

Improving quality of life using compound mind-body therapies: evaluation of a course intervention with body movement and breath therapy, guided imagery, chakra experiencing and mindfulness meditation

Lotta Fernros · Anna-Karin Furhoff ·
Per E. Wändell

Accepted: 10 February 2008 / Published online: 7 March 2008
© Springer Science+Business Media B.V. 2008

Abstract *Objective* Assess changes in quality of life and in sense of coherence (SOC), after an intervention involving a self-development course using mind-body medicine (MBM) activities.

Design A questionnaire study using a health-related quality of life (HRQOL) instrument, the SWEDQUAL, with 13 subscales and scores ranging from 0 to 100, combined with the SOC-13 scale, healthcare utilisation, medication and sick listing data.

Setting A training centre for MBM. Eligible course attendants (study group, SG, $n = 83$) assessed their HRQOL before and 6 months after a 1-week course. A control group (CG) of individuals who had previously attended the course ($n = 69$), matched for age, sex and length of course time to the SG, also made assessments.

Main outcome Changes in HRQOL and SOC in SG and CG.

Results Of the 13 HRQOL subscales, eight showed clinically significant improvement in the SG ($>9\%$, $p < 0.01$), namely, General health perceptions (9%), Emotional well-being [negative (45%) and positive (26%)], Cognitive functioning (24%), Sleep (15%), Pain (10%), Role limitation due to emotional health (22%) and Family functioning (16%). Sexual, marital and physical function and role in the SG as well as all CG scores were similar to

average population values. The assessed SOC also improved in the SG after intervention ($p < 0.01$), challenging previous statements of ‘the stableness of SOC’. Use of psychotropic medication was slightly reduced in the younger aged SG participants after intervention.

Conclusions This group of men and women (SG), starting from a clinically significant low health assessment, had improved their HRQOL and SOC after the course intervention.

Keywords Breath therapy · CAM classification · Guided imagery · Health-related quality of life · Holistic health · Intervention study · Mindfulness meditation · Mind-body medicine · Sense of coherence

Abbreviations

CAM	Complementary and alternative medicine
CG	Control group
HRQOL	Health-related quality of life
MBM	Mind-body medicine, subgroup of CAM (including relaxation techniques)
MBR	Mind-body relations (MESH term definition: the relation between the mind and the body in a religious, social, spiritual, behavioural, and metaphysical context. This concept is significant in the field of alternative medicine)
PD	Psychoactive drugs: (in this study) SSRI depression medication, tranquillisers and/or sleeping pills
PMTA	Primary modes of therapeutic action
QOL	Quality of life (in general)
SG	Study group
SOC	Sense of coherence

L. Fernros · A.-K. Furhoff · P. E. Wändell
Karolinska Institutet/Stockholm County Council's
Center for Family and Community Medicine, Huddinge, Sweden

L. Fernros (✉)
Center for Family and Community Medicine, Karolinska
Insitutet, Alfred Nobel's allé 12, 14183 Huddinge, Sweden
e-mail: lotta.fernros@sil.se
URL: www.cefam.se

Introduction

A wide range of complementary and alternative medicine (CAM) methods, all with a traditional, empirical background, are currently in use many of the world's societies [1, 2]. Such methods are used for coping with life events or simply for a conscious optimisation of personal health [2, 3]. As these methods become better researched, some (acupuncture, diets) are being widely accepted in health-care systems [4]. The characteristics of CAM users as well as their attitudes towards CAM have been published [5–8]. In addition, some CAM methods have subjected to cost-benefit analyses or reviewed for the strength of their methodology [9–11].

To date, there have been few intervention studies carried out on the CAM methods themselves. During the last years, many methods, such as mindfulness-based stress reduction, Qigong, yoga, breath and dance therapy, mental imagery, massage and hypnosis, have been studied in the context of diagnoses and age groups; these include breast and prostate cancer, cardiac patients, ulcerative colitis, inner-city population, chronic low-back pain, asthma and end-of-life, cystic fibrosis [12–30].

A new classification that would enhance the (potential) user's overview of all possibilities is now needed in CAM. Medline uses a few dozen MESH subdefinitions to, rather randomly, classify diverse CAM therapies. With the aim of classifying CAM into a few, more easily understood categories, Astin suggests the use of philosopher Ken Wilber's four-quadrant model, which interfaces the human dimensions of 'interior' and 'exterior' with those of the 'individual' and 'collective' [31]. In addition, Tataryn proposes a framework of four basic paradigms—body (BY) (diets/substances, physical manipulation), body-mind (=MBM) (meditation, psychotherapy), body-energy (BE) (energy flows, meridians, chakra system) and body-spirit (BS) (healing, shamanism) [32]. Jones suggests further subdivision into six "primary modes of therapeutic action/influence" (PMTA), separating BY into chemical and biomechanical modes, and BS into psychological and 'non-local' (=spiritual) (see Table 1) [2]. Most CAM (and allopathic!) therapies can be sorted into these PMTA frames, which serve to clarify the basic theories underlying the therapy, both for practitioners and patients.

All three classifications/models embrace a holistic health perspective—i.e. that humans function as integrated units and, consequently, changes at one point may have synergistic effects at another point, another level or even on the whole person. To detect holistic changes, it seems appropriate to use well-known health-related quality of life (HRQOL) and sense of coherence (SOC) measures in CAM research.

During the last decades, new training centres have been established where courses are held that are directed towards a holistic health approach to life. A recent study of a group of people just starting on a course at one centre in Sweden showed that these individuals scored significantly lower on the emotional health scale within the HRQOL and had more long-term sick leave than the general population, despite normal physical health and advanced education [5]. These findings raise the question of whether MBM/BE training can change the HRQOL, healthcare utilisation or even sick leave patterns, and if so, whether there any variables predictive for outcome?

