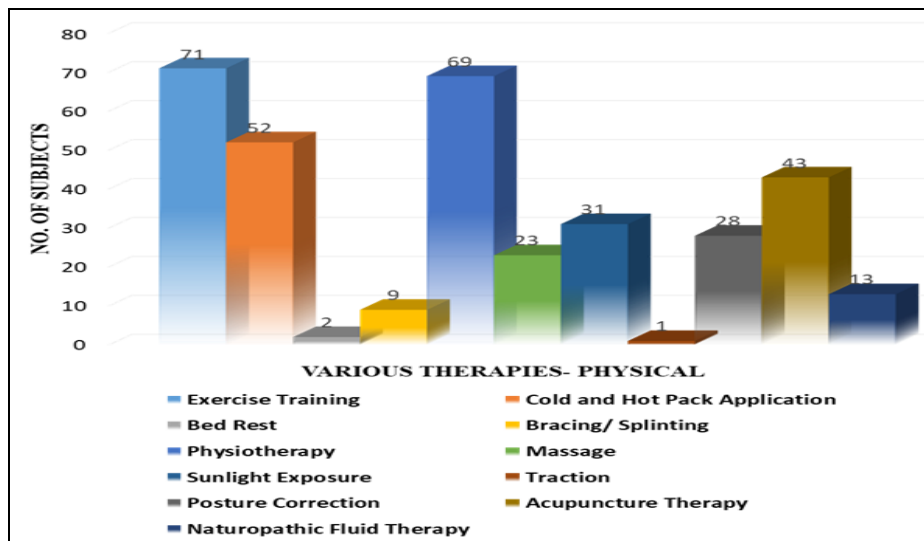


FIG. 3: PHYSICAL THERAPY ADVISED WITH DRUG THERAPY

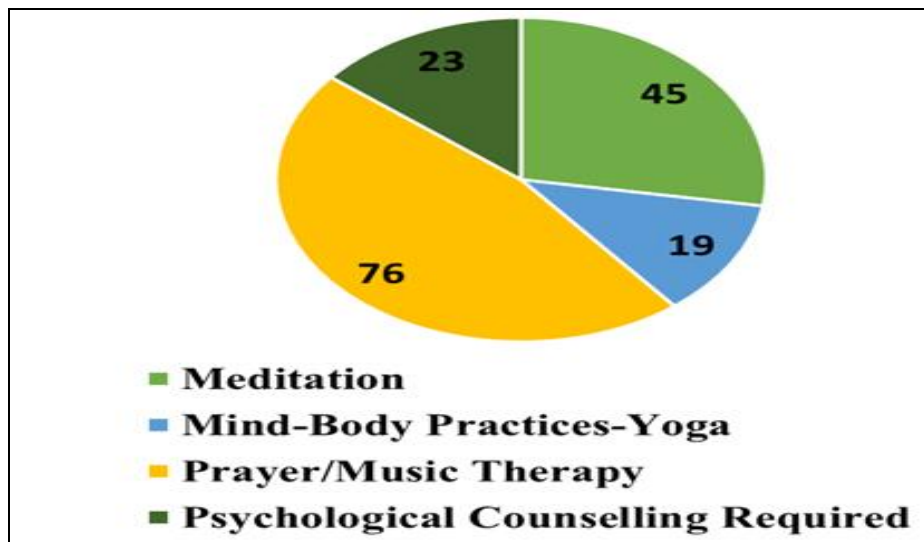


FIG. 4: PSYCHOLOGICAL THERAPY IS ADVISED WITH DRUG THERAPY

Similarly, a study conducted by Anja Sollgruber *et al.* displayed a wide range of observations to support prayer, religiosity, and spirituality interventions to improve the coping abilities and non-specific psychological support, *i.e.*, improved outcomes in the form of lowering pain intensity, perception of pain, frequency and duration of the pain symptoms to promote mental and spiritual health with religious- spiritual well-being in a single session of meditation¹⁵. Also, a study conducted by Courtney Lee *et al.* stated that the

responses were mixed and inconclusive but implied that these methods could be indisputably implemented due to positive benefits like self-directed motivation, improved patient health, lower cost, *etc.*¹⁶. 23.0% needed the counselor's help to get over the thought of pain, and 19.0% were enthusiastic about mind-body - yoga practices, as reported by U.S.FDA series reports¹³. **Table 1** depicts the Knowledge, Attitude, and Practices of Non-Pharmacological Modalities and Pharmacotherapy. Most subjects (71.0%) acceded

that non-pharmacological therapies were effective with conventional drug-targeted therapies and can be used in palliative care (69.0%) and 49% said

non-pharmacological therapies do not replace the drug.

