REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

Review of literature in the relevant field enables the researcher to develop better understanding of the problem related to respective research area. Polit and Hungler (2001) state that the term “literature review” is often used to cover both; the process of searching for relevant literature and the critical reporting of the literature.

A literature review is usually a critic of the status of knowledge on a carefully defined research topic; it enables the researcher to acquaint himself with current knowledge in the research area. It warms the research not to select unworthy, unfaithful problem areas. It also helps the researcher to avoid unintentional duplication of well established theories. Until we have learnt what others have done and what still remains to be done in our area. The review is not only a mere collection of thoughts in publication of journals and books, but it is a launching pad to understand the research gap to bridge the research area in the right perspective.

The review of literature enables the researcher to

- Justify the research question, theoretical or conceptual framework.
- Establish the importance of the research area.
- Provide background information related to the topic.
- Select promising methods and measures.
- Up-to-date knowledge in the respective field.
- A sound knowledge of the process, tools and techniques adopted by the researcher.

With this background, the researcher presents a detailed review of works reported in various sources on Mindfulness Meditation therapy in the field of Yoga and Meditation
therapy. The review of related literature refreshes the researcher’s ideas, regarding the problem of own and helps her in the whole process of research.

The literature reviewed on the present study has been classified into categories such as Anxiety, Stress, Depression and Academic achievement on Mindfulness meditation. The researcher scanned some studies related to Academic achievement with Anxiety, Stress and depression and organized the abstracts of them are given below.

FIG -2. 1
AN EMPIRICAL VIEW OF REVIEW OF RELATED LITERATURE
2.2 STUDIES ON MINDFULNESS MEDITATION

Bowen S, Marlatt GA. 2005 studied on Spirituality, mindfulness and substance abuse. A growing body of research suggests that mindfulness-based therapies may be effective in treating a variety of disorders including stress, chronic pain, depression and anxiety. However, there are few valid and reliable measures of mindfulness. Furthermore, mindfulness is often thought to be related to spirituality, given its roots in Buddhist tradition, but empirical studies on this relationship are difficult to find. The present study: (1) tested the reliability and validity of a new mindfulness measure, the Freiburg Mindfulness Inventory (FMI), (2) explored the relationship between mindfulness and spirituality, and (3) investigated the relationship between mindfulness and/or spirituality and alcohol and tobacco use in an undergraduate college population (N=196). The Results of the study supported that the reliability of the FMI and suggested that spirituality and mindfulness may be separate constructs. In addition, smoking and frequent binge-drinking were negatively correlated with spirituality scores; as spirituality scores increased the use of alcohol and tobacco decreased. Thus, spirituality may be related to decreased substance use. In contrast, a positive relationship between mindfulness and smoking/frequent binge-drinking behavior was uncovered, and warrants further investigation.

Fan M, Posner MI. 2007 studied on Short-term meditation training improves attention and self-regulation. Recent studies suggest that months to years of intensive and systematic meditation training can improve attention. However, the lengthy training required has made it difficult to use random assignment of participants to conditions to confirm these findings. This article shows that a group randomly assigned to 5 days of meditation practice with the integrative body-mind training method shows significantly better attention and control of stress than a similarly chosen control group given
relaxation training. The training method comes from traditional Chinese medicine and incorporates aspects of other meditation and mindfulness training. Compared with the control group, the experimental group of 40 undergraduate Chinese students given 5 days of 20-min integrative training showed greater improvement in conflict scores on the Attention Network Test, lower anxiety, depression, anger, and fatigue, and higher vigor on the Profile of Mood States scale, a significant decrease in stress-related cortisol, and an increase in immunoreactivity. The results of the study provided that the convenient method for studying the influence of meditation training by using experimental and control methods similar to those used to test drugs or other interventions.

**Cuellar NG. 2008** studied on Mindfulness meditation for veterans---implications for occupational health providers. Mindfulness meditation (MfM) is a mind-body therapy identified by the National Center for Complementary and Alternative Medicine. Initially taught in a formal classroom setting, MfM is a sustainable intervention with minimal costs that can be used over time. For veterans, after mastery, this technique shows promise in improving health outcomes and quality of life. This article describes MfM, discusses the conceptual framework and evidence-based research for MfM, and identifies the implications of MfM use by health care providers who are caring for war veterans.

**Gordon NS, Goolkasian P.2008** studied on Mindfulness-based cognitive therapy for generalized anxiety disorder while cognitive behavior therapy has been found to be effective in the treatment of generalized anxiety disorder (GAD), a significant percentage of patients struggle with residual symptoms. There is some conceptual basis for suggesting that cultivation of mindfulness may be helpful for people with GAD. Mindfulness-based cognitive therapy (MBCT) is a group treatment derived from mindfulness-based stress reduction (MBSR) developed by Jon Kabat-Zinn and colleagues. MBSR uses training in mindfulness meditation as the core of the program.
Eligible subjects recruited to a major academic medical center participated in the group MBCT course and completed measures of anxiety, worry, depressive symptoms, mood states and mindful awareness in everyday life at baseline and end of treatment. The results of the study examined that the Eleven subjects (six female and five male) with a mean age of 49 (range = 36–72) met criteria and completed the study. There were significant reductions in anxiety and depressive symptoms from baseline to end of treatment. The study concluded that the MBCT may be an acceptable and potentially effective treatment for reducing anxiety and mood symptoms and increasing awareness of everyday experiences in patients with GAD. Future directions include development of a randomized clinical trial of MBCT for GAD.

**Folkman S, Blackburn E. 2009** studied on Can meditation slow rate of cellular aging related to Cognitive stress, mindfulness, and telomeres. Understanding the malleable determinants of cellular aging is critical to understanding human longevity. Telomeres may provide a pathway for exploring this question. Telomeres are the protective caps at the ends of chromosomes. The length of telomeres offers insight into mitotic cell and possibly organismal longevity. Telomere length has now been linked to chronic stress exposure and depression. This raises the question of mechanism: How might cellular aging be modulated by psychological functioning? We consider two psychological processes or states that are in opposition to one another-threat cognition and mindfulness-and their effects on cellular aging. Psychological stress cognitions, particularly appraisals of threat and ruminative thoughts, can lead to prolonged states of reactivity. In contrast, mindfulness meditation techniques appear to shift cognitive appraisals from threat to challenge, decrease ruminative thought, and reduce stress arousal. Mindfulness may also directly increase positive arousal states. We review data linking telomere length to cognitive stress and stress arousal and present new data linking
cognitive appraisal to telomere length. Given the pattern of associations revealed so far, we propose that some forms of meditation may have salutary effects on telomere length by reducing cognitive stress and stress arousal and increasing positive states of mind and hormonal factors that may promote telomere maintenance. Aspects of this model are currently being tested in ongoing trials of mindfulness meditation.

Chiesa A, Serretti A. 2010 studied on systematic review of neurobiological and clinical features of mindfulness meditations. Mindfulness meditation (MM) practices constitute an important group of meditative practices that have received growing attention. The aim of the present paper was to systematically review current evidence on the neurobiological changes and clinical benefits related to MM practice in psychiatric disorders, in physical illnesses and in healthy subjects. Literature search was undertaken using Medline, ISI Web of Knowledge, the Cochrane collaboration database and references of retrieved articles. Controlled and cross-sectional studies with controls published in English up to November 2008 were included. RESULTS: Electroencephalographic (EEG) studies have revealed a significant increase in alpha and theta activity during meditation. Neuroimaging studies showed that MM practice activates the prefrontal cortex (PFC) and the anterior cingulated cortex (ACC) and that long-term meditation practice is associated with an enhancement of cerebral areas related to attention. From a clinical viewpoint, Mindfulness-Based Stress Reduction (MBSR) has shown efficacy for many psychiatric and physical conditions and also for healthy subjects, Mindfulness-Based Cognitive Therapy (MBCT) is mainly efficacious in reducing relapses of depression in patients with three or more episodes, Zen meditation significantly reduces blood pressure and Vipassana meditation showed that the efficacy in reducing alcohol and substance abuse in prisoners. However, given the
low-quality designs of current studies it is difficult to establish whether clinical outcomes are due to specific or non-specific effects of MM.