The aim of this study was to follow changes in HRQOL and SOC [33], medication, sick leave and utilisation of alternative and allopathic health care in a group of participants at a MBM training center over a period of 6 months. At the start of this study, we had two hypotheses: (1) that the individuals of the control group (CG) would maintain stable scores at a normal, high level; (2) that the individuals of the study group (SG) would show improved scores after the course intervention.

Methods

Setting

The setting, the participants and the Swedish population samples have been defined by Fernros et al. [5], but are summarised here. This study was carried out at one specific training centre in Sweden which holds courses teaching health self-management. The principal course includes MBM and BE techniques, if categorised according to Jones PMTA or Tataryn [2, 32], and the process is, according to Wilber, 'individual' and 'interior' [31].

The centre has been holding the same MBM/BE courses since 1985; each course is 7 days long, lasts 14 hours a day and has room for 24 people. The price is euro 3055 per person, which includes the costs of the 7-day course, lodging, food and phone contacts (preparations and follow-up). The participants join the courses mainly on their own initiative or on a friend's recommendation, but only rarely by medical referral. About 5000 people have attended the courses to date.

The therapists have attended various educational courses on a holistic health management that is equivalent to 2–3 full-time years in counselling and MBM/BE techniques, including guided and active meditation approaches, non-judgemental mindfulness, body awareness, liberating dance, breathing therapy and facilitating honest emotional expressions. The staff includes one doctor, a course leader, a doctor (one therapist and one assistant per four participants).

Table 1 Periodic table of healthcare systems and practices: based on the “primary modes of therapeutic action” (PMTA) by Jones [2] (published with permission from Curtis H. Jones). The publisher for this copyrighted material is Mary Ann Liebert, Inc Publishers

1) Bio-chemical	2) Bio-mechanical	3) Mind–body	4) Energy flow	5) Psychological	6) Non-local
<i>Synthetic products</i> ^a	Personal activity ^a	Mind–body ^a	Bio–energy ^a	Individual ^a	Religious ^a
Pharmaceuticals	Exercise	Bio–feedback training	Acupuncture CTM	Counseling	Distance healing
Some vitamins	Hatha yoga	Behavioral medicine	Acupressure CTM	Hypnotherapy	Faith practices
		Guided imagery	Healing touch	Neurolingistic programming	Prayer
<i>Natural products</i> ^a	Physical/psychological ^a	Mindfulness meditation	Qi Gong, Tai Chi	Art therapies (drama, painting, music)	
Some dietary supplements	Pancha karma (Ayur.)	Psychoneuro-immunology	Ayurvedic medicine,	Psychotherapy	Extra- religious ^a / spiritual ^b
Nutrition	Pilates	Placebo	Reiki, Shiatsu,	Psychosynthesis ^b	Distance healing
Western herbal medicine	Alexander technique	Rebirthing	Jin shin jyutsu ^b		Positive intention practices
Colonics	Hellerwork	Visualisation			Prayer
		Death exercise ^b	Non-human field ^a		Animistic practices. e.g. shamanism
<i>Injection</i> ^a	Non-invasive/ manipulation ^a		Chinese herbs	Group ^a	Fire walking ^b
Cell therapy	Chiropractic medicine	Body–mind ^a	Homeopathy	Family therapy	
Chelation therapy	Kinesiology (applied)	Art therapies (dance, pottery)		Support groups (e.g. AA, NA)	
	Feldenkrais	Body posture/ straining therapy ^b	Emitted energy ^a	Rituals	
<i>Ingestion</i> ^a	Massage	Aromatherapy	Colour & light therapy		
Internal (incl. gut ^b) cleansing products		Birth exercise ^b	Diathermy		
	Invasive methods ^a	Liberating dance ^b	Magnets, Radiation		
	Surgery	Chakra experiencing ^b	(Ultra) Sound therapy		
	Dentistry		Conduction/ convection ^a		
			Hydrotherapy, sauna		
			Warm/ cold objects		
			Laser		
<i>Systems</i> ^a	Systems ^a	Systems ^a	Systems ^a	Systems ^a	Systems ^a
Allopathic medicine	Allopathic medicine	Mind–body medicine	Ayurvedic medicine	Psychotherapy systems (Freudian, Jungian, humanistic)	Religious healing
Herbal medicine (and others)	Naprapathic medicine	Chakra body energy centres ^b	Chinese Trad. Medicine		Traditions
	Osteopathy		Energy flow medicine		

Ayur, Ayurvedic medicine.

^a Each subheading has many more methods than given here; the few methods presented in this table are only a few examples

^b Practices/ therapies added as interpreted by author

The focus of the course is on personal development through self-knowledge, using all of the techniques described in the previous paragraph, supplemented with information to help the participants understand the BE centres in the body, namely the seven Chakras: 1, ‘survival/breeding/sexuality’ in the pelvis; 2, ‘relating’ in the belly; 3, ‘power’ in the solar plexus; 4, ‘heart’ in the chest; 5, ‘creativity’ in the throat; 6, ‘intuition’ in the forehead; 7, ‘spirituality’ at the top of the head. A different teaching method has been established, that relies more on experiencing, feeling and expression, and less on verbal learning.

The course contains many different and exclusive body exercises, meditations, reflections and relating practices on themes such as birth, death, freedom and bully–victim roles. The founder of the training centre describes these in his book [34]. The aims of this intense 1-week course is to provide repeated opportunities to join in with engaged curiosity about one’s self. In this well-staffed milieu, 7 days and nights in a row, participants are invited to explore themselves outside of their normal emotional comfort zone, reaching new experiences and feelings of suppressed fear, sadness, anger, joy and love, enhancing integrity and insights. Some previous participants have commenced on the course with serious personal problems, such as depression with suicide thoughts, sexual abuse, cancer disease, family relation difficulties, as well as less serious ones. Many of them are asked to bring a husband/ family member into the course for mutual support. The course curriculum is not suitable for schizophrenic patients, but the centre has had experience dealing with people with brief reactive psychosis symptoms in the course (outside of this study).

