Self-Reported Effects of Energy Healing: A Prospective Observational Study With Pre–Post Design

Agnete E. Kristoffersen[a,*] Trine Stub[a] Olav Knudsen-Baas[b] Anne Helseth Udal[b] and Frauke Musial[a]

Introduction: Healing is reported to be used by 16.8% of the population, however utilization may be considerably higher in selected patient groups.

The aim of this study was to map the symptoms the participants reported when visiting a healer for the first time, and to evaluate the subjectively experienced benefits and risks from the healing sessions.

Method: Data were obtained from the Measure Yourself Medical Outcome Profile (MYMOP) questionnaire. One-hundred adults who, for the first time, referred themselves to a healer in southern Norway between January 2016 and January 2017 were included in the study. Eligible for analyses were 92 participants who fulfilled their treatment plan and returned both the baseline (pre) and post-treatment questionnaire. The occurring symptoms were grouped according to their nature into four symptom groups: *pain, psychological problems, fatigue* and *other*. With regard to the observational character of the study, all results were described and interpreted descriptively and exact *p*-values were given and interpreted as measures of effect.

Results: The participants who visited the healers in this study were mainly women (80%) with chronic disease (82%), with pain, fatigue and/or psychological problems as main complaints. They experienced an improvement of symptoms, well-being and improved activity level of approximately 50% regardless of the nature of the complaints. Women reported more improvement than men did. The pre–post changes was found after an average of 4.1 treatments. Forty percent of the participants reported adverse effects, which occurred directly after the healing session, generally lasting for less than one day.

Conclusion: The study participants reported substantial improvement of, and major reduction of the burden of symptoms, improved well-being and activity level after healing sessions. Due to the observational nature of the study, no interpretations about specificity of the descriptive results or the mechanisms of effect can be made.

Keywords: Spiritual healing, Energy healing, Hands on healing, Complementary and alternative medicine, MYMOP, Clinical trial, Norway

INTRODUCTION

Complementary and alternative Medicine (CAM) is defined as a treatment modality that is not considered to be standard medical treatment and mainly practiced outside conventional health care.[1] CAM is commonly used in Norway[2–4] with massage therapy, acupuncture, naprapathy, reflexology, osteopathy, cupping and healing as the most frequently used interventions.[5] Healing is reported to be used by 16.8% of the population[4] and 1.1% of the respondents answered that they had used healing within the past 12 months.[6] However, utilization may be considerably higher in selected patient groups or areas: In a Norwegian study, 34% of people with health complaints attributed to former dental amalgam fillings, reported the use of healing,[7] whereas a study of cancer patients in Northern Norway, the use of healing was reported by 33%.[8] In line with these findings, patients with chronic diseases and psychological problems reported likewise frequent use of healing (14–36%).[9, 10]

Energy healing can best be described as a ritual practiced by healers. The ritual initiate a process so that patients may experience an improvement of health complaints. The healing modality may focus on a process, so that the patient can move from a mode of disease to a mode of renewed health. However, to apply healing can likewise have the aim to ameliorate the suffering associated with a disease, even though the disease itself is still present. In many ways, some definitions of healing have parallels with Antonovsky's concept of salutogenesis.[11] Salutogenesis is a term that describes an approach focusing on factors that support human health and well-being, rather than on factors that cause disease (pathogenesis). More specifically, the "salutogenic model" is concerned with the relationship between health, stress, and coping.[11]

A healer may be understood as a person, who exercises above all routines within the ritual, the practice of laying on of hands, prayers, and/or meditation while most importantly considering himself connected to a transcendent or spiritual power.[12, 13] Healing, similar to

a The National Research Center in Complementary and Alternative Medicine, (NAFKAM), Department of Community Medicine, Faculty of Health Sciences, UiT The Arctic University of Norway, Tromso, Norway

b Hospital of Southern Norway, Arendal, Norway

Trial registration. Clinicaltrials.gov, Protocol ID 44894 registered 02/24/2016.

* *Corresponding author.*

e-mail: agnete.kristoffersen@uit.no

many other interventions such as psychotherapy, is largely dependent on the relationship between practitioner and patient and on patients' preferences, expectations, beliefs and motivations.[14, 15] However, there are certain specificities with regard to the relationship between a client and a healer that are unique and differ from other therapeutic relationships. These are e.g. a triangular relationship between the healer, the client and the transcendent as well as empathy and the feeling of "fusion". In this special relationship, the personality of the healer plays an unique and central role.[14]

In contrast to the high utilization and more or less anecdotic reports of subjective benefits from healing, reasonably little is known about measurable treatment effects, even though there have been several attempts to rigorously investigate healing as a phenomenon. Generally, the results are inconsistent and systematic reviews struggle with heterogeneous interventions and methodological challenges.[16−18] Moreover, patients who seek CAM care often suffer from chronic diseases and multiple pathologies.[19] These complex treatment settings often include multiple treatment modalities, as well as techniques for changing the clients behavior, all of which are implemented in a highly individualized fashion in most cases.[20]

Generally, most CAM interventions are under-researched, taking into consideration that they are widely practiced and that little is known about their clinical effectiveness and risk profile. Thus, the situation for research on CAM interventions may be considered to be parallel to a phase IV "post marketing surveillance" trial, where the therapy is in practice. It is therefore of interest to investigate how it relates to other interventions with regard to the risk/benefit profile. Observational studies are well suited to investigate these questions.[21] Moreover, adverse effects are usually more commonly reported in observational studies under real life conditions.[22, 23] Therefore, in order to investigate the potential clinical effect and risk profile of an intervention, an observational study in a real life setting provides an appropriate approach as a first step.

The aim of this study is therefore to map the conditions the clients report when visiting a healer for the first time, and to evaluate the subjectively experienced benefits and risks from the healing intervention.

METHODS

Design
This was a prospective observational study with pre−post design in an unselected study population. The intervention was energy healing as usually practiced.

Setting
The study was conducted in a community in southern Norway with 44,000 inhabitants and took place in an alternative and complementary outpatient clinic. Two practitioners, who were trained in intuitive energy healing, performed the healing treatments. Both the healers were approved healers by the Norwegian healers association. The inclusion period lasted from January 2016 to January 2017.

PARTICIPANTS
All adult persons (above 18 years of age), regardless of their symptoms, who contacted one of the two healers for a healing consultation for the first time, were asked to participate in the study. All clients referred themselves to the clinic and the treatment, and the consultation fee (NOK 800/€80) was paid by the patients themselves. The clients were not offered any compensation for participating in the study.

