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What is the effect of haptotherapy on patients with chronic pain?

Gert A. Klabbers[1] and Ad J. J. M. Vingerhoets[2]

Abstract

Introduction: Chronic pain is a frequent problem, has a significant impact on quality of life, mood, and sick leave, and causes high direct and indirect costs. In practice, haptotherapy seems to reduce chronic pain, but this effect has not yet been scientifically evaluated. This is the first study on the impact of haptotherapy on patients with chronic pain complaints.

Haptotherapy: The main aim of haptotherapy is to improve the wellbeing of patients, i.e., to reduce complaints of distress, anxiety, depression and somatization, to be achieved by increasing body awareness and self-awareness and by improving the sense of control regarding their complaints and their consequences for daily life.

Participants: People aged 18 or older (*N*=24) with chronic pain complaints for more than six weeks.

Study design: Participants were requested to complete some questionnaires before the start of the therapy and again, approximately three and five months later. These questionnaires include sociodemographic questions and a question about the intensity of the pain they felt in the previous week, the Four-Dimensional Symptom Questionnaire, the Scale of Body Connection, the Pain Catastrophizing Scale, the Pictorial Representation of Illness and Self Measure, and the Haptotherapy questionnaire.

Statistical analysis: The non-parametric Friedman test of differences among repeated measures was used to compare the mean outcomes at three time points: (T1) At the start of haptotherapy, (T2) three months after the start of haptotherapy, and (T3) five months after the start of haptotherapy.

Discussion: The investigation had to be abruptly terminated a few months after the start, due to the professional ban on contact professions, because of the COVID-19 pandemic. However, with limited data (n = 17), over time (T1, T2, T3), we have measured a statistically significant and clinically relevant reduction of distress, anxiety, pain catastrophizing, and increased body awareness. Further research could reveal which improvements are most beneficial for patients with chronic pain complaints.

Conclusion: One has to be careful with conclusions due to selection bias, the small number of participants, and the lack of a control group. Nevertheless, the findings suggest that haptotherapy might be a promising therapy for people with chronic pain. Further research is necessary, preferably by employing a Randomized Controlled Trial with one or more control groups.

Keywords: Chronic pain, haptotherapy

Introduction

Chronic pain can be defined as an unpleasant sensory and emotional experience resulting from possible or actual tissue damage (Merskey & Bogduk, 1994). Pain is qualified as chronic if the complaints last longer than six weeks or longer than the expected recovery time after an injury or illness. Social and psychological factors play an essential role in continuing chronic pain complaints (Dutch Association of Rehabilitation Physicians, 2012). People with chronic pain generally have increased and selective attention to pain signals (Schaefer, Egloff, & Witthöft, 2012). Perceived pain signals determine the choices a person makes regarding activities in daily life. These choices can lead to a pattern of structural under- and/or overload. Chronic pain reduces quality of life (Picavet & Hoeymans, 2004) and it increases the risk of psychopathology (Demyttenaere et al., 2007), absenteeism (Eerd, Cote, Kristman, Rezai, Hogg-Johnson, Vidmar, & Beaton, 2011), and limitations in daily activities (Achterberg, Gambassi, & Finne-Soveri, 2010). A significant percentage of the population (19% in Europe and 18% in the Netherlands) suffer from chronic pain (Bala, Bekkering, Riemsma, Harker, Huygen, & Kleijnen, 2011; Bekkering et al., 2011), and since chronic pain is associated with aging disorders, the aging population will only soon make the problem worse (Regieraad Kwaliteit van Zorg, 2011). Many patients (69%) use nondrug treatment methods, such as massage, physiotherapy, and acupuncture, which is striking because these therapies are insufficiently effective in the majority of people with chronic pain (Regieraad Kwaliteit van Zorg, 2011). Clinical experience suggests that haptotherapy (HT) can be beneficial for chronic pain patients, and we want to substantiate this scientifically with this research project.

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[1]**Dr. Gert A. Klabbers**, GZ-Haptotherapist and Physiotherapist, Therapy Centre Ietje Kooistraweg 25, 7311 GZ Apeldoorn, the Nederlands. Postdoctoral Fellow at the University of Tilburg, Warandelaan 2, 5037 AB Tilburg, the Netherlands.
Contact: praktijk@gertklabbers.nl
[2]**Emeritus Professor Dr. Ad J. J. M. Vingerhoets**, Department of Medical and Clinical Psychology, University of Tilburg, Warandelaan 2, 5037 AB Tilburg, the Netherlands.

This is a first study of the effects of HT in chronic pain based on the guideline 'HT in chronic pain' (Klabbers, Biggelaar, Kaman, & Massop, 2019).

