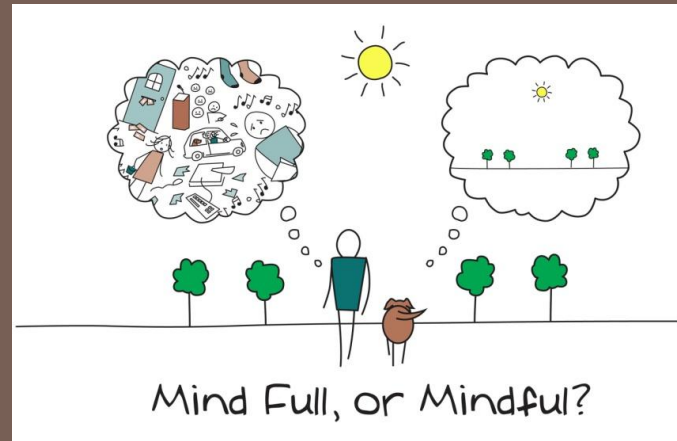
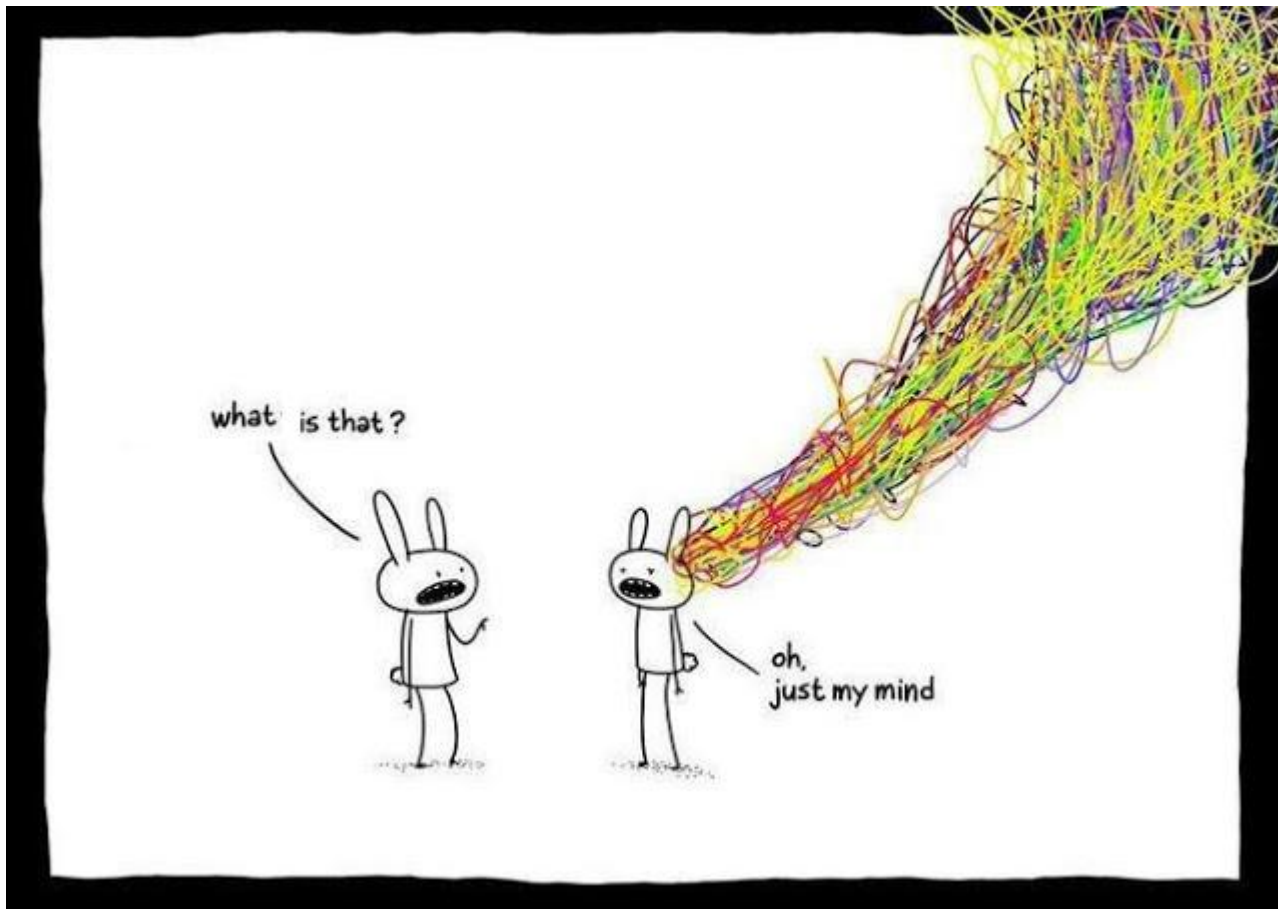