The study reported here is an experimental, prospective, case–control study of a compound intervention (the course). The study group (SG) was recruited through an invitation during a personal visit to the training centre at the very start of all seven courses over a 1-year period (Fig. 1). In all, 50 men and 57 women agreed to participate. The mean age of participants of the SG was 42.1 years, with no gender difference.

The control group (CG) represented people who had attended the same course 1–3 years previously (Fig. 1). The main reason for including CG in this study was to avoid the bias of the course attendant subpopulation, which has been clearly shown in a comparison of entry data and data on the general Swedish population [5]. Among those individuals who had previously taken the course and eligible to participate in this study, we chose 126 people from previous enrollment lists; these individuals were informed of the study and invited by mail to participate. Of these, 39 men and 47 women agreed to participate in the study. The mean age of the CG was 44.1 years (2 years old than that of

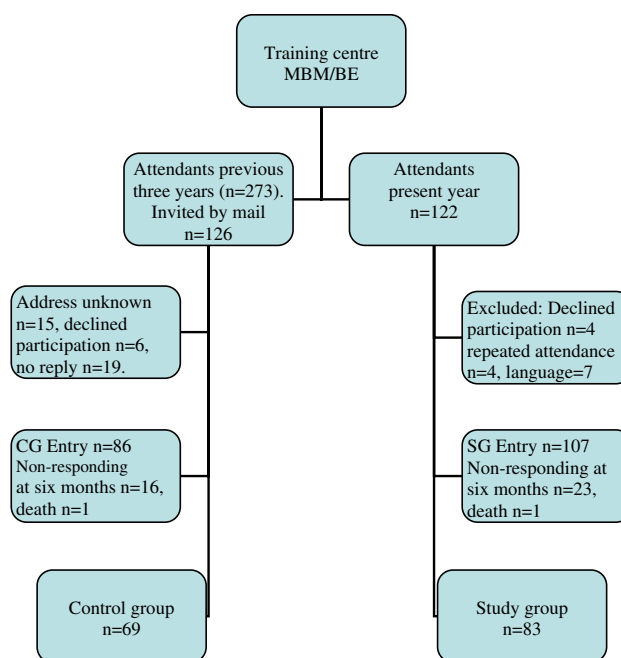


Fig. 1 Flow chart of recruitment of individuals from the training centre MBM/BE. SG Study group, CG control group

the SG), which assures that they had their course experiences at about the same ages as the SG.

The study started in January 2000, and all follow-up questionnaires were collected no later than August 2001.

Assessments

Three questionnaires were used to assess HRQOL, SOC and socio-demographic background.

The HRQOL questionnaire SWEDQUAL 1.0 was chosen; this a nationally well-known, validated and reliable instrument with a Cronbach’s alpha reliability coefficient of $\leq 78\%$ [35]. SWEDQUAL 1.0 was developed from the Medical Outcomes Study, as was the Short-Form (SF-36), and is similar the SF-36 although it contains more items on sleep, cognitions, personal relations and sexual functioning. SWEDQUAL consists of 61 items of self-assessment distributed into 13 scales (Table 2). Two random samples ($n = 2366$) of the Swedish population were tested with SWEDQUAL. These samples have been used in studies on conditions as disparate as diabetes, glaucoma, angina pectoris and, here, MBM-users [5, 36–38].

In addition, the participants completed a socio-demographic questionnaire on level of education, marital status, medication as well as the number of visits to doctors, CAM providers and sick leave during the preceding 6 months. The socio-demographic and SWEDQUAL data from the subpopulation attending this MBM course have been compared in an earlier study to population data collected from several national authorities [5].

Table 2 Quality of life items in SWED-QUAL 1.0

Scale	Description
Psychological	
Emotional well-being	Negative and positive affectivity altogether
Negative affectivity (6)	Felt nervous, tense, down, sad, impatient, annoyed
Positive affectivity (6)	A happy person, harmonic, feel liked, optimistic
Role limitation due to emotional health (3)	Extent to which emotional problems interfere with activities of daily living (ADL)
Cognitive functioning (6)	Concentration, memory, decisions, confusion
Physical	
General health perceptions (8)	Prior and current health, resistance to illness, health concern
Sleep quality (7)	Sleep initiation, maintenance, somnolence
Pain frequency, intensity (6)	Pain interference with ADL, sleep and mood
Physical functioning (7)	Perform activities (work, sports, stairs, dressing)
Satisfaction with physical ability (1)	Satisfaction with ability to do what wanted
Role limitation due to physical health (3)	Extent to which physical problems interfere with ADL
Social/relationships	
Family functioning (4)	Satisfaction with cohesiveness, talking things over, understanding
Marital functioning (6)	Express wishes, sharing feelings, being supportive
Sexual functioning (5)	Lack of interest, inability to enjoy sex, having orgasm (women), getting/maintaining erection (men)

Number in parenthesis indicates the number of items of self-assessment for that scale

The SOC scale short form was also used (13 items, with a Cronbach's alpha of 0.74–0.91). This scale measures comprehensiveness, meaningfulness and manageability in life [33]. Swedish national medians have been presented in studies by Langius' group and Nilsson [39–41].

