

# A RANDOMIZED CONTROLLED TRIAL OF TONG LEN MEDITATION PRACTICE IN CANCER PATIENTS: EVALUATION OF A DISTANT PSYCHOLOGICAL HEALING EFFECT

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**Context:** Tong Len meditation is an important therapeutic tool in the Tibetan medicine, and it can be used for self-healing and/or to heal others. Currently, in the West, there is no scientific study concerning the efficacy of a Tong Len distant healing effect on psychological disorders in cancer patients.

**Objectives:** To evaluate a distant healing effect of Tong Len meditation on stress, anxiety, depression, fatigue, and self-perceived quality of life in cancer patients. These psychological objectives were chosen as a consequence of the limited scientific literature of present day.

**Design:** We performed a double-blind randomized controlled trial on 103 cancer patients with tumors. Overall, 12 meditators used Tong Len in aid of 52 patients randomly selected as experimental group, while the remaining 51 patients constituted the control group. Patients and meditators did not know each other. All patients completed profile of mood states (POMS) and European Quality of Life—5 dimensions (EQ-5D) questionnaires before treatment (T0), after two (T1) and three months of treatment (T2), and one month after treatment cessation (T3).

**Results:** With regard to the parameters related to depression, a statistically significant improvement ( $P = .003$ ) was

observed in the treatment group compared to controls. On the other hand, the vigor/activity parameter saw significant improvements in the control group ( $P = .009$ ). Both groups exhibited significant improvements in the other factors assessed in the POMS and EQ-5D questionnaires.

**Conclusions:** This study did not provide sufficient evidence supporting an efficacy of Tong Len meditation in distant psychological healing as compared to a control condition. The research highlighted some psychological improvements through Tong Len distant meditation in a group of patients unknown to meditators. Therefore, the enhancement detected in most parameters in both treatment and control groups raises interest on in-depth analysis and evaluation of distant meditation on cancer patients to mitigate psychological problems caused by the disease.

**Key words:** Tong Len, Distance meditation, Distant psychological healing effect, Compassion, Nonlocal phenomena, Quantum physics

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## INTRODUCTION

Distant healing intentions are compassionate mental acts that improve the well-being of another person at a distance.<sup>1</sup> This definition includes different methods and interventions, characterized by the application of one person's intention towards someone else's health. There are techniques and practices from various approaches describing distant healing intention interventions from various approaches, such as intercessory prayer, spiritual healing, nondirected prayer, intentionality, energy healing, shamanic healing, nonlocal healing, noncontact therapeutic touch, and Reiki.<sup>2</sup> Distant healing intention is a healing modality, which is usually applied in complementary and alternative medicine (CAM) and nonlocal medicine, based on the concept that one

person's consciousness can affect another person's physical substratum.<sup>3</sup>

The conception of a nonlocal mind allows the understanding of the outcomes that reliably demonstrate the existence of interactions between distant living beings. Schrödinger<sup>4</sup> was one of the first authors that gave a contribution to the elaboration of a model of consciousness that unifies the distant healing-related phenomena with science traditions, adopting a unitary vision of human consciousness, which is omnipresent, unbounded, infinite, collective, and eternal.<sup>5</sup>

Distant healing intentions are commonly applied and the research in this field is growing. Many studies observed small but significant effects for distant healing intentions as intercessory prayer<sup>6</sup>; some researches explored the variables that modulate the effects of distant healing intentions, suggesting the development of further studies to explain this phenomenon.<sup>7</sup>

The main publications involved the effects of intentions on inanimate objects (as sophisticated random number generators), plants, cells, animals (growth of tumors in animals, microbial growth, germination of seeds and growth of plants, kinetics of biochemical reactions, etc.) and humans' health, in particular on organic diseases and surgical wounds.<sup>8–10</sup> However, most of researches about religious behaviors and health were observational studies, without randomization and control. Furthermore, nearly all of them showed an efficacy of distant healing intentions when there was a strong and empathic connection between the healer and a distant individual who had received the healer's efforts (recipient), even when the recipient was unaware about the sending condition.<sup>11,12</sup> These studies suggested that compassionate healing intentions could exert measurable physical effects on a distant recipient; they also observed that a bonded connection between the healer and the recipient might be the core part of the healing process, because most of these nonlocal phenomena are based on empathy, a feature of close and compassionate relationships.<sup>13,14</sup>