*Sexual Health in the Context of Infertility Treatment,
Saturday, 1 July, 2017 University Hospital of Geneva 14H15-14h50*



MINDFULNESS-BASED INTERVENTIONS & INFERTILITY CARE

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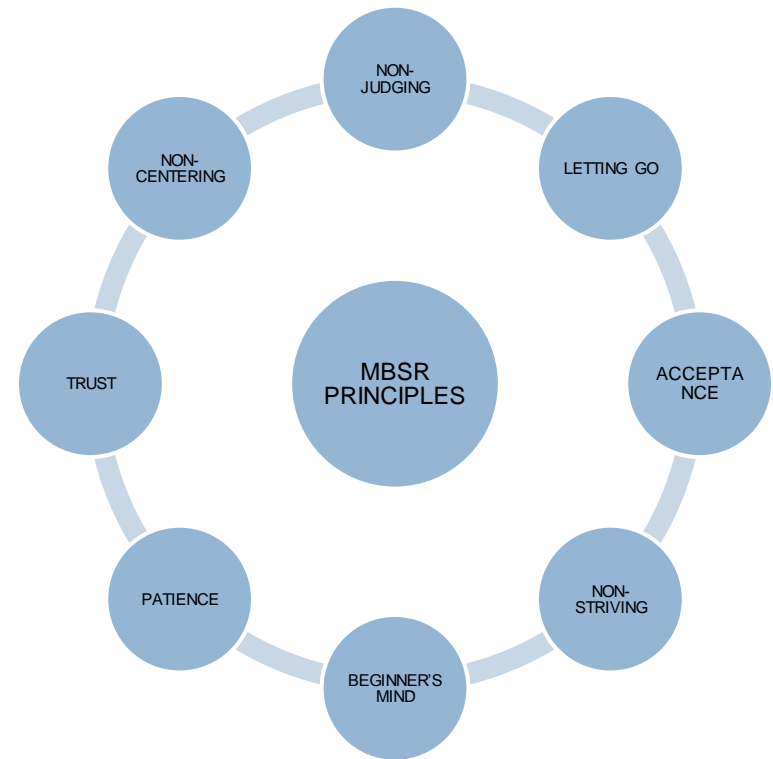
WHAT IS MINDFULNESS ?



- Concept stemming from ancient Buddhist philosophy and Yoga and practiced to achieve enduring happiness and to gain insight into a view of the true nature of existence.
- J. Kabat-Zinn 1990 (University of Massachusetts): paying attention in a particular way: on purpose, in the present moment, and non-judgementally
- Bishop et al. 2004. Two components model:
 1. Regulation of attention in order to maintain it on the **immediate experience** (including one's sensations, thoughts, body states, consciousness and environment)
 2. Approaching one's experience with an orientation of **curiosity**, **openness** and **acceptance**, regardless of their valence and desirability.
- Mindfulness-based therapy (MBT) popular in psychotherapy:
 - ▣ MBCT (Mindfulness-based cognitive therapy)
 - ▣ MBSR (Mindfulness-based stress reduction)

MBSR: MINDFULNESS-BASED STRESS REDUCTION

- 1979 Jon Kabat-Zinn founded the MBSR Clinic at the University of Massachusetts.
- MBSR: Group program that focuses upon the progressive acquisition of mindful awareness
- 8-weeks workshop:
 - Weekly 2-hour group meeting, one-day retreat, daily 45-mn home practice of meditation
 - Instruction of 3 formal techniques: mindfulness meditation (sitting, walking meditation), body scanning, simple yoga postures