**Zeidan F, Johnson SK, 2010** studied on Effects of brief and sham mindfulness meditation on mood and cardiovascular variables. Although long-term meditation has been found to reduce negative mood and cardiovascular variables, the effects of a brief mindfulness meditation intervention when compared to a sham mindfulness meditation intervention are relatively unknown. This experiment examined whether a 3-day (1-hour total) mindfulness or sham mindfulness meditation intervention would improve mood and cardiovascular variables when compared to a control group. Eighty-two (82) undergraduate students (34 males, 48 females), with no prior meditation experience, participated in three sessions that involved training in either mindfulness meditation, sham mindfulness meditation, or a control group. Heart rate, blood pressure, and psychological variables (Profile of Mood States, State Anxiety Inventory) were assessed before and after the intervention. The results of the study implied that the meditation intervention was more effective at reducing negative mood, depression, fatigue, confusion, and heart rate, when compared to the sham and control groups. The results indicated that brief meditation training has beneficial effects on mood and cardiovascular variables that go beyond the demand characteristics of a sham meditation intervention.

**Young LA. 2011** studied on Mindfulness meditation: a primer for rheumatologists. Over the past decade, there has been an increasing interest in meditation as a mind-body approach, given its potential to alleviate emotional distress and promote improved well being in a variety of populations. The overall purpose of this review is to provide the practicing rheumatologist with an overview of mindfulness and how it can be applied to Western medical treatment plans to enhance both the medical and psychological care of patients.
Chiesa A, Serretti A. 2011 studied on Mindfulness based cognitive therapy for psychiatric disorders: a systematic review and meta-analysis. Mindfulness-based Cognitive Therapy (MBCT) is a meditation program based on an integration of Cognitive behavioural therapy and Mindfulness-based stress reduction. The aim of the present work is to review and conduct a meta-analysis of the current findings about the efficacy of MBCT for psychiatric patients. A literature search was undertaken using five electronic databases and references of retrieved articles. Main findings included the following: 1) MBCT in adjunct to usual care was significantly better than usual care alone for reducing major depression (MD) relapses in patients with three or more prior depressive episodes (4 studies), 2) MBCT plus gradual discontinuation of maintenance ADs was associated to similar relapse rates at 1 year as compared with continuation of maintenance antidepressants (1 study), 3) the augmentation of MBCT could be useful for reducing residual depressive symptoms in patients with MD (2 studies) and for reducing anxiety symptoms in patients with bipolar disorder in remission (1 study) and in patients with some anxiety disorders (2 studies). However, several methodological shortcomings including small sample sizes, non-randomized design of some studies and the absence of studies comparing MBCT to control groups designed to distinguish specific from non-specific effects of such practice underscore the necessity for further research.

Kristeller JL, Wolever RQ. 2011 studied on Mindfulness-based eating awareness training for treating binge eating disorder: the conceptual foundation. This paper reviews the conceptual foundation of mindfulness-based eating awareness training (MB-EAT). It provides an overview of key therapeutic components as well as a brief review of current research. MB-EAT is a group intervention that was developed for treatment of binge eating disorder (BED) and related issues. BED is marked by emotional, behavioral and physiological deregulation in relation to food intake and self-
identity. MB-EAT involves training in mindfulness meditation and guided mindfulness practices that are designed to address the core issues of BED: controlling responses to varying emotional states; making conscious food choices; developing an awareness of hunger and satiety cues; and cultivating self-acceptance. Evidence to date supports the value of MB-EAT in decreasing binge episodes, improving one's sense of self-control with regard to eating, and diminishing depressive symptoms.

Chiesa A, Serretti A. 2011 studied on Mindfulness-based interventions for chronic pain: a systematic review of the evidence. Chronic pain is a common disabling illness that does not completely respond to current medical treatments. As a consequence, in recent years many alternative interventions have been suggested. Among them, mindfulness-based interventions (MBIs) are receiving growing attention. The aim of the present article is to review controlled studies investigating the efficacy of MBIs for the reduction of pain and the improvement of depressive symptoms in patients suffering from chronic pain. A literature search was undertaken using MEDLINE,(®) ISI web of knowledge, the Cochrane database, and references of retrieved articles. The search included articles written in English published up to July 2009. The data were independently extracted by two reviewers from the original reports. Quality of included trials was also assessed. Current studies showed that MBIs could have nonspecific effects for the reduction of pain symptoms and the improvement of depressive symptoms in patients with chronic pain, while there is only limited evidence suggesting specific effects of such interventions. Further findings evidenced some improvements in psychologic measures related to chronic pain such as coping with pain following MBIs as well. There is not yet sufficient evidence to determine the magnitude of the effects of MBIs for patients with chronic pain. Main limitations of reviewed studies include small sample size, absence of randomization, and the use of a waiting list control group that does not
allow distinguishing of specific from nonspecific effects of MBI as well as differences among interventions.

Roth HD, Britton WB. 2011 studied on Effects of mindfulness training on body awareness to sexual stimuli: implications for female sexual dysfunction. Treatments of female sexual dysfunction have been largely unsuccessful because they do not address the psychological factors that underlie female sexuality. Negative self-evaluative processes interfere with the ability to attend and register physiological changes (interoceptive awareness). This study explores the effect of mindfulness meditation training on interoceptive awareness and the three categories of known barriers to healthy sexual functioning: attention, self-judgment, and clinical symptoms. Forty-four college students (30 women) participated in either a 12-week course containing a "meditation laboratory" or an active control course with similar content or laboratory format. Interoceptive awareness was measured by reaction time in rating physiological response to sexual stimuli. Psychological barriers were assessed with self-reported measures of mindfulness and psychological well-being. The findings of the study explained that the women who participated in the meditation training became significantly faster at registering their physiological responses (interoceptive awareness) to sexual stimuli compared with active controls (F(1,28) = 5.45, p = .03, η(p)(2) = 0.15). Female meditators also improved their scores on attention (t = 4.42, df = 11, p = .001), self-judgment, (t = 3.1, df = 11, p = .01), and symptoms of anxiety (t = -3.17, df = 11, p = .009) and depression (t = -2.13, df = 11, p < .05). Improvements in interoceptive awareness were correlated with improvements in the psychological barriers to healthy sexual functioning (r = -0.44 for attention, r = -0.42 for self-judgment, and r = 0.49 for anxiety; all p < .05). The study concluded that the Mindfulness-based improvements in interoceptive awareness highlight the potential of mindfulness training as a treatment of female sexual dysfunction.
Sipe WE, Eisendrath SJ. 2012 studied on Mindfulness-based cognitive therapy: theory and practice. Mindfulness-based cognitive therapy (MBCT) incorporates elements of cognitive-behavioural therapy with mindfulness-based stress reduction into an 8-session group program. Initially conceived as an intervention for relapse prevention in people with recurrent depression, it has since been applied to various psychiatric conditions. Our paper aims to briefly describe MBCT and its putative mechanisms of action, and to review the current findings about the use of MBCT in people with mood and anxiety disorders. The therapeutic stance of MBCT focuses on encouraging patients to adopt a new way of being and relating to their thoughts and feelings, while placing little emphasis on altering or challenging specific cognitions. Preliminary functional neuroimaging studies are consistent with an account of mindfulness improving emotional regulation by enhancing cortical regulation of limbic circuits and attentional control. Research findings from several randomized controlled trials suggest that MBCT is a useful intervention for relapse prevention in patients with recurrent depression, with efficacy that may be similar to maintenance antidepressants. Preliminary studies indicate MBCT also shows promise in the treatment of active depression, including treatment-resistant depression. Pilot studies have also evaluated MBCT in bipolar disorder and anxiety disorders. Patient and clinician resources for further information on mindfulness and MBCT are provided.