A recent review of noncontact healing studies showed that subjects in the active condition exhibit a significant improvement in well-being relative to control subjects under circumstances that do not seem to be susceptible to placebo and expectancy effects.<sup>15</sup>

Other clinical trials showed a significant effect even when the one who sent distant healing intentions and the one who received them (recipient patient) did not know each other.<sup>2</sup> Researches on distant healing and intercessory prayer revealed that nonlocal mind had a solid connection with love, compassion, and deep care<sup>16</sup>: the nonlocal mind vision may change the core feature of medicine and switch the paradigm, equal to the passage from classical to quantum physics.

The present study addresses the effects of Tong Len, a Tibetan meditation practice, which literally means, "sending and receiving." It is believed to be highly effective at alleviating suffering and favoring healing. Tong Len is based on the Buddhist concept of compassion: the meditator receives the suffering of other beings with the aim of neutralizing his own egoism—which is considered the origin of our troubles and various forms of disease in the Buddhist philosophy. Through the development of compassion and kindness, positive energy is generated towards other beings and ourselves. Tibetan Lamas believe that

the practice of Tong Len contributes towards the reduction and elimination of suffering and it can aid the curing of diseases.<sup>17,18</sup>

Research evidence demonstrated a link between self-compassion and healing: self-compassion was related to psychological flourishing and reduced psychopathology in a mindful self-compassion (MSC) program.<sup>16</sup> A number of scientific reports investigated the effects of compassion meditation upon the behavioral and neuroendocrine responses to psychosocial stressors in those who meditate.<sup>19,20</sup> Furthermore, neuroimaging studies showed that compassion meditation was leading the activation of brain areas involved in emotional processing and empathy<sup>21</sup>; data supported the potential use of this form of meditation as a technique for coping with a number of psychological disorders related to a long-term illness, such as social anxiety, depression, and anger. To date, studies have not examined the distance effects of Tong Len performed by a group of meditators upon a group of patients affected by cancer-related anxiety, depression, and stress specifically triggered by their cancer diagnosis, although some studies suggested a positive effect of intercessory prayer upon some diseases.<sup>22</sup>

The primary research focus was supporting the hypothesis that Tong Len meditation used by meditators can produce a significant distant healing effect on psychological well-being of cancer patients that were randomly assigned to receive their efforts.

Moreover, this research is important because it investigated the presence of a distant psychological healing effect without any empathic bond between meditators and patients. Until now, the majority of scientific literature revealed the existence of distant healing effects when there are empathic connection and deep acquaintanceship between healers and recipients.

## METHODS

The Ethics Committee of the Bologna Health Authority approved the study.

It consisted of a double-blind randomized controlled trial that aims to assess the capacity of Tong Len meditation to reduce stress, anxiety, depression, and fatigue in cancer patients, and to assess its effects upon patient perceived quality of life. The study started in April 2013 and finished in October 2013, with a final follow-up assessment.

### Selection and Description of Participants

Overall, 103 cancer patients (seven males and 96 females) receiving treatment at the "U.O.C. Oncologia of Ospedale Bellaria" (Oncology Department of Bellaria Hospital, Bologna) were enrolled onto the study; all patients were at least 18 years old, resident in the district of Bologna and, according to the oncologist's judgments, were not deemed to require psychological treatment. The study involved a prevalence of women because the Oncology Department of Bellaria Hospital treats mainly breast cancers.

Patients diagnosed with psychiatric disorders and receiving treatment from Mental Health Services, patients in the terminal phase of cancer (admitted to a Hospice or receiving palliative care), and those with advanced-stage neoplasms were excluded from the study.

All patients recruited onto the study were informed about the aim of the study and the process of randomized assignment to either treatment or control group. All subjects provided written informed consent for their participation.