The practice of mindfulness meditation encompasses focusing attention of the experiences of thoughts, emotions and body sensations, simply observing them as they arise and pass away



USE OF MINDFULNESS

IN PATIENTS

- Psychiatric conditions
 - Anxiety *Hofmann et al, 2010; Roemer, et al 2008*
 - Depression *Hofmann et al., 2010; Teasdale et al., 2000*
 - Substance abuse *Bowen et al., 2006*
 - Eating disorders *Tapper et al., 2009*
- Somatic conditions
 - MBSR: Positive effects on pain, anxiety and stress in people with chronic disorders, such as fibromyalgia, coronary artery disease, back pain and arthritis
 - MBCT: decrease depression, anxiety and fatigue in some physical conditions, such as coronary heart disease diabetes and cancer

IN HEALTHY INDIVIDUALS

- Positive effect on psychological well-being *Carmody et al.2008; Chiesa et al. 2009*
- Enhances cognitive functioning *Jha et al. 2007; Ortner et al. 2007, Pagnoni et al. 2007; Slagter et al., 2007.*

The Effect of Mindfulness-Based Therapy on Anxiety and Depression: A Meta-Analytic Review

Stefan G. Hofmann, Alice T. Sawyer, Ashley A. Witt, and Diana Oh
Boston University

- small to medium effect sizes on psychological and physical symptoms across a range of chronic somatic conditions including cancer, cardiovascular disorders and chronic pain
- Best effect size in patients with anxiety and depression

Effect size analysis of studies examining the efficacy of mindfulness-based therapy on anxiety symptoms in various disorders.

Category	Study	Hedges' g	95% Confidence Interval	p-value
Targeted Disorder				
Anxiety Disorders				
GAD	Craigie et al., 2008	0.69	0.32 – 1.06	<0.01
	Evans et al., 2008	0.89	0.38 – 1.41	0.02
GAD/Panic Disorder	Kabat-Zinn et al., 1992	0.84	0.46 – 1.22	<0.01
	Kim et al., 2009	1.61	1.08 – 2.14	<0.01
SAD	Lee et al., 2007	2.13	1.29 – 2.97	<0.01
	Bogels et al., 2006	0.48	-0.01 – 0.98	0.06
	Koszycski et al., 2007	0.93	0.54 – 1.32	<0.01
Subtotal Anxiety Disorders		0.97	0.73 – 1.22	<0.01
Depression	Ramel et al., 2004	0.12	-0.30 – 0.55	0.70
Pain Disorders				
Arthritis	Pradhan et al., 2007	0.21	-0.08 – 0.50	0.15
Chronic Pain	Rosenzweig et al., 2009	0.54	0.37 – 0.70	<0.01
	Sagula & Rice, 2004	0.64	0.38 – 0.91	<0.01
Fibromyalgia	Grossman, 2007	0.55	0.29 – 0.80	<0.01
	Lush et al., 2009	0.24	-0.06 – 0.55	0.12
Subtotal Pain Disorders		0.44	0.22 – 0.67	<0.01
Cancer				
Breast Cancer	Lengacher et al., 2009	0.75	0.48 – 1.02	<0.01
	Tacon et al., 2004	1.25	0.87 – 1.64	<0.01
	Tacon et al., 2005	1.19	0.84 – 1.55	<0.01
Breast/ Prostate Cancer	Carlson et al., 2003	0.21	-0.03 – 0.44	0.08
Heterogeneous	Carlson & Garland, 2005	0.51	0.31 – 0.71	<0.01
	Garland et al., 2007	0.50	0.29 – 0.70	<0.01
	Kieviet-Shijnen et al., 2008	0.36	0.13 – 0.58	<0.01
	Specca et al., 2000	0.63	0.41 – 0.86	<0.01
Subtotal Cancer		0.63	0.45 – 0.81	<0.01
Medical Problems				
Chronic Fatigue	Surawy et al., 2005 (1)	0.69	0.17 – 1.21	0.01
	Surawy et al., 2005 (2)	1.07	0.50 – 1.64	<0.01
	Surawy et al., 2005 (3)	0.73	0.20 – 1.25	0.01
Diabetes	Rosenzweig et al., 2007	0.28	-0.15 – 0.71	0.21
Heart Disease	Tacon et al., 2003	0.79	0.25 – 1.32	<0.01
Heterogeneous	Reibel et al., 2001	0.53	0.37 – 0.69	<0.01
Hypothyroidism	Schulte, 2007	0.30	-0.20 – 0.80	0.23
Organ Transplant	Kreitzer et al., 2005	0.41	0.06 – 0.76	0.02
Stroke	Moustgaard, 2005	0.98	0.59 – 1.36	<0.01