Roberts-Wolfe D, Sacchet M. 2012 studied on Mindfulness training alters emotional memory recall compared to active controls: support for an emotional information processing model of mindfulness. While mindfulness-based interventions have received widespread application in both clinical and non-clinical populations, the mechanism by which mindfulness meditation improves well-being remains elusive. One possibility is that mindfulness training alters the processing of emotional information,
similar to prevailing cognitive models of depression and anxiety. The aim of this study was to investigate the effects of mindfulness training on emotional information processing (i.e., memory) biases in relation to both clinical symptomatology and well-being in comparison to active control conditions. Fifty-eight university students (28 female, age $= 20.1 \pm 2.7$ years) participated in either a 12-week course containing a "meditation laboratory" or an active control course with similar content or experiential practice laboratory format (music). Participants completed an emotional word recall task and self-report questionnaires of well-being and clinical symptoms before and after the 12-week course. The result of the study showed that the Mediators showed greater increases in positive word recall compared to controls [F (1, 56) = 6.6, p = 0.02]. The meditation group increased significantly more on measures of well-being [F (1, 56) = 6.6, p = 0.01], with a marginal decrease in depression and anxiety [F (1, 56) = 3.0, p = 0.09] compared to controls. Increased positive word recall was associated with increased psychological well-being ($r = 0.31, p = 0.02$) and decreased clinical symptoms ($r = -0.29, p = 0.03$). The study examined that the Mindfulness training was associated with greater improvements in processing efficiency for positively valence stimuli than active control conditions. This change in emotional information processing was associated with improvements in psychological well-being and less depression and anxiety. These data suggested that mindfulness training may improve well-being via changes in emotional information processing.

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2.3 MINDFULNESS MEDITATION AND ANEXITY

Laugharne J, Janca A. 2008 studied on Complementary alternative medicine for the treatment on anxiety and depression. There is well documented evidence for the increasing widespread use of complementary and alternative medicine in the treatment of physical and psychiatric symptoms and disorders within Western populations. Here we
provide a review of the recent literature on evidence for using such interventions in the treatment of anxiety and depression. With regard to herbal treatments, kava is effective in reducing anxiety symptoms and St John's worth in treating mild to moderate depression. The association of kava with hepatotoxicity, however, is a significant concern. Promising data continue to emerge for the use of omega-3 fatty acids in managing depression. Evidence for the use of acupuncture in treating anxiety disorders is becoming stronger, although there is currently minimal empirical evidence for the use of aromatherapy or mindfulness-based meditation. The evidence base for the efficacy of the majority of complementary and alternative interventions used to treat anxiety and depression remains poor. Recent systematic reviews all point to a significant lack of methodologically rigorous studies within the field. This lack of evidence does not diminish the popularity of such interventions within the general Western population.

Krisanaprakornkit T, Sriraj W, (2009) studied on Meditation therapy for anxiety disorders. Although meditation therapy is widely used in many anxiety-related conditions there is still a lack of studies in anxiety disorder patients. The small number of studies included in this review do not permit any conclusions to be drawn on the effectiveness of meditation therapy for anxiety disorders. Transcendental meditation is comparable with other kinds of relaxation therapies in reducing anxiety, and Kundalini Yoga did not show significant effectiveness in treating obsessive-compulsive disorders compared with Relaxation/Meditation. Dropout rates appear to be high, and adverse effects of meditation have not been reported. More trials are needed. HideAbstract (click to read). Anxiety disorders are characterized by long term worry, tension, nervousness, fidgeting and symptoms of autonomic system hyperactivity. Meditation is an age-old self regulatory strategy which is gaining more interest in mental health and psychiatry. Meditation can reduce arousal state and may ameliorate anxiety symptoms in various
anxiety conditions. Objectives: To investigate the effectiveness of meditation therapy in treating anxiety disorders Search strategy: Electronic databases searched include CCDANCTR-Studies and CCDANCTR-References, complementary and alternative medicine specific databases, Science Citation Index, Health Services/Technology Assessment Text database, and grey literature databases. Conference proceedings, book chapters and references were checked. Study authors and experts from religious/spiritual organizations were contacted.

Sears S, Kraus S, (2009) made a study on cognitive distortions and coping style as mediators for the effects of mindfulness meditation on anxiety. This study examined cognitive distortions and coping styles as potential mediators for the effects of mindfulness meditation on anxiety, negative effect, positive effect, and hope in college students. Our pre- and post intervention design had four conditions: control, brief meditation focused on attention, brief meditation focused on loving kindness, and longer meditation combining both attention and loving kindness aspects of mindfulness. Each group met weekly over the course of a semester. Longer combined meditation significantly reduced anxiety and negative affect and increased hope. Changes in cognitive distortions mediated intervention effects for anxiety, negative effect, and hope. Further research is needed to determine differential effects of types of meditation.

Stefan G. Hofmann, (2010) studied on the Effect of Mindfulness-Based Therapy on Anxiety and Depression. The study examined that the effect of size analysis of this popular intervention for anxiety and mood symptoms in clinical samples. The search identified 39 studies totaling 1,140 participants receiving mindfulness-based therapy for a range of conditions, including cancer, generalized anxiety disorder, depression, and other psychiatric or medical conditions. The result of the study showed that the effect size estimates suggested that mindfulness-based therapy was moderately effective for
improving anxiety (Hedges’ g = 0.63) and mood symptoms (Hedges’ g = 0.59) from pre to post-treatment in the overall sample. In patients with anxiety and mood disorders, this intervention was associated with effect sizes (Hedges’ g) of 0.97 and 0.95 for improving anxiety and mood symptoms, respectively. These effect sizes were robust, unrelated to publication year or number of treatment sessions, and were maintained over follow-up. The study suggested that the mindfulness-based therapy is a promising intervention for treating anxiety and mood problems in clinical populations.

McDuffie J, Strauss JL. 2011 studied on an Overview of Complementary and Alternative Medicine Therapies for Anxiety and Depressive Disorders: Supplement to Efficacy of Complementary and Alternative Medicine Therapies for Posttraumatic Stress Disorder [Internet]. VA is committed to expanding the breadth of posttraumatic stress disorder (PTSD)-related services available to Veterans. Since depressive and anxiety disorders share common features with PTSD, this report was commissioned to examine the efficacy of complementary and alternative medicine (CAM) therapies for the treatment of depressive and anxiety disorders as a means to detect treatments that might be applicable to PTSD.

Tanay G, Lotan G, Bernstein A. 2012 studied on salutary proximal processes and distal mood and anxiety vulnerability outcomes of mindfulness training: a pilot preventive intervention. The present study evaluated the effect of a brief mindfulness-based preventive intervention on (a) dispositional (MAAS; Brown & Ryan, 2003) and state (SMS; Tanay & Bernstein, 2010) mindfulness; (b) putative proximal factors/processes engendered through the development of mindfulness, including increased decentering (EQ-D; Fresco et al., 2007) and reduced experiential avoidance (AAQ; Hayes et al., 2004); and (c) distal mood and anxiety vulnerability factors, including reduced depression-related dysfunctional attitudes, (DAS; de Graaf, Roelofs, &
Huibers, 2009), anxiety sensitivity (ASI-3; Taylor et al., 2007), and negative affectivity (PANAS-NA; Watson, Clark, & Tellegen, 1988) among a university-community sample in Israel. Fifty-three adult participants between the ages of 20 and 52 (M(age)=25.2 years, SD(age)=4.3 years; 65.4% women) were recruited from the Haifa University community. Nineteen participants were randomly assigned to an experimental condition (M(age)=25.3 years, SD(age)=4.3 years; 66% women) and studied prospectively over the course of a four-session (21-day) mindfulness skills training intervention; and 34 participants were randomly assigned to a no-intervention (control) condition (M(age)=24.9 years, SD(age)=2.4 years; 64.7% women) and studied prospectively. Findings demonstrate statistically robust and clinically significant relations between mindfulness and the theorized proximal and distal mood and anxiety vulnerability factors. Findings are discussed with respect to their theoretical implications for better understanding mindfulness-psychopathology vulnerability relations, clinical implications for larger-scale universal and selective diagnostic prevention efforts, and future directions for this area of research.

