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The effect of clinical hypnosis and self-hypnosis on pain intensity in moroccan cancer patients: a pilot study

El efecto de la hipnosis clínica y la autohipnosis sobre la intensidad del dolor en pacientes marroquíes con cáncer: Un estudio piloto

Hayat Sine[1], Abderrahmane Achbani[2], Zakariae Cherrat[3], Karim Filali[1]

1. Department of Clinical Epidemiology and Medico-Surgical Sciences, Faculty of Medicine and Pharmacy, Mohammed V-Rabat University, Rabat, Morocco 2. Department of Cell Biology and Molecular Genetics, Faculty of Sciences, University Ibn Zohr, Agadir, Morocco 3. Department of Public Health, Laboratory of Community Health, Faculty of Medicine and Pharmacy, Mohamed V University, Rabat

Corresponding author
Hayat Sine (MSc)
E-mail: hayat_sine@um5.ac.ma

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Abstract

Background: Pain is a common symptoms in cancer patients.
Objectives: This pilot study evaluated the feasibility, acceptability, and potential efficacy of a 4-week hypnosis intervention in cancer patients with pain.
Methods: The study was conducted at the Regional Oncology Centre in Agadir, Morocco. The favourable opinion of the Ethics Committee was registered under No.06/19. The study population consisted of 20 patients. Each patient received four hypnosis sessions. Assessments with the Visual Analogue Scale (VAS) for pain and evaluation of opiate and analgesic use were carried out at the beginning and after 2-4 weeks of hypnosis treatment.
Results: The mean age of the subjects was 43.25 years (±14.05). For the VAS score at baseline: (35%) had severe pain, (30%) very severe pain and (35%) intolerable pain with an average VAS of 6, 8 and 9 respectively. The mean VAS value decreased from baseline to 3.71 (±0.48), 6.00 (±0.5) and 6.86 (±0.69) respectively at two weeks of follow-up, and 2.43 (±0.5 3), 4.67 (±0.51), 5.14 (±1.07) respectively at four weeks of follow-up (P<0.001). The results showed a significant decrease in the doses of analgesic drugs consumed by the patients in the study after 2 to 4 weeks of hypnosis treatment compared to baseline (P<0.001).
Conclusion: Our results suggest that Clinical hypnosis is feasible and beneficial for pain control in cancer diseases.

Key words: Clinical hypnosis, self-hypnosis, cancer, pain, visual analogue scale.

Resumen

Antecedentes: El dolor es un síntoma común en los pacientes con cáncer.
Objetivos: Este estudio piloto evaluó la viabilidad, la aceptabilidad y la eficacia potencial de una intervención de hipnosis de 4 semanas en pacientes de cáncer con dolor.
Métodos: El estudio se realizó en el Centro Regional de Oncología de Agadir, Marruecos. Se registró el dictamen favorable del Comité de Ética con el número 06/19. La población del estudio consistió en 20 pacientes. Cada paciente recibió cuatro sesiones de hipnosis. Las evaluaciones con la Escala Visual Analógica (EVA) para el dolor y la evaluación del uso de opiáceos y analgésicos se llevaron a cabo al principio y después de 2-4 semanas de tratamiento con hipnosis.
Resultados: La edad media de los sujetos fue de 43,25 años (±14,05). En cuanto a la puntuación de la EVA al inicio del tratamiento: (35%) tenían dolor intenso, (30%) dolor muy intenso y (35%) dolor intolerable con una EVA media de 6, 8 y 9 respectivamente. El valor medio de la EVA disminuyó desde el inicio hasta 3,71 (±0,48), 6,00 (±0,5) y 6,86 (±0,69) respectivamente a las dos semanas de seguimiento, y 2,43 (±0,5 3), 4,67 (±0,51), 5,14 (±1,07) respectivamente a las cuatro semanas de seguimiento (P<0,001). Los resultados mostraron una disminución significativa de las dosis de fármacos analgésicos consumidos por los pacientes del estudio después de 2 a 4 semanas de tratamiento con hipnosis en comparación con la línea de base (P<0,001).
Conclusión: Nuestros resultados sugieren que la hipnosis clínica es factible y beneficiosa para el control del dolor en las enfermedades oncológicas.

Palabras clave: Hipnosis clínica, autohipnosis, cáncer, dolor, escala visual analógica.