HOW DOES MINDFULNESS MBCT/MBSR WORK ?

- MBCT/MBSR helps people:
 - learn that habitual reactive patterns stem from unhelpful habits of the mind; that fear, denial and discrepancy-based thinking create and exacerbate distress;
 - that skillful ways of relating to experience can be developed through awareness, wise discernment and practice which offer the potential for (moments of) freedom from reactivity”

MECHANISMS OF CHANGE



Universal:

- Learning to stabilize attention (mindful attention)
- Decentering from negative thinking (emotion regulation strategy)
- Acceptance

Disease specific:

CVD: self-awareness of cardiac experiences, attention control of CVD risk factors
Depression: Decrease in cognitive reactivity (the degree to which a mild dysphoric state reactivates negative thinking patterns)

Mindfulness practice leads to increases in regional brain gray matter density.

Anatomical magnetic resonance (MR) images from 16 healthy, meditation-naïve participants were obtained before and after they underwent the 8-week program. Changes in gray matter concentration were investigated using voxel-based morphometry, and compared with a waiting list control group of 17 individuals.

Mechanism	Exemplary instructions	Self-reported and experimental behavioral findings	Associated brain areas
1. Attention regulation	Sustaining attention on the chosen object; whenever distracted, returning attention to the object	Enhanced performance: executive attention (Attention Network Test and Stroop interference), orienting, alerting, diminished attentional blink effect	Anterior cingulate cortex
2. Body awareness	Focus is usually an object of internal experience: sensory experiences of breathing, emotions, or other body sensations	Increased scores on the Observe subscale of the Five Facet Mindfulness Questionnaire; narrative self-reports of enhanced body awareness	Insula, temporo-parietal junction
3.1 Emotion regulation: reappraisal	Approaching ongoing emotional reactions in a different way (nonjudgmentally, with acceptance)	Increases in positive reappraisal (Cognitive Emotion Regulation Questionnaire)	(Dorsal) prefrontal cortex (PFC)
3.2 Emotion regulation: exposure, extinction, and reconsolidation	Exposing oneself to whatever is present in the field of awareness; letting oneself be affected by it; refraining from internal reactivity	Increases in nonreactivity to inner experiences (Five Facet Mindfulness Questionnaire)	Ventromedial PFC, hippocampus, amygdala
4. Change in perspective on the self	Detachment from identification with a static sense of self	Self-reported changes in self-concept (Tennessee Self-Concept Scale, Temperament and Character Inventory)	Medial PFC, posterior cingulate cortex, insula, temporo-parietal junction

MBSR is associated with changes in gray matter concentration in brain regions involved in learning and memory processes, emotion regulation, self-referential processing, and perspective taking.

