Online Appendix.

eTable 1. Main Results Table, Informal Caregivers

Reference	Study Design	Caregiver's service population	Caregiver population	# Enrolled	Intervention	Control Group	Outcomes Measures (including instruments and timing)	Study Quality Score (Downs and Black Criteria[13])
Benn[35] 2012 USA	RCT	Special needs children using the special education services of the school district.	Parents and educators of special needs children	60	5 wks (2.5 hrs, 2x per week and 2 full day sessions, 36 hrs of teaching plus homework). Educators and parents met in separate groups. Content: SMART-in Education (stress management, relaxation techniques) - 70% Kabat-Zinn MBSR, adds emotional theory,compassion, mindfulness applied to teaching and parenting. Homework: sitting practices, monitor emotional responses.	wait-list	Instruments • 5 Facet Mindfulness Questionnaire Perceived Stress Scale State-Trait Anxiety Inventory • Center for Epidemiologic Studies Depression (CES-D) Scale • Positive and Negative Affect Schedule Psychological Well-Being Scale • Neff self-compassion scale • Brown & Phillips Forgiveness Questionnaire Interpersonal Reactivity Index • Emotion Regulation at Work Self-Efficacy Scale • Everyday Parenting Scale • Parenting Stress Index Measurement timing: 1 week pre-tx, 1 wk post-tx and 2 months post-tx Attrition: 43 left by end of study. Most pts had 10min formal mindfulness practice daily at home.	17

Results
All measures favored meditation therapy group post tx and 2 months post tx.
Mindfulness: medium size effect post tx.
Stress, Anxiety, Depression, Self-Compassion, Positive/Negative WellBeing : all had medium size effects post tx. 2 months post tx, the sig effect of MT on depression gone but larger effect sizes on mindfulness, stress, anxiety and positive well being indicators. Self-efficacy: small size effect downward, not statistically significant
Empathic concern medium effect at f/u and post tx sig for MT; Forgiveness stat sig diff at f/u, not at post tx.

Black[39] 2013 USA	RCT	Dementia patients	primary caregivers for elderly person>3 days/wk.	45	8 wks (12 minutes daily) using audio CD guidance Content: Kirtan Kriya Meditation, kundalini yoga practice: 12 min yogic meditation and chanting practice using audio CD. 1 min silent focus inward, 11 min repetitive finger movements and chanting, then deep breathing and visualization of light.	8 wks (12 minutes daily) using CD. Content Relaxing Music: relax in quiet place w/eyes closed listening to instrumental music CD provided	Instruments • Short Form 36 Health Survey (SF 36) • Hamilton Rating Scale for Depression (HAM-D) • Cumulative Illness Rating scale • MMSE at baseline Peripheral blood mono-nuclear cells isolated for genome-wide transcription profiling. Differentially expressed genes analyzed for prevalence of transcription factor binding motifs targeted by NF-kB and Interferon Response Factor 1 Other measures as per Lavretsky 2012 study Measurement timing: Blood samples drawn between 10-11am at baseline and 8 weeks later.	14

Results
HAM-D: 65.2% of KKM pts showed 50% improvement vs 31.2% RM pts had 50% improvement. $p < 0.05$*
SF 36 Mental Health Summary Score: 52% of KKM pts showed 50% improvement vs 19% RM pts improved 50% $p < 0.05$*
NF-kB: KKM pts had reduced expression of genes w/ NF-kB response elements $p = 0.006$
IRF1: KKM pts had increased expression of genes w/IRF1 response elements $p = 0.040$.
49 genes relatively down-regulated and 19 rel up-regulated in KKM vs RM.
*incompleted reported – not included in meta-analysis

Danucalov[36] 2013 Brazil	RCT	Alzheimer's patients	Family caregivers	46	2 months (1 hr 15min session 3x/wk) 1 'live' session/wk, 2 sessions /wk at home w/DVD. Content: Hatha yoga, awareness, voluntary regulation of breath, mindfulness meditation and compassion meditation.	wait-list	Instruments • Beck Depression Inventory (BDI) • Beck Anxiety Inventory (BAI) • Lipp's Stress Symptoms Inventory for Adults (LSSIA) Salivary cortisol Measurement timing: Surveys at baseline and 2 months post tx Cortisol: 8 samples collected per pt: 4 at baseline: 2 samples/day on 2 consecutive days (immediately upon waking (in dark) and 30 min after waking up, fasting (after exposure to natural light). 4 samples after intervention completed	11
	Results BDI: score 16.0+/-7.8 pre-tx, 8.2+/-4.6 post-tx. Stat sig change within grp and vs control: both p<0.001. BAI: pre-tx 17.6+/-9.4, post-tx 8.7+/-5.5, stat sig change within grp and vs control p<0.001. LSSIA: 68% (17pts) scored 'absence of stress' post-tx p<0.05.* Cortisol: Day 2 scores: 937.6+/-171.3 pre-tx and 408.1+/-81.3 post-tx, p<0.05. Reduction in average score (day 1 + day 2) pre-tx: 823.0+/-131.2 vs post-tx: 424.6+/-55.3,p<0.001 *incompletely reported, not included in meta-analysis								
Epstein-Lubow[20] 2011 USA	pre-post	Nursing home or homecare patients with dementia or other significant medical conditions	Family caregivers spending >20hrs/wk caring for pt.	9	8 wks (75 min session/wk, daily homework x 30 min). Content: MBSR (yoga and seated meditation), rationale for mindfulness, guided techniques, loving-kindness and forgiveness meditation, examples of stress from caregiving scenarios.	N/A	Instruments • Center for Epidemiologic Studies Depression Scale (CES-D) • Zarit Burden Interview (ZBI) • State-Trait Anxiety Inventory (STAI) • Inventory of Complicated Grief (ICG) • Perceived Stress Scale (PSS) • SF12 Health Survey (SF 12) • Kentucky Inventory of Mindfulness Skills (KIMS) Measurement timing: Baseline, 8 wks, and 4 wks f/u. KIMS and CESD also done at 4 wk mark. Qualitative comments written	10