Introduction

Pain is a common symptom in cancer patients[1]. The prevalence and severity of pain progresses with the spread of the disease: almost half of cancer patients report some degree of pain, but this percentage increases to 74% in the advanced and terminal stages[2]. In advanced cancer patients, pain is moderate to severe in 40-50% of cases and very severe or unbearable in 25-30% of cases[3]. Cancer pain is a multidimensional and complex phenomenon made up of sensory, emotional, cognitive and behavior factors. It is the product of a complex combination of physiological, cognitive, social and other parameters. Cancer-related pain is either caused by the tumor itself or is related to treatment, because treatments such as chemotherapy, radiotherapy and surgery can cause pain[4]. This pain leads to disturbances in several aspects of daily life, such as restriction in range of motion, problems with self-image, and psychological difficulties[5]. Indeed In severe chronic diseases such as cancer, chronic pain, which continually stimulate the fight or flight response, lead to the production and secretion of catecholamines. This has various physiological consequences, including anxiety. Because some catecholamines, such as norepinephrine, act as neurotransmitters in the brain, these substances can alter cognition and other mental processes[6].

The conventional approach uses often very high doses of opioids, which increases the risk of immediate side effects such as respiratory depression and/or constipation associated with opioids[7]. This pharmacology-only approach has a high failure rate. Indeed, several studies have shown that the use of opioids for chronic pain may actually worsen the pain[8]. This was confirmed by a 3-year observational study conducted in 2016 by CDC (Centers for Disease Control and Prevention) involving more than 69,000 women with recurrent pain, which showed that patients who received opioid treatment were less likely to experience improvement in pain[9]. However, an approach to cancer pain that combines non-pharmacological therapies shows their impact on chronic pain while significantly reducing the risk to patients[8]. Hypnosis certainly modulates the phenomenological aspects of the cognitive experience, such as the sensation of pain. It is likely that hypnotic analgesia is due to a variety of factors, including changes in expectations about the imminence of painful events, as well as attentional, cognitive, and emotional problems[10].

Several previous research studies conducted in the field psycho-oncology, have shown that hypnotherapy is an effective non-conventional method to alleviate cancer pain, reduce anxiety, and alleviating disorders in cancer patients. However, all research has been conducted outside of Morocco so far. In Morocco, not a single empirical research has been conducted on hypnosis and cancer, indicating a need for more productive studies in this area. The present study was therefore designed to examine the effect of clinical hypnosis and self-hypnosis on pain intensity in cancer patients.

Methods

Participants

This study was conducted with a total of 20 participants using the convenience sampling method; a non-probability sampling technique. Patients who were diagnosed with cancer and met the inclusion and exclusion criteria were included in the study. They were selected at the Regional Oncology Center of Agadir, Morocco.

This study is approved by the Ethics Committee for Biomedical Research (ECBR) of Mohamed V University - Faculty of Medicine and Pharmacy of Rabat. The favourable opinion of this committee was registered under No.06/19. All participants also signed a written informed consent to voluntarily participate in this study.

The group, composed of 20 participants, received an intervention in the form of hypnotherapy at the same time as the medical treatments. Socio-demographic and clinical data are presented in **table II**.

Eligibility criteria for participants

Inclusion criteria

The criteria for inclusion are: i) People with cancer ii) Patients with Stage II or IV cancer whose pain score on the Visual Analog Scale (VAS) should be between 4 and 7; iii)Individuals must be 18 years of age or older, regardless of gender iv) Individuals must be able to understand and speak French and/or Arabic, v) Individuals should be interested in a complementary approach to their pharmacological and interventional treatment, vi) Patients could only be enrolled in the groups if they were using only pharmacological therapy with opioids and/or analgesics vii) Participants classified as highly susceptible to hypnosis (SHCS score of 6 or higher) will be selected for enrollment in the hypnosis group in order to maximize the potential of hypnosis to reduce pain;

Exclusion criteria

The exclusion criteria are: i) Age <18; ii) Patients must not have had severe cognitive impairment; iii) Patients must not have suffered from major psychiatric disorders, such as schizophrenia; iv) The patient could not be enrolled if he or she was using additional therapies and not only drugs, for example, psychotherapies or blocks of anesthesia (these therapies could compromise the pain study); v) Inability to give informed consent; vi) Terminally ill patients (One of the objectives of the study was a 4-week follow-up).