Dachman L, Lejuez CW. 2012 studied on Meditative therapies for reducing anxiety: a systematic review and meta-analysis of randomized controlled trials. Anxiety disorders are among the most common psychiatric disorders and meditative therapies are frequently sought by patients with anxiety as a complementary therapy. Although multiple reviews exist on the general health benefits of meditation, no review has focused on the efficacy of meditation for anxiety specifically. Major medical databases were searched thoroughly with keywords related to various types of meditation and anxiety. Over 1,000 abstracts were screened, and 200+ full articles were reviewed. Only randomized controlled trials (RCTs) were included. The study quality ranged from 0.3 to 1.0 on the 0.0-1.0 scale (mean = 0.72). Standardized mean difference (SMD) was -0.52 in
comparison with waiting-list control (p < .001; 25 RCTs), -0.59 in comparison with attention control (p < .001; seven RCTs), and -0.27 in comparison with alternative treatments (p < .01; 10 RCTs). Twenty-five studies reported statistically superior outcomes in the meditation group compared to control. No adverse effects were reported. This review demonstrated that some efficacy of meditative therapies in reducing anxiety symptoms, which has important clinical implications for applying meditative techniques in treating anxiety.

Vazquez-Montes M, Williams JM. 2012 studied on A randomized clinical trial of mindfulness-based cognitive therapy versus unrestricted services for health anxiety (hypochondriasis). The efficacy and acceptability of existing psychological interventions for health anxiety (hypochondriasis) are limited. In the current study, the authors aimed to assess the impact of mindfulness-based cognitive therapy (MBCT) on health anxiety by comparing the impact of MBCT in addition to usual services (unrestricted services) with unrestricted services (US) alone. The 74 participants were randomized to either MBCT in addition to US (n = 36) or US alone (n = 38). Participants were assessed prior to intervention (MBCT or US), immediately following the intervention, and 1 year post intervention. In addition to independent assessments of diagnostic status, standardized self-report measures and assessor ratings of severity and distress associated with the diagnosis of hypochondriasis were used. The result of the study showed that the intention-to-treat (ITT) analysis (N = 74), MBCT participants had significantly lower health anxiety than US participants, both immediately following the intervention (Cohen's d = 0.48) and at 1-year follow-up (d = 0.48). The per-protocol (PP) analysis (n = 68) between groups effect size was d = 0.49 at post intervention and d = 0.62 at 1-year follow-up. Meditational analysis showed that change in mindfulness mediated the group changes in health anxiety symptoms. Significantly fewer participants allocated to MBCT than to US
met criteria for the diagnosis of hypochondriasis, both immediately following the intervention period (ITT 50.0% vs. 78.9%; PP 47.1% vs. 78.4%) and at 1-year follow-up (ITT 36.1% vs. 76.3%; PP 28.1% vs. 75.0%).

**Vøllestad J, Nielsen MB, Nielsen GH. 2012** studied on Mindfulness- and acceptance-based interventions for anxiety disorders: a systematic review and meta-analysis. Mindfulness- and acceptance-based interventions (MABIs) are receiving increasing attention in the treatment of mental disorders. These interventions might be beneficial for patients with anxiety disorders, but no prior reviews have comprehensively investigated the effects of this family of interventions on clinical samples. The aim of this study was to review and synthesize extant research on MABIs for patients with diagnoses of anxiety disorders. We conducted a systematic search of relevant databases according to pre-defined criteria. Studies were eligible for inclusion if they employed MABIs for patients diagnosed with anxiety disorders. The study inferred that the Meta-analysis of within-group pre- to post-treatment effects yielded overall Hedges'g effect sizes of 1.08 for anxiety symptoms and 0.85 for depression symptoms. For controlled studies, overall between-group Hedges'g was 0.83 for anxiety symptoms and 0.72 for depression symptoms. Moderator analyses examined whether intervention type, design, treatment dosage, or patient sample was associated with systematic variation in effect sizes. No significant moderating effects were found on the variables examined, apart from an observed superiority in effect size for clinical trials on samples of patients with mixed anxiety disorders. However, differential effect sizes indicated benefits of adding specific psychotherapeutic content to mindfulness training, as well as an advantage of individual over group treatment.

**Kumar N, Balkrishna A. 2012** studied on Performance in a substitution task and state anxiety following yoga in army recruits. 140 men (M age = 30.3 yr., SD = 5.7) from
the Indian army in north India participated in the study. They were naive to yoga and were assigned to yoga and breath awareness groups randomly, with 70 in each group. 20 healthy males of comparable age (M age = 33.7 yr., SD = 7.0) formed a comparison group. Their performance in a digit-letter substitution task and a state anxiety subscale was assessed immediately before and after two 45-min. sessions. The two groups of soldiers practiced either yoga or breathe awareness. The comparison group listened to meditation music. Digit-letter substitution scores increased in both groups of army personnel and in the comparison group. The study stated that the anxiety decreased after yoga and listening to meditation music, but not after breath awareness. The study suggested that even in army personnel naive to yoga, a yoga-based intervention or listening to meditation music could reduce anxiety while increasing performance on an attention task.

**Jacka FN, Schweitzer I. 2012.** Studied on Complementary medicine, exercise, meditation, diet, and lifestyle modification for anxiety disorders: a review of current evidence. Use of complementary medicines and therapies (CAM) and modification of lifestyle factors such as physical activity, exercise, and diet are being increasingly considered as potential therapeutic options for anxiety disorders. The objective of this meta review was to examine evidence across a broad range of CAM and lifestyle interventions in the treatment of anxiety disorders. In early 2012 we conducted a literature search of PubMed, Scopus, CINAHL, Web of Science, PsycInfo, and the Cochrane Library, for key studies, systematic reviews, and meta analyses in the area. Our paper found that in respect to treatment of generalized anxiety or specific disorders, CAM evidence revealed current support for the herbal medicine Kava. One isolated study shows benefit for naturopathic medicine, whereas acupuncture, yoga, and Tai chi have tentative supportive evidence, which is hampered by overall poor methodology. The
breadth of evidence does not support homeopathy for treating anxiety. Strong support exists for lifestyle modifications including adoption of moderate exercise and mindfulness meditation, whereas dietary improvement, avoidance of caffeine, alcohol, and nicotine offer encouraging preliminary data.

Monti DA, Kash KM. 2012 studied on Changes in cerebral blood flow and anxiety associated with an 8-week mindfulness programme in women with breast cancer. This study employed the functional magnetic resonance imaging to evaluate changes in cerebral blood flow (CBF) associated with the Mindfulness-based Art Therapy (MBAT) programme and correlate such changes to stress and anxiety in women with breast cancer. Eighteen breast cancer patients were randomized to the MBAT or education control group. The patients received the diagnosis of breast cancer between 6 months and 3 years prior to enrollment and were not in active treatment. The age of participants ranged from 52 to 77 years. A voxel-based analysis was performed to assess differences at rest, during meditation and during a stress task. The anxiety sub-scale of the Symptoms Checklist-90-Revised was compared with changes in resting CBF before and after the programmes. Subjects in the MBAT arm demonstrated significant increases in CBF at rest and during meditation in multiple limbic regions, including the left insula, right amygdala, right hippocampus and bilateral caudate. Patients in the MBAT programme also had a significant correlation between increased CBF in the left caudate and decreased anxiety scores. In the MBAT group, responses to a stressful cue resulted in reduced activation of the posterior cingulate. The results demonstrated that the MBAT programme was associated with significant changes in CBF, which correlated with decreased anxiety over an 8-week period.