								each class.

Results
CES-D: Baseline 16.6 (12.9), effect size 0.29 during active tx but returned to pre-tx levels at 12wks.
ZBI: effect size 0.63 at 12 wks, p=0.007 reduction in burden at 12 wks
STAI: no stat sig repeated measures; PSS, SF-12, ICG: not stat sig. KIMS: overall score not state sig
Qualitative: compassion & forgiveness exercise most helpful.

Fisher[45] 2001 Canada	pre-post	Alzheimer's' or Alzheimer's'-related dementia pts in community	Family caregivers providing>2hrs care/day to family member	36	6 wks of sessions, manual and classical music tape for home practice. Content:. Stress management and relaxation training. Deep breathing, Benson & McKee full relaxation response, guided imagery, Jacobson's progressive muscle relaxation.	N/A	Instruments • Memory and Behavior Problem Checklist (modified to create self-efficacy scale) Measurement timing: Baseline and at 6 wks	9

Results
Behavior Problem Part A: No stat sig decrease in incidence.
Self-Efficacy Part B: Mean self-efficacy pre-tx 3.38 (SD 0.66), post-tx 3.60, (SD 0.63), p=0.025

Hoppes[29] 2012 USA	pre-post	Dementia patients	Family caregivers	11	4 wks (1 hr session/wk) Content: Intentional breathing, visualizing an inner safe harbor, walking meditation,walking without a goal meditation.	N/A	Instruments • Bedard Burden Interview • Snyder State Hope Scale • Life-Orientation Test • Freiburg Mindfulness Inventory Qualitative Interviews Measurement timing: Baseline, end of session 4 and at 1 month follow-up. Qualitative interviews: at 1 month follow-up.	7

Results
Burden: Pre-tx mean: 34.2, SD:6.23, Post-tx mean 27.8, SD 6.61, 1 month: 30.70 SD 7.53, p<0.01.
Self-Efficacy/Hope: Pre-tx 14.6 SD 3.5, Post-tx 17.10, SD 3.7, 1 month 17.8 SD 4.34. p<0.01. Correlation among variables at 1 month follow up: hope, mindfulness, and optimism all strongly negatively correlated to burden.
Mindfulness: Not stat sig change. Optimisim: not stat sig change.
Qualitative: themes: increased acceptance increased sense of presence, increased sense of peace/calm, decreased reactivity to difficult behaviors of family members

Innes[40] 2012 USA	pre-post	Community-dwelling adults w/mild cognitive impairment or	Live-in caregiving relative	12 (6 dyads of caregivers and their	8wks (30-45min in-person yogic meditation training, then 11min 2x/day practice at home with CD of guided meditation, cues and ocean	N/A	Instruments • Perceived Stress Scale (PSS) • Profile of Mood States (PoMS)	11

		Alzheimers' dementia		family member receiving care).	sounds, Content: Kirtan-Kriya yogic meditation (finger movements, mantra)		• Positive & Negative Affect Scale (PANAS) • Dispositional Resilience Scale (DRS) • General Sleep Disturbance Scale (GSD) • Self-Compassion Scale (SCS) • Memory Functioning Questionnaire Treatment (MFS) Heart Rate Blood Pressure (BP) Measurement timing: Baseline and at 8 wks	

Results

Tx effects did not vary by grp - pooled for analysis

PSS: 17.3+/-2.1 to 11.8+/-1.4 (p=0.03); POMS depression subscale: 9.4+/-2.2 to 5.7+/-1.2 (p=0.01)

GSD: 32.9+/-5.8 to 26.9+/-3.8 (p=0.02); MFS retrospective memory subscale: 10.8+/-1.8 to17.1+/-2.5 (p=0.04)

PANAS, DRS*, SCS*: no stat sig change; Systolic BP: 128.2+/-4.0 to 121.8+/-4 (p= 0.004)