Patients in both groups were required to complete the profile of moods states (POMS)<sup>23</sup> and EQ-5D questionnaires.<sup>24</sup> The POMS is a 65-items scale which assesses six affective dimensions. The results from the questionnaires were assessed using the values derived from the six subscales relative to: tension/anxiety, depression/despondency, anger/hostility, tiredness/apathy, vigor/activity, and confusion/bewilderment. The overall score for total mood disturbance (TMD), used to assess “general distress,” derived from the sum of the values for tension/anxiety, depression/despondency, anger/hostility, tiredness/apathy, and confusion/bewilderment, in the absence of those for vigor/activity, according to the standard procedure.<sup>23</sup> The EQ-5D consists of five dimensions (mobility, self-care, usual activities, pain/discomfort, and anxiety/depression). Each dimension has three levels of response or severity (no problems, some problems, and extreme problems). In addition to these five dimensions, the visual analogue scale (VAS) component of the last part of the EQ-5D allows patients to place their current health status on a range from 0 to 100.<sup>24</sup> The results deriving from questionnaire EQ-5D are represented by a score calculated on the basis of the five dimensions examined and the score from the VAS.

Tests were performed before the start of Tong Len (T0), following two months (T1) and three months (T2) of meditation, and one month after treatment cessation (T3; “follow-up”). A file was produced for each patient, recording all personal data (age, gender, marital status, and level of education) and clinical data (BMI, blood pressure, heart rate, white blood cell count, and tumor stage), obtained from the nursing and medical staff and patients hospital files.

The assignment of each patient to either the treatment ( $n = 52$ ) or control ( $n = 51$ ) group was performed in a randomized manner.

### Technical Information

The practice of Tong Len is considered a positive emotion endowed with the potential to heal. This potential has been the subject of several studies by Davidson,<sup>25</sup> who defined it as generating a global re-balancing of the person. Tong Len is a form of meditation that can be practiced quantitatively by healthcare professionals for self-healing and healing others. It can be performed every day at home or at work. As every kind of meditation, Tong Len effects on energetic and emotional levels and it produces benefits on patients.

The Tong Len meditator uses compassion to visualize the patient or patients, who in turn experience great benefit or become released of their suffering. During the practice, the meditator visualizes him/herself while absorbing the suffering of the participant(s), he/she cleanses it, and returns it to the patient(s) as positive energy.

In the present study, Tong Len meditation was practiced at distance by 12 healthcare professionals, 10 of whom operate in the Azienda USL of Bologna (Bologna Health Authority) and who received specific training for this purpose upon a

group of cancer patients randomly selected. The meditator group was enrolled because of the personal motivation shown during the training course. Meditators had experience with meditation and yoga, but they did not practice them regularly. They participated in five group-training meetings for 20 h duration. The training followed the traditional criteria for transmission. The meetings were weekly, thus the participants could continue the training by themselves at home.

The training course was directed by Dr. Pagliaro—from 1989 to 1991 he participated to a training course about Tibetan medicine managed by the Vice-director of Men Tsee Khang, Dr. P.Y. Arya; he practices regularly Tibetan meditation and he teaches healing meditation in several hospitals.

The last practical meeting lasted six hours and it was directed by Venerable Sangye Khadro—a Tibetan nun who teaches meditation, she is expert in Tong Len.

Once the group of meditators had completed their training in Tong Len mediation, each meditator examined the files of the patients to treat. Each file contained just the initials of the patients, their gender, age, and the cancer diagnosis with indications of the type of tumor pathology.

Every meditator practiced for all the patients; the meditation was practiced from the beginning of June to the end of September, three times a week for 15–20 min, according to the pre-established day and time schedule. Each meditator individually performed Tong Len in their own surroundings, abiding to the agreed modality (day, time, and duration) (Table 1).

### Statistics

Continuous variables are presented as means (standard deviation), while categorical variables as shown as absolute frequencies (relative frequency). Independent *t*-tests and Pearson's chi-square tests were used to examine between-group differences at baseline. For the clinical variables, changes were calculated between baseline and T3 and paired *t*-tests performed to examine the differences.

In order to evaluate between-group differences in the absolute values of each variable over time, two-way analysis of variance (ANOVA) for mixed measures was used.

Demographic and psychological data were analyzed using independent *t*-tests and Pearson's chi-square tests to compare drop-outs with those who completed the study.

Intent-to-treat analysis was calculated in the same manner and included all drop-outs, and for whom the T3 scores were entered as unchanged.

All *P* values are based on two-sided tests and *P* values less than or equal to .05 were considered significant. Statistical analyses were performed using the statistical package Stata Intercooled for Windows, version 12.0.

### RESULTS

A flowchart describing patient participation is reported in Figure 1.