Research questions

1. What is the effect of HT on people aged 18 or older who had pain complaints for more than six weeks, measured with the Four-Dimensional Symptom Questionnaire (4DSQ), the Scale of Body Connection (SBC), and the Pain Catastrophizing Scale (PCS)?
2. How do effects of HT in the patient's private life relate to its impact in the work environment, measured with the Pictorial Representation of Illness and Self Measure (PRISM)?
3. Which client characteristics (age, gender, marital status, children, paid employment, volunteer work, caregiver, and educational level) predict a positive effect of HT in people who had pain complaints for more than six weeks?
4. Which characteristics of the therapist (age, gender, previous education, HT training, own experience with chronic pain) predict a positive effect of HT in people who had pain complaints for more than six weeks?

We will further explore how HT-specific questions relate to the information obtained from the 4DSQ.

Haptotherapy

Haptotherapy is a therapy that uses sensory awareness and experience as a starting point (Veldman, 2007). When there is pain, everybody wants to get rid of it as soon as possible. However, pain can also be a signal to do something about oneself. There may be an imbalance between thinking, feeling, and acting, between what someone needs or wants and what someone is capable of doing. For many people, it is also a challenge to learn to accept the physical, psychological, and/or social consequences of an illness or pain. Besides, there may be situations in which people lose themselves and completely identify with their pain. In the HT sessions, the therapist uses conversations, experiential exercises, and affective touch to enable the client to feel what is going on physically and emotionally. In this way, the patient learns to experience how his or her body reacts and how he or she deals with these physical reactions. (Klabbers, 2020). In this way, HT contributes to an increased awareness of one's body and one's emotions. The goal is to create or restore the balance between thinking, feeling, and acting. As a result, clients are better able to feel their limitations, distinguish between what is possible and what is not possible and increase their resilience so that they can take on a stronger and more vigorous attitude towards life and find themselves again. (Plooij, 2014; Plooij & Zandvliet, 2010).

The main aim of HT in case of chronic pain

Guideline HT in case of chronic pain: "In chronic pain, attention is increasingly drawn to the negative sensations in the body and the accompanying emotions and thoughts about possibilities and impossibilities with regard to movement and interaction. This attention bias negatively affects normal, natural, and affective contact with oneself and others and creates a state of being of surviving instead of living. The main aim of HT is to improve the wellbeing of the patient who experiences chronic pain, i.e., to reduce complaints of distress, anxiety, depression, and somatization, to be achieved by increasing body awareness and self-awareness and by improving the patient's sense of control regarding the pain and its consequences for daily life." (Klabbers et al., 2019).

Secondary aims of HT in case of chronic pain

Guideline HT in case of chronic pain: "To recognize and acknowledge excessive focus on pain and pain avoidance; to discover firsthand through experiential methods what the consequences are of one's focus on pain in contact with oneself and with others; shifting towards increased contact with neutral and positive body sensations; to learn from the affective therapeutic relationship to make judgment-free contact with body sensations, to take the signaling function of the pain seriously by acting accordingly, and to respect one's limitations and those of others; to express and share emotions, feelings, and thoughts associated with the pain complaints; to recognize any underlying trauma, for which additional adequate (multidisciplinary) treatment can be instituted." (Klabbers et al., 2019).

Target group

People with chronic nonspecific pain complaints for more than six weeks. With manifest or imminent limitations of the general level of functioning. The client is open to experiential therapy and intends – where possible – to involve the people in his or her world in the HT treatment.

Study design

Study population

For this study, 560 haptotherapists in primary healthcare were invited to participate, expecting that a representative number (approximately 40%) would participate with 2 patients per therapist since the aim was to include 448 patients with chronic pain. This number was based on the following calculation: for a multiple regression analysis with 18 predictors (i.e., baseline patient and therapist characteristics and measurements), 360 respondents are needed, based on 20 respondents per predictor. Considering a dropout of approximately 20%, this resulted in a required sample of 448 participants.

Ethical approval

Within this study's context, patients were treated in accordance with a regular HT treatment based on the HT guideline for chronic pain (Klabbers et al., 2019). Since they underwent a standard treatment of HT, the Medical Ethical Review Committee of Brabant decided that the scientific research into the effect of HT on people with

chronic pain complaints is not subject to the Medical Research Involving Humans Subjects Act (WMO). Subsequently, the research was approved by the Ethical Review Committee of Tilburg University (ERB), which was set up to review the scientific and ethical aspects of research projects that are not subject to the WMO.

Inclusion criteria

People aged 18 or older who had experienced pain complaints for more than six weeks.

Exclusion criteria

Eligible persons were excluded if (1) they had severe psychiatric symptoms that were not or not sufficiently under control, making an effective treatment relation impossible even with the support of psychiatric co-treatment, and/or if (2) there were language or communication barriers that made it impossible for them to participate in HT.

Treatment

In eight sessions of approximately one hour, patients receive a regular HT treatment based on a guideline developed for this purpose, i.e., the guideline 'HT in case of chronic pain' (Klabbers et al., 2019).