The three entry questionnaires were completed by the members of the SG on arrival at the centre, before the start of the course. The members of the CG were sent the same questionnaires by mail at the same time. Both the SG and CG were sent the follow-up questionnaire by mail 6 months later. A response time within 8.5 months was achieved by 94% of SG and 82% of the CG. For logistic and dropout data, see Fig. 1.

The CG subjects were matched to the study group subjects by sex and age \pm 4 years (intention was 2 years). A 5- to 9-year difference was accepted in a few (six) people aged over 50 years in order to maximise data utilisation.

Statistical methods

We have used the paired *t* test and χ^2 test. No difference was found between Pearson and Spearman correlations, or between the *t* test and Wilcoxon sign rank test. The sample size of the SG was assessed to 88 subjects. This assessment was based on an expected intervention difference with 80 and 72.5 points, respectively, on the scale 'General Health Perceptions' (SD 25) by the paired *t* test, with an alpha = 0.05 and power = 0.8. A SWEDQUAL difference

of 7.5 points = 9% correlates to an Effect size >0.3 and was judged to be the clinically significant level [5]. Statistical significance is accordingly chosen to $p < 0.01$, owing to multiple comparisons. This is valid also for SOC, who was shown to have significantly adjusted changes of 2.4–4.9 in 6 months [42]. The analyses were carried out on STATA ver. 8 software (Stata Corp, College Station, TX), updated January 2005.

The study was approved by the local Ethics Committee of Karolinska Institutet at Karolinska University Hospital in Huddinge.

Main outcome measures

1. Changes in HRQOL measured by SWEDQUAL 1.0 at 6 months after intervention, especially 'general health perceptions', 'sleep', 'pain', 'negative affectivity', 'positive affectivity', 'role limitation due to emotional health' and 'cognitive functioning'.
2. Changes in SOC 6 months after intervention.

Results

The SWEDQUAL results on HRQOL in SG and CG are shown in Table 3. The SG had overall HRQOL improvement, especially on the six co-correlated scales: 'Role

Table 3 SWED-QUAL health-related quality of life (HRQOL) results in the study group before the course intervention, the control group at the same time and in both groups and 6 months later

HRQOL scales SWEDQUAL: 0 (worst)–100 (best)	Study group (<i>n</i> = 83)			<i>p</i> value for HRQOL Difference	Control group (<i>n</i> = 69)		<i>p</i> value forHRQOL difference
	Baseline HRQOL (SD)	Six months Difference (95% CI)	HRQOL		Baseline HRQOL (SD)	Six months Difference HRQOL(95% CI)	
Psychological							
Emotional well-being (neg + pos):	50.5 (20.7)	17.6 (12.3; 22.8)		<0.001	70.6 (22.0)	0.9 (−3.7; 5.6)	ns
Negative affectivity	45.0 (24.6)	20.4 (14.0; 26.8)		<0.001	69.9 (25.2)	−0.9 (−6.4; 4.7)	ns
Positive affectivity	55.9 (22.8)	14.7 (9.3; 20.2)		<0.001	71.4 (22.3)	2.7 (−2.4; 7.7)	ns
Role limitation due to emotional health	53.3 (31.1)	11.8 (3.2; 20.4)		<0.01	74.9 (25.3)	−1.5 (−7.8; 4.7)	ns
Cognitive functioning	58.4 (27.1)	13.9 (8.0; 19.9)		<0.001	79.7 (20.9)	−3.6 (−8.7; 1.5)	ns
Physical							
General health perceptions	73.7 (25.4)	7.0 (3.5; 10.5)		<0.001	86.4 (18.1)	1.1 (−1.8; 3.9)	ns
Sleep quality	66.6 (21.3)	10.3 (5.8; 14.8)		<0.001	76.9 (21.3)	−1.1 (−5.3; 3.0)	ns
Pain frequency- intensity	77.4 (23.6)	7.4 (3.1; 11.8)		<0.001	82.4 (21.9)	3.4 (−3.0; 9.8)	ns
Physical functioning	94.0 (8.9)	0.4 (−1.0; 7.2)		ns	96.6 (5.4)	−2.1 (−5.0; 0.9)	ns
Satisfaction with physical functioning	66.0 (25.7)	6.1 (0.1; 12.1)		<0.05	78.4 (22.0)	0.2 (−4.6; 4.9)	ns
Role limitation due to physical health	72.0 (30.7)	3.8 (−3.2; 10.7)		ns	80.7 (27.4)	1.7 (−5.4; 8.9)	ns
Social/relationships							
Family functioning	57.3 (29.6)	8.9 (2.8; 14.9)		<0.01	70.7 (28.3)	2.4 (−2.6; 7.4)	ns
Marital functioning	67.9 (23.0)	5.8 (1.4; 10.3)		<0.05	76.6 (25.6)	2.7 (−3.8; 9.1)	ns
Sexual functioning	80.4 (23.2)	3.1 (−1.0; 7.2)		ns	81.5 (21.4)	−1.0 (−5.1; 3.1)	ns

ns, Not significant; CI, confidence interval; SD, standard deviation

All values represent scale mean scores for HRQOL [range: 0 (worst)–100 (best possible)]

limitation due to emotional health’, ‘Positive’ and ‘Negative affectivity’, together with ‘Cognitive functioning’, ‘Sleep quality’ and ‘General health’, Table 2. Starting from statistically significant low HRQOL assessments before the course (all $p < 0.01$), the SG reached average population mean values after the course intervention, only differences are shown; for population values, see [5].

The CG maintained normal HRQOL levels on all 13 scales and did not differ from the Swedish population in general. Those members of the CG who did not return questionnaires (dropouts) had a pattern of entry assessment levels between those of the SG and CG, but all SWED-QUAL results showed only small differences in terms of dropouts, age or gender among all data in both groups.