Hölzel et al. 2011

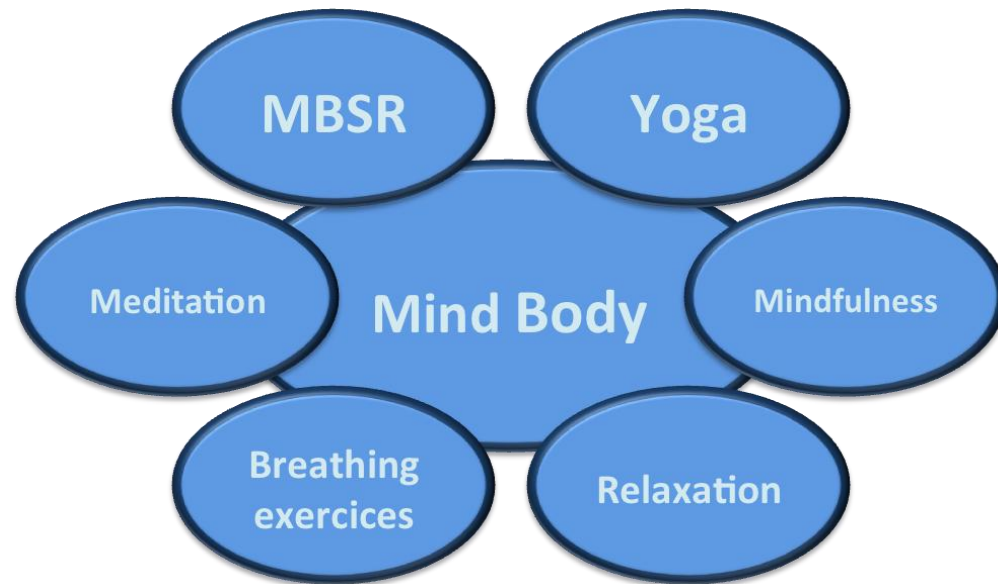
PSYCHOLOGICAL IMPACT OF INFERTILITY

- Infertility:
 - ▣ chronic condition – long treatments
 - ▣ higher level of stress, anxiety and depression
 - ▣ decreased quality of life
 - ▣ marital dysfunction
 - ▣ treatment discontinuation
 - ▣ diminished chance to conceive



MINDFULNESS & INFERTILITY

Development of new psychosocial intervention with mind-body approaches in infertile patients



Infertility and its medical treatment are stress inducing conditions
The use of mindfulness with infertile patients may be adequate

MINDFULNESS BASED PROGRAM FOR INFERTILITY (MBPI)

- 10 weekly sessions: first session introductory, 8 sessions of 2 hours, last session of one day
 - maximum 15 women, male partners invited in 3 sessions
 - MBPI sessions with a similar structure:
 - Begin with a first half-hour of sharing
 - Formal mindfulness practice (commonly used in mindfulness program)
 - Sharing how the experience was for them
 - Finish with breathing exercise
- Each session included metaphors and experiential exercises and counseling in healthy lifestyle