Sharma MP, Mao A, 2012 studied on Mindfulness-based cognitive behavior therapy in patients with anxiety disorders: a case series. The present study is aimed that
the evaluating the effectiveness of a Mindfulness-Based Cognitive Behavior Therapy (MBCBT) for reducing cognitive and somatic anxiety and modifying dysfunctional cognitions in patients with anxiety disorders. A single case design with pre- and post-assessment was adopted. Four patients meeting the specified inclusion and exclusion criteria were recruited for the study. Three patients received a primary diagnosis of generalized anxiety disorder (GAD), while the fourth patient was diagnosed with Panic Disorder. Patients were assessed on the Cognitive and Somatic Anxiety Questionnaire (CSAQ), Penn State Worry Questionnaire (PSWQ), Hamilton's Anxiety Inventory (HAM-A), and Dysfunctional Attitudes Scale. The therapeutic program consisted of education regarding nature of anxiety, training in different versions of mindfulness meditation, cognitive restructuring, and strategies to handle worry, such as, worry postponement, worry exposure, and problem solving. A total of 23 sessions over four to six weeks were conducted for each patient. The findings of the study are discussed in light of the available research, and implications and limitations are highlighted along with suggestions for future research.

Chen Y, Yang X, (2012) studied on “randomized controlled trial of the effects of brief mindfulness meditation on anxiety symptoms and systolic blood pressure in Chinese nursing students”. The study evaluated that the effects of brief mindfulness meditation on the anxiety and depression symptoms and autonomic nervous system activity in Chinese nursing students. One hundred and five nursing students were randomly approached by email and seventy-two responded. Sixty recruited students were randomized into meditation and control group (n=30 each) after screening and exclusion due to factors known to influence mood ratings and autonomic nervous system measures. The meditation group performed mindfulness meditation 30min daily for 7 consecutive days. The control group received no intervention except pre-post treatment measurements. The
Self-Rating Anxiety Scale and Self-Rating Depression Scale were administered to participants, and heart rate and blood pressure were measured. Pre- and post-treatment data were analyzed using repeated-measures analysis of variance. The present study examined that the mindfulness meditation was beneficial for Chinese nursing students in reducing anxiety symptoms and lowering systolic blood pressure. Individuals with moderate anxiety are most likely to benefit from a short-term mindfulness meditation program.

John M. Grohol,( 2012) studied on Mindfulness Cognitive Therapy Reduces Anxiety in Bipolar Patients. In patients with bipolar disorder, mindfulness-based cognitive therapy (MBCT) has been shown to significantly reduce anxiety, according to researchers at the University of New South Wales. MBCT involves traditional cognitive behavioral therapy (CBT) methods, while also incorporating newer psychological strategies, such as mindfulness meditation. The goal is to become aware of and accept all incoming thoughts and feelings, but not to attach or react to them. The newer therapy, however, seemed to have no effect on symptoms of depression or mania; nor did it reduce episodes, found the researchers during 12 months of follow up. For the study, the team recruited 95 patients with bipolar disorder, who were at least 18 years old. They were either assigned to MBCT or typical therapy. Those in the MBCT group received weekly mindfulness meditation practice, cognitive therapy regarding depression, and psycho education. All of the participants were assessed at baseline and follow up using the Montgomery-Åsberg Depression Rating Scale (MADRS), the Young Mania Rating Scale (YMRS), the Depression Anxiety Stress Scales, and the State Trait Anxiety Inventory (STAI). They were also evaluated for mood episode recurrences over the study period. Overall, 34 participants assigned to the MBCT group finished the program and were assessed at follow up. The findings revealed that there were no significant differences
between the two groups regarding improvements in MADRS and YMRS scores over the
12-month study period.

Teresa M Edenfield (2012) studied on mindfulness meditation as a self-help
treatment for anxiety and depression. Complementary and alternative medicine (CAM)
treatments have increased in popularity. This is especially true for treatments that are
related to exercise and mindfulness-based interventions (MBIs) in the treatment of both
mental and physical illness. MBIs, such as Mindfulness-based Cognitive Therapy
(MBCT) and Mindfulness-Based Stress Reduction (MBSR), which are derived from
ancient Buddhist and Yoga philosophies, have become popular treatments in
contemporary psychotherapy. While there is growing evidence that supports the role of
these interventions in relapse prevention, little is known about the role that MBIs play in
the treatment of acute symptoms of depression and anxiety. Even less is known about the
importance of specific components of MBIs (eg, mindfulness meditation [MM]) and the
overall impact that these interventions have on the experience or expression of
psychological distress. Moreover, few studies have rigorously evaluated the dose-
response relationship that is required to effect positive symptom change and the
mechanisms of change that are responsible for observed improvements. This review will
define meditation and mindfulness, discuss the relationship between stress and health and
how MM relates to therapeutically engaging the relaxation response, and review the
empirical findings that are related to the efficacy of MM in the treatment of depression
and anxiety symptoms. Given the paucity of research that examines the applications of
these treatments in clinical populations, the limitations of applying these findings to
clinical samples will be mentioned. A brief review of the issues related to the possible
mechanisms of change and the dose-response relationship regarding MBIs, particularly
MM, will be provided. Finally, limitations of the extant literature and future directions for further exploration of this topic will be offered.

**Mark G. Williams (2012) studied on** Clinical Trial of Mindfulness-Based Cognitive Therapy Versus Unrestricted Services for Health Anxiety (Hypochondriasis). The efficacy and acceptability of existing psychological interventions for health anxiety (hypochondriasis) are limited. In the current study, the authors aimed to assess the impact of mindfulness-based cognitive therapy (MBCT) on health anxiety by comparing the impact of MBCT in addition to usual services (unrestricted services) with unrestricted services (US) alone. **Method:** The 74 participants were randomized to either MBCT in addition to US ($n = 36$) or US alone ($n = 38$). Participants were assessed prior to intervention (MBCT or US), immediately following the intervention, and 1 year post intervention. In addition to independent assessments of diagnostic status, standardized self-report measures and assessor ratings of severity and distress associated with the diagnosis of hypochondriasis were used. The results of the study showed that the intention-to-treat (ITT) analysis ($N = 74$), MBCT participants had significantly lower health anxiety than US participants, both immediately following the intervention ($d = 0.48$) and at 1-year follow-up ($d = 0.48$). The per-protocol (PP) analysis ($n = 68$) between groups effect size was $d = 0.49$ at post intervention and $d = 0.62$ at 1-year follow-up. Meditational analysis showed that change in mindfulness mediated the group changes in health anxiety symptoms. Significantly fewer participants allocated to MBCT than to US met criteria for the diagnosis of hypochondriasis, both immediately following the intervention period (ITT 50.0% vs. 78.9%; PP 47.1% vs. 78.4%) and at 1-year follow-up (ITT 36.1% vs. 76.3%; PP 28.1% vs. 75.0%). The study concluded that the MBCT may be a useful addition to usual services for patients with health anxiety.

### 2.4 MINDFULNESS MEDITATION AND DEPRESSION
Thorsten Barnhofer, Catherine Crane, (2009) studied on Mindfulness-based cognitive therapy as a treatment for chronic depression: A preliminary study. This pilot study investigated the effectiveness of Mindfulness-Based Cognitive Therapy (MBCT), a treatment combining mindfulness meditation and interventions taken from cognitive therapy, in patients suffering from chronic-recurrent depression. Currently symptomatic patients with at least three previous episodes of depression and a history of suicidal ideation were randomly allocated to receive either MBCT delivered in addition to treatment-as-usual (TAU; N = 14 completers) or TAU alone (N = 14 completers). Depressive symptoms and diagnostic status were assessed before and after treatment phase. Self-reported symptoms of depression decreased from severe to mild levels in the MBCT group while there was no significant change in the TAU group. Similarly, numbers of patients meeting full criteria for depression decreased significantly more in the MBCT group than in the TAU group. Results are consistent with previous uncontrolled studies. Although based on a small sample and, therefore, limited in their generalizability, they provide further preliminary evidence that MBCT can be used to successfully reduce current symptoms in patients suffering from a protracted course of the disorder.