Measure
The outcome was Measure Yourself Medical Outcome Profile (MYMOP). The MYMOP was initially published in 1996[24] and was revised to MYMOP-2 after a second validation.[25]

The MYMOP questionnaire has been evaluated extensively and is a responsive and valid instrument.[26, 27] They were asked to rate four items (Symptom 1, Symptom 2, well-being, and the impact of symptoms on their activity status) on a scale from 0 to 6 where 0 was "As good as it could be" and 6 was "As bad as it could be" (MYMOP scale).[25] In the questionnaire the clients were asked to report one or two symptoms (physical or mental) which bothered them the most. They were asked to consider how bad each symptom was during the last week and score them accordingly. They were also asked how much these symptoms affected a particular activity (such as walking from the house door to the garage for a patient with back pain). Well-being during the last week, use of medication, and possible adverse effects or worsening of symptoms were reported as well as socio-demographic data (gender, age, income, education and work situation). Study participants completed the MYMOP questionnaire before the first, and directly after the last treatment.

INTERVENTION
The healing intervention was based on an assessment (interview conducted by the healer) of the clients total health situation prior to the healing session. The healers hands were held for some time at different parts of the patient's body outside the clients clothing. The intervention consisted of the regular procedures of a healing ritual that the clients would also have received if they had not been participants in the study. The treatment sessions were highly individualized, and included possible life-style advice. The time point of follow-up consultations and length of treatment sessions varied with the nature and severity of the symptoms, and was tailored to the needs of each client and his or her ability to pay for the treatments. Generally, a healing session lasted for 45 minutes.

Data analyses and statistics
One of the aims of this observational study was to generate hypothesis about the conditions of healing as an intervention in the practioners office, and to provide data for sample size calculation for a possible larger effect study. With regard to the observational character of the study, all data, including exact p-values, were reported and interpreted descriptively. *P*-values may be seen as estimate of effect, without setting a significance threshold[28]. Generally, all data are presented as mean ± SD. All analyses were performed in SPSS for Windows (version 24.0, SPSS, Inc., Chicago, IL).

In a first step, pre−post comparisons were calculated for the four MYMOP scales Symptom 1, symptom 2, well-being, and activity using paired *t*-test (see Table 2). In order to explore, whether patients with different symptom complexes responded differently to healing, the symptoms that were reported by the

clients (MYMOP Symptom 1 and MYMOP symptom 2), were inspected and then, based on the nature of the symptom, grouped into four main categories (Factor "symptom groups": pain, psychological problems, fatigue and other) (see Table 1 and Table 2).

In a next step, baseline means (pre), post intervention means (post) and changes over time (difference values between pre and post) were calculated for the four MYMOP scales (Symptom 1, Symptom 2, Activity, and Well being) according to the factor "symptom groups". Furthermore, three single comparisons were performed using one-way ANOVA across the factor "symptom groups": baseline (pre), post, and for the difference values between pre and post.

An exploratory analysis of gender effects was made by using multiple t-tests for independent samples. For gender differences, a similar strategy was chosen as for the analysis of the factor "symptom group". Single comparisons were calculated at pre, post, and for pre−post differences.

A normal distribution of Symptom 1, Symptom 2, Activity, and Well-being pre and post were confirmed ($p < 0.001$ for all measurements) using Kolmogorov-Smirnov tests of normality.

The correlation between change in the MYMOP scales and the number of treatments and age was analyzed parametrically using Pearson Correlation test.

With regard to readability, only means and p-values were reported in the text while ± SD, F or t statistics, degrees of freedom (DF), and p-values are reported in tables.

Inclusion process
One hundred and one clients were invited to participate in the study, and 100 accepted the invitation (99% response rate). All of these completed the baseline (pre) questionnaire, while eight did not return the second questionnaire due to drop out from treatment ($n = 7$), or not returning the second (post treatment) questionnaire ($n = 1$). A total of 92 participants were included in the analyzes (Fig. 1).

RESULTS

Basic characteristics of the participants
Most of the 92 included clients were women (80%, $n = 74$). The clients had a median age of 48 years (range 20−78) and 45% ($n = 41$) had a university education. Fifty percent were working, either full or part time ($n = 46$) while 41% ($n = 38$) were on sick leave, work assessment allowance or received disability benefits. Most of the clients were married or lived with a partner (76%, $n = 70$) and had a rather high household income (more than 550' NOK/55' €, 67%, $n = 44$). Almost 60% had struggled with the health complaint that was the key reason for the visit to the healer for more than five years ($n = 54$), and this was even more true for women (66%, $n = 48$) than for men (33%, $n = 6$, $p = 0.022$) (Table 1).

MYMOP Symptom 1
All participants ($n = 92$) reported a first key symptom (Symptom 1 in the MYMOP). After categorizing these symptoms, 48% ($n = 44$) reported *pain*, *psychological* complaints such as anxiety and depression were reported by 23% ($n = 21$), *fatigue* was

reported by 14% ($n = 13$), and *other* complaints were reported by 15% ($n = 14$).

The mean score for symptom 1 was 4.9 at baseline (pre) and 2.1 after a mean of 4.1 healing sessions ($p < 0.001$). When categorized by the nature of the symptom, the mean pre score for *pain* was 5.0 while post score was 2.1. For *psychological* complains, pre score was 4.7 and post treatment score was 2.3. For *fatigue* pre score was 4.9 and post treatment score was 2.3, while for *other* symptoms, pre score was 4.6 while post treatment score was 1.8 (Table 2, Fig. 4). There were small differences between the symptom groups at baseline (pre) ($p = 0.427$), at post treatment ($p = 0.675$) and regarding reduction of the symptom ($p = 0.527$). Larger differences were found between men and women concerning baseline (pre) value (5 for women and 4.3 for men, $p = 0.003$), resulting in a larger difference for women ($p = 0.034$) as post treatment value was very similar for both men (2.1) and women (2.2, $p = 0.865$) (Table 2, Fig. 2).

Only a very low correlation was found between pre−post score for symptoms 1 and increased age ($r = 0.054$), increased education ($r = −0.042$), and increased income ($r = 0.121$). No association was found between and the participants work situations (employed, on sick leave/disability pension, or other) and change in pre−post score for symptom 1 ($p = 0.814$).

MYMOP Symptom 2
Eighty percent of the clients reported a second symptom. The symptoms were reported and categorized as followed: 43% ($n = 35$) reported *pain*; 28.4% ($n = 23$) reported *psychological* complaints while 12.8% ($n = 12$) reported *fatigue*. Almost 14% ($n = 11$), reported *other* symptoms (Table 1).