The recruitment procedure

It was a clinical trial. Since all the patients were suffering

from cancer. The effect of the intervention was evaluated by comparing the group before and after an interventional treatment with hypnosis as an adjunctive therapy in addition to the standard pharmacological intervention. This study began in May 2020 at the Regional Oncology Centre in Agadir, Morocco, and was approved by the Board of Directors. All patients gave their informed consent in writing. In the first six months, we examined 44 cancer patients. Only 26 people were included and 6 refused to participate in the study.

Design of the study

This study was systematically planned by a pilot group, with comparison of results before and after; a quasi-experimental research design. People who volunteered to participate and who were sensitive to hypnosis (SHCS score of 6 or higher) were assigned to the experiment. Scores on the dependent variables were obtained for the group before an a posteriori analysis was carried out.

Hypnosis treatment

The subjects participating in this investigation received a total of 4 individual sessions of hypnosis (one session per week). The hypnotic intervention followed scenario designed by the principal investigator (HS) using procedures similar to those used by Dorfman and colleagues (2008)[11]. The scenarios focused on relaxation and reduction of pain sensation. The scenario began with an induction focusing on progressive muscle relaxation and suggestion designed to generate feelings of calmness and ease, followed by a visualization of a beach scene or exercise refuge to reinforce feelings of relaxation and bring the patients into a deeper trance state. Patients were encouraged to "let go of tension as they were ready to do it; allowing themselves to go further and into a deeper state of relaxation; abandoning all preoccupation and worry", for pain management, participants were encouraged to distract themselves, which is, "in a movie, you can be absorbed and distracted so that you don't even notice a headache". It was also suggested that patients could control sensation by "easing the pain" and "placing their breath in the area that needed it most". The script also provided suggestions for a "cool and comfortable numbing", «Magic Gloves», and suggestions for images associated with these feelings were provided. Towards the end of each session posthypnotic suggestions were provided assured patients that they "have within them the ability to return to that special place in the future whenever they need it".

(i) The general objective of the complementary hypnosis treatment was to teach patients clinical hypnosis and self-hypnosis as a complementary treatment to their pharmacological therapy for pain relief. (ii) The clinical hypnosis and self-hypnosis techniques used in this study are explained in the **table I**; (iii) Hypnosis treatment lasted 4 weeks; (iv) For 4 weeks, a series of weekly one-hour individual workshops were held. Pain assessment and doses of analgesic medication consumed were carried out. (v) The group had to attend 100% of the sessions for 4 weeks; (vi) Hypnosis treatment sessions were held in each patient's hospital room at the Regional Oncology Centre in Agadir, Morocco, where the participant was encouraged to use hypnosis while sitting in their chair or bed.

Figure 1 shows a timeline of study participants receiving hypnotherapy for 4 weeks.

After the demographic data and pre-tests, the VAS Scale were explained and administered to the group to assess the baseline study. After the last hypnosis session (after 4 weeks), all participants in the group were asked to complete the follow-up with the VAS post-test questionnaires. The principal investigator assessed (mg/day) opioid use and pharmacological analgesic therapies for each patient on medical records at baseline and 4 weeks. Assessments of pain a were conducted using validated tests: VAS for pain assessment.

The Visual Analogue Scale (VAS) for pain evaluation

VAS has been used to measure the intensity of pain in cancer patients. It is a one-dimensional measure of pain intensity. introduced by Hayes and Patterson in 1921[12], (VAS) is a visual analog scale, in which the person chooses a number (0-10). The interpretation of the notes is as follows: 0 = "no pain". 1-3 = "mild pain", 4-6 = "moderate pain", 7-9 = "severe pain", and 10 = "worst possible pain"[13].

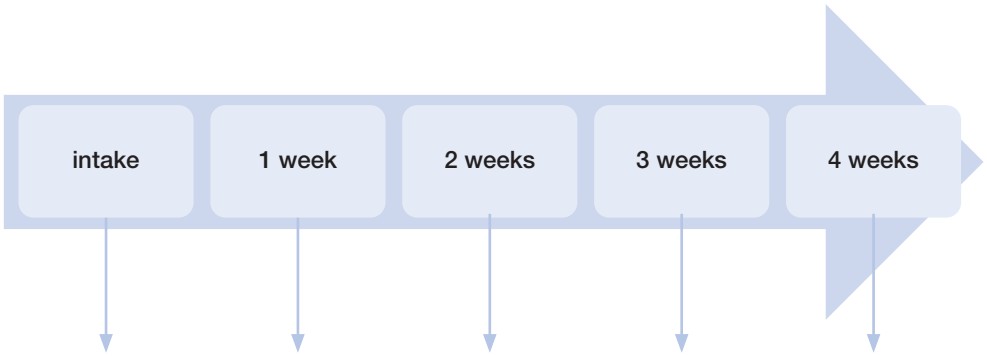
The Stanford Hypnotic Susceptibility Scale, Form C (SHSS: C)