*incompletely reported, not included in meta-analysis

Lavretsky[37] 2012 USA	RCT	Dementia patients	Family caregivers identified as primary source of assistance, in contact w/pt >3 days/wk	49	8 wks (practicing 12min/day at home using meditation CD). Content: Kirtan Kriya yoga practice (finger movements, mantra, silence, deep breathing, light visualization).	8 wks (12 min/day at home using instrumental music on CD). Content: relaxation -listen to music in quiet place w/eyes closed.	Instruments • SF 36 Health Survey (SF 36) • Hamilton Rating Scale for Depression (HAM-D) • Energy • Cumulative Illness Rating scale • Mini Mental State Exam • California Verbal Learning Test II - Trail Making A & B Telomere extraction from peripheral blood mononuclear cells Measurement timing: Baseline and at 8 wks.	13

Results

SF MCS 36: Meditation grp: 52.2% grp had response vs Relax grp: 18.7% responded p=0.02.

HAM-D: Meditation grp: 65.2% responded vs Relax: 31.2% responded p=0.03.

Energy: Meditation group increase score increase 19.6 (SD 20.6) vs Relax 5.0 (SD 16.7), p=0.01

Cognition: MMSE total change Meditation grp: 0.2(SD 0.7) vs Relax :-0.9(SD 1.2) p=0.0003

Trails B: Meditation grp -11.2(19.7) vs Relax: 9.9(30.5) p=0.005.

Telomerase activity: 43.3% increase in Meditation grp vs 3.7% increase in Relax grp. p=0.05. Increased telomere activity correlated with: decreased depression r=-0.33p=0.05 and mental health score (SF-36) (r=0.44,p=0.01) in the entire sample. Increased telomere activity sig assoc w/improved mental health score in meditation sample only r=0.59 p=0.01

Lengacher[30] 2012 USA	pre-post	Community-dwelling advanced	Family caregiver at home or	26 dyads of pt and caregiver	6 wks (Wk 1,3,6: in person class – 2 hr session for Wk 6. Wk 2,4,5: at home using	N/A	Instruments • Perceived Stress Scale	10

		cancer patients (Stage III-IV breast, lung, colon or prostate ca post-surgery & on radiation therapy/chemotherapy)	assisting w/ appointments		CDs). Practice 15-45min/day informally and 15-45min/day formally, 6 days/wk. Content: Sitting/walking meditation, body scan, yoga. Given practice, examples, manual of poses, exercises and homework. Asked to log work.		(PSS) • Center for Epidemiology Studies Depression (CES-D) • State-Trait Anxiety Inventory (STAI) • Memorial Symptom Assessment Scale Medical (MSAS) • Outcomes Studies Short Form General Health Survey Salivary Cortisol and IL-6 collected btw 10am-noon Measurement timing: at baseline and post 6 wk intervention. Cortisol and IL-6 saliva sample collected btw 10am and noon.	

Results

5 pts, 2 caregivers on steroids- 3 included in immune analysis. Only 10 dyads did immune analysis as was added after 17 dyads already enrolled.
Stat sig *caregivers* results:
MSAS psych scale: 4.1(2.6) pre-tx to 3.5(2.4) (p=0.04)
Other caregiver scales not stat sig.
Stat sig results for pts:
PSS: 19.5+/-7.1 pre-tx to 16.8+/-6 (p=0.04) STAI 42.7+/-12.6 to 39.3+/-10.2 (p=0.05)
MSAS: total score 3.6(1.8) to 2.9(1.5) (p=0.006), global score 3.1(1.8) to 2.4(1.6) (p0.01), physical 4(2) to 2.1(1.9) (p0.02), psych score4.6(2.9) to 3.7(2.4)(p0.02)
Cortisol pts wk 1 change p=0.042, carer wk 1 p=0.05, caregivers wk 3 p=0.029 Overall cortisol levels about 50% reduction btw wk 1 and wk 6
IL-6: carers post-tx change at wk 1 p=0.029,pts wk 3 p=0.033, pts wk 6 p=0.02, lower levels at wk6 vs wk 1 overall

| Minor[22] 2006 Canada | pre-post | Children w/chronic illness. | Family caregivers of children attending hospital-based clinics. | 44 | 8 wks(2hr session/wk). Fnal session: 1hr 45min meditation and debriefing.

Content
Sitting/walking meditation, yoga, body scan, guided imagery. Given program manual, mindful parenting manual, 2 CDs of above material. Homework: 45 min practice, 6 days/wk. | N/A | Instruments
• Symptoms of Stress Inventory (SoSI),
  - Depression subscale
  - Anxiety subscale
• Profile of Mood States (PoMS)

Measurement timing:
Baseline and after 8th session | 8 |

Results

SOSI total stress score decreased 32% p<0.001, stat sig diffs in all subscales p<0.001.
Depression subscale decreased, p<.001, Anxiety subscale decreased, p<.001
POMS total mood disturbance score 56% reduction p<0.001 and stat sig diffs in all subscales.