MIND BODY THERAPEUTIC PROGRAM

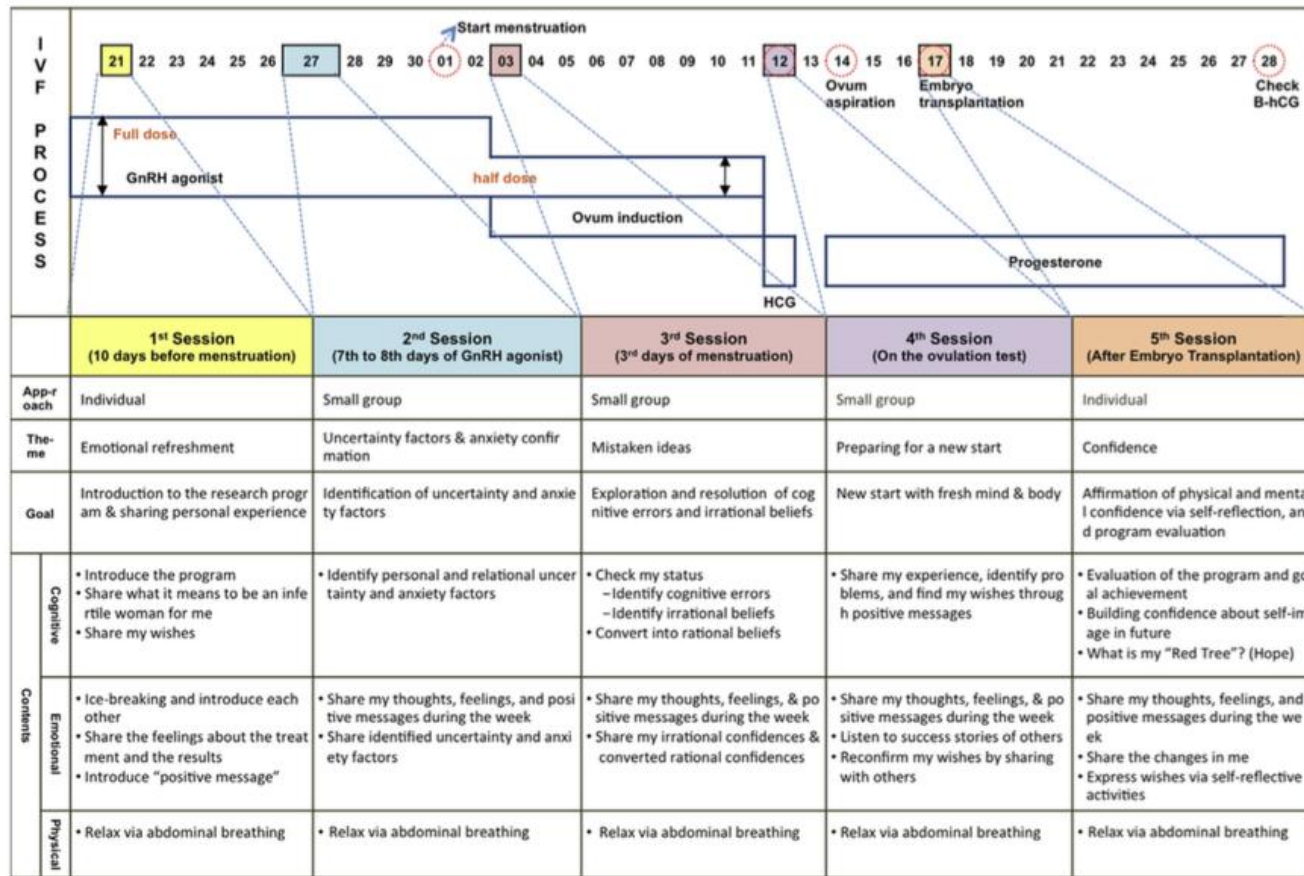


Figure 1. The mind-body therapeutic program. Note. GnRH = gonadotropin-releasing hormone; B-hCG = β -human chorionic gonadotropin; HCG = human chorionic gonadotropin.

MIND BODY-BASED INTERVENTIONS IN INFERTILE WOMEN

- Systematic review of literature conducted in January 2017 (PubMed, PsychINFO, EMBASE, the Cochrane Library)

Keywords: infertility, mind body based interventions

- Studies eligible if:
 - ▣ data on infertile individuals or couples
 - ▣ evaluated the effect of a mind-body intervention (mindfulness, yoga or mindfulness, stress reduction program (MBSR))
 - ▣ Effect on anxiety, depression, pregnancy rates and quality of life

ANXIETY: STATE-TRAIT ANXIETY INVENTORY (STAI)

- 7 studies (5 controlled, 2 uncontrolled)
- **Significant reduction in anxiety state scores** after intervention
- Small effect on anxiety in 4 studies (Effect size d of 0.19, 0.23, 0.29, 0.34, respectively) and a large effect (Effect size d of 1.52) in one study

Author Year	Study design	Number of participants (intervention, control)	Measurement timing	Effect size
Kim 2014	NRCT	26, 24	Before and after intervention	1.52
Galhardo 2013	NRCT	55, 37 (women and men)	Before and after intervention	0.34
Chan 2011	RCT	114, 110	At randomization, starting ovarian stimulation, embryo transfer	0.23
Chan 2006	RCT	101, 126	Day of recruitment (T1), 1 st day of ovarian stimulation (T2), day of embryo transfer (T3)	0.29
Domar 1990	UCT	54, N/A	Before and after intervention	N/A
Oron 2015	UCT	49, N/A	Before and after intervention	N/A
Valoriani 2014	NRCT	45, 75	At baseline and after 3 months	0.19

NRCT: non-randomized controlled trial, RCT: randomized controlled trial, UCT: uncontrolled trial, N/A: not applicable