Measuring instruments

Four-Dimensional Symptom Questionnaire (4DSQ): distress, depression, anxiety and somatization, Scale of Body Connection (SBC): body awareness and dissociation, Pain Catastrophizing Scale (PCS): rumination, magnification and helplessness, Pictorial Representation of Illness and Self Measure (PRISM), HT questionnaire (HQ14) and socio-demographic questions and a question about the amount of pain experienced in the previous week.

Four-Dimensional Symptom Questionnaire (4DSQ)

De 4DSQ comprises 50 items concerning psychological and psychosomatic symptoms listed in the DSM-5 (American Psychiatric Association, 1994). Symptoms of distress, anxiety, depression, and somatization are measured as separate dimensions (Terluin, Brouwers, van Marwijk, Verhaak, & van der Horst, 2006; Terluin et al., 2009). In HT practice, the 4DSQ is administered frequently to monitor the progress and the effects of the therapy (Klabbers, 2011). The 4DSQ scales have a high internal consistency (Cronbach's alpha: 0.84 to 0.94) (Terluin et al., 2006, 2009).

Scale of Body Connection, Dutch version (SBC)

The SBC (Price, Thompson, & Cheng, 2017), Dutch translation (Maas, Köke, Bosscher, Hoekstra, & Peters, 2015), measures the degree of body awareness and body dissociation and consists of twenty statements, twelve of which measure body awareness and the remaining eight measure body dissociation. The SBC is mainly used in therapies aimed to improve the connection between mind and body, for instance, in case of physical symptoms for which there is no sufficient medical explanation. Cronbach's alpha = 0.72 and 0.63 for physical awareness and physical dissociation, respectively (Price & Thompson, 2007).

Pain Catastrophizing Scale, Dutch version (PCS)

De PCS (Sullivan & Pivik, 1995; Damme, 2002) is a self-assessment questionnaire to investigate catastrophizing in clinical and nonclinical populations. Catastrophizing is generally described as an overly negative orientation to harmful stimuli and plays an essential role in the experience and management of pain. The PCS consists of thirteen statements that describe thoughts and feelings that one can experience when suffering from pain. The items are divided into the category's rumination, magnification, and helplessness, with each item being scored on a 5-point Likert scale.

The PCS total score and the separate PCS subscales correlate significantly with the Inventory of Negative Thoughts in Response to Pain (Osman, Barrios, Kopper, Hauptmann, Jones, & O'Neill, 1997).

Pictorial Representation of Illness and Self Measure (PRISM)

The burden of disease is essential for patients but complex and challenging to describe, let alone measure. The PRISM (Buchi & Sensky, 1999) is a measuring instrument that uses images instead of words. Participants are asked to consider two computer images, each showing a big white circle representing either their private life or their work environment. A smaller yellow circle is placed in the center, and a red circle is placed to the side. Participants are asked to "imagine that the white circle represents your personal life / work environment, and the yellow circle is yourself. Imagine that the red circle is your pain. You can click and drag the red circle. Where would you place the pain in your private life / work environment at the moment?". The distance in millimeters between the center of the yellow circle (= self) and the red circle (= pain) is used as a quantitative outcome measure. A reversed version of the PRISM (PRISM-R2) proved to be able to discriminate between individuals with good and deteriorated levels of Quality of Life (Lehmann, Oerlemans, Poll-Franse, & Vingerhoets, 2011).

Socio-demographic questions

Patient: Age, gender, partner, children, paid work, volunteer work, caregiver, and education level. Therapist: Age, gender, own experience with chronic pain, HT-training, pre-education.

Haptotherapy questionnaire (HQ14)

The HQ14 is a compilation of fourteen clinical questions from HT practice, in which each item is scored on a 5-point Likert scale. The questionnaire indicates a patient's wellbeing from a HT perspective (Klabbers & Hagg, 2020). The HQ14 has not yet been validated.

Pain

The intensity of the pain experienced in the past week was measured on a 5-point Likert scale.

Procedure

Patients with pain complaints in a participating HT practice via a referral or directly were asked, without obligation, whether they wanted to participate in the current study. If they were interested, they received the patient information letter of the study (Patient information letter, 2019). After the patient had consented and signed an Informed consent form (Informed-consent, 2019), they received a login code and the internet address of the research website of Tilburg University, with the request to complete the first questionnaire before the start of the therapy. All participating patients completed a questionnaire – at home on their computer – three times at the following time points: at the beginning of the HT (T1), after the end of eight sessions of HT, i.e., approximately three months after the start of the haptotherapy (T2) and approximately five months after the onset of HT (T3). They were asked about their perception of the pain and whether they had specific complaints. Answering these questions took about 20 to 30 minutes per time point.