Oken [32] 2010 USA	RCT	Dementia patients	Family caregivers providing >12hrs/wk of care to relative w/dementia	31	Meditation grp (MBCT): 7 wks (90 min session/wk x 6 wks plus wk 1 overview of dementia and information on developing action plans) Content: Instruction re: stress, relaxation, meditation, problem solving in applying principles. Included seated meditation, body awareness, breathing space. Education grp (PCT): 7 wks (6 wkly classes and wk 1 overview of dementia and action plan development). Content: Based on Powerful Tools for Caregivers curriculum: self care, communicating needs for carer and pt, caregiver decisions. Homework: reading from Caregiver Handbook, completing action plans.	Respite: provided respite care 3hrs/wk x 7 wks.	Instruments • Revised Memory and Behavior problems Checklist (RMBC) • Caregiver Appraisal Tool Centre for Epidemiology Studies Depression (CES-D) Scale • General Perceived Self-Efficacy Scale (PSS) • Pittsburgh Sleep Quality Index Epworth Sleep Questionnaire • Global Impression of Change Scale • Neuropsychiatric Inventory of reported pt behavior • Coping Responses Inventory • Mindful Attention Awareness Salivary cortisol Interleukin 6 (IL6) Tumor Necrosis Factor (TNF) C reactive protein Measurement timing: within 3 weeks of start and end of classes. Cortisol: upon waking, 30min after eating, and bedtime (10-11pm).	14
	Results RMBC reaction score stat sig diff btw 3 grps p=0.03. Post-tx RMBC scores higher in respite grp than MBCT grp p=0.041 or PCT grp p=0.839. Confidence scores stat sig diff btw grps p=0.026, lower for respite than MBCT p=0.010, diff btw MBCT and PCT post-tx p=0.036. PSS: decline in intervention group, increase in education and respite control groups, p.332 CES-D: decrease in intervention group, decrease in education control, and increase in respite control group, p=.705 Cortisol, IL-6, TNF, CRP, other scales: no significant differences.							

Pomykala[38]
2012
USA
	RCT	Dementia patients attending geri-psych / memory clinic.	Primary family caregiver, seeing pt >3x/week	10	8 wks (12min/day) with baseline session with instruction then using CD
					
					Content:
					Chanting meditation (Kundalini yoga) with initial. All participants received info on caregiver health, dementia course and prognosis (meditation and relaxation groups).
						Relaxation group: 8 wks (12min/day)
						
						Content:
						relax in quiet place w/eyes closed while listening to provided instrumental music CD.
							Instruments
							• SF 36 Health Survey
							  ▪ Mental Component Score (MCS)
							  ▪ Physical Component Score (PCS)
							• Hamilton Rating Score for Depression (HAM-D)
							• Caregiver Burden
							• Mini-Mental Status Exam (MMSE)
							
							PET scan to measure resting metabolism/3D CT Head for reconstruction and attenuation correction
							
							Measurement timing:
							baseline and at 8 weeks.
								13

Results

9 caregivers completed intervention and were analyzed.

SF36: PCS 36 declines in intervention and control groups; MCS 36 increased in intervention group greater than control group

HAM-D decline in intervention and control groups

Caregiver Burden declines in intervention and control group

PET: Meditation grp: decreased metabolism over time in R inferior frontal cortex t=4.438 p=.021 Relaxation: increased metabolism over time t=2.88,p=0.046, sig diff btw grps: t= 4.74 p=0.001. R post cingulate cortex had 2nd biggest sig diff btw grps t=3.98, p=0.002, decreased metabolism in meditators. L associative visual cortex decreased metabolism in meditators t=4.15, p= 0.002 though analysis not a priori. Increasing metabolism in meditators & stat sig diff btw grps for L sup frontal cortex t= 5.37, p=0.001

van Puymbroeck[23] 2010 USA	controlled trial	Adult patient	Informal caregivers to an adult patient.	18	8 wks (2hr session/wk with 4 hr retreat at wk 6). Practice at home 30min, 3x/wk with CD/audiotape. Content: Quiet meditation, weekly discussion topic (communication styles, assertiveness skills) and technique: sitting meditation, stretching, deep breathing, body scan, practicing being present, then guided imagery or silent meditation.	Mall Walking: 8 wks, 1 session/wk (20min sessions increasing to 60 min sessions). Content Weekly educational article re: exercise, discussed next session. Recorded home practice-15min to 45 min /day	Instruments • Center of Epidemiological Studies Depression Scale (CES-D) • State Trait Anxiety Inventory (STAI) • Sense of Competence Questionnaire (SCQ) • Caregiver Burden • Satisfaction with Life Scale (SWLS) • Sense of Coherence Measurement timing: Baseline and at 8 weeks:	15

Results

12 of the 18 participants completed wk 8 survey - only their data included in results. Caregivers who completed study were sig older t=-2.188 p<0.05 and gave more hrs/day of care than those who dropped out t=-3.146 p<0.05

CES-D: less depressive symptoms at T2 for MBSR vs MW t=-2.508 p<0.05

STAI Mean score higher in control grp at T1 t=3.827,p<0.05. control grp state anxiety increased over 8 wks t=-2.94 p<0.05. Attrition grp had sig higher state anxiety than those who completed study M=45.5 vs M=28.63 t=-3.618 p<0.05. No sig diffs from T1 to T2 in MBSR group but differed from MW grp at T2: less

	state anxiety t=-2.52 p<0.05 at 8 wks SCQ Caregiver Burden: declined in intervention group, increased in control group SOC self-efficacy: At T2 MBSR scores higher t=-3.83 p<0.05. SWLS: MBSR grp: increased from average to high, MW: decreased to slightly below average, though neither change was stat sig).							