Overall, 103 patients provided their informed consent for participation in the study; with randomization 52 patients were assigned to the treatment group and 51 to the control group. A total of, 41 patients from the treatment group and

**Table 1.** Phases of Tong Len Meditation

1. Visualization of the patients' suffering as negative energy that is transformed by meditators.
2. Visualization of patients' improvements.
3. Visualization of the consolidation of the improvements (reduction/elimination of stress, anxiety, nausea and fatigue, and an improved response to the cancer treatments).

36 from the control group completed the study. The demographic and clinical characteristics and scores from the psychological tests performed at T0 for both patient groups are shown in Table 2. Of the 103 patients enrolled, 96 were female (93.20%) and seven were male (6.80%). The average age was 57.09 years (SD = 9.64).

No significant differences were observed in any of the parameters between the control and treatment group, confirming the validity of the randomization model adopted.

### Psychological Aspects—POMS Questionnaire

From the analysis of the results for factors surveyed using the POMS questionnaire improvements were statistically significant in both groups for tension/anxiety, anger/hostility, tiredness/apathy, and confusion/bewilderment. The factor depression showed a significant improvement only in the treatment group ( $P = .003$ ). In contrast, control group patients reported a significant improvement in the level of vigor/activity ( $P = .009$ ), while a not statistically significant change was observed in the treatment group. Overall, using the Total Mood Disturbance indicator, as an index of overall change in the variables tested using POMS, the observed

improvement was statistically significant in both treatment and control groups (Table 3).

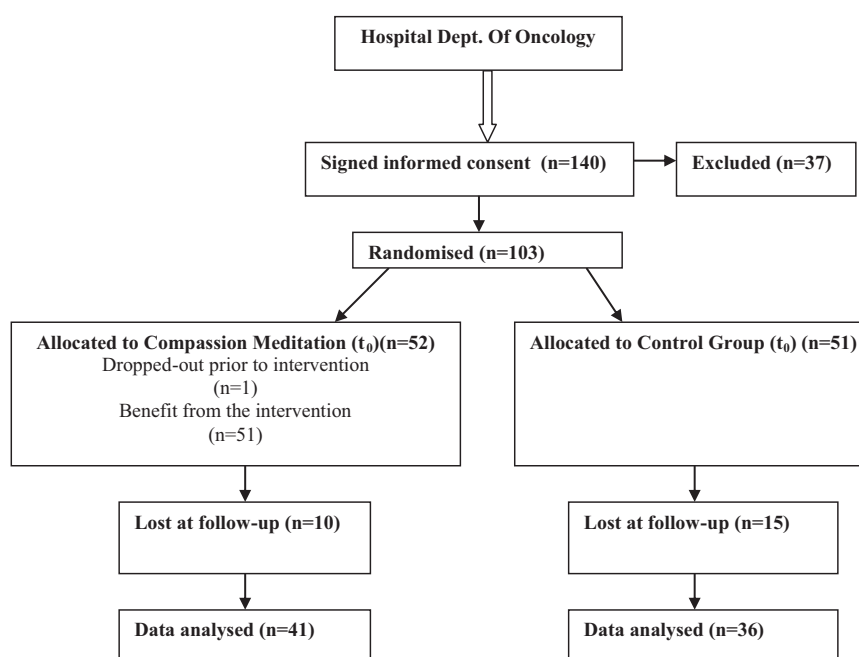
### Evaluation of Perceived Quality of Life (EQ-5D)

The analysis of the data obtained from the test of self-perceived quality of life (EQ-5D) and reported in Table 3, suggested that a significant improvement in the perception of quality of life occurred in both groups, especially if expressed using the visual analogue scale (VAS); this result was less evident when considering the overall score for the five dimensions.

Figure 2 shows temporal trend of total mood disturbance in treatment and control groups. It shows how TMD was reduced in both groups during the study, how reduction occurred, especially in the treatment group, between T0 and T1 and that the effect was also maintained over time. There is not statistically significant difference between-groups at each time, as indicated by overlapping error bars. Analysis of TMD with two-way ANOVA for mixed measures demonstrated main effects of time ( $F[3,337] = 3.70$ ,  $P = .0120$ ), but no main effects of group ( $F[1,339] = 1.16$ ,  $P = .2814$ ) and no treatment group  $\times$  time interactions ( $F[1,337] = .11$ ,  $P = .9517$ ).