Hypnotizability scores predict the effectiveness of analgesia suggestions in both ordinary states of consciousness[14,15]. The Stanford Clinical Hypnotic Scale (SCHS; Morgan & Hilgard, 1975) was utilized to measure degree of hypnotic responsiveness of the subjects[16]. Created a few years after Forms A and B, Form C contains some of the elements of Form B, but has more difficult elements so that when subjects are selected for advanced testing in which knowledge of their ability to experience more varied articles is required[17]. After a standardized hypnotic induction, the hypnotized person receives suggestions relating to the list below (see **Table II**).

The Montreal Cognitive Assessment (MoCA)

The MoCA it was created in 1996 by Ziad Nasreddine in Montreal, is a short 30 point test which evaluates 8 cognitive domains; including visuospatial abilities, executive functions, naming, attention, language, abstraction, short term memory and orientation[18]. Also, according to previous studies, MoCA is more sensitive than Mini-Mental State Examination (MMSE) in diagnosis of Mild Cognitive Impairment (MCI)[18,19].

Figure 1: Schematic time-line of patient's participants of study receiving hypnotherapy during 4 weeks. Measuring instruments.



	Information session	Session 1	Session 2	Session 3	Session 4
Hypnosis	+	+	+	+	+
MOCA	+				
SHSS:C	+				
VAS	+	+	+	+	+
Use of analgesics	+	+	+	+	+
Evaluation			+		+

Table I: Themes covered in each individual session.

Participants (N=20)	
General information session on hypnosis treatment	**Explanation: What is hypnosis?** - Common beliefs about hypnosis. - Answers to participants' questions. - Hypnotic induction exercises to determine SHSS: C. - Identification of a safe place.
Session 1	**Definition of three realistic objectives to be achieved** - List of things in life that are pleasant and comforting. - Discussion on pain: What does it mean? When does it happen, and what does it do to your body? - Discussion on balancing personal resources and environmental demands. - Optical illusions: Everyone looks at the same thing but does not see the same thing. The same situation can be differently perceived by different people - Hypnosis exercise: floating on a cloud. - At the end of the session: suggestion of self-hypnosis
Session 2	**Reflection on personal qualities and the importance of knowing them** - Find an object that will be associated with a "Stop! To use when we feel stressed. - Breathing exercise with imagery (coloured air flow). - Hypnosis exercise: Adaptation of the "refuge" exercise. (Finding and imagining a peaceful and pleasant place). - At the end of the session: suggestion of self-hypnosis
Session 3	- Discussion on how we talk to each other at ourselves and our self-esteem. - Creation of a timeline with moments of happiness, self-confidence and pride with an emphasis on body sensations. - Breathing exercise (abdominal breathing) with imagery (flow of coloured air). - Hypnosis exercise: Pain and colours. - At the end of the session: suggestion of self-hypnosis
Session 4	- Discussion on self-respect and care for bring to yourself. - Use of imagination to turn pain into more positive thoughts: drawing something scary, then changing the drawing to make it less scary. - Hypnosis exercise: magic gloves At the end of the session - Revision of the objectives determined at the beginning of the exercise of the sessions: Have they been carried out? The importance of being proud of us, to congratulate us.

N: number of patients, SHSS: C: Stanford Hypnotic Susceptibility Scale, Form C.

Table II: Stanford Clinical Hypnotic Scale (form c).

0	**Eye closure**
1	Hand Lowering (right hand)
2	Moving Hands Apart
3	Mosquito Hallucination
4	Taste Hallucination
5	Arm Rigidity (right arm)
6	Dream
7	Age Regression (school)
8	Arm Immobilization
9	Anosmia to Ammonia
10	Hallucinated Voice
11	Negative Visual Hallucination (Three Boxes)
12	Post-Hypnotic Amnesia

Statistical analyses

Data analyses were performed using IBM SPSS Statistics version[23] (Chicago, IL, USA). Participants' characteristics are expressed as absolute and relative frequencies (n, %) for categorical data or mean and standard deviation (SD) for continuous variables. To adjust for between-group baseline differences, changes from pre to post-test assessment were analyzed by calculating the difference between the two moments (Δ=T1 %-T2 %).