The total mean score for symptom 2 was at baseline (pre) 4.5 reduced to 2.3 after the treatment (Table 2, Fig. 4, $p < 0.001$). If the symptom categories were taken into account, the values were 4.3 pre and 2.3 post treatment for *pain*, 4.6 pre and 2.2 post treatment for *psychological* complaints 4.5 pre and 2.1 post treatment for *fatigue,* and 4.7 pre and 2.6 post treatment for *other* (Table2, Fig. 4). There were no major differences between the symptom groups concerning baseline (pre) value ($p = 0.746$), reduction of the symptom ($p = 0.688$), and post treatment value ($p = 0.794$).

Some differences were found between men and women regarding baseline (pre) score (4.6 for women and 4 for men, $p = 0.081$), post treatment value (2.3 for women and 2.4 for men, $p = 0.895$) and reduction of score (2.4 for women and 1.6 for men, $p = 0.068$) (Table 2).

The correlations found between pre−post score for symptom 2 and higher age ($r = 0.016$), higher education ($r = 0.058$), and higher income ($r = 0.008$) were low. No association was found between the participants work situations (employed, on sick leave/disability pension, or other) and change in pre−post score for symptom 2 ($p = 0.965$).

MYMOP Activity
The clients were asked how much their symptoms affected negatively a particular activity that they liked to do. They were most concerned about their ability to work, and to be physically and socially active. Mean score at baseline (pre) for influence on the chosen activity was 4.7 reduced to 2.4 post treatment (Table 2, Fig. 4, $p < 0.001$). A closer look at the symptom categories revealed a baseline (pre) score of 4.7

Table 1. Basic characteristics of the participants

	Total		Men		Women		
	n*	%	*n**	%	*n**	%	*p*-value
Gender			18	19.6	74	80.4	
Age median (range)	48(20−78)		50(20−75)		47(25−78)		0.326^
Household income							0.268**
< NOK 300ˈ (30ˈ€)	3	4.5	1	7.1	2	3.8	
NOK 301-550ˈ (30-55 €)	19	28.8	2	14.3	17	32.7	
NOK 551-850ˈ (55-85 €)	31	47.0	6	42.9	25	48.1	
NOK 850ˈ+ (more than 85ˈ €)	13	19.7	5	35.7	8	15.4	
Martital status							0.534**
Married	70	76.1	14	77.8	56	75.7	
Divorsed	3	3.3	0	0	3	4.1	
Widow/widower	4	4.3	0	0	4	5.4	
Singel	15	16.3	4	22.2	11	14.9	
Education							0.694**
Primary school	10	10.9	1	5.6	9	12.2	
Middel level	41	44.6	9	50.0	32	43.2	
University	41	44.6	8	44.4	33	44.6	
Employment							0.290**
Full time	34	37.0	10	55.6	24	32.9	
Part time	12	13.0	1	5.6	11	15.1	
Retired	6	6.5	2	11.1	4	5.5	
Sick leave. work assessment allowance or received disability benefits	38	41.3	5	27.8	33	45.2	
Other (student or house wife)	2	2.2	0	0	1	1.4	
Duration of symptoms							0.022**
0−4 weeks	0	0	0	0	0	0	
4−12 weeks	5	5.5	1	5.6	4	5.5	
13−51 weeks	11	12.1	2	11.1	9	12.3	
1−5 years	21	23.1	9	50.0	12	16.4	
More than 5 years	54	59.3	6	33.3	48	65.8	
MYMOP Symptom 1							0.471**
Pain	44	47.8	11	61.1	33	44.6	
Psychological	21	22.8	2	11.1	19	25.7	
Fatigue	13	14.1	3	16.7	10	13.5	
Other	14	15.2	2	11.1	12	16.2	
MYMOP Symptom 2							0.929**
Pain	34	43.0	7	50.0	27	41.5	
Psychological	19	29.2	3	21.4	19	29.2	
Fatigue	12	15.2	2	14.3	10	15.4	
Other	11	13.9	2	14.3	9	13.8	
Number of healing sessions							
Mean (range)	4.1(1−17)		4.8(1−16)		3.9(1−17)		0.321^

* Due to missing responses the analyzed numbers do not always add up to the total number;

ˈ 000;

^ Independent sample *t*-test;

** Pearson chi square.

and post treatment score of 2.3 for *pain*, 5 pre- and 2.4 post treatment value for *psychological* complaints 4.6 pre- and 3.2 post treatment value for *fatigue* and 5.6 pre- and 2.1 post treatment value for *other*. There were small differences between the symptom groups concerning baseline (pre) value ($p = 0.675$), post treatment value ($p = 0.239$) and reduction in how much their symptoms affected a particular activity ($p = 0.191$) (Table 2).

Table 2. Mean ± SD, F or t statistics, degrees of freedom (DF), and *p*-values for the factors symptom groups and gender for MYMOP symptoms, activity and wellbeing