### Comparison of Study Drop-Outs With Patients Completing the Study

Considering that a significant number of subjects dropped out before the conclusion of the study ( $N = 11$  treatment patients;  $N = 15$  control patients: 25.25%), it was deemed important to perform a more detailed analysis of this subgroup to investigate whether important differences existed. From an analysis of patients who dropped out prior to the end of the study compared to those remaining until the T3 follow-up, it emerged that drop-outs tended to be more depressed/despondent ( $P = .0532$ ). The data also showed a

**Figure 1.** Flowchart of study participants.

**Table 2.** Mean Demographic, Anthropometric, Social, Clinical, and Psychological Characteristics of the Treatment vs. Control Groups (Baseline Values at T0)

	Whole study population		Treatment		Control		P value
	Mean (SD)	N (%)	Mean (SD)	N (%)	Mean (SD)	N (%)	
<i>Demographic, anthropometri, and social characteristics</i>							
Age (years)	57.09 (9.64)		58.21 (9.79)		55.94 (9.44)		.2338
Gender							
Male		7 (6.80)		5 (9.62)		2 (3.92)	
Female		96 (93.20)		47 (90.38)		49 (96.08)	.2510
BMI	26.01 (4.96)		26.02 (4.66)		26.00 (5.29)		.9882
Civil status							
Single		9 (8.82)		4 (7.8)		5 (9.8)	
Married/co-inhabiting		76 (74.51)		39 (76.5)		37 (72.5)	
Separated/divorced		14 (13.73)		7 (13.7)		7 (13.7)	
Widowed		3 (2.94)		1 (2.0)		2 (3.9)	.3170
Years of education	12.05 (3.84)		12.08 (3.46)		12.02 (4.23)		.9388
Level of education							
Elementary school		9 (8.82)		4 (7.8)		5 (9.8)	
Lower middle school		18 (17.65)		8 (15.7)		10 (19.6)	
Upper high school		43 (42.16)		23 (45.1)		20 (39.2)	
Degree		17 (16.67)		7 (13.7)		10 (19.6)	
Other		15 (14.71)		9 (17.7)		6 (11.8)	.7960
<i>Clinical characteristics</i>							
Systolic pressure (mmHg)	123.14 (13.41)		122.76 (11.3)		123.54 (15.37)		.7744
Diastolic pressure (mmHg)	75.97 (11.25)		77.10 (12.42)		74.79 (9.89)		.3125
Heart rate	73.78 (8.72)		73.22 (7.54)		74.36 (9.85)		.5258
Leukocytes (mmc)	6.26 (2.12)		6.17 (2.17)		6.35 (2.09)		.6800
Neutrophils (%)	57.76 (11.07)		58.08 (9.85)		57.43 (12.28)		.7713
Lymphocytes (%)	29.65 (8.80)		29.79 (8.92)		29.51 (8.76)		.8726
Neutrophils (mmc)	3.74 (1.65)		3.70 (1.77)		3.77 (1.54)		.8284
Lymphocytes (mmc)	1.80 (.70)		1.75 (.58)		1.86 (.82)		.4322
<i>Psychological tests</i>							
POMS							
Tension/anxiety	55.76 (11.94)		56.41 (11.77)		55.12 (12.18)		.5865
Depression/despondency	55.02 (12.59)		55.57 (12.49)		54.47 (12.79)		.6618
Anger/hostility	56.11 (12.82)		56.71 (13.88)		55.51 (11.78)		.6399
Tiredness/apathy	57.57 (12.26)		58.22 (12.21)		56.92 (12.40)		.5965
Vigor/activity	50.97 (11.96)		50.92 (11.46)		51.02 (12.55)		.9672
Confusion/bewilderment	54.28 (12.79)		56.37 (13.03)		52.20 (12.32)		.0994
Total mood disturbance	227.77 (62.67)		232.35 (63.99)		223.20 (61.60)		.4633
EQ-5D							
VAS	66.25 (16.89)		65.35 (15.49)		67.16 (18.28)		.5920
Score	.72 (.22)		.69 (.24)		.75 (.20)		.1942

SD: standard deviation.

slight tendency for some other POMS factors to be higher in the drop-out patient group, although statistical significance was not achieved (Table 4). Thus, a strong difference in terms of personal features did not exist between the study drop-outs and those completing the study.