Guido Bondolfi, Françoise Jermann, (2010) studied on Depression relapse prophylaxis with Mindfulness-Based Cognitive Therapy: Replication and extension in the Swiss health care system. Background Mindfulness-Based Cognitive Therapy (MBCT) is a group intervention that integrates elements of Cognitive Behavioral Therapy (CBT) with components of mindfulness training to prevent depressive relapse. The efficacy of MBCT compared to Treatment As Usual (TAU), shown in two randomized controlled trials indicates a significant decrease in 1-year relapse rates for patients with at least three past depressive episodes. The present study is the first independent replication trial.
comparing MBCT + TAU to TAU alone across both language and culture (Swiss health care system). Sixty unmediated patients in remission from recurrent depression (≥ 3 episodes) were randomly assigned to MBCT + TAU or TAU. Relapse rate and time to relapse were measured over a 60 week observation period. The frequency of mindfulness practices during the study was also evaluated. Results Over a 14-month prospective follow-up period, time to relapse was significantly longer with MBCT + TAU than TAU alone (median 204 and 69 days, respectively), although both groups relapsed at similar rates. Analyses of homework adherence revealed that following treatment termination, the frequency of brief and informal mindfulness practice remained unchanged over 14 months, whereas the use of longer formal meditation decreased over time. Limitations Relapse monitoring was 14 months in duration and prospective reporting of mindfulness practice would have yielded more precise frequency estimates compared to the retrospective methods we utilized. The study concluded that the required to determine which patient characteristics, beyond the number of past depressive episodes, may predict differential benefits from this therapeutic approach.

Deming A, Accardi M. 2010 studied on Hypnosis, rumination, and depression: catalyzing attention and mindfulness-based treatments. Over the past 30 years, mental health practitioners, encouraged by rigorous empirical studies and literature and meta-analytic reviews, have increasingly appreciated the ability of hypnosis to modulate attention, imagination, and motivation in the service of therapeutic goals. This article describes how hypnosis can be used as an adjunctive procedure in the treatment of depression and rumination symptoms, in particular. The focus is on attention-based treatments that include rumination-focused cognitive behavioral therapy, cognitive control training, and mindfulness-based cognitive therapy. The authors provide numerous examples of techniques and approaches that can potentially enhance treatment gains,
including a hypnotic induction to facilitate mindfulness and to motivate mindfulness practice. Although hypnosis appears to be a promising catalyst of attention and mindfulness, research is required to document the incremental value of adding hypnosis to the treatments reviewed.

Wisner KL, Mischoulon D. 2010 studied on Complementary and alternative medicine in major depressive disorder: the American Psychiatric Association Task Force report. To review selected complementary and alternative medicine (CAM) treatments for major depressive disorder (MDD). Authors of this report were invited participants in the American Psychiatric Association's Task Force on Complementary and Alternative Medicine. The group reviewed the literature on individual CAM treatments for MDD, methodological considerations, and future directions for CAM in psychiatry. Individual CAM treatments were reviewed with regard to efficacy in MDD, as well as risks and benefits. Literature searches included MEDLINE and PsycINFO reviews and manual reference searches; electronic searches were limited to English-language publications from 1965 to January 2010 (but manual searches were not restricted by language). Treatments were selected for this review on the basis of (1) published randomized controlled trials in MDD and (2) widespread use with important clinical safety or public health significance relevant to psychiatric practice. An action plan is presented based on needs pertaining to CAM and psychiatry.

Stuart Eisendrath M.D, Maggie Chartier, (2011) did a study on Adapting Mindfulness-Based Cognitive Therapy for Treatment-Resistant Depression. Major depressive disorder (MDD) is currently ranked the third leading cause of disability in the world. Treatment-Resistant Depression (TRD) causes the majority of MDD's disability. Strikingly, 50% of individuals with MDD will fail to remit with two adequate trials of antidepressant medications, thus qualifying as treatment resistant. Current
pharmacological and psychotherapeutic treatment strategies for TRD are limited in effectiveness so new interventions are needed. Mindfulness-Based Cognitive Therapy (MBCT) is a new psychotherapeutic treatment with established efficacy in preventing relapse of depression for individuals in complete remission. MBCT is a group-based, 8-week intervention that uses mindfulness meditation as its core therapeutic technique. It teaches people to have a different relationship to depressive thoughts and feelings. Strategies are focused on decreasing rumination, enhancing self-compassion, increasing acceptance and decreasing avoidance. This modified version of MCBT, which includes the use of metaphor and adaptations of the original intervention will be discussed through the clinical case of a woman with long-standing TRD. A brief review of the current MBCT literature and future directions for the treatment of TRD are discussed.

Thorsten Barnhofer, James W. Griffith (2011) studied on Dispositional mindfulness moderates the relation between neuroticism and depressive symptoms. Negative emotional reactivity as measured by neuroticism has been shown to be an important risk factor for the development of depressive symptoms. This study investigated whether the ability to be mindful can protect against the negative effects of this temperamental vulnerability. An English community sample of N = 144 individuals who had completed a neuroticism questionnaire six years previously were assessed for current depressive symptoms and dispositional levels of mindfulness at points of assessment approximately one year apart. Dispositional mindfulness moderated the relation between neuroticism and current depressive symptoms: Neuroticism was significantly related to depression in those with low to medium levels of dispositional mindfulness but not in those with relatively high levels of mindfulness. Further analyzes focusing on particular mindfulness skills indicated that this effect was carried mostly by the ability to describe inner experience. The results suggest that dispositional mindfulness

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and particularly the ability to describe inner experience are helpful in dealing with negative emotional reactivity in a way that reduces the likelihood of depressive symptoms to develop.

**Chartier M, McLane M. (2011)** studied on Dating Mindfulness-Based Cognitive Therapy for Treatment-Resistant Depression: A Clinical Case Study. Major depressive disorder (MDD) is currently ranked the third leading cause of disability in the world. Treatment-Resistant Depression (TRD) causes the majority of MDD's disability. Strikingly, 50% of individuals with MDD will fail to remit with two adequate trials of antidepressant medications, thus qualifying as treatment resistant. Current pharmacological and psychotherapeutic treatment strategies for TRD are limited in effectiveness so new interventions are needed. Mindfulness-Based Cognitive Therapy (MBCT) is a new psychotherapeutic treatment with established efficacy in preventing relapse of depression for individuals in complete remission. MBCT is a group-based, 8-week intervention that uses mindfulness meditation as its core therapeutic technique. It teaches people to have a different relationship to depressive thoughts and feelings. Strategies are focused on decreasing rumination, enhancing self-compassion, increasing acceptance and decreasing avoidance. This modified version of MCBT, which includes the use of metaphor and adaptations of the original intervention will be discussed through the clinical case of a woman with long-standing TRD. A brief review of the current MBCT literature and future directions for the treatment of TRD are discussed.