Statistical significance was set at $p<0.05$. Since null hypothesis significance testing and, consequently, p values, depend on sample size, the meaningfulness of differences was determined through the associated effect sizes (ES). These were expressed as Kruskal-Wallis test for continuous variables and Pearson's coefficient (r) for nominal variables. The interpretation of Pearson's coefficient (r) is analogous to the correlation coefficient, expressing the strength of association between two variables.

Results

Demographic data and characteristics of the participants at baseline

Twenty subjects - 7 men and 13 women - participated in the study. The mean age of the subjects was 43.25 years {±14.05} ranging from a minimum of 21 years old to a maximum of 67 years old (average age = 43,25±14,05). The patients suffered from 3 main types of cancer: (i) Digestive cancer (n=35%); (ii) Hematological cancer (n=30%); (iii) Breast cancer (n=25%).

Ten patients (50%) in this study are at stage III (**T1N1M0**); (**T3N0M0**) of cancer and undergoing chemotherapy (80%). Most subjects reported pain ranging from severe (35%) to intolerable (35%) on the VAS score with the use of Tramadol Hydrochloride (35%) and Morphine Sulphate (35%) as analgesic pain relievers. The hypnotizability score for most participants in this study was between medium (10%) and high (10%). The demographic and medical data of the sample are presented in **table III**.

Table III: Demographic data and characteristics of participants.

Characteristics	N (%)
Gender	
Male	7 (35%)
Female	13 (65%)
Tumor location	
Breast	5 (25%)
Hematological	6 (30%)
Digestive	7 (35%)
Lung	1 (5%)
Gynecological	1 (5%)
Stage of cancer (TNM)	
Stage II(T2N0M0)	6 (30%)
Stage III(T1N1M0); (T3N0M0)	10 (50%)
Stage IV (T2N1M1); (T4N0M0)	4 (20%)
Type of treatments	
Chemotherapy	16 (80%)
Radiotherapy	3 (15%)
No treatment	1 (5%)
MOCA score	
Normal > or = to 26/30	20 (100%)
Low < to 26/30	--------
SHSS:C	
Medium (5-7pt)	10 (50%)
High (8-12pt)	10 (50%)
VAS score	
Severe pain	7 (35%)
Very severe pain	6 (30%)
Intolerable pain	7 (35%)
Use of Analgesics	
Tramadol Hydrochloride	7 (35%)
Morphine Sulphate	7 (35%)
Nephopam Hydrochloride	6 (30%)

Data expressed in n [%], VAS: Visual Analogue Scale, SHSS: C: Stanford Hypnotic Susceptibility Scale: Form C (SHSS: C), MOCA Score: Montreal Cognitive Assessment, TNM: an international cancer classification system

Two-week follow-up

Looking at the two-week follow-up (n=20), the methods used at the first follow-up included VAS and the use of opioids. After 2 weeks of follow-up, there were no dropouts. The average VAS score at baseline was 6, 8 and 9 respectively.

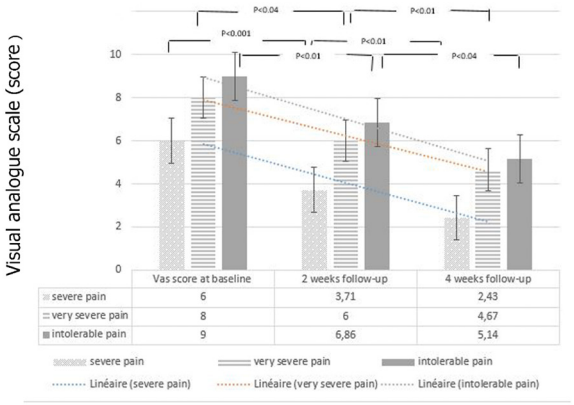
After 2 weeks, the score decreased from the baseline score and was significantly lower at 3.71 (±0.48), 6.00 (±0) and 6.86 (±0.69) respectively (**Figure 2**).

The mean reduction in the VAS score was significantly greater after 2 weeks of treatment with hypnotic therapy compared to baseline (before hypnosis) ($P<0.001$).