Statistical analysis

To analyze the effect of HT on people aged 18 or older with pain complaints for more than six weeks, we compared the group means at T1, T2, and T3 using the non-parametric Friedman test of differences among repeated measures. To analyze the predictive value of client characteristics and therapist characteristics on the effect of the therapy, we intended to use a multiple regression analysis, with the patient and therapist characteristics and baseline measurements as predictors and the '4DSQ, SBC, PCS and the PRISM' change scores as dependent variables. To analyze the correlation between the answers to the HT-specific questions and the information obtained from a validated questionnaire, we calculated the correlations between these answers and the outcomes of the 4DSQ.

Results

From October 6, 2019, to January 22, 2020, the study was started successfully, and 61 healthcare therapists registered to participate in the study. However, five months after the start of the study, the Dutch government declared a professional ban for contact professions as a consequence of the Covid-19 pandemic, which was communicated in a press conference by Prime Minister Mark Rutte on television on March 15, 2020. As a result, the present study, which was scheduled to continue until December 31, 2021, had to be stopped. By March 15, 2020, 17 of the 61 included therapists had already started treating patients with chronic pain complaints, and they had asked 28 of these patients to participate in our study. Of these 28 patients, four chose not to participate, and the remaining 24 patients were included in the study. For baseline patient characteristics, see Table 1a. For baseline therapist characteristics, see Table 1b. The patients participating at that time ($N = 24$) were asked to continue completing the questionnaires as far as possible and to the extent relevant.

There were fewer participants than planned based on the power analysis. As a result, it was impossible to perform a multiple regression analysis to answer research questions 3 and 4 regarding the client and therapist characteristics and baseline measurements that might predict a positive effect of HT in people with pain complaints for more than six weeks. However, despite the limited number of participants, it was possible to use the non-parametric Friedman test of differences among repeated measures to compare the group means at T1 with those at T2 and T3 and thus to answer research questions 1 and 2: (1) 'What is the effect of HT in people age 18 or older with pain complaints for more than six weeks?' and (2) 'How does the effect of HT in the patient's private life relate to its effect in the work environment?'

Table 1a: Baseline patient carateristics

Age in years ≥ 18 (*Sd*: 15.9)	*M* = 38 *N* = 24	
	n	%
Women	20	83.3
Men	4	16.7
Single	6	25.0
Has children	17	70.8
Does paid work	19	79.2
Does voluntary work	4	16.7
Is an informal caregiver	3	12.5
Education		
Primary education only	0	0,0
Secondary vocational education	12	50.0
Higher professional education	9	37.5
Scientific education	3	12.5

Table 1b: Baseline therapist characteristics

Age in years (*Sd*: 7.5)	*M* = 57 *N* = 17	
	n	%
Women	16	94.1
Men	1	5.9
Experience with chronic pain	8	47.1
Haptotherapy training		
Academy of Haptonomy	13	76.5
Institute of Applied Haptonomy	2	11.8
Synergos Vocational Training for Haptonomy	1	5.9
Schooling Institute Authentic Haptonomy	1	5.9
Pre-education		
Physiotherapy	13	76.5
Exercise therapy	2	11.8
Nurse	2	11.8

Four-Dimensional Symptom Questionnaire (4DSQ)

Distress

A statistically significant change over time (T1, T2, T3) of distress was measured with the 4DSQ, $\chi 2$ (2) = 6.067, p = .048. The median values (IQR) on T1, T2, T3 were 12.5 (10.5 to 23.0), 11.0 (3.75 to 14) and 9.5 (2.75 to 15.5), respectively. Post hoc analysis with Wilcoxon signed rank tests performed with a Bonferroni correction resulted in a significance level of p <.017 and showed a statistically significant reduction of distress over time T1-T2 after eight sessions of HT in patients with chronic pain (Z = -2.588, p = .010). This reduction in distress remained stable over time T2-T3 (Z = .0, p = 1.0).

Anxiety

A statistically significant change over time (T1, T2, T3) of anxiety was measured with the 4DSQ, $\chi 2$ (2) = 7.280, p = .026. The median values (IQR) on T1, T2, T3 were 5.00 (1.50 to 9.75), 1.50 (.25 to 4.25), and .00 (2.75 to 4.25), respectively. Post-hoc analysis with Wilcoxon signed-rank tests performed with a Bonferroni correction resulted in a significance level of p <.017 and showed a statistically significant reduction in anxiety after eight sessions of HT over time T1-T2 in patients with chronic pain (Z = -4,407, p = .002). This reduction in anxiety remained stable over time T2-T3 (Z = .271, p = .786).

Depression

No statistically significant change over time (T1, T2, T3) of depression was measured with the 4DSQ, $\chi 2$ (2) = 4,000, p = .135. The median values (IQR) on T1, T2, T3 were 1.00 (0.25 to 3.75), 0.00 (0.00 to 1.00) and 0.00 (0.00 to 2.75), respectively.