	Pre-treatment					Post-treatment					Pre – post treatment				
	Mean	SD	F/t-value	DF	*P*-value	Mean	SD	F/t-value	DF	*P*-value	Mean	SD	F/t-value	DF	*P*-value
MYMOP Symptom 1															
Pre−post comparison	4.86	0.94				2.11	1.30				2.75	1.43			<0.001
Symptom groups*			0.937	3/87	0.427			0.512	3/88	0.675			0.747	3/87	0.527
Pain	5.00	0.94				2.09	1.43				2.91	1.39			
Psychological	4.67	0.97				2.29	1.38				2.38	1.53			
Fatigue	4.92	0.95				2.31	0.63				2.62	1.12			
Other	4.62	0.87				1.79	1.25				2.92	1.66			
Gender**			−3.060	89	0.003			0.171	90	0.865			−2.154	89	0.034
Men	4.28	0.96				2.17	1.20				2.11	1.23			
Women	5.00	0.88				2.11	1.33				2.90	1.44			
MYMOP Symptom 2															
Pre−post comparison	4.47	1.11				2.31	1.39				2.15	1.42			<0.001
Symptom groups*,^			0.411	3/75	0.746			0.343	3/76	0.794			0.494	3/75	0.688
Pain	4.32	1.23				2.32	1.43				2.00	1.68			
Psychological	4.59	1.06				2.24	1.60				2.35	1.97			
Fatigue	4.54	0.78				2.08	0.64				2.46	1.09			
Other	4.67	1.15				2.62	1.56				2.05	1.29			
Gender**			−1.768	77	0.081			0.132	78	0.895			2.21	77	0.141
Men	4.00	0.78				2.36	0.84				1.64	1.28			
Women	4.57	1.15				2.30	1.48				2.26	1.44			
MYMOP Activity															
Pre−post comparison	4.70	1.06				2.43	1.42				2.27	1.51			<0.001
Symptom groups*,^			0.511	3/88	0.675			1.432	3/87	0.239			1.617	3/87	0.191
Pain	4.66	1.24				2.33	1.34				2.33	1.49			
Psychological	4.95	0.74				2.38	1.63				2.57	1.69			
Fatigue	4.62	0.65				3.15	1.28				1.46	1.13			
Other	4.57	1.16				2.14	1.35				2.43	1.50			
Gender**			−1.434	90	0.155			−0.054	89	0.957			1.016	89	0.316
Men	4.39	1.09				2.41	1.58				1.98	1.43			
Women	4.78	1.04				2.43	1.39				2.35	1.53			
MYMOP Well-being															
Pre−post comparison	4.33	1.32				2.13	1.24				2.20	1.64			<0.001
Symptom groups*,^			0.226	3/88	0.878			0.923	3/86	0.433			1.132	3/86	0.341
Pain	4.25	1.38				2.23	1.34				2.02	1.79			
Psychological	4.52	1.33				1.81	1.08				2.71	1.52			
Fatigue	4.23	1.42				2.46	0.78				1.77	1.36			
Other	4.29	1.07				2.00	1.47				2.29	1.55			
Gender**			−2.608	90	0.011			0.979	88	0.330			−2.941	88	0.004
Men	3.61	1.09				2.39	0.92				1.22	1.11			
Women	4.49	1.32				2.07	1.30				2.42	1.67			

  ^ Symptoms reported as symptom 1;
  * One-Way ANOVA;
  ** Independent sample *t*-test.

Small differences were seen between men and women regarding baseline (pre) score (4.8 for women and 4.4 for men, *p* = 0.155), post treatment value (2.4 for both men and women, *p* = 0.957) and reduction of score (2.4 for women and 1.92 for men, *p* = 0.316) (Table 2).

The correlations found between pre−post score for activity level and higher age (*r* = 0.003), higher education (*r* = −0.015), and higher income (*r* = 0.048) were generally low. No association was found between the participants work situations (employed,
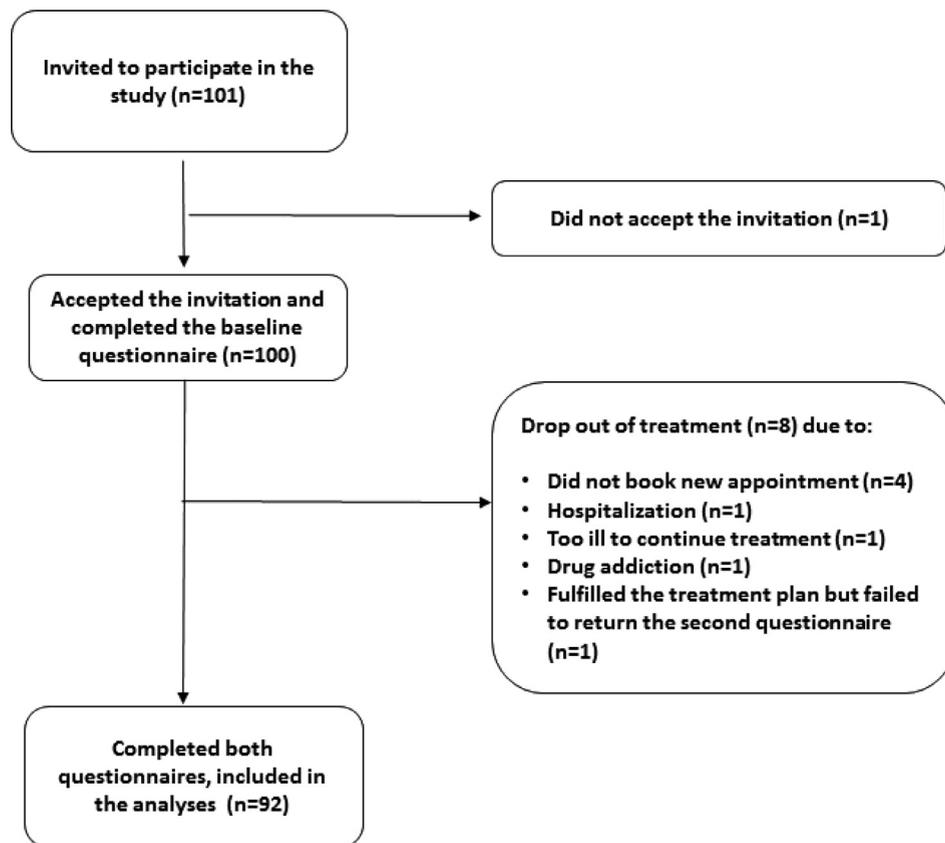
Fig 1. Flow chart of the inclusion process.

on sick leave/disability pension, or other) and change in pre−post score for activity level ($p = 0.676$).

MYMOP Well-being

The MYMOP subscale "Well-being within the last week" was recorded both at baseline (pre) and by the end of the intervention (post). Mean value at baseline (pre) for well-being was 4.3 and the post value was 2.1 (Table 2, Fig. 4, $p < 0.001$). For the symptom group *pain*, the pre value was 4.3 and the post value was 2.2, for *psychological* complaints, the pre value was 4.2 and the post value was 1.8, for *fatigue*, these values were 4.2 at pre and 2.5 at post while *other* was 4.3 pre and 2.0 post treatment. Only small differences between the groups were found concerning baseline (pre) value ($p = 0.878$), post treatment value ($p = 0.433$) and increase of well-being ($p = 0.341$).

Differences were found between men and women concerning baseline (pre) value (4.5 for women and 3.6 for men, $p = 0.011$), resulting in a larger increase of well-being for women than for men ($p = 0.004$) as post treatment values were similar (2.1 for women and 2.4 for men, $p = 0.330$) (Table 2, Fig. 3).

The correlations found between pre−post score for symptoms well-being and higher age ($r = 0.021$), higher education ($r = -0.111$), and higher income ($r = 0.055$) were low. No association was found between and the participants work situations (employed, on sick leave/disability pension or other) and change in pre−post score for well-being ($p = 0.989$).