Four-week follow-up

The average VAS score after two weeks of hypnosis was 3.71 (±0.48), 6.00 (±0) and 6.86 (±0.69) respectively. After four weeks, the score decreased from the two-week score and was significantly lower, at 2.43 (±0.5 3), 4.67 (±0.51) and 5.14 (±1.07) respectively (**Figure 2**). The mean reduction in the VAS score was significantly greater after 4 weeks of hypnosis treatment compared to the baseline (pre-hypnosis) score ($P<0.001$).

Figure 2: Assessment of subjects according to VAS score at baseline, 2- and 4-weeks of hypnosis treatment.



¥ test de Kruskal-Wallis , SD: standard deviation

The administration of hypnotic therapy and the VAS score have been significantly associated with the change in VAS score after 4 weeks in univariate analysis. The sex, age of the patients and Tumor location were not associated with a significant decrease in the VAS score. In multivariate analysis, hypnosis treatment was associated with a greater decrease in VAS score (P<0.01) compared to baseline. Moreover, the decrease in the VAS score was statistically significantly different according to cancer stage (p = <0.01). The associations of the variables with reduction of the VAS score after one month of hypnotic intervention follow-up are presented in **table IV**.

In a 2- and 4-week follow-up of hypnosis treatment, we compared the doses of analgesic drugs consumed by the participants in this study to the doses used at baseline (mg/day). According to **table V**, the group of participants in this study had to significantly reduce the doses of analgesic drugs consumed after 2 to 4 weeks of hypnosis treatment compared to baseline (before hypnosis) (p< 0.05). On the other hand, this present study noted that 10% of the subjects who were on analgesics at the beginning had to stop the pharmacological treatment of pain after 4 sessions of individual hypnotic intervention.

Table IV: Variables associated with changes in VAS pain score after 4 weeks of hypnosis treatment.

Variables	r	P value
Baseline VAS score	0.81	<0.001
Sex (male vs. female)	-0.02	0.919
Age	0.44	0.051
Tumor location	0.13	0.569
Stage of cancer (TNM)	0.81	<0.001

r: The Pearson Correlation Coefficient, VAS: Visual Analogue Scale, TNM: an international cancer classification system.

Table V: Opioid consumption at baseline, 2- and 4-weeks of hypnosis treatment.

Use of opioids (mg/day)at baseline	Opioid consumption follow-up N (%)	2 weeks N (%)	P value ¥	4 weeks follow-up	P value ¥
Chlorhydrate de tramadol					
300	1 (5%)	-------		-------	
200	2 (10%)	1 (5%)		-------	
180	-------	1 (5%)		-------	
150	3 (15%)	1 (5%)	<0.001	1 (5%)	<0.001
120	-------	-------		1 (5%)	
100	1 (5%)	3 (15%)		2(10%)	
50	-------	-------		1 (5%)	
Stop of treatment				1 (5%)	
Sulfate de Morohine					
120	1 (5%)	-------		------	
90	4 (20%)	1 (5%)		------	
60	1 (5%)	4 (20%)		2 (10%)	
30	-------	1 (5%)		4 (20%)	
20	1 (5%)	--------		--------	
10	--------	1 (5%)		1 (5%)	
Nephopam Hydrochloride					
60	2 (10%)	-------		-------	
40	4 (20%)	2 (10%)	0.026	-------	0.178
20	-------	2 (10%)		1 (5%)	
stop of treatment	-------	-------		5(25%)	

Discussion

Cancer pain can have a serious impact on patients' quality of life, which is the reason why best management practices are of paramount importance.

Barriers to optimizing cancer pain management frequently cited by professionals and patients included knowledge deficits, inadequate pain assessments

and misconceptions about pain[9]. It is well known that opioids have been the main therapeutic method for the management of moderate to severe cancer pain[20]. Nevertheless when opioid drugs were involved, effects regarding addiction, tolerance and side events were mentioned by both doctors and patients[2,8]. Other factors include high costs (non-reimbursable expenses) and unavailability of treatment[5]. The results of this study corroborate with research that has reported the beneficial effects of clinical hypnosis on pain in cancer patients[4,21-27].