Somatization

No statistically significant difference over time (T1, T2, T3) of somatization was measured with the 4DSQ, $\chi 2$ (2) = 1,000, p = .607. The median (IQR) on T1, T2, T3 were 11.00 (8.50 to 15.00), 7.00 (5.25 to 17.25), and 10.00 (8.25 to 11.00), respectively.

The Scale of Body Connection (SBC)

A statistically significant change over time (T1, T2, T3) of body awareness was measured with the SBC, $\chi 2$ (2) = 8.067, p = .018. The median values (IQR) on T1, T2, T3 were 63.50 (58.75 to 70.25), 70.50 (70.00 to 73.50), and 69.50 (64.75 to 71.00), respectively. Post-hoc analysis with Wilcoxon-signed rank tests performed with a Bonferroni correction resulted in a significance level of p <.017 and showed a statistically significant increase in body awareness after eight HT sessions between T1and T2 (Z = -3,152, p = .002). This increase in body awareness remained stable over time T2-T3 (Z = 1.2721, p = .203).

Pain Catastrophizing Scale, Dutch version (PCS)

A statistically significant change over time (T1, T2, T3) of pain catastrophizing was measured with the PCS, $\chi 2$ (2) = 12857, p = .002. The median values (IQR) on T1, T2, T3 were 30.0 (20.5 to 33.0), 21.0 (13.5 to 27.5) and 20 (14.0 to 25.5), respectively. Post-hoc analysis with Wilcoxon-signed rank tests performed with a Bonferroni correction resulted in a significance level of p < .017 and showed a statistically significant reduction in pain catastrophizing after eight sessions between T1 and T2 in the participants (Z = -2,616, p = .009). This reduction in pain catastrophizing remained stable over time T2-T3 (Z = -1,604, p = .109).

Pictorial Representation of Illness and Self Measure (PRISM)

No statistically significant change over time (T1, T2, T3) was measured with the PRISM for the effect of HT in the patient's life $\chi 2$ (2) = 3.429, p = .180. The median values (IQR) on T1, T2, T3 were 6.45 (5.27 to 7.35), 7.61 (3.27 to 19.40), and 6.42 (4.54 to 10.51), respectively. No statistically significant effect was measured in patient's work environment $\chi 2$ (2) = 3,000, p = .223. The median (IQR) on T1, T2, T3 were 4.51 (3.06 to 12.48), 6.62 (5.39 to 14.50), and 7.41 (4.95 to 14.30), respectively.

Effect sizes 4DSQ, SBC, and PCS

To gain an impression of the clinical relevance of the improvements over time (T1-T2), the effect sizes were calculated for the reduction of distress, anxiety, and pain catastrophizing and the increase of body awareness. Cohen's d was 0.6, 0.8, 0.8, and 0.9, respectively (Social Science Statistics, 2020).

Pain

No significant decrease in the mean pain score over time T1-T2 was observed $\chi 2$ (2) = 3,440, p = .179. The median values (IQR) on T1, T2, T3 were 4.00 (2.50 to 4.00), 3.00 (2.50 to 4.00), and 3.00 (2.00 to 4.00), respectively.

Haptotherapy questionnaire (HQ14)

At T1, 85.7% of patients with chronic pain complaints had one or more elevated 4DSQ scores. Their correlations with the outcomes of the HT questionnaire items are shown in Table 2. Ten (1, 2, 3, 4, 6, 9, 10, 11, 13, 14) of the fourteen questions of the HT questionnaire show a significant correlation with one or several subscales of the 4DSQ, see Table 2. Chronbach's Alpha of the HQ14 at T1: (n = 24) α = .814, at T2: (n = 17) α = .780, at T3 (n = 9): α = .886. The outcomes of five questions (2, 4, 6, 7, 10) showed a significant positive change with an effect size $\geq$ 0.5. No significance could be demonstrated for the outcomes of three questions (1, 3, 14) with an effect size $\geq$ 0.5. The outcomes of the questions (5, 8, 9, 11, 12, 13), with an effect size of 0.2 to 0.4, were also not significant; see Table 3.

Table 2: Pearsons Correlations (bold is significant)

	4DSQ			
N = 24	Distress	Anxiety	Depression	Somatization
Haptotherapy questionnaire				
1 How satisfied were you with your wellbeing in life?	**-0,518 ****	**-0,432 ***	**-0,629 ****	**-0,506 ***
2 How did you experience your physical movements?	-0,322	-0,293	**-0,477 ***	**-0,433 ***
3 How was your muscle tone?	**-0,737 ****	**-0,457 ***	**-0,464 ***	**-0,667 ****
4 Were you confident?	-0,368	**-0,439 ***	**-0,416 ***	-0,245
5 Did physical contact startle you?	-0,175	-0,094	0,079	-0,122
6 Did you trust other people?	**-0,587 ****	**-0,428 ***	**-0,725 ****	**-0,550 ****
7 Did you rely on your own capabilities?	-0,137	-0,117	0,116	0,004
8 How was your contact with others?	0,030	0,179	0,038	-0,011
9 Did you experience freedom in your life?	**-0,587 ****	**-0,433 ***	**-0,607 ****	-0,390
10 Did you feel responsible for your own life?	**-0,618 ****	-0,360	**-0,484 ***	**-0,658 ****
11 Have you enjoyed life?	-0,331	-0,264	**-0,565 ****	-0,344
12 Did you touch those close to you?	0,075	-0,037	-0,081	-0,059
13 Have you been touched by people who are dear to you?	-0,179	**-0,433 ***	**-0,429 ***	-0,292
14 Did you feel an inner peace?	-0,386	-0,225	**-0,523 ****	**-0,452 ***