Number of treatments

The clients received on average in 4.1 healing sessions (4.8 for men and 3.9 for women, $p = 0.321$) with a range of 1−17 sessions (Table 1). The correlation between the number of treatments and the change in the MYMOP scales were generally low, with $r = -0.148$ with a p-value of $p = 0.211$ for symptom 1, $r = -0.067$ with $p = 0.587$ for symptom 2, $r = -0.146$ with $p = 0.214$ for activity and $r = -0.204$ with $p = 0.083$ for well-being.

Adverse effects

Forty percent of the clients ($n = 36$) reported one or more adverse effects after treatment, more common among women (42%, $n = 31$,) than men (30%, $n = 5$, $p = 0.343$). The majority reported tiredness (24%, $n = 22$), followed by pain/back pain (8%, $n = 7$), headache (5%, $n = 5$), and other events such as vertigo, irritability, melancholy and blurred vision (5%, $n = 5$). Two clients (2%) reported worsening of symptoms, without specifying the events. Most of the adverse effects occurred within the first day after treatment (89%), and lasted for maximum 24 h (60%). For ten participants (11%), the adverse effect lasted for a week or more (range 7-24 days).

DISCUSSION

Main findings

The participants in the study were mainly women with chronic disease with pain, fatigue and/or psychological challenges. The
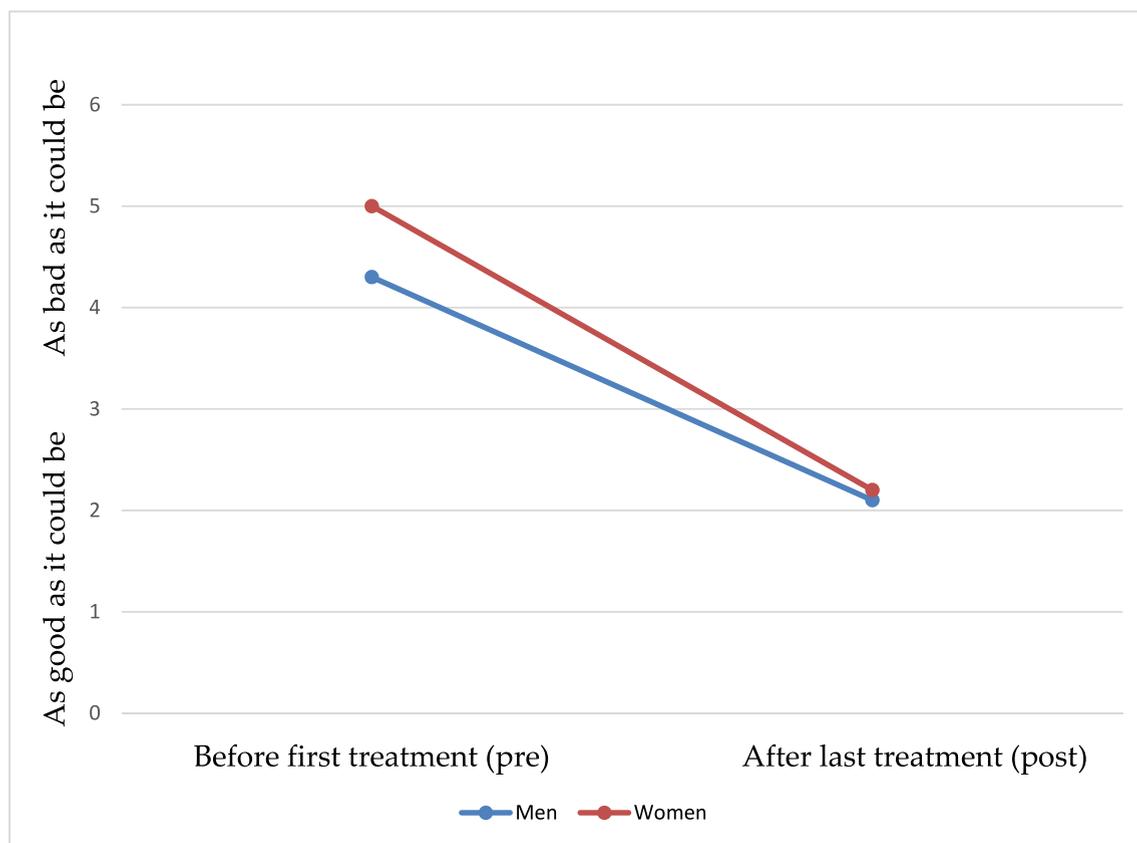
Fig. 2. Change in main symptom pre—post treatment after a mean of 4.8 healing sessions for men and 3.9 healing sessions for women.

clients experienced an improvement of their symptoms, well-being and activity level of approximately 50%. This improvement was achieved after a mean of 4.1 healing sessions. Forty percent reported some adverse effects, which occurred mainly directly after the healing session, lasting for less than one day.

Even though this was an observational study and no statistical evaluation of effect in the common sense was aspired (for further discussion see Greenland et al[28]), improvements of symptoms, well-being and activity level from baseline (pre) to post treatment, occurred, and most of them within the range of 40—50% percent change from baseline.

It is not surprising that these improvements of symptom load were accompanied by a reduction in perceived disturbances of daily activities and improvements of wellbeing. Even though the observed changes were larger for women (53%) compared to men (43%), both genders seems to benefit from the intervention. The changes are rather large compared to other studies on health complaints, in particular if conducted in a more standardized setting of a controlled, clinical trial.

Other studies

A systematic review including 66 clinical studies in various populations suggested strong evidence of effect for Biofield therapies (including Reiki, therapeutic touch, and healing touch) in decreasing pain in pain populations, moderate evidence for reducing pain in hospitalized populations, moderate evidence in reducing pain in cancer populations and moderate evidence for decreasing anxiety in hospitalized populations. This is in line with our findings, suggesting 58% reduction of pain and 51% reduction of psychological complaints (including anxiety and depression) in a self-selected population. Moreover, Jain and Mills found weak evidence for effect on fatigue and quality of life for cancer patients. The reasons for lack of evidence in this domain reflect a paucity of studies that have examined this outcome. However, this is in contrast to our findings, as we found 53% reduction of fatigue in our study population.[29]

Adverse effects

The registration of adverse effects is important to identify treatment that might impose risk to patients. Even though many CAM interventions are perceived as *natural*, adverse effects are commonly reported in trials.[30] As energy healing is a no pharmacological intervention, possible risk is therefore classified as indirect, which means related to other aspects as the clinical context and practice.[31]