The SOC levels, changes and reference data are presented in Table 4. The mean SOC scores of the SG increased significantly by about 10% after the course intervention ($p < 0.01$), thus reaching the mean SOC levels of the average population. The lowest initial assessments in the SG were seen among individuals aged up to 35 years (data not shown), and there were large individual variations in how much the score changed (−20 to +41, SD = 13.0).

The CG maintained SOC means at about the levels of the average population, but here also, there was individual variation (−22 to +34, SD = 12.1). Dropouts from the CG had SOC assessments similar to the entry values of the SG. The SOC scores also co-correlated with the eight increased SWEDQUAL scores mentioned above (Pearson corr > 0.4).

Socio-demographic data are shown in Table 5. Self-assessed number of sick leave days showed an irregular pattern. The women in the SG had more sick leave at both entry and follow-up than the general Swedish population, both in percentage of individuals and in number of days. The men in the SG and all individuals of the CG had a sick leave similar to that of the average population, again both in percentage of individuals and in number of days [5]. The sick leave was inversely and significantly correlated to the General Health ($p < 0.01$) scale, but not to the other scales. Two of three subjects were very healthy.

“Psychoactive drugs” (PD) stands for selective serotonin reuptake inhibitors (SSRI), depression medication, tranquilisers and/or sleeping pills, and antipsychotics were not used in our SG and CG. Both the SG and CG groups together, including dropouts, had a medication usage rate

Table 4 Sense of coherence in study and control groups expressed in two different ways (data published with permission from Vård I Norden Ann Langius, 1996. For more Swedish references, see Discussion)

SOC-13 measures (13–91 points possible)	Study group			Control group			Swedish population				
	Start value SOC (%) n = 83	Start rates, within Langius' frame (%) n = 83	Six-month value SOC (%) n = 83	SOC median difference (p value) ^a	Start value SOC (%) n = 69	Start rates, within Langius' frame (%)	Six-month value SOC (%) n = 69	Six-month rates, within Langius' frame (%)	SOC median difference (p value) ^a	Langius' samples-96 n = 19-268, total >640	Langius' Reference rates (%)
SOC median	59***	62	3 (<0.01) ^a	64	64.5	0.5 (ns) ^a	64–71	Reference!	64–71	Reference!	
Low SOC range	29–49 (25)	36–53 (25)	33–56 (25)	37.3	32–56 (25)	(33.3)	40–60	Reference!	40–60	Reference!	(25)
Middle SOC range	50–69 (50)	54–74 (50)	57–73 (50)	(46.3)	57–73 (50)	(49.3)	61–75	Reference!	61–75	Reference!	(50)
High SOC range	70–83 (25)	75–85 (25)	74–85 (25)	(16.4)	74–86 (25)	(17.4)	76–88	Reference!	76–88	Reference!	(25)

***Significantly low compared to reference values by Langius

The “value” columns give the participants' median self-rated SOC and the quartile range of the observed values. The “rate” columns show the percentage of the observed values that fall within the corresponding quartile range reported in Langius' study of standard Swedish populations

^a Wilcoxon sign rank test

of about 10%, which is similar to that of the average population. In the SG, the PD use started as average and decreased by the end of the course ($p < 0.01$). There were relatively more PD users (17%) among dropouts from the course than among both the SG and CG (6%), which was a significant difference ($p = 0.03$).

The number of individuals who recently had participated in (other) self-development activities/courses increased from 16 to 38% after the course intervention, a rate still 'kept up' in the CG.

Discussion

The main finding of this study was that the intervention has a strong positive effect on HRQOL, especially in terms of emotional health. This result indicates that this MBM/BE course is an effective approach for normalising reduced HRQOL. Emotional health is here fairly well correlated (0.26–0.57) to self-assessed general health which, in turn, is well known to be correlated to health prognosis. We assume here that simply following the course curriculum is the reason for the increased emotional QOL as this course has a strong focus on awareness of feelings during the exercises. Qualitative comments at follow-up have included: “My long-lasting anxiety is slowly diminishing.” “I have terminated a relationship that was destructive for me.” “I have opened myself to the world, 2 months ago, after 21 years in a closed body.” There were, however, also a few negative comments: “I feel as if I don't need such a strong course, but I do need an increase in self confidence.” “My tendency for depression has increased (after the course), I have had panic anxiety for the first time, I am now sick listed.” “I was sick listed 25% for 2 months because the course brought up so much from my past.”

The reliability of the results is strengthened by the high response rates, the long inclusion time (an entire year), the equal gender distribution in the SG and the use of previously validated questionnaires [SWEDQUAL (61 items), SOC-13]. Other generic QOL measures, such as QOL5 (five items), would have been too endpoint focused for this new research area. It was considered important at the time of designing the study (1999) to obtain as wide view as possible, thus the requirement for many scales. The WHOQOL-100 [43] or the WHOQOL-BREF [44] would have suited our purpose as well. These include 26 items in four domains and, like SWEDQUAL, also have the physical, psychological and social/relationship aspects (Table 2).

The results on the two groups (SG and CG) confirmed the initial two hypotheses: (1) the stability of the CG scores and (2) the clinically significant improved scores of the SG, which reached population average levels after 6 months.