*Correlation is significant ($p \leq .05$) / **Correlation is significant ($p \leq .01$).

Table 3: Haptotherapy questionnaire (bold is significant)

N = 17	T1		T2		Difference		
Fourteen questions about the past week*	*M*	*Sd*	*M*	*Sd*	*M*	*p*	*d*
1 How satisfied were you with your wellbeing in life? (completely unhappy - super happy)	2.9	1.1	3.5	0.9	0.6	.070	0.6
2 How did you experience your physical movements? (clumsy and stiff - smooth and harmonious)	2.5	0.8	3.2	1.1	0.6	**.029**	0.6
3 How was your muscle tone? (very high muscle tone - relaxed)	2.1	0.9	2.7	1.1	0.6	.056	0.6
4 Were you confident? (very insecure - full of confidence)	2.6	1.1	3.4	1.0	0.8	**.006**	0.8
5 Did physical contact startle you? (very much - not at all)	4.2	1.1	3.8	1.3	-0.4	.308	0.3
6 Did you trust other people? (very suspicious - full of confidence)	3.4	1.2	4.0	1.1	0.6	**.029**	0.5
7 Did you rely on your own capabilities? (adapted myself a lot - followed my own course)	2.5	0.9	3.5	0.8	0.9	**.003**	1.1
8 How was your contact with others? (distant - personal, profound)	3.4	0.9	3.7	1.0	0.4	.331	0.4
9 Did you experience freedom in your life? (very limited - uninhibited and free)	2.6	1.0	2.9	1.1	0.4	.231	0.4
10 Did you feel responsible for your own life? (was being lived - went my own way)	2.6	0.9	3.8	0.8	1.1	**≤ .001**	1.3
11 Have you enjoyed life? (it wasn't fun – pure enjoyment)	2.9	1.1	3.2	1.0	0.3	.236	0.3
12 Did you touch those close to you? (not at all - very often)	3.9	0.8	3.7	1.2	-0.2	.450	0.2
13 Have you been touched by people who are dear to you? (not at all - very often)	3.8	0.9	3.5	1.3	-0.3	.264	0.3
14 Did you feel an inner peace? (never - always)	2.4	0.9	2.9	0.8	0.5	.132	0.6

*Each item is scored on a 5-point Likert scale

Discussion

The current study aimed to investigate the effect of HT on patients with chronic pain. There were sufficient registrations of people with chronic pain in the first three months (n = 24). However, the investigation had to be abruptly terminated a few months after the start, due to the professional ban on contact professions, because of the COVID-19 pandemic. Several initial aims of the research, therefore failed, because to identify predictive factors for the outcome of HT in patients with chronic pain, many more participants are needed. Nevertheless, we decided to report our findings because the measurements showed several significant positive changes with large effect sizes.

Clinical relevance

The effect sizes of the significant reduction of distress (d = 0.8), measured with the 4DSQ, the significant reduction of anxiety (d = 0.8) measured with the 4DSQ, of pain catastrophizing (d = 0.8) measured with the PCS, and the significant increase of body awareness (d = 0.9) measured with the SBC, all were larger than the effect sizes obtained with treating chronic pain with acceptance and commitment therapy via the Internet (d range from 0.2 to 0.6) (Buhrman et al., 2013), and also larger than the effect size of a cognitive behavioral approach to chronic pain (d range from 0.2 to 0.5) (Morley, 2011). Thus, the effect sizes of positive changes after treatment of chronic pain with HT suggest clinical relevance and are very promising. At the same time, we are aware of the present study's limitations, including a selection bias.

Touching and being touched

It is noteworthy that the questions about touching (HQ14 question 12) and being touched (HQ14 question 13) showed only a small positive change, and the question about whether or not the participant was startled by physical contact (HQ14 question 5) even showed a negative change. This is remarkable because touching and being touched is the core business of HT. A possible explanation for this may be the introduction of social distancing, which banned touching each other to limit the risk of infection with the Covid-19 virus as much as possible. Further research could reveal which improvements are essential for patients with chronic pain. In any follow-up study of HT in patients with chronic pain in a post-corona period, it would be useful by all means to use the HQ14 to develop this questionnaire further.