Forty percent of the participants in this study reported adverse effects after the treatment. The majority of the participants reported increased tiredness (24%), pain (8%) and headache (5%). As these reactions mainly lasted for less than three days, they can be classified as healing aggravation according to the following criteria: (i) an increase of the patients' existing symptoms (ii) and/or a feeling of well-being that emerged 1—3 days after treatment (iii) and/or headache and/or fatigue accompanying these symptoms.[32] Healing
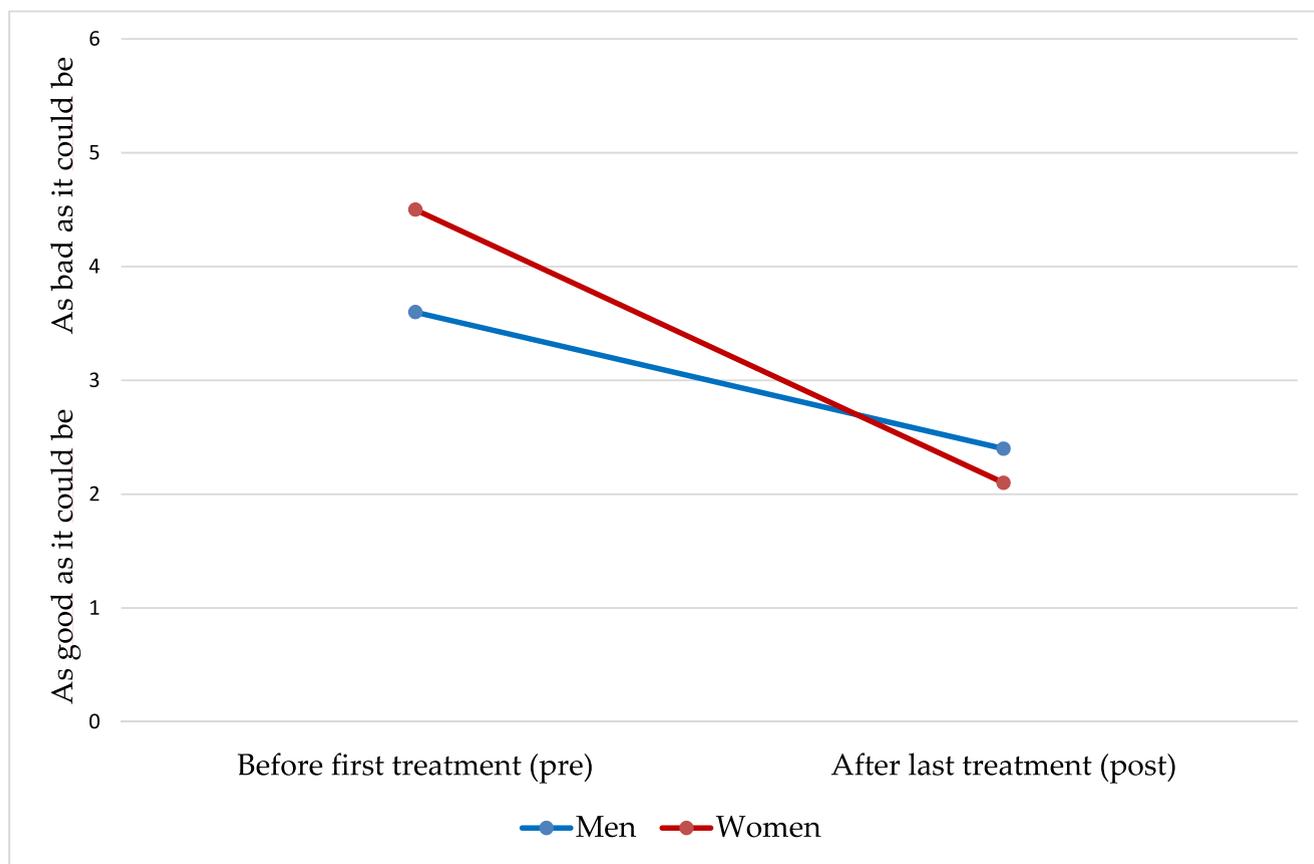
Fig. 3. Change in wellbeing for men and women.

aggravation is well known across different CAM modalities and is often seen as a natural reaction to the treatment and an expression for a body in a healing process.[33] The high number of adverse effects reported in this study might be due to an expectation of this as the healers informed the clients of possible healing aggravations after the first healing session.

Strength and limitations

The results of this observational study have to be interpreted with care, as no inference statistical determination of effect was performed. The real life conditions with self-selection include aspects that are likely to have an impact on the sample characteristics and experienced benefit as that clients paid for the intervention themselves. The disadvantage of this approach is reduced generalizability of the results. The major advantage is, however that the findings will have considerably high external validity and thus help to understand why clients are willing to invest time, money, and effort into a non-evidence based intervention.

Several aspects of this study are likely to have contributed to the large pre−post differences:

i) The participants were self-selected and paid for the treatment themselves. It must be assumed that this population had rather strong expectations regarding the effectiveness of healing as an intervention for their complaints. Expectations are a very prominent part of the total treatment effect in general, and have often been discussed as one main component of the placebo effect.[34] Even though all clients were first time visitors, the overall expectation is likely to have contributed to the study outcome and the rather large improvements.

ii) The four different symptom groups "pain", "fatigue", "psychological", and "other" were very similar with regard to changes from baseline, which indicates that the treatment affected all groups similar and rather unspecific.

iii) These were patients with a long disease history, which may support the assumption that they experienced limited benefit from conventional therapy. A long chronification history usually leads to co-factors such as illness behavior, depression and anxiety. In this study, 19 participants had a combination of "pain" and "psychological problems" with regard to MYMOP symptom 1 and symptom 2. It is reasonable to assume, that those co-factors may represent a substantial part of the whole illness situation, while the original health complaint, such as e.g. pain, may only be a part of it. In the reversal, it may not be surprising that a rather unspecific intervention such as healing may induce a change of symptoms and well-being.