## DISCUSSION

The main purpose of this study was to evaluate the efficacy of Tong Len distant meditation to reduce stress, anxiety, fatigue, and depression in a group of cancer patients randomly assigned to the treatment group in a double-blind manner.



**Table 3.** POMS, Total Mood Disturbance and EQ-5D: Pre- (T0) vs. Post-treatment (T3, Follow-up) Comparisons

	Treatment group				Control group			
	T0	T3	Change	P value	T0	T3	Change	P value
	Mean (SD)	Mean (SD)	Diff (95% CI)		Mean (SD)	Mean (SD)	Diff (95% CI)	
<i>POMS</i>								
Tension/anxiety	56.59 (11.06)	51.29 (10.59)	-5.30 (-8.97;-1.61)	.0039	53.08 (11.78)	47.81 (11.59)	-5.27 (-8.99;-1.56)	.0016
Depression/despondency	55.93 (12.39)	50.44 (10.39)	-5.49 (-8.98;-1.99)	.0029	51.06 (10.22)	49.56 (11.66)	-1.50 (-4.76;1.76)	.3564
Anger/hostility	57.10 (14.10)	50.88 (10.88)	-6.22 (-9.98;-2.46)	.0018	53.31 (10.53)	49.56 (12.71)	-3.75 (-6.83;-0.67)	.0184
Tiredness/apathy	58.41 (12.30)	53.32 (12.19)	-5.09 (-8.69;-1.51)	.0065	54.69 (10.97)	48.61 (11.11)	-6.08 (-9.36;-2.80)	.0006
Vigor/activity	51.68 (11.11)	54.73 (11.16)	3.05 (-1.04;7.14)	.1400	52.17 (12.35)	56.42 (10.97)	4.25 (1.12;-7.38)	.0093
Confusion/bewilderment	57.24 (13.06)	49.24 (12.60)	-8.00 (-11.68;-4.32)	.0001	51.14 (11.62)	47.03 (12.42)	-4.11 (-7.45;-0.77)	.0173
<i>Total Mood Disturbance</i>	233.59 (62.95)	200.44 (58.50)	-33.15 (-51.80;-14.5)	.0009	211.11 (57.33)	186.14 (63.29)	-24.97 (-42.3;-7.00)	.0060
<i>EQ-5D</i>								
VAS	67.20 (14.58)	72.61 (17.84)	5.41 (1.25;9.58)	.0122	68.33 (17.24)	78.61 (14.77)	10.28 (4.56;16.00)	.0008
Score	.71 (.23)	.71 (0.26)	0 (-.06;0.07)	.8285	.76 (.18)	.78 (.20)	.03 (-.04;.10)	.4247

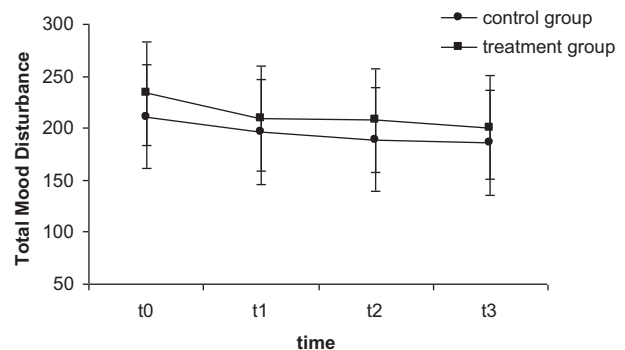
SD: standard deviation.

The analysis of the POMS scores obtained after four months of receiving distance meditation treatment revealed a significant improvement in the following parameters: anxiety/tension, depression/despondency, anger/hostility, tiredness/apathy, and confusion/bewilderment. The parameter vigor/activity showed a trend towards improvement in the treatment group although the difference between pre- and post-treatment values did not attain statistical significance. Significant improvements in the POMS parameters (including vigor and activity) were also observed in the control group, although no significant improvement in the parameter depression/despondency.

The research revealed that a distant meditation with Tong Len produced an overall psychological gain for the entire sample: the improvement was already evident by the first time-point analyzed (T1), and it constantly lasted until the end of follow-up period. We observed a tendency to improve occurred in both groups, but a statistically significant improvement of the depression factor was obtained only in the treatment group. It may be interesting to verify the stability of this improvement with further studies.