Collaborating with referrers

From an organizational point of view, we learned that 24 patients with chronic pain were included in the first three months of the study, which means that a two-year duration of the study would have been insufficient to include the number of required participants based on the power analysis. It, therefore, is advisable to plan a follow-up study with a longer duration or to ensure a sufficient number of inclusions per month, for instance, by collaborating more with other referrers, such as GPs.

Strengths and weaknesses of the study

The main limitation of this study is the small number of patients due to the Covid-19 pandemic. In this pilot, we decided to approach patients with chronic pain complaints – who had already registered for HT – with the invitation to participate in the study. Not all patients chose to participate, so there was a selection bias. As a positive note, the existing practice of HT in chronic pain was investigated, so the research has ecological validity. And seventeen therapists treated twenty-four patients, i.e., on average one or two patients per therapist, so the patient distribution over the therapists was adequate.

Recommendations for HT practice

The HQ14 consists of clinical questions; therefore, it can provide recognizable starting points for a meaningful discussion during the evaluation, partly because the HQ14 is not specifically complaint-oriented and offers a perspective for treatment goals. In HT practice, it would be useful to apply the HQ14 to develop this questionnaire further.

Recommendations for future research

A follow-up study of HT for chronic pain is desirable and necessary, preferably through a Randomized Controlled Trial with one or more control groups.

Conclusion

One has to be careful with conclusions because of the study's limitations, including the selection bias, the small number of participants, and the lack of a control group. Nevertheless, the findings suggest that haptotherapy might be a promising therapy for people with chronic pain. Further research is necessary, preferably a Randomized Controlled Trial with one or more control groups.

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References

Achterberg, W.P., Gambassi, G., & Finne-Soveri, H. (2010). Pain in European long-term care facilities: cross-national study in Finland, Italy, and the Netherlands. *Pain, 148*, 70-74.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders (DSM-5)* Washington, DC: American Psychiatric Association.

Bala, M., Bekkering, T., Riemsma, R., Harker, J., Huygen, F., & Kleijnen, J. (2011). Epidemiology of chronic pain in the Netherlands, from http://www.pijnsamen.nl/wp-content/uploads/2016/01/Epidemiology-of-chronic-pain-in-the-Netherlands.pdf

Bekkering, G.E., Bala, M., Reid, K., Kellen, E., Harker, J., Riemsma, … F.J.P.M., & Kleijnen, J. (2011). Epidemiology of chronic pain and its treatment in the Netherlands. *Netherlands Journal of Medicine, 69*(3), 141-153.

Buchi, S. & Sensky, T. (1999). PRISM: Pictorial Representation of Illness and Self Measure. A brief nonverbal measure of illness impact and therapeutic aid in psychosomatic medicine. *Psychosomatics, 40*(4), 314-320.

Buhrman, M., Skoglund, A., Husell J., Bergström, K., Gordh, T., Hursti, T., … T., & Andersson, G. (2013). Guided internet-delivered acceptance and commitment therapy for chronic pain patients: A randomized controlled trial. *Behaviour Research and Therapy, 51*(6), 307-315. doi: https://doi.org/10.1016/j.brat.2013.02.010

Damme, S.V. (2002). Catastroferen over pijn: Pain Catastrophizing Scale-Dutch Version (PCS-DV), from http://www.bsw.ugent.be/VVGP/fichePCS.pdf

Demyttenaere, K.B.R., Lee, S., Posada-Villa, J., Kovess, V., Angermeyer, M.C., Levinson, … & Von Korff, M. (2007). Mental disorders among persons with chronic back or neck pain: results from the World Mental Health Surveys. *Pain, 129*(3), 332-342.

Eerd, D. v., Cote, P., Kristman, V.L., Rezai, M., Hogg-Johnson, S., Vidmar, M., & Beaton, D.E. (2011). The Course of Work Absenteeism Involving Neck Pain: A Cohort Study of Ontario Lost-Time Claimants. *Spine, 36*(12), 977-982.

Informed-consent. (2019), from https://www.haptotherapeutenapeldoorn.nl/wp-content/uploads/2019/08/toestemmingsformulier.pdf

Klabbers, G.A. (2020). Impaired ability to feel: indication for haptotherapy. *International Journal of Haptonomy and Haptotherapy, 3,* 12-14.

Klabbers, G.A., Biggelaar, A.J.M. v., Kaman, H.M.C., & Massop, S.F.M. (2019). Richtlijn Haptotherapie bij Chronische Pijn, from https://www.haptotherapeutenapeldoorn.nl/wp-content/uploads/2021/01/Richtlijn-Haptotherapie-bij-Chronische-Pijn-versie-2021-1.pdf

Klabbers, G.A. & Hagg J.W. (2020). *Haptotherapievragenlijst*, from https://www.gertklabbers.nl/wp-content/uploads/2021/01/Haptotherapievragenlijst-HV14-Klabbers-Hagg-2021-1.pdf

Lehmann, V., Oerlemans, S., Poll-Franse, L.V. v.d., Vingerhoets, A.J.J.M., & Mols, F. (2011). Suffering in long-term cancer survivors: An evaluation of the PRISM-R2 in a population-based cohort. *Qual Life Research, 20*, 1645-1654.