DEPRESSION

- 4 studies found significant decrease in depression

Author year	Study design	Number of participants Intervention/control	Scale	Results
Galhardo 2013	NRCT	55/37	BDI	T1:11.02+/-7.1, T2 6.18+/-4.05; p<.001
Oron 2015	UCT	49/ NA	BDI	T1:7.77+/-5.97, T2:5.26+/-3.9 ;p<.001
Valoriani 2014	NRCT	45/75	EDS	T1:9.27+/-5.50, T2:6.60+/-4.77; p<.001
Psaros 2016	UCT	51/NA	BDI	T1:17.9+/-1.2, T2:10.1 +/-1.3; p<.001

PREGNANCY RATE

- 2 studies demonstrated significant improvement in pregnancy rate after intervention
- A study showed a non-significant increase in pregnancy rate
- 2 studies showed no difference in pregnancy and implantation rates

Author year	Pregnancy rate Experimental group (%)	Pregnancy rate Control group (%)	P value
Li 2016	45	26	0.04
Domar 2011	52	20	0.05
Chan 2006	28	15	0.07
Chan 2011	30	24	0.3
Kim 2014	65	46	0.16

QUALITY OF LIFE

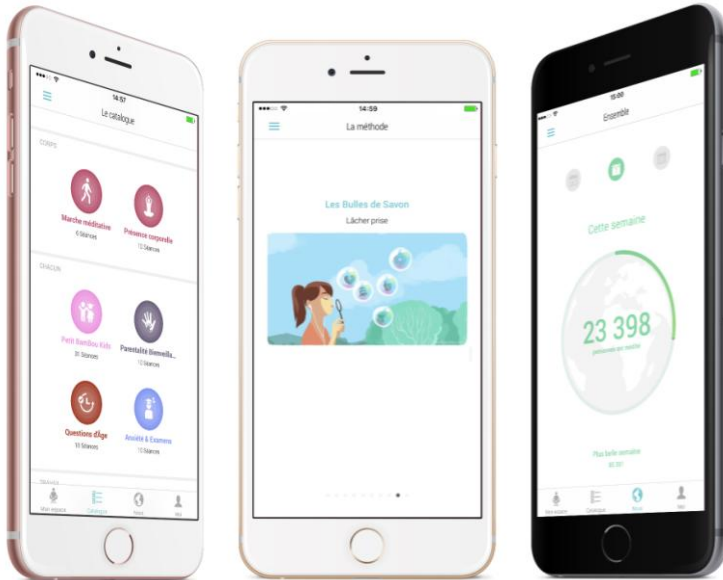
- A significant increase was found in FertiQol score for 2 studies and in the WHO well-being scores for 1 study
- 2 studies showed also improvement on marital satisfaction after intervention (Sharg 2016, Chan 2011)

Author year	T1	T 2	P value
FertiQol score			
Li 2016	59.04 +/-14.94	71.72+/-11.43	0.002
Oron 2015	55.4+/-14.3	64.7+/-15.3	0.027
WHO wellbeing score			
Sheratt 2013	8.89+/-3.44	17.11+/-2.15	<0.001



Petit BamBou

- Launch in January 2015
- 850k users, 850k FB fans
 - ▣ Free access to 8 meditation sessions
 - ▣ Freemium: monthly subscription to access the rest of the catalogue 5€/month
 - ▣ 440 guided meditations
 - ▣ new health section



Development of a new module: guided meditation for infertility

- Exploring your wish to have a baby
- When pregnancy takes longer than expected
- The female body
- A couple meditation
- The inner process
- Connecting to your inner resources
- Developing self-compassion
- Have a break
- Taming your fear
- Preparing for ART procedures
- A new life begins

*Available in French in
September 2017!*

Frédérique TETTAMANTI (Mindfulness Instructor HUG) & Isabelle STREULI (Specialist in reproductive medicine) collaboration with petit Bambou

Take home message

- Mindfulness-based interventions could be useful in infertile women with a positive impact:
 - ▣ Anxiety
 - ▣ Depression
 - ▣ Pregnancy rate and quality of life
- Adapted programs
- E-tools