Waelde[34]
2004
USA
	pre-post	Community-based dementia patients (MMSE<23)	Female Caucasian or Latina family caregivers, providing >4hr/day for dementia pt w/dementia	14	6 sessions (5 sessionsx90 min & 1 session x3hrs). Practice 30min/day, 6 days/wk with cassettes, home manual.
					
					Content: meditation, hatha yoga, guided imagery. Discussion of applying techniques to stressful care situations.
						N/A	Instruments
							• Centre for Epidemiologic Studies Depression Scale (CES-D)
							• Revised Scale for Caregiver Self-Efficacy
							• State Trait Anxiety Inventory (STAI)
							• Revised Memory & Behavior Problem Checklist
							  - Caregiver Burden
							  - Caregiver Self-Efficacy
							
							Measurement timing:
							1 wk pre-intervention and 1 month post
								8

	Results Large tx effect size(>0.8) for depression, medium(>0.5) for anxiety, self-efficacy. CES-D: 23.5(17.78) to 18.50(17.05) (p<0.01) STAI 24.75(7.16) to 21.08(7.39)(p<0.05) RSCSE: 61.38 (22.35) to 74.29(10.68) (p<0.05) RMBPC Caregiver Burden: decreased after meditation intervention RMBPC Caregiver Self-Efficacy: decreased after meditation intervention F/U Questionnaire: 70% felt better at 1month Extended baseline assessments-data available for 8 pts from 2 years pre-intervention showed stat sig increase in # of caregiving problems before tx (5(1.41) to 13.88(7.79) p<0.01.Tx adherence assoc w/change in depression score p<0.02, session attendance correlates w/weekly practice time p=0.009							
Whitebird[25] 2012 USA	RCT	Community-dwelling dementia pt	Primary family caregiver to dementia pt, score>5/10 on perceived stress scale	78	8 wks (2.5 hr wkly sessions, 1 wellness retreat x 5 hrs). Content: Sitting, walking meditation, body scan, Hatha yoga and stretching exercises. Given CDs for home and written material.	8 wks (2.5 hr wkly sessions, 1 wellness retreat x 5 hrs). Content: Community Caregiver Education and Social Support (CCES): info on self care, grief, loss, dementia, legal/financial issues, communication, community resources.	Instruments • Perceived Stress Scale (PSS) • Centre for Epidemiologic Studies Depression Scale (CESD) • State Trait Anxiety Inventory (STAI) • Short Form-12 Health Survey (MCS-12) • Caregiver Burden: Montgomery Borgatta Caregiver Burden Scale, Study Social Support Survey Measurement timing: Surveys at orientation, post-intervention (2 months) and 6 months later.	17
	Results MCS: at 2 months: MBS had stat sig better mental health scores and maintained the improvement: 36.6 baseline to 47.4 @ 2months to 49.7 at 6 months,							

p=0.007. CCES scores: 40.04 baseline, 40.8 at 2 months and 44.6 at 6 month. Sig diff btw the grps at 6 months p=-0.04.

PSS: At 2 months MBSR had lower stress scores vs CCES (15.2 vs 19.3 CCES) p=0.007

CES-D: MBSR at 2months: 10.6 vs 17.1 for CESS p=0.005. At 6 months the grps were not stat sig diff from each other.

For all other outcomes, no sig diffs btw grps at 2 months or 6 months.