Table 5 Socio-demographic and medical data among the SG compared to official Swedish population statistics from 1999–2000 (NBH, NSIB, StSw; source: Statistics Sweden)

Socio-demographics	Population values (%)	SG ^a (n = 83)				CG ^a (n = 69)			
		Entry	Follow-up	Diff (CI)	p (diff)<	Entry	Follow-up	Diff (CI)	p (diff)<
Doctor's appointments (mean) ^a	1.4 ^a	1.7	1.4	−0.3 (−0.8; 0.1)	ns	1.1	0.8	−0.3 (−0.7; 0.1)	ns
Sick leave none, n (%)		57 (69)	51 (62)			52 (75)	50 (73)		
Sick leave 1–92 days, n (%)		13 (16)	14 (17)			7 (10)	10 (15)		
Sick leave >90 days ^a , n (%)	(3.4) ^b	13 (16)	18 (22)			10 (15)	9 (13)		
Sick leave (mean days) ^a									
All	23.8 ^a	32.5	40.4	7.8 (−2.5; 8.2)	ns	29.3	26.2	−3.1 (11.6; 5.4)	ns
Men	19.7 ^a	22.0	21.2			22.6	24.3		
Women	28.0 ^a	41.4	56.5			36.2	28.1		
Psychotropic medication (%) ^b									
All	~10% ^b	9.6	6.0	3.6	<0.01	2.9	2.9		ns
Men	~5% ^b	10.5	7.9			2.9	2.9		
Women ^a	~13% ^b	8.9	4.4			3.0	3.0		

^a Half-year values

^b Cumulative prevalence over a 1-year period

A previous study by Mulkins, using a similar study design, evaluated an integrative (=CAM) intervention in Vancouver and showed HRQOL improvement (SF-36) after 6 months [45]. In a review from 2003, Clark found a strong relationship between overall satisfaction among hospitalised patients and the degree to which staff addressed emotional/spiritual needs, independent of diagnosis [46]. Another Canadian study defined six benefits from integrative healthcare via interviews and focus groups. These benefits included 'improved physical and emotional well-being', 'personal transformation', 'feeling connected' and 'improved quality of life' [47]; as such, they were similar to the results shown by our SWEDQUAL and SOC scales.

There was a significant improvement (=salutogenesis) in median SOC values reported by the SG after intervention (Table 5). The SOC showed an individual variability, in terms of both degree of change and correlation (Pearson >0.3) to the improved SWEDQUAL health, emotional, sleep and cognitive scales, but not to the physical ones (function, pain). This separated correlation is described by Flensburg-Madsen et al. [48] in their questioning of SOC's association to health. Still, we found a correlation (0.36) to general health, indicating that people's health experience is not only physical. According to Antonovsky's definition from the 1980s, results obtained with SOC-13 approximate those obtained with SOC-29 (items) in showing stable values for adults [33]. In Sweden, SOC-13 has shown stable levels over time in different Swedish populations ranging in age from 30 to 65 years in the early 1990s [39] as well as a statistically significant decline in both men and women over a 5-year period in the late 1990s [41]. Furthermore, Holmberg recently demonstrated large individual

changes in SOC-29 scores (25% had more than a 1 SD change) after 12 years of assessment among middle-aged Swedish men, despite stable median values [49].

These findings and those of Larsson and Kallenberg [42] and Volanen et al. [50] support the findings of our study: adjusted SOC can still change significantly by as much as 1–8% in either direction as a result of life experience(s), therapeutic intervention(s), life crises and aging, making it a useful intervention variable [42, 50].

The sick leave rates are only self-assessed data, which makes interpretation difficult. Although the sick leave rates among women in the SG seemed high, the CG women had a lower sick leave rate (close to the average rate for the Swedish population) 2 years after their intervention. Use of registry data and one additional year of study time may have provided a clearer picture of this aspect of the study. 'Doctor's appointments' was only an average population-associated variable and is not further discussed.

Conclusions

This study shows that this MBM/BE intervention gives significant improvement of (emotional) HRQOL and SOC. The study also contributes to the original validation of therapeutic CAM interventions for which there is as yet little scientific documentation.

Further research

The WHOQOL-BREF questionnaire from 2004 may have been a more modern and global health questionnaire,

adding Spirituality, Energy and Medication and the new fourth domain, Environment with Safety, Finance, Healthcare and Leisure assessments. The CAM training centre setting, where individual skills are practiced together in a group, is likely to be of interest for future cost-benefit analyses. The addition of registry data on sick listing may have enhanced interpretation. The presence of emotional health problems indicates that further studies may benefit from adding interviews and/or focus groups to the study design. In search of possible reasons to the initially reduced HRQOL scores, our interpretation may have been strengthened if we had used a validated depression scale. On the other hand, the experiences from the training centre, the physical functioning and the PD use indicated only average population depression rates.

Physiological parameters, such as blood pressure and levels of stress hormones, may have provided useful information, but these were not measured for logistic reasons. An interesting bridge between soft data (assessments) and hard data (cytokines) has recently been reported by Kelley and Lekander who found associations between low self-assessed general health and an increase in pro-inflammatory cytokines (the brain mediators of sickness behaviour). Such measurements may have been useful in this study, but they were not available during the time interval of this study [41, 51, 52].

The categorisation of PMTA is quite different from the diffuse MESH-term ‘mind–body relations’ (MBR). We would welcome an unbiased revision of the MESH-term system for CAM towards PMTA, with the aim of increasing clarity and comparability for future research.

Acknowledgements This study was supported by separate grants from the Stockholm County Council and its Center for Family and Community Medicine, Huddinge, Sweden.