An improvement in the self-perceived quality of life, derived from the visual analogue scale (VAS) of the EQ-5D questionnaire, occurred in both groups. Improvements were observed in all cancer patients enrolled onto this study, independent of whether they received Tong Len meditation or not, probably reflecting a potential "white lab coat effect." The psychological benefit detected by POMS and EQ-5D scales in the whole sample could also be explained by a psychological process.

It is triggered when patients know they are subjects of a therapy in which they put their trust, when they feel welcomed and listened to or, as happened in this case, when they believe to be in the treatment condition. This process presents features very similar to those observed at the subatomic level by numerous quantum physics studies on "nonlocal effects." The occurrence of such distance effects that can produce psychological benefits on all subjects tested, it has also been identified by other studies.<sup>26,27</sup>

**Figure 2.** Change in total mood disturbance in treatment and control groups. Mean total mood disturbance scores (with 95% CI) are shown for the four study time-points T0, T1, T2, and T3 follow-up for treatment and control groups.

**Table 4.** Comparison of Personal Characteristics Between Drop-Out Patients and Those Completing the Study at Follow-up (T3)

	Drop-outs (T1 or T2)		Nondrop-outs (T3)		P value
	Mean (SD)	N (%)	Mean (SD)	N (%)	
Group					
Treatment		11 (21.15)		41 (78.85)	.3350
Control		15 (29.41)		36 (70.59)	
Gender					
Male		24 (25.0)		72 (75.0)	.8340
Female		2 (28.57)		5 (71.43)	
Age (years)	57.08 (11.15)		57.09 (9.15)		.9949
BMI	27.56 (5.90)		25.51 (4.56)		.1472
POMS					
Tension/anxiety	58.28 (13.21)		54.95 (11.46)		.2270
Depression/despondency	59.24 (14.67)		53.65 (11.61)		.0532
Anger/hostility	58.52 (13.38)		55.32 (12.62)		.2811
Tiredness/apathy	60.32 (13.54)		56.67 (11.77)		.1980
Vigor/activity	48.08 (12.72)		51.91 (11.63)		.1653
Confusion/bewilderment	53.96 (13.32)		54.39 (12.70)		.8848
EQ-5D					
VAS	61.72 (19.56)		67.73 (15.78)		.1228
Score	.70 (0.25)		.73 (.21)		.5429

SD: standard deviation.

An intention-to-treat analysis was performed and confirmed the improvement in depression symptoms in the treatment group.

## CONCLUSIONS

This study did not provide sufficient evidence supporting an efficacy of Tong Len meditation in distant psychological healing compared to a control condition. It showed improvements on each analyzed parameter in both treatment and control groups, while the factor depression statistically changed only in treated patients. This enhancement was not likewise significant in a clinical sense.

The current study presented several limitations, such as the relatively low number of enrolled patients, the lack of tumor staging and the nonhomogeneity of tumor pathologies (tumors that are more difficult to treat may produce smaller improvements or require longer timescales before significant results may be detected). The nonhomogeneity of the ongoing cancer treatments was another important limitation: different treatments were associated with different psychological disturbances that may be manifested at different intensities, in different modalities, and have different characteristics. Furthermore, interpretation of results should be taken with caution in light of multiple statistical comparisons. Therefore, for the present study no strong conclusion can be reached. The results could be confirmed in a larger study.

An additional limitation of this research consisted in the fact there was no possibility to operate reliable neural and physiological measurements on meditators during the dispatch of compassion. It did not allow the exploration of a part of the senders' efficacy. In the future, further studies have to perform and analyze various measurements on senders,

because they are also scientifically relevant participants. Meditators and patients are "all-in-it-together" and they both need to be studied.

However, the research confirmed a benefit on both groups. Therefore, the enhancement detected in both treatment and control groups raises interest on in-depth analysis and evaluation of distant meditation on cancer patients to mitigate psychological problems related to the disease.