eTable 2. Main Results Table, Health Professionals

Reference	Study Design	Caregiver's service population	Caregiver population	# Enrolled	Intervention	Control Group	Outcomes (including measurement instruments and timing)	Study Quality Score (Downs and Black Criteria[13])
Brady[18] 2011 USA	Pre-post	Inpatient behavioral health unit	Behavioral health staff	23	4 wk mindfulness program (1 hour/week class x 4weeks, plus 30 minutes/day at home practice with CD.) Content: Sitting, walking and lying meditation instruction; attention to breath; mindful eating; total body relaxation; incorporation into work.	N/A	Instruments • Mental Health Professionals Stress Scale (MHPSS) • Toronto Mindfulness Scale (TMS) • Sense of Self Scale (SOSS) • Maslach Burnout Inventory for Human Services (MBI) • Patient Satisfaction Survey (PSS) Patient safety events Measurement timing: 3 months before and 3 months after intervention	10
	Results MHPSS: decreased after class (M 53,63,SD 18.27) and post-intervention (M39.56, SD 20.63) t(15) 3.89,p<0.01. MBI: no sig diff for depersonalization, emotional exhaustion or personal accomplishment TMS: mindfulness score stat sig increase M 25.50, SD 10.75 vs M 32.75, SD 11.19, t(15) 3.14, p<0.01 post-tx. SOSS: Stat sig increases on self acceptance, sense of what is possible, responsibility to care for own health, and total SOSS score (189.63, SD 31.09 to 206.44, SD 29.91 p<0.02). PSS: Pt satisfaction w/RNs increased 4.62% 3 months post MBSR. Satisfaction w/psychiatrists decreased (1/6 participated), other staff increased 6% - largest quarterly increase of the year Thematic analysis: value of class: connecting to self, awareness of need to improve self-care								
Cohen-Katz[19] 2005 USA	Controlled Trial	Community hospital	Nurses	27	8 week MBSR program (2.5 hrs/wk with one 6 hour retreat and daily practice homework with audiotape). Content: communication skills, stress-reactivity, self-compassion and experiential exercises.	Waitlist	Instruments • Maslach Burnout Inventory (MBI) • Brief Symptom Inventory (BSI) • Mindfulness Attention and Awareness Scale (MAAS) Measurement timing: Before intervention, post-intervention & 3 months post-intervention.	9
	Results MBI: *emotional exhaustion:* stat sig greater reduction for tx group p=0.05; *personal accomplishment*: stat sig greater increase for tx group p=0.014 MBSR within grp analysis: stat sig decrease in emotional exhaustion btw T1 and T2, p=0.001 and T3 p=0.01. BSI: # of pts w/elevated distress decreased in MBSR and control group. MAAS: stat sig diff btw grp means post-tx: p=0.001. Stat sig change btw pre and post-tx for MBSR group p=0.004, and btw pre and 3 months post-tx p=0.002								

Cutshall[44] 2011 USA	Pre-post	Critically ill hospitalized patients	Registered Nurses	11	4 wks (30 min session, 4x/wk) Content: Healing Rhythms Meditation Program for computer use: 15 steps – quiet the mind, observe thoughts, open yourself to others, etc, with each step taking 20min to learn.	N/A	Instruments • Short Form 36 (SF 36) Vitality Subscale • State Trait Anxiety Inventory (STAI) • Linear Analogue Self Assessment (LASA) Measurement timing: baseline and 4 weeks	11
	Results All 4 scales showed stat sig improvement SF 36 vitality subscale diff in mean 0.65 SD 0.87 p=0.04 STAI -0.41 SD 0.52 p=0.03 LASA anxiety diff in mean 2.27 SD 2.49 p=-0.01; LASA stress diff in mean -2.09 SD 2.39 p=0.01							

Goodman[21] 2012 USA	Pre-post	University medical centre	physicians, nurses, psychologists, social workers	93	8 wk MBSR (2.5 hrs/wk and 7 hr silent retreat). Homework: practice 45min/day, 6 days/wk)
					
					Content: Body scan, mindful movement, sitting/walking meditation. Mindfulness overview, application to life/challenging situations, mindful communication, compassion meditation, practicing appreciation.
						N/A	Instruments
							• Maslach Burnout Inventory (MBI)
							• Short Form 12 (SF 12)
							  o Mental Component Score
							  o Physical Component Score
							
							Measurement timing: Completed at first and last class
								8

	Results MBI: Stat sig improvement for all HCPs on all subscales. Stat sig diff btw MD improvement (6.9) vs other HCPs (2.9) on emotional exhaustion score, p=0.016. Emotional exhaustion subscale: for MDs: pre 28.1 SD 9.8, post 21.3 SD 8.8, p <0.001, other HCPs: 21.7 SD 10.2 pre, post 18.8 SD 9.4, p=0.028, depersonalization: for MDs: pre: 9.2 SD 6.0, post 6.7 SD 5.3 p=0.001, other HCP: pre 5.0 SD 3.8, post 4.0 SD 3.6 p=0.039, Personal accomplishment for MDs: pre: 37.7 SD 5.8, post 41.0 SD 5.1 p<0.001, other HCPs: 38.4 SD 6.1, post 41.0 SD 5.7 p<0.001 SF12 (MCS) physicians: pre 40.9 SD 8,8 post 48.5 SD 6.1 p<0.001; Others: pre 43.8 SD 9.3, post 50.0 SD 6.1 p<0.001 SF12 (PCS) physicians: pre 58.5 SD 6.8 pst 57.6 SD 4.2, p .28; Others: pre 26.0 SD 5.5 post 55.9 SD 3.9, p=0.88							