iv) Due to lack of a control group, we cannot draw the conclusion that the findings presented in this paper are exclusively
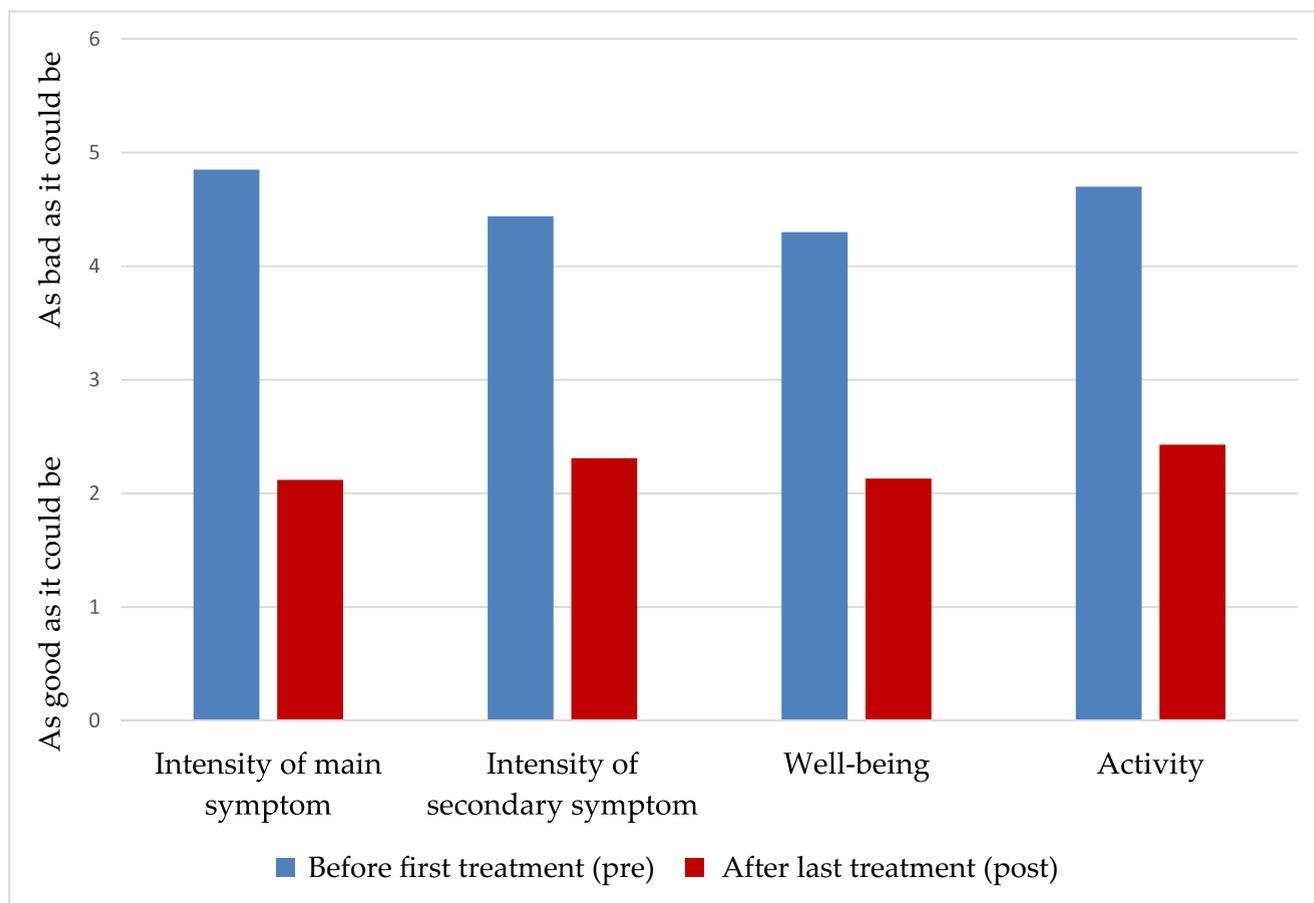
Fig 4. Change in symptoms ($p < 0.001$), activity ($p < 0.001$) and wellbeing ($p < 0.001$) after treatment. The average (mean) number of sessions was 4.1.

due to the healing treatment. Nonetheless, the long duration of the symptoms in the study sample (59% longer than five years) reduces the likelihood that the reduction of symptoms and increase of well-being and activity was entirely due to the natural cause of disease.

v) As only two different healers were used in the study, we cannot generalize the findings to healing treatment in general. In particular, the special relationship between a client and a healer, such as the subjectively experienced triangular relationship between the healer, the client and the transcendent and the feeling of "fusion" differs from other therapeutic relationships. In this context, it is understood that the personality of the healers plays a unique and central role[14]. However, exactly that uniqueness of the therapeutic relationship includes obvious and fundamental constraints with regard to the generalization of the results.

The main strengths of the study were the high response rate with only one client refusing to take part in the study, in addition to the rather low number of clients dropping out during the study period. We would, however like to emphasize that this observational study does not provide any basis with regard to the clinical effectiveness of healing as an intervention.

CONCLUSION

The results show, that a number of 4−5 healing sessions was on average sufficient to induce changes in the perceived health status. Adherence to the intervention and compliance to the study were high. The calculated changes between 40% and 50% indicate that if a sample size calculation was to be performed based on these findings, the effect size would be rather strong. However, the recruitment and response patterns are likely to be different for women and men and the particularities of the special relationship between a client and a healer need to be taken into consideration.

With regard to planning a controlled clinical trial, it must be taken into account the following: i) The effect size in this study is probably overestimated due to setting effects. ii) The adherence maybe considerably smaller in a larger, more standardized clinical study due to control of bias measures such as randomization to different healers and study conditions, and that iii) these deviances from the outcome observed in this study are potentially different for women and men.

Due to the real life treatment settings, the subjectively experienced clinical benefit under uncontrolled practice conditions must expected to be considerably higher than what can be expected in standardized clinical trials. Nonetheless, it may exactly be that difference, which may explain the high utilization and adherence of patients to their practitioners reported in surveys.

ABBREVIATIONS

CAM: Complementary and Alternative Medicine; MYMOP: Measure Yourself Medical Outcome Profile.

DECLARATION

Ethics approval and consent to participate

Approval of the study was applied for at the Regional Committee for Medical and Health Research Ethics (REK 2015/1387). They concluded that the project did not fell under the definition of projects to be assessed under the Health Research Act. They suggested that an approval was applied for at the Norwegian Social Science Data Service (NSD) that approved the study (project number 44894). Written informed consent was obtained from all participants. Special emphasis was placed on informing the participants that there would be no disadvantage if they did not wish to participate or withdraw from the study.

Consent for publication

Not applicable.

Availability of data and materials

The raw dataset is not available due to Norwegian privacy regulations. Applicants for any data must be prepared to conform to Norwegian privacy regulations.

Authors' contributions

OKB, FM and AEK conceived the study and AEK performed the initial and final analyses. AEK, TS and FM drafted the initial version of the paper and all authors revised the manuscript critically for important intellectual content and approved the final manuscript.

SUPPLEMENTARY MATERIAL

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.explore.2018.06.009.