## REFERENCES

1. Sicher FT, Targ E, Moore D 2nd, Smith HS. A randomized double-blind study of the effect of distant healing in a population with advanced AIDS: report of a small scale study. *West J Med.* 1998;169:353–363.
2. Schlitz M, Hopf HW, Eskenazi L, Vieten C, Radin D. Distant healing of surgical wounds: an exploratory study. *Explore.* 2012;4(4):223–230.
3. Achterberg J. *Imagery in Healing.* Boston, MA: New Science Library; 1985.
4. Schrodinger E. *What is Life? And Mind and Matter.* London, England: Cambridge University Press; 1969.
5. Dossey L. CAM, Religion, and Schrodinger's One Mind. *Explore.* 2011;7(1):1–7.
6. Hodge DR. Social justice and people of faith: a transnational perspective. *Soc Work.* 2007;52:139–148.
7. Roberts L, Ahmed I, Hall S, Davidson A. Intercessory prayer for the alleviation of ill health. *Cochrane Database Syst Rev.* 2011:1–48.
8. Jonas WB, Crawford CC. *Healing, Intention and Energy Medicine.* New York, NY: Churchill Livingstone; 2003;xv–xix.

9. Dossey L. PEAR lab and nonlocal mind: why they matter. *Explore*. 2007;3(3):191–196.
10. Krukoff MW, Crater SW, Lee KL. From efficacy to safety concerns: a STEP Forward or a step back for clinical research and intercessory prayer? The Study of Therapeutic effects of Intercessory Prayer (STEP) *Am Heart J*. 2006;151(4):762–764.
11. Braud WG. Consciousness interactions with remote biological systems: anomalous intentionality effects, 'Subtle energies'. *J Int Soc Study Subtle Energies Energy Med*. 1991;2(1):1–46.
12. Radin D. *Entangled Minds*. New York, NY: Paraview/Simon & Schuster; 2006.
13. Achterberg J, Cooke K, Richards T, Standish L, Kozak L, Lake J. Evidence for correlations between distant intentionality and brain function in recipients: a functional magnetic resonance imaging analysis. *J Altern Complem Med*. 2005;11:965–971.
14. Dossey L Healing Words. *The Power of Prayer and the Practice of Medicine*. New York, NY: Harper Collins; 1993.
15. Roe CA, Sonnex C, Roxburgh EC. Two meta-analyses of non-contact healing studies. *Explore*. 2015;11(1):11–23.
16. Germer CK, Neff KD. Self-compassion in clinical practice. *J Clin Psychol*. 2013;69(8):856–867.
17. H.H. The Dalai Lama. *An Open Heart: Practicing Compassion in Everyday Life*. Boston, MA: Little, Brown and Company; 2000.
18. Hopkins J. *Cultivating Compassion: A Buddhist Perspective*. New York, NY: Broadway Books; 2001.
19. Pace TW, Negi LT, Adame DD, et al. Effect of compassion meditation on neuroendocrine, innate immune and behavioural responses to psychosocial stress. *Psychoneuroendocrinology*. 2009; 34:87–98.
20. Hofmann SG, Grossman P, Hinton DE. Loving-kindness and compassion meditation: potential for psychological interventions. *Clin Psychol Rev*. 2011;31:1126–1132.
21. Lutz A, Greischar LL, Perlman DM, et al. BOLD signal in insula is differentially related to cardiac function during compassion meditation in experts vs. novices. *Neuroimage*. 2009;47: 1038–1046.
22. Harris WS, Gowda M, Kolb JW, et al. A randomized, controlled trial of the effects of remote, intercessory prayer on outcomes in patients admitted to the coronary care unit. *Arch Intern Med*. 1999;159:2273–2278.
23. McNair D, Lorr M, Droppleman L. *Profile of Mood States Manual*. North Tonawanda, NY: Multi-Health Systems; 1992.
24. EuroQol Group. EuroQol a new facility for the measurement of health-related quality of life. *Health Policy*. 1990;16(3):199–208.
25. Davidson R, Begley S. *The Emotional Life of Your Brain: How its Unique Patterns Affect the Way You Think, Feel, and Live—and How You Can Change Them*. New York, NY: Hudson Street Press; 2012.
26. Greyson B. Distance healing of patients with major depression. *J Sci Explor*. 1996;10(4):447–465.
27. Astin JA, Harkness E, Ernst E. The efficacy of distant healing: a systematic review of randomized trials. *Annu Intern Med*. 2000;132:903–910.