**Piet J, Hougaard E. 2011** studied on The effect of mindfulness-based cognitive therapy for prevention of relapse in recurrent major depressive disorder: a systematic review and meta-analysis. Mindfulness-based cognitive therapy (MBCT) is a group-based clinical intervention program designed to reduce relapse or recurrence of major depressive disorder (MDD) by means of systematic training.
in mindfulness meditation combined with cognitive-behavioral methods. Electronic databases were searched and researchers were contacted for further relevant studies. Studies were coded for quality. Meta-analyses were performed by means of the Cochrane Collaboration Review Manager 5.1. Six randomized controlled trials with a total of 593 participants were included in the meta-analysis. MBCT significantly reduced the risk of relapse/recurrence with a risk ratio of 0.66 for MBCT compared to treatment as usual or placebo controls, corresponding to a relative risk reduction of 34%. In a pre-planned subgroup analysis the relative risk reduction was 43% for participants with three or more previous episodes, while no risk reduction was found for participants with only two episodes. In two studies, MBCT was at least as effective as maintenance antidepressant medication. Results of this meta-analysis indicated that MBCT is an effective intervention for relapse prevention in patients with recurrent MDD in remission, at least in case of three or more previous MDD episodes.

Willoughby Britton, (2012) made a study on The Effects of Mindfulness-Based Cognitive Therapy on Affective Memory Recall Dynamics in Depression. Converging research suggests that mindfulness training exerts its therapeutic effects on depression by reducing rumination. Theoretically, rumination is a multifaceted construct that aggregates multiple neurocognitive aspects of depression, including poor executive control, negative and over general memory bias, and persistence or stickiness of negative mind states. Current measures of rumination, most-often self-reports, do not capture these different aspects of ruminative tendencies, and therefore are limited in providing detailed information about the mechanisms of mindfulness. Developed new insight into the potential mechanisms of rumination, based on three model-based metrics of free recall dynamics. These three measures reflect the patterns of memory retrieval of valenced information: the probability of first recall (Pstart) which represents initial affective bias,
the probability of staying with the same valence category rather than switching, which indicates strength of positive or negative association networks (Pstay), and probability of stopping (Pstop) or ending recall within a given valence, which indicates persistence or stickiness of a mind state. We investigated the effects of Mindfulness-Based Cognitive Therapy (MBCT; N = 29) vs. wait-list control (N = 23) on these recall dynamics in a randomized controlled trial in individuals with recurrent depression. Participants completed a standard laboratory stressor, the Trier Social Stress Test, to induce negative mood and activate ruminative tendencies. Following that, participants completed a free recall task consisting of three word lists. This assessment was conducted both before and after treatment or wait-list.

Spinhoven P, Speckens AE. (2012) studied on The efficacy of mindfulness-based cognitive therapy in recurrent depressed patients with and without a current depressive episode: a randomized controlled trial. The aim of this study is to examine the efficacy of mindfulness-based cognitive therapy (MBCT) in addition to treatment as usual (TAU) for recurrent depressive patients with and without a current depressive episode. A randomized, controlled trial comparing MBCT+TAU (n=102) with TAU alone (n=103). The study population consisted of patients with three or more previous depressive episodes. Primary outcome measure was post-treatment depressive symptoms according to the Hamilton Rating Scale for Depression. Secondary outcome measures included the Beck Depression Inventory, rumination, worry and mindfulness skills. Group comparisons were carried out with linear mixed modeling, controlling for intra-group correlations. Additional mediation analyses were performed. Comparisons were made between patients with and without a current depressive episode. The study concluded that the MBCT is as effective for patients with recurrent depression who are currently depressed as for patients who are in remission.
Directions towards a better understanding of the mechanisms of action of MBCT are given, although future research is needed to support these hypotheses.

Manicavasagar V, Parker G. (2012) studied on Cognitive predictors of change in cognitive behavior therapy and mindfulness-based cognitive therapy for depression. An appreciation of cognitive predictors of change in treatment outcome may help to better understand differential treatment outcomes. The aim of this study was to examine how rumination and mindfulness impact on treatment outcome in two group-based interventions for non-melancholic depression: Cognitive Behavior Therapy (CBT) and Mindfulness-Based Cognitive Therapy (MBCT). Sixty-nine participants were randomly allocated to either 8-weekly sessions of group CBT or MBCT. Complete data were obtained from 45 participants (CBT = 26, MBCT = 19). Outcome was assessed at completion of group treatments. The result of the study examined that the depression scores improved for participants in both group interventions, with no significant differences between the two treatment conditions. There were no significant differences between the interventions at post-treatment on mindfulness or rumination scores. Rumination scores significantly decreased from pre- to post-treatment for both conditions. In the MBCT condition, post-treatment rumination scores were significantly associated with post-treatment mindfulness scores. The findings of the study suggested that the decreases in rumination scores may be a common feature following both CBT and MBCT interventions. However, post-treatment rumination scores were associated with post-treatment mindfulness in the MBCT condition, suggesting unique role form mindfulness in understanding treatment outcome for MBCT.

Mandelli L, Serretti A. (2012) studied on Mindfulness-based cognitive therapy versus psycho-education for patients with major depression who did not achieve remission following antidepressant treatment: a preliminary analysis. The objective of
this study was to compare mindfulness-based cognitive therapy (MBCT) with a psycho-
educational control group designed to be structurally equivalent to the MBCT program but excluding the claimed "active ingredient" of MBCT (i.e., mindfulness meditation practice) for the treatment of patients with major depression (MD). This was a randomized controlled trial. The study was conducted at the Institute of Psychiatry, University of Bologna, Italy. Patients who had MD and who did not achieve remission following at least 8 weeks of antidepressant treatment were considered for inclusion. Eligible subjects were randomized to receive MBCT or psycho-education and were prospectively followed for 8 weeks. MD severity was assessed with the Hamilton Rating Scale for Depression (HAMD). Measures of anxiety, mindfulness, and quality of life, as measured with the Beck Anxiety Inventory, Mindfulness Attention and Awareness Scale, and the Psychological General Well-being Index (PGWBI), respectively, were also included. All assessments were performed at baseline, 4 weeks, and 8 weeks. Changes of psychologic variables over the study period were analyzed by means of the repeated-measures analysis of variance. The result of the study indicated that the 29 screened subjects, 16 received MBCT or psycho-education. Both HAMD and PGWBI scores improved to a significantly higher extent in the MBCT group than in the psycho-educational control group.

Geschwind N, Peeters F. (2012) studied on Efficacy of mindfulness-based cognitive therapy in relation to prior history of depression: randomized controlled trial. There appears to be consensus that patients with only one or two prior depressive episodes do not benefit from treatment with mindfulness-based cognitive therapy (MBCT). Currently non-depressed adults with residual depressive symptoms and a history of depression ($\leq 2$ prior episodes: $n = 71$; $\geq 3$ episodes: $n = 59$) were randomised to MBCT ($n = 64$) or a waiting list (control: $n = 66$) in an open-label, randomised
controlled trial. The main outcome measured was the reduction in residual depressive symptoms (Hamilton Rating Scale for Depression, HRSD-17). The study examined that the Mindfulness-based cognitive therapy was superior to the control condition across subgroups ($\beta = -0.56$, $P<0.001$). The interaction between treatment and subgroup was not significant ($\beta = 0.45$, $P = 0.16$). The study concluded that the Mindfulness-based cognitive therapy reduces residual depressive symptoms irrespective of the number of previous episodes of major depression.

Williams C, Ridgway N.2012 studied on Psychological interventions for difficult-to-treat depression. Mindfulness-based cognitive therapy (MBCT) may be helpful in preventing relapse in those with three or more depressive episodes. Recent research suggests it may also benefit those who have experienced fewer previous episodes of depression. If confirmed, this raises challenges of how MBCT is offered, accessed and supported.


Mindfulness-base stress reduction (MBSR) teaches a series of mindfulness meditation and yoga practices, delivered in a group format during eight weekly sessions plus one full-day session. This case report demonstrates how MBSR was associated with dramatic clinical improvement of an individual with symptoms of panic, generalized anxiety, and depression. Scores on clinical assessment measures suggested clinically severe levels of anxious arousal, generalized anxiety, worry, fear of negative evaluation, and depression at the beginning of the intervention. The scores on all these measures fell well within normal limits 7 weeks later at the end of the intervention, and no remaining symptoms were reported afterward. Increased life satisfaction and quality of
life were documented as well. This case illustrates the potential benefit of MBSR as an alternative or adjunctive treatment for comorbid anxiety and depressive disorder symptoms.