Krasner[31] 2009 USA	pre-post	Primary care	Physicians	70	8 wk MBSR (2.5 hrs/wk and 7 hr session btw 6th and 7th wk) Maintenance phase: 2.5 hr session each month x 10 months after the 8th session. Content: preventing burnout, awareness of thoughts, reflecting on practice experiences. The 7 hr session: guided silent meditation. Other techniques: body scan, sitting/walking meditation, mindful movement (yoga type exercises).	N/A	Instruments • 2 Factor Mindfulness Scale • Maslach Burnout Inventory (MBI) • Jefferson Scale of Physician Empathy • Physician Belief Scale (PBS) • Mini-markers of Big Five Factor Structure Personality Scale • Profile of Moods States (PoMS) o Depression subscale Measurement timing: Baseline, pre-intervention, 8 weeks, 12 months, 15 months	16

Results
MBI: all subscales-moderate improvements effect sizes at 8 weeks, 12 months, and 15 months (all p<.05), except depersonalization NS at 8 weeks
Empathy: increased at 8 weeks, 12 months, and 15 months (all p < .001)
PBS: increased at 8 weeks, 12 months, and 15 months (all p < .001)
PoMS: depression improved at 8 weeks, 12 months, and 15 months (p=.06 at 8 weeks, others p < .001)
Overall mood disturbance improved at 8 weeks, 12 months, and 15 months (all p<0.001)
Mindfulness: largest effect sizes at 15 months for: total score, observe and nonreact: p<0.001. Correlate w/decrease in total mood disturbance p<0.001: decreased tension, depression, fatigue subscales. Moderate correlate w/decrease in emotional exhaustion p<0.001. Emotional stability, accomplishment, conscientiousness: p<0.001.

Mackenzie[26] 2006 USA	Controlled Trial	Geriatric teaching hospital: LTC and complex continuing care units	Nurses & nurses aides	30	4 wks (30 min/wk) didactic and experiential exercises. Content: mindful eating, stretch, sitting with awareness of thoughts, body scan. Homework: CD to practice 10min/day, 5 days/wk, a manual summarizing key points and assignments.	waitlist	Instruments • Maslach Burnout Inventory (MBI) • Smith Relaxation Dispositions Inventory • Job Satisfaction Scale (JSS) • Satisfaction with Life Scale (SwLS) • Antonovsky's Orientation to Life Questionnaire Measurement timing: Before and after 4 week intervention.	14

Results
MBI: MBSR exhaustion decreased, control increased: stat sig grp x time intervention 4.96 p<0.05. Depersonalization: stable for MBSR, stat sig increase for control: grp x time interaction 4.88 p<0.05.
JSS: MBSR stat sig & higher vs control pre and post: 10.10 p=0.004. Coherence: sig effect of time for both grps p-0.004
SwLS: sig MBSR increase, F=7.07, p<0.01

Oman 2006[41] 2008[42] 2010[43] USA	Controlled Trial	2 Colorado hospitals	Nurses, MDs, PTs, OTs, chaplains, psych counselors	61	8 wks (2hrs/wk) Eight Point Program adaptation. Content: Passage meditation, mantra repetition, focused attention, training the senses, putting others first, inspirational reading. Non-sectarian, spiritually focused. 2 Esawaran texts for recommended reading and meditation passages	waitlist	Instruments: • Relational Caregiving Self-Efficacy Scale (RCSES) • Maslach Burnout Inventory (MBI) • Global Measure of Perceived Empathy • Multidimensional Measurement of Religiousness & Spirituality • Assessment of Altruism and Correlate • Given Love Scale Marlowe-Crown Scale • Perceived Stress Scale (PSS) • Daily Spiritual Experience Scale Qualitative semi-structured interviews w/13 tx pts, 11 controls Measurement timing: Registration Exam 1, 8 wks (last session): Exam 2 8 wks later: Exam 3 19 wks later: Exam 4	16
	Results RCSES: Mean self-efficacy gain in tx grp 0.84, control grp 0.45: 50% of tx grp PSS: decreased after intervention, p<.01 MBI: all subscales no statistically significant change Given Love and sense of compassion correlate w/self-efficacy p<0.05. Stat sig tx effects p<0.50 at all post-tx assessments. Tx effect at Exam 2: 0.38 larger vs control, 0.47 at 8 wk f/u, 0.37 at 19 wk f/u - medium-size effects. Altruistic actions/empathy tx effects not constant over time p<0.05. Altrium: no sig diff from exam 2 to 3 but dropped from exam 3 to 4 p=0.001. Empathy increased sig from 2 to 3 p=0.03 but not from 3 to 4. Qualitative: Caregiver disposition -increased understanding, ability to be respectful w/patients. Expanded self-efficacy across all areas of life, more productive at work								
Pipe[27] 2009 USA	Controlled Trial	US health care system	Nurses	33	5 sessions x2 hrs ea. Content: didactic and experiential, nursing-specific examples. Homework: 30 min/day of practice	5 sessions x 2 hrs, facilitated 'attention-control' (Advanced principles of stress & leadership strategies)	Instruments: • Symptom Checklist 90-Revised ▪ Depression subscale ▪ Anxiety subscale • Global Severity Index (GSI) • Positive Symptom Distress Index (PSDI) • Caring Efficacy Scale (CES) Measurement timing: baseline and 4 weeks	18
	Results Symptom Checklist: Depression and anxiety stat sig improvement in intervention group, p<0.05 PSDI: sd p<0.05 for tx grp. Control grp: stat sig improvement for CES but less than tx grp. Caregiver Efficacy Scale: p<0.05 for tx grp. Control grp: stat sig improvement for CES but less than tx grp.								