References

- Honda, K., & Jacobson, J. S. (2005). Use of complementary and alternative medicine among United States adults: The influences of personality, coping strategies, and social support. *Preventive Medicine, 40*, 46–53.
- Jones, C. H. (2005). The spectrum of therapeutic influences and integrative health care: Classifying health care practices by mode of therapeutic action. *Journal of Alternative and Complementary Medicine, 11*, 937–944.
- Henderson, J. W., & Donatelle, R. J. (2004). Complementary and alternative medicine use by women after completion of allopathic treatment for breast cancer. *Alternative Therapies in Health and Medicine, 10*, 52–57.
- Paterson, C., & Britten, N. (2004). Acupuncture as a complex intervention: A holistic model. *Journal of Alternative and Complementary Medicine, 10*, 791–801.
- Fernros, L., Furhoff, A. K., & Wandell, P. E. (2005). Quality of life of participants in a mind-body-based self-development course: A descriptive study. *Quality of Life Research, 14*, 521–528.
- Kersnik, J. (2000). Predictive characteristics of users of alternative medicine. *Schweizerische medizinische Wochenschrift, 130*, 390–394.
- Kersnik, J., Svab, I., & Vegnuti, M. (2001). Frequent attenders in general practice: Quality of life, patient satisfaction, use of medical services and GP characteristics. *Scandinavian Journal of Primary Health Care, 19*, 174–177.
- Lewith, G. T., Hyland, M., & Gray, S. F. (2001). Attitudes to and use of complementary medicine among physicians in the United Kingdom. *Complementary Therapies in Medicine, 9*, 167–172.
- Efficace, F., Horneber, M., Lejeune, S., Van Dam F, Leering, S., Rottmann, M., et al. (2006). Methodological quality of patient-reported outcome research was low in complementary and alternative medicine in oncology. *Journal of Clinical Epidemiology, 59*, 1257–1265.
- Herman, P. M., Craig, B. M., & Caspi, O. (2005). Is complementary and alternative medicine (CAM) cost-effective? A systematic review. *BMC Complementary and Alternative Medicine, 5*, 11.
- Lafferty, W. E., Downey, L., McCarty, R. L., Standish, L. J., & Patrick, D. L. (2006). Evaluating CAM treatment at the end of life: A review of clinical trials for massage and meditation. *Complementary Therapies in Medicine, 14*, 100–112.
- Elsenbruch, S., Langhorst, J., Popkirowa, K., Muller, T., Luedtke, R., Franken, U., et al. (2005). Effects of mind-body therapy on quality of life and neuroendocrine and cellular immune functions in patients with ulcerative colitis. *Psychotherapy and Psychosomatics, 74*, 277–287.
- Hui, P. N., Wan, M., Chan, W. K., & Yung, P. M. (2006). An evaluation of two behavioral rehabilitation programs, qigong versus progressive relaxation, in improving the quality of life in cardiac patients. *Journal of Alternative and Complementary Medicine, 12*, 373–378.
- Carlson, L. E., Speca, M., Patel, K. D., & Goodey, E. (2004). Mindfulness-based stress reduction in relation to quality of life, mood, symptoms of stress and levels of cortisol, dehydroepiandrosterone sulfate (DHEAS) and melatonin in breast and prostate cancer outpatients. *Psychoneuroendocrinology, 29*, 448–474.
- Ventegodt, S., Clausen, B., Langhorn, M., Kromann, M., Andersen, N. J., & Merrick, J. (2004). Quality of life as medicine III. A qualitative analysis of the effect of a five-day intervention with existential holistic group therapy or a quality of life course as a modern rite of passage. *ScientificWorldJournal, 4*, 124–133.
- Roth, B., & Robbins, D. (2004). Mindfulness-based stress reduction and health-related quality of life: Findings from a bilingual inner-city patient population. *Psychosomatic Medicine, 66*, 113–123.
- Ventegodt, S., Thegler, S., Andreasen, T., Struve, F., Enevoldsen, L., Bassaine, L., et al. (2007). Clinical holistic medicine (mindful, short-term psychodynamic psychotherapy complemented with bodywork) in the treatment of experienced physical illness and chronic pain. *ScientificWorldJournal, 7*, 310–316.
- Oken, B. S., Zajdel, D., Kishiyama, S., Flegal, K., Dehen, C., Haas, M., et al. (2006). Randomized, controlled, six-month trial of yoga in healthy seniors: Effects on cognition and quality of life. *Alternative Therapies in Health and Medicine, 12*, 40–47.
- Yeh, G. Y., Wood, M. J., Lorell, B. H., Stevenson, L. W., Eisenberg, D. M., Wayne, P. M., et al. (2004). Effects of tai chi mind-body movement therapy on functional status and exercise capacity in patients with chronic heart failure: A randomized controlled trial. *The American Journal of Medicine, 117*, 541–548.