REFERENCES

1. Lovdata. Act No. 64 of 27 June 2003 relating to the alternative treatment of disease, illness, etc; 2003. [Available from; http://www.ub.uio.no/ujur/ulovdata/lov-20030627-064-eng.pdf].
2. Kristoffersen AE, Stub T, Salamonsen A, Musial F, Hamberg K. Gender differences in prevalence and associations for use of CAM in a large population study. *BMC Complement Altern Med*. 2014;14:463.
3. NAFKAM-undersokelsen 2014, Bruk av alternativ behandling i Norge [The NAFKAM survey 2014. Use of complementary and alternative medicine in Norway] [Available from; http://nifab.no/hva_er_alternativ_behandling/tall_og_fakta/nafkam_undersoe kelsen_2014].
4. Bakken K, Melhus M, Lund E. Use of hypnotics in Sami and non-Sami populations in northern Norway. *Int J Circumpolar Health*. 2006;65(3):261–270.
5. NAFKAM-undersokelsen 2016, Bruk av alternativ behandling i Norge [The NAFKAM survey 2016. Use of complementary and alternative medicine in Norway] [Available from: http://www.nifab.no/om_nifab_no/information_in_english/nafkam_sur vey_2016].
6. Healing nifab.no: Norwegian health authorities' official information web site about complementary and alternative medicine 2017 [Available from: http://www.nifab.no/behandlingsformer/healing].
7. Kristoffersen AE, Musial F, Hamre HJ, et al. Use of complementary and alternative medicine in patients with health complaints attributed to former dental amalgam fillings. *BMC Complement Altern Med*. 2016;16:22.
8. Risberg T, Lund E, Wist E, Kaasa S, Wilsgaard T. Cancer patients use of nonproven therapy: a 5-year follow-up study. *J Clin Oncol*. 1998;16(1):6–12.
9. Kristoffersen AE, Stub T, Melhus M, Broderstad AR. Prevalence and associations for use of a traditional medicine provider in the SAMI-NOR 1 Survey: a population-based study on health and living conditions in Regions with Sami and Norwegian populations. *BMC Complement Altern Med*. 2017;17(1):530.
10. Sexton R, Sorlie T. Use of traditional healing among Sami psychiatric patients in the north of Norway. *Int J Circumpolar Health*. 2008;67(1):135–146.
11. Antonovsky A. *Unraveling the mystery of health: how people manage stress and stay well*. Jossey-Bass; 1987.
12. Brown CK. The integration of healing and spirituality into health care. *J Interprofessional Care*. 1998;12(4):373–381.
13. Benor DJ. Spiritual healing: a unifying influence in complementary therapies. *Complement Therapies Med*. 1995;3(4):234–238.
14. Stockigt BM, Besch F, Jeserich F, Holmberg C, Witt CM, Teut M. Healing relationships: a qualitative study of healers and their clients in Germany. *Evid Based Complement Alternat Med*. 2015;2015 145154.
15. Teut M, Stockigt B, Holmberg C, Besch F, Witt CM, Jeserich F. Perceived outcomes of spiritual healing and explanations—a qualitative study on the perspectives of German healers and their clients. *BMC Complement Altern Med*. 2014;14:240.
16. Baldwin AL, Hammerschlag R. Biofield-based therapies: a systematic review of physiological effects on practitioners during healing. *Explore (NY)*. 2014;10(3):150–161.
17. O'Mathuna DP, Ashford RL. Therapeutic touch for healing acute wounds . *Cochrane Database Syst Rev*. 2014;(7):3 CD002766.
18. Roe CA, Sonnex C, Roxburgh EC. Two meta-analyses of noncontact healing studies. *Explore (NY)*. 2015;11(1):11–23.
19. MacPherson H, Peters D, Zollman C. Closing the evidence gap in integrative medicine. *BMJ*. 2009;339:b3335.
20. Ritenbaugh C, Aickin M, Bradley R, Caspi O, Grimsgaard S, Musial F. Whole systems research becomes real: new results and next steps. *J Altern Complement Med*. 2010;16(1):131–137.
21. Patsopoulos NA. A pragmatic view on pragmatic trials. *Dialogues Clin Neurosci*. 2011;13(2):217–224.
22. Higgins JP, Green S. *Cochrane handbook for systematic reviews of interventions*. John Wiley & Sons; 2011.
23. Vandenbroucke JP. When are observational studies as credible as randomised trials? *Lancet*. 2004;363(9422):1728–1731.

24. Paterson C. Measuring outcomes in primary care: a patient generated measure, MYMOP, compared with the SF-36 health survey. *BMJ*. 1996;312(7037):1016–1020.

25. Paterson C, Britten N. In pursuit of patient-centred outcomes: a qualitative evaluation of the 'measure yourself medical outcome profile'. *J Health Serv Res Policy*. 2000;5(1):27–36.

26. Paterson C. Seeking the patient's perspective: a qualitative assessment of EuroQol, COOP-WONCA charts and MYMOP. *Qual Life Res*. 2004;13(5):871–881.

27. Paterson C, Langan CE, McKaig GA, et al. Assessing patient outcomes in acute exacerbations of chronic bronchitis: the measure your medical outcome profile (MYMOP), medical outcomes study 6-item general health survey (MOS-6A) and EuroQol (EQ-5D). *Qual Life Res*. 2000;9(5):521–527.

28. Greenland S, Senn SJ, Rothman KJ, et al. Statistical tests, P values, confidence intervals, and power: a guide to misinterpretations. *Eur J Epidemiol*. 2016;31(4):337–350.

29. Jain S, Mills PJ. Biofield therapies: helpful or full of hype? A best evidence synthesis. *Int J Behav Med*. 2010;17(1):1–16.

30. Stub T, Musial F, Kristoffersen AE, Alraek T, Liu J. Adverse effects of homeopathy, what do we know? A systematic review and meta-analysis of randomized controlled trials. *Complement Ther Med*. 2016;26:146–163.

31. Stub T, Salamonsen A, Kristoffersen AE, Musial F. How to handle worsening of condition during treatment - risk assessment in homeopathic practice. *Forsch Komplementmed*. 2015;22(1):30–35.

32. Stub T, Kristoffersen AE, Alraek T, Musial F, Steinsbekk A. Risk in homeopathy: classification of adverse events and homeopathic aggravations—A cross sectional study among Norwegian homeopath patients. *Complement Ther Med*. 2015;23(4):535–543.

33. Pitchford P. *Healing with whole foods: Asian traditions and modern nutrition*. North Atlantic Books; 2002.

34. Kirsch I. *How expectancies shape experience*. American Psychological Association; 1999.