	GSI: Change from baseline btw groups: tx grp stat sig greater improvement vs control							
Poulin[28] 2008 USA	Controlled Trial	Geriatric hospital	Nurses, nurses aides	40	4 sessions x 30min ea Content: brief MBSR: obstacles to practice, incorporation into daily life, mindfulness. Bodyscan, sitting meditation, 3 min breathing for acute stress. Homework: CD and handouts, practice 15-20min/day	4 sessions x 30min ea. Content: Brief Image and Progressive Muscle Relaxation: impact of stress, imagery, abdominal breathing, progressive muscle relaxation 3 min breathing for calming. 3rd grp: waitlist control	Instruments: • Maslach Burnout Inventory (MBI) • Satisfaction with Life Scale (SwLS) • Smith Disposition Inventory (SDI) Measurement timing: Baseline and after 4th session	12

Results
MBI: No sig grp by time interactions on any subscales, but moderate effect size for bMBSR grp on EE subscale: sig higher EE vs other grps pre-intervention but improved to level of other grps post-test F=2.17, np^2=0.1.
SDI: Stat sig grp by time, large effect size for bMBSR pre: 35.3(8.9), post: 43.6(9.3) and bIPMR pre: 38.1(7.0) post: 50.3(11.8) vs control pre: 42.9(10), post: 41(11.4) F=4.12, np^2=0.2.
SWLS: stat sig grp by time, large effect size for bMBSR pre: 22.8(6.6) post: 26(5) and bIPMR pre: 21.1(6.5) post: 25.1(7.2) vs control pre:26.9(6.1) post:26.4(6.2) F=3. 96 np^2-0.18

Schenstrom[33] 2006 Sweden	pre-post	Primary Care staff	MDs, RNs, PTs, OTs, SW	52	7 days of teaching, 2-4 wk interval btw sessions. Total of 50 hours of teaching. Content: Mindfulness training w/lectures and cognitive attitude exercises. Homework: booklet w/exercises for weekly practice, CD of guided formal meditation - body scan, sitting meditation, yoga.	N/A	Instruments: • Mindfulness Attention and Awareness Scale (MAAS) • WHO 5 Well-Being Questionnaire Visual Analogue Scales measuring perceived stress at work/outside of work x 7 days. Measurement timing: Pre and post intervention and 3 months later.	11

Results
MAAS: stat sig increase post-tx, p=0.02, persisted 3 months post-tx, p = 0.015.
WHO 5: Stat sig increase in subjective well-being post-tx and 3 months post, both p=0.001.
Stress in workplace: Decreased post-tx, p=0.01 and persisted 3 months later p=0.001.

Severtsen[15] 1986 USA	pre-post	Collegiate nursing program	Nursing students	10	1 session instruction, home practice x 7 wks. <u>Content:</u> mantra meditation practiced in session x 5 min. Discussion of common problems of new meditators. Written instructions for practice at home. Homework: practice 15-20min/day x 7 wks.	1 session, home practice x 7 wks. <u>Content:</u> importance of aerobic exercise, appropriate heart rate during it. Practice 15-20min/day x7 wks	<u>Instruments:</u> • Holmes-Rahe Social Readjustment Rating Scale (HRSRS) • Stanford University Stress Level Test (SUSLT) Baseline 15min EEG - First half of EEG w/eyes open, second half w/eyes closed. <u>Measurement timing:</u> Baseline and end of 7 weeks	6
	Results <u>HRSRS:</u> all scores higher post-tx for exercise grp <u>SUSLT:</u> no stat sig change, meditation grp had lower stress vs exercise grp pre-tx <u>EEG:</u> No stat sig diff pre-post in either group for proportion of alpha and beta waves							
Shapiro[24] 2005 USA	Controlled Trial	VA Health System	MDs, nurses, SWs, PTs, psychologists	38	8 weeks (2hrs/wk). <u>Content:</u> Teaching around sitting meditation, body scan, hatha yoga, 3 min breathing space, loving kindness meditation.	waitlist	<u>Instruments:</u> • Brief Symptom Inventory for Psychological Distress (BSI) • Maslach Burnout Inventory (MBI) • Perceived Stress Scale (PSS) • Satisfaction with Life Scale (SwLS) • Self-Compassion Scale (SCS)	12
	Results Not intention to treat: 8/18 dropped out of tx grp, 2/20 left control. <u>PSS:</u> Significant diff btw grps: p=0.04. Tx grp had sig mean decrease in perceived stress: 27% vs control 7% <u>SCS:</u> sig diff btw grps p=0.004. Tx grp increased in self-compassion 22% vs 3% control. <u>SwLS, MBI, BSI:</u> No stat sig diff btw grps							