TABLE 1: KNOWLEDGE, ATTITUDE AND PRACTICES OF NON-PHARMACOLOGICAL MODALITIES (N=100)

Knowledge	Yes n (%)	No n (%)	Not Known n (%)
Has no minimal side effects	58(58.0)	16(16.0)	26(26.0)
Effective when implemented with drug therapy	71(71.0)	12(12.0)	19(19.0)
Can be used as palliative care	69(69.0)	18(18.0)	3(3.0)
Does not replace drug therapy	49(49.0)	28(28.0)	33(33.0)
Only effective after partial pain relief with drugs	51(51.0)	38(38.0)	11(11.0)
Attitude			
Lack of awareness	22(22.0)	54(54.0)	24(24.0)
Lack of compliance	71(71.0)	29(29.0)	8(8.0)
Economic constraint	56(56.0)	34(34.0)	10(10.0)
Lack of sources	28(28.0)	66(66.0)	6(6.0)
Self-neglect	69(69.0)	25(25.0)	9(9.0%)
Practice / Implementation			
Physical therapy	71(71.0)	21(21.0)	8(8.0)
Psychological therapy	19(19.0)	53(53.0)	28(28.0)
Counselling	10(10.0)	62(62.0)	28(28.0)
Diet & Lifestyle management	51(51.0)	47(47.0)	2(2.0)

Similar findings were noted in a study conducted by U.S.FDA Administration that patients were sizably benefited from non-medical therapies like ice/ heat application, hydrotherapy, orthopedic footwear use, posture correction methods, and dietary changes¹³.

TABLE 2: DIET AND LIFESTYLE MODIFICATIONS ADVISED IN SUBJECTS ON CONVENTIONAL NP TREATMENT (N=100)

Diet Modifications	n (%)
Avoid hot/cold food	1 (1.0)
Cold Sips of water, avoid spicy food	1 (1.0)
High fibre diet with plenty of water	4 (4.0)
Low Salt Diet	2 (2.0)
Strict Diabetic Diet	11 (11.0)
Strict Diabetic Renal Diet	2 (2.0)
Strict Diabetic, Low Salt Diet	3 (3.0)
No Modifications advised	76 (76.0)
Total	100
Lifestyle Modifications	n (%)
Cold fomentation	1 (1.0)
Cotton clothing	3 (3.0)
Cushioned pads while sitting	18 (18.0)
Good prosthesis use, mirror box therapy	3 (3.0)
Local anaesthetic containing toothpaste	1 (1.0)
Neck immobilization with traction	1 (1.0)
Orthotic cushioned footwear	1 (1.0)
Refrain from alcohol	7 (7.0)
Refrain from smoking	5 (5.0)
Refrain from tobacco chewing	1 (1.0)
Soft firm heel shoes	2 (2.0)
Wrist splint / brace application	6 (6.00)
No modification advised	51 (51.0)
Total	100 (100.0)

Table 2 illustrates the Diet and Lifestyle Modifications advised in subjects with Neuropathic pain to add on or improve clinical outcomes of analgesic therapy and achieve considerable improvement in patient's compliance to treatment and improve QoL. In our study, 24 subjects needed modifications in diet and 49 needed modifications in lifestyle. Of the 24 subjects, 11 with Diabetic Peripheral Neuropathy were advised strict diabetic diet and glycemic control and posture correction and cushioned pads in 18 subjects with Intervertebral Disc Prolapse. Diet –Nutritional status and Lifestyle improvements promote the healing process and reduce pain and overall health of the patients⁶. The detailed modifications advised in the study are enlisted in the above-mentioned table.

Strength of the Study: Many other studies conducted previously mainly assessed the knowledge and practice of these modalities among health care professionals (HCP's) like nurses, paramedical staff and physicians, etc., in the active management of NP. This study is a first-of-a-kind study in our geographical region that allowed us to ascertain the awareness of the subject of non-pharmacological interventions (on targeted Pharmacological therapy) in NP and their knowledge, attitude and practices towards actual implementation of these modalities in alleviating pain in NP patients on an OPD basis which may

further help in delineating and developing a strong recommendation to include non-Pharmacological Interventions with tailor-made guidelines along with definitive drug therapy in the course of time. Limitations – 1. It was a single-center study with only newly diagnosed NP cases as inclusions. A short duration of over 6 weeks of therapy may be insufficient to assess the precise response to pain. 2. A randomized controlled design would have helped us better compare the efficacy of different non-pharmacological interventions used in the treatment.

CONCLUSION: Although many different non-pharmacological therapies tried to treat and alleviate pain are already in vogue with variable outcomes; all these interventions target mainly to modify the response to pain. Currently, there are no definitive rules to chart out an optimal strategy for managing NP and practices vary worldwide due to diversified reasons. Also, most of the non-pharmacological interventions implemented in clinical practice are underutilized due to a lack of knowledge and evidence. The present study showed that subjects with chronic painful NP conditions benefited to a larger extent with various safe, effective non-pharmacological modalities - physical and psychological interventions, in easing the perception of pain and increasing awareness, thus improving the overall dimensions of health. It gave a positive outlook on Knowledge, Attitude, Practice, and the Actual implementation of Non-pharmacological Modalities and Mainstay Pharmacotherapy in effectively palliating pain symptoms.

ACKNOWLEDGEMENT: We are grateful to all the patients and Staff of Pain Clinic, KIMS Hospital, who contributed and supported us during the conduction of the study.

CONFLICTS OF INTEREST: None

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How to cite this article:

Nadkarni S, Jyothi R and Kumar BKA: Knowledge, attitude and practice of non-pharmacological interventions in subjects with chronic neuropathic pain on targeted pharmacological therapy. Int J Pharm Sci & Res 2022; 13(9): 3600-05. doi: 10.13040/IJPSR.0975-8232.13(9).3600-05.