20. Jakovljevic, M. (2006). The modern psychopharmacotherapy, mind-body medicine and science of well-being. Body, brain, mind & spirit: All for one, and one for all. *Psychiatria Danubina*, *18*, 148–149.
21. Mehling, W. E., Hamel, K. A., Acree, M., Byl, N., & Hecht, F. M. (2005). Randomized, controlled trial of breath therapy for patients with chronic low-back pain. *Alternative Therapies in Health and Medicine*, *11*, 44–52.
22. Cassileth, B., Trevisan, C., & Gubili, J. (2007). Complementary therapies for cancer pain. *Current Pain and Headache Reports*, *11*, 265–269.
23. Epstein, G. N., Halper, J. P., Barrett, E. A., Birdsall, C., McGee, M., Baron, K. P., et al. (2004). A pilot study of mind-body changes in adults with asthma who practice mental imagery. *Alternative Therapies in Health and Medicine*, *10*, 66–71.
24. Lee, S. W., Mancuso, C. A., & Charlson, M. E. (2004). Prospective study of new participants in a community-based mind-body training program. *Journal of General Internal Medicine*, *19*, 760–765.
25. Ventegodt, S., Thegler, S., Andreasen, T., Struve, F., Enevoldsen, L., Bassaine, L., et al. (2007). Clinical holistic medicine (mindful, short-term psychodynamic psychotherapy complemented with bodywork) improves quality of life, health, and ability by induction of Antonovsky-salutogenesis. *ScientificWorldJournal*, *7*, 317–323.
26. Goodill, S. W. (2005). Dance/movement therapy for adults with cystic fibrosis: Pilot data on mood and adherence. *Alternative Therapies in Health and Medicine*, *11*, 76–77.
27. Sagar, S. M., Dryden, T., & Wong, R. K. (2007). Massage therapy for cancer patients: A reciprocal relationship between body and mind. *Current Oncology*, *14*, 45–56.
28. Elkins, G., Marcus, J., Palamara, L., & Stearns, V. (2004). Can hypnosis reduce hot flashes in breast cancer survivors? A literature review. *The American Journal of Clinical Hypnosis*, *47*, 29–42.
29. Dillard, J. N., & Knapp, S. (2005). Complementary and alternative pain therapy in the emergency department. *Emergency Medicine Clinics of North America*, *23*, 529–549.
30. Ventegodt, S., Thegler, S., Andreasen, T., Struve, F., Enevoldsen, L., Bassaine, L., et al. (2007). Clinical holistic medicine (mindful, short-term psychodynamic psychotherapy complemented with bodywork) in the treatment of experienced mental illness. *ScientificWorldJournal*, *7*, 306–309.
31. Astin, J. A., & Astin, A. W. (2002). An integral approach to medicine. *Alternative Therapies in Health and Medicine*, *8*, 70–75.
32. Tataryn, D. J. (2002). Paradigms of health and disease: A framework for classifying and understanding complementary and alternative medicine. *Journal of Alternative and Complementary Medicine*, *8*, 877–892.
33. Antonovsky, A. (1993). The structure and properties of the sense of coherence scale. *Social Science & Medicine*, *36*, 725–733.
34. Stern, B. (1996). *Feeling bad is a good start*. San Diego: Promotion Publishing.
35. Brorsson, B., Ifver, J., & Hays, R. D. (1993). The Swedish Health-Related Quality of Life Survey (SWED-QUAL). *Quality of Life Research*, *2*, 33–45.
36. Brorsson, B., Bernstein, S. J., Brook, R. H., & Werko, L. (2002). Quality of life of patients with chronic stable angina before and four years after coronary revascularisation compared with a normal population. *Heart*, *87*, 140–145.
37. Wandell, P., Brorsson, B., & Aberg, H. (2000a). Functioning and well-being of patients with type 2 diabetes or angina pectoris, compared with the general population. *Diabetes Metabolism*, *26*, 465–471.
38. Wandell, P. E., & Brorsson, B. (2000b). Assessing sexual functioning in patients with chronic disorders by using a generic health-related quality of life questionnaire. *Quality of Life Research*, *9*, 1081–1092.
39. Langius, A., & Bjorvell, H. (1993). Coping ability and functional status in a Swedish population sample. *Scandinavian Journal of Caring Sciences*, *7*, 3–10.
40. Langius, A., Bjorvell, H., & Antonovsky, A. (1992). The sense of coherence concept and its relation to personality traits in Swedish samples. *Scandinavian Journal of Caring Sciences*, *6*, 165–171.
41. Nilsson, M., Trehn, G., & Asplund, K. (2001). Use of complementary and alternative medicine remedies in Sweden. A population-based longitudinal study within the northern Sweden MONICA Project. Multinational Monitoring of Trends and Determinants of Cardiovascular Disease. *Journal of Internal Medicine*, *250*, 225–233.
42. Volanen, S. M., Suominen, S., Lahelma, E., Koskenvuo, M., & Silventoinen, K. (2007). Negative life events and stability of sense of coherence: A five-year follow-up study of Finnish women and men. *Scandinavian Journal of Psychology*, *48*, 433–441.
43. Skevington, S. M. (1999). Measuring quality of life in Britain: Introducing the WHOQOL-100. *Journal of Psychosomatic Research*, *47*, 449–459.
44. WHOQOL_Group. (1998). Development of the World Health Organization WHOQOL-BREF quality of life assessment. The WHOQOL Group. *Psychological Medicine*, *28*, 551–558.
45. Mulkins, A., Verhoef, M., Eng, J., Findlay, B., & Ramsum, D. (2003). Evaluation of the Tzu Chi Institute for Complementary and Alternative Medicine's Integrative Care Program. *Journal of Alternative and Complementary Medicine*, *9*, 585–592.
46. Clark, P. A., Drain, M., & Malone, M. P. (2003). Addressing patients' emotional and spiritual needs. *Joint Commission Journal on Quality and Safety*, *29*, 659–670.
47. Verhoef, M. J., Mulkins, A., & Boon, H. (2005). Integrative health care: How can we determine whether patients benefit? *Journal of Alternative and Complementary Medicine*, *11*[Suppl 1], S57–S65.
48. Flensburg-Madsen, T., Ventegodt, S., & Merrick, J. (2005). Sense of coherence and physical health. A review of previous findings. *ScientificWorldJournal*, *5*, 665–673.
49. Holmberg, T. (2006). SOC—A study of stability with 12-year follow-up. In: Annual General Meeting of the Swedish Society of Medicine 2005. The Swedish Society of Medicine. Sweden.
50. Larsson, G., & Kallenberg, K. (1996). Sense of coherence, socioeconomic conditions and health. Interrelationships in a nation-wide Swedish sample. *European Journal of Public Health*, *6*, 175–180.
51. Kelley, K. W., Bluthe, R. M., Dantzer, R., Zhou, J. H., Shen, W. H., Johnson, R. W., et al. (2003). Cytokine-induced sickness behavior. *Brain, Behavior, and Immunity*, *17*[Suppl 1], S112–S118.
52. Lekander, M., Elofsson, S., Neve, I. M., Hansson, L. O., & Udden, A. L. (2004). Self-rated health is related to levels of circulating cytokines. *Psychosomatic Medicine*, *66*, 559–563.