Individual differences in responses to hypnosis are referred to as "hypnotizability" or "hypnotic susceptibility". These terms essentially refer to a person's ability to experience hypnosis and demonstrate the behaviors associated with it. Hypnotisability was most often associated with hypnotic analgesia[28-29]. In our investigations we decided, as other authors have done in the field of clinical hypnosis research[30-32], to use hypnotic induction to determine hypnotizability. It is interesting to note that all patients participating in this study had a medium to high SHSS: C, regardless of gender. in fact no relationship between the degree of hypnotizability and time and gender variables could be detected from the results of other trials[31-33]. There are a number of important clinical implications in the results of this research concerning the effects and mechanisms of hypnosis on pain. Firstly, there is ample evidence that hypnosis is an effective treatment for chronic pain, is cost-effective and has minimal side effects. In fact, none of our patients participating in hypnosis treatment have reported side effects. Secondly, we have found a statistically significant reduction in pain in cancer patients receiving clinical hypnosis as adjunctive therapy to analgesic drugs (Opioids, Nephopam Hydrochloride) compared to baseline (before hypnosis).

Statistics showed that clinically significant reductions in pain (VAS) experienced by each study participant were independent of gender, age or cancer type, however hypnosis treatment was associated with a greater reduction in VAS score ($P<0.01$) compared to baseline. Subjects were at a lower risk of taking increased doses of pharmacological analgesics for pain control. This study showed a significant reduction in the use of analgesic drugs (opioids and Nephopam Hydrochloride) in the participant group after 2 and 4 weeks of hypnosis treatment.

The present study has enriched the data on hypnosis treatment in oncology from several points of view: in particular, with hypnosis and self-hypnosis techniques, we have observed the positive impact of treatment on the participants' ability to control pain. Thus, hypnosis treatment has proven to be effective, even without a therapist, by practicing self-hypnosis at home. This is obviously essential for its implementation in clinical practice, particularly in the care of cancer patients. The results of our investigations assume that in the future clinical psychologists, psychotherapists and hypnosis practitioners will be able to successfully integrate hypnosis treatment into oncology services. This suggests that hypnosis treatment is a promising option for cancer patients and a well-accepted intervention in chronic and acute populations.

Another clinical consequence is that when hypnosis is used or patients are taught self-hypnosis for pain management, practitioners can use different suggestions to alleviate the many components of pain (e.g. sensory, affective, cognitive, motivational). Patients in this study appreciated that a pharmacological solution, such as the use of analgesics, was not the only therapy for their symptoms and were therefore willing to undergo physical testing and pain management through hypnosis and self-hypnosis.

Self-hypnosis was practiced directly and easily with the patients and the latter were not only able to experience pain relief, but some of them also talked about achieving psychological and psychosocial well-being. Indeed, the patients participating in this study said that through self-hypnosis they had found a sense of inner peace, acceptance and spiritual healing This sense of spiritual well-being and healing helped the patients and their direct family in the cancer treatment process.

Even though hypnotic suggestibility and self-hypnosis training was different in all our subjects, scientific data revealed that hypnosis could not only decrease pain and the average daily dose of analgesics, but also that all patients felt more comfortable. Hypnosis has had benefits in other aspects of suffering for many people, more and more patients reported that hypnosis gave them increased energy, better sleep and improved resilience. Finally, follow-up at two and four weeks demonstrated the stability of the effects of hypnosis treatment.

A limitation of this study was the small sample size ($n = 20$), which limits the generalizability of the conclusions, the lack of a control group and lack of patient blindness.

However, the effectiveness of hypnosis in pain control, and the reduction in analgesic drug doses observed in this study are encouraging. The results of this pilot study strongly suggest that an additional study is warranted to establish the potential benefits of hypnosis for pain management in cancerology in particular by measuring serum cortisol levels, which is a new approach to pain monitoring. It is a direct and objective indicator of pain stimulation by the brain. Also other aspects should be examined such as the suggestion sets and hypnosis models used to determine their effectiveness in treatment.

Conclusion

This is the first study done in Morocco on the use of clinical hypnosis and self-hypnosis in the oncology department

with clinically relevant results. This feasibility study of clinical hypnosis and self-hypnosis for pain showed promise as a possible treatment for cancer. Therefore, policy on the care and treatment of patients with chronic and serious diseases, such as cancer, should focus on: (i) Ways of optimizing multidisciplinary care by adopting clinical hypnosis as adjunctive therapy; (ii) The use of hypnosis and self-hypnosis as adjunctive therapy for patients with advanced serious diseases; (iii) The development of trials to study results of clinical hypnosis in palliative care with appropriate comparison groups are necessary and (iv) More research on the effects and effectiveness of Hypnosis is necessary in oncology care.

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Conflict of interest statement

Authors have no conflicts of interest to declare.

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