Maas, L.C.C. v.d., Köke, A., Bosscher, R., Hoekstra, T., & Peters, M. (2015). Measuring Body Awareness with the Scale of Body Connection: Structure and Reliability of the Dutch Translation *Psychomotor Therapy in Chronic Pain Rehabilitation Enhancing body awareness in multidisciplinary treatment.* Amsterdam: Vrije Universiteit Amsterdam.

Merskey, H. & Bogduk, N. (1994). *Classification of chronic pain, descriptions of chronic pain syndromes and definitions of pain terms* (Second Edition ed.). Seattle USA: Task Force on Taxonomy Classification of Chronic Pain.

Morley, S. (2011). Efficacy and effectiveness of cognitive behaviour therapy for chronic pain: Progress and some challenges. *Pain, 152*(3), 99-102. Doi: 10.1016/j.pain.2010.10.042

Nederlandse Vereniging van Revalidatieartsen. (2012). *Behandelkader Pijnrevalidatie*, from http://www.revalidatiegeneeskunde.nl

Osman, A., Barrios, F.X., Kopper, B.A., Hauptmann, W., Jones, J., & O'Neill, E. (1997). Factor structure, reliability, and validity of the Pain Catastrophizing Scale. *Journal of Behavioral Medicine, 20*, 589-605.

Patiënteninformatiebrief. (2019), from https://www.haptotherapeutenapeldoorn.nl/wp-content/uploads/2019/07/Pati%C3%ABnteninformatiebrief.pdf

Picavet, H.S.J. & Hoeymans, N. (2004). Health related quality of life in multiple musculoskeletal diseases: SF-36 and EQ-5D in the DMC3 study. *Annals of the Rheumatic Diseases 63*(6), 723-729.

Plooij, E. (2014). Als aanraken nodig is. *De Psycholoog, 49*(11), 22-29.

Plooij, E. & Zandvliet, J. (2010). 'Voel je wel?': Haptotherapie in de eerstelijnsgezondheidszorg. *Tijdschrift Praktische Huisartsgeneeskunde, 1,* 15-24.

Price, C.J., & Thompson, E.D. (2007). Measuring dimensions of body connection: body awareness and bodily dissociation. *Journal of Alternative and Complementary Medicine, 13(9)*, 945-953.

Price, C. J., Thompson, E.A., & Cheng, S.C. (2017). Scale of Body Connection: A multi-sample

construct validation study. *Plos One, 12*(10). doi: https://doi.org/10.1371/journal.pone.0184757

Regieraad Kwaliteit van Zorg. (2011). Chronische pijn, from https://www.yumpu.com/nl/document/read/28458906/rapport-chronische-pijn-regieraad-kwaliteit-van-zorg

Schaefer, M., Egloff, B., & Witthöft, M. (2012). Is interoceptive awareness really altered in somatoform disorders? Testing competing theories with two paradigms of heartbeat perception. *Journal of Abnormal Psychology, 121*(3), 719-724.

Statistics, S.S. (2020). Effect Size Calculator for T-Test, from https://www.socscistatistics.com/effectsize/default3.aspx

Sullivan, M.J.L., Bishop, S.R., & Pivik, J. (1995). The Pain Catastrophizing Scale: development and validation. *Psychological Assessment, 7*(4), 524-532.

Terluin, B., Brouwers, E.P.M., Marwijk, H.W.J. v., Verhaak, P.F.M., & Horst, H.E. v. der (2009). Detecting depressive and anxiety disorders in distressed patients in primary care; comparative diagnostic accuracy of the Four-Dimensional Symptom Questionnaire (4DSQ) and the Hospital Anxiety and Depression Scale (HADS). *BMC Family Practice, 10*, 1-12.

Terluin, B., Marwijk, H.W.J. v., Adèr, H.J., Vet, H.C.W. de, Penninx, B.W.J.H., Hermens, M.L.M., … & Stalman, W.A.B. (2006). The Four-Dimensional Symptom Questionnaire (4DSQ): a validation study of a multidimensional self-report questionnaire to assess distress, depression, anxiety and somatization. *BMC Psychiatry, 6,* 1-20.

Veldman, F. (2007). *Levenslust en Levenskunst. Zin, inhoud en betekenisverlening aan het persoonlijk leven binnen de menselijke samenleving.* Blaricum: Van der Veer Media.

Vereniging van Haptotherapeuten. (2020), from www.haptotherapeuten-vvh.nl