Desbordes G, Schwartz EL. 2001 studied on Effects of mindful-attention and compassion meditation training on amygdala response to emotional stimuli in an ordinary, non-meditative state. The amygdala has been repeatedly implicated in emotional processing of both positive and negative-valence stimuli. Previous studies suggested that the amygdala response to emotional stimuli is lower when the subject is in a meditative state of mindful-attention, both in beginner meditators after an 8-week meditation intervention and in expert meditators. However, the longitudinal effects of meditation training on amygdala responses have not been reported when participants are in an ordinary, non-meditative state. In this study, we investigated how 8 weeks of training in meditation affects amygdala responses to emotional stimuli in subjects when in a non-meditative state. Healthy adults with no prior meditation experience took part in 8 weeks of either Mindful Attention Training (MAT), Cognitively-Based Compassion Training (CBCT; a program based on Tibetan Buddhist compassion meditation practices), or an active control intervention. Before and after the intervention, participants underwent an fMRI experiment during which they were presented images with positive, negative, and neutral emotional valences from the IAPS database while remaining in an ordinary, non-meditative state. Using a region-of-interest analysis, we found a longitudinal decrease in right amygdala activation in the Mindful Attention group in response to positive images, and in response to images of all valences overall. In the CBCT group, we found a trend increase in right amygdala response to negative images, which was significantly correlated with a decrease in depression score. No effects or trends were observed in the control group. This finding suggested that the effects
of meditation training on emotional processing might transfer to non-meditative states. This is consistent with the hypothesis that meditation training may induce learning that is not stimulus- or task-specific, but process-specific, and thereby may result in enduring changes in mental function.

Edenfield TM, Saeed SA.. 2012 studied on An update on mindfulness meditation as a self-help treatment for anxiety and depression. In recent years, complementary and alternative medicine (CAM) treatments have increased in popularity. This is especially true for treatments that are related to exercise and mindfulness-based interventions (MBIs) in the treatment of both mental and physical illness. MBIs, such as Mindfulness-based Cognitive Therapy (MBCT) and Mindfulness-Based Stress Reduction (MBSR), which are derived from ancient Buddhist and Yoga philosophies, have become popular treatments in contemporary psychotherapy. While there is growing evidence that supports the role of these interventions in relapse prevention, little is known about the role that MBIs play in the treatment of acute symptoms of depression and anxiety. Even less is known about the importance of specific components of MBIs (eg, mindfulness meditation [MM]) and the overall impact that these interventions have on the experience or expression of psychological distress. Moreover, few studies have rigorously evaluated the dose-response relationship that is required to effect positive symptom change and the mechanisms of change that are responsible for observed improvements. This review will define meditation and mindfulness, discuss the relationship between stress and health and how MM relates to therapeutically engaging the relaxation response, and review the empirical findings that are related to the efficacy of MM in the treatment of depression and anxiety symptoms. Given the paucity of research that examines the applications of these treatments in clinical populations, the limitations of applying these findings to clinical samples will be
mentioned. A brief review of the issues related to the possible mechanisms of change and the dose-response relationship regarding MBIs, particularly MM, will be provided. Finally, limitations of the extant literature and future directions for further exploration of this topic will be offered.

Josefsson T, Lindwall M, 2013 studied on Physical exercise intervention in depressive disorders: Meta-analysis and systematic review. Previous meta-analyses investigating the effect of exercise on depression have included trials where the control condition has been categorized as placebo despite the fact that this particular placebo intervention (e.g., meditation, relaxation) has been recognized as having an antidepressant effect. Because meditation and mindfulness-based interventions are associated with depression reduction, it is impossible to separate the effect of the physical exercise from the meditation-related parts. The present study determined the efficacy of exercise in reducing symptoms of depression compared with no treatment, placebo conditions or usual care among clinically defined depressed adults. Of 89 retrieved studies, 15 passed the inclusion criteria of which 13 studies presented sufficient information for calculating effect sizes. The main result showed a significant large overall effect favoring exercise intervention. The effect size was even larger when only trials that had used no treatment or placebo conditions were analyzed. Nevertheless, effect size was reduced to a moderate level when only studies with high methodological quality were included in the analysis. Exercise may be recommended for people with mild and moderate depression who are willing, motivated, and physically healthy enough to engage in such a program.

2.5 STRESS AND MINDFULNESS MEDITATION

Schwartz GE, Bonner G. 1998 studied on Effects of mindfulness-based stress reduction on medical and premedical students. The inability to cope successfully with the enormous stress of medical education may lead to a cascade of consequences at both a
personal and professional level. The present study examined the short-term effects of an 8-week meditation-based stress reduction intervention on premedical and medical students using a well-controlled statistical design. Findings of the study indicated that participation in the intervention can effectively (1) reduce self-reported state and trait anxiety, (2) reduce reports of overall psychological distress including depression, (3) increase scores on overall empathy levels, and (4) increase scores on a measure of spiritual experiences assessed at termination of intervention. (5) Replicated in the wait-list control group, (6) held across different experiments, and (7) were observed during the exam period. Future research should address potential long-term effects of mindfulness training for medical and premedical students.

Anton PA. 1999 studied on Stress and mind-body impact on the course of inflammatory bowel diseases. At present, the medical management of inflammatory bowel diseases (IBD) including Crohn's disease and ulcerative colitis, are focused on topical, locally active antiinflammatories and systemic immunosuppressives, which are thought to exert their targeted effects in the gastrointestinal mucosa. There is a paucity of controlled trials assessing the impact of mind, central nervous system (CNS), and neuromodulation on the overly active immune response in the intestinal mucosa. Patients and their physicians have long been aware of a strong association between attitude, stress, and flares of their IBD. Although reports to date remain mostly anecdotal, the degree to which mind-body influences and stress impact levels of local inflammation deserves closer attention with the aim of identifying contributing mechanisms, which may highlight new therapeutic interventions, as well as assist in identifying particular subsets of patients that may respond to novel forms of adjunctive treatments for IBD, including hypnosis, meditation, neuropeptide receptor modulation, and cortisol-releasing factor (CRF) modulation.
Bishop SR 2002 studied on what do we really know about mindfulness-based stress reduction? Mindfulness-Based Stress Reduction (MBSR) is a clinical program, developed to facilitate adaptation to medical illness, which provides systematic training in mindfulness meditation as a self-regulatory approach to stress reduction and emotion management. There has been widespread and growing use of this approach within medical settings in the last 20 years, and many claims have been made regarding its efficacy. This article will provide a critical evaluation of the available state of knowledge regarding MBSR and suggestions for future research. A review of the current literature available within the medical and social sciences was undertaken to provide an evaluation regarding what we know about the construct of mindfulness, the effectiveness of MBSR, and mechanisms of action. The result of the study incurred that there has been a paucity of research and what has been published has been rife with methodological problems. At present, we know very little about the effectiveness of this approach. However, there is some evidence that suggests that it may hold some promise.

Proulx K. 2003 studied on Integrating mindfulness-based stress reduction. Mindfulness-based stress reduction (MBSR) programs may mitigate the effects of stress and disease. This integrative review identified 21 clinical studies on MBSR interventions. Although preliminary findings suggest health enhancement from MBSR, controlled, randomized studies, the operationalization of constructs and qualitative research are needed.

Beddoe AE, Murphy SO. 2004 studied on Mindfulness decrease stress and foster empathy among nursing students. This pilot study of baccalaureate nursing students explored the effects of an 8-week mindfulness-based stress reduction (MBSR) course on stress and empathy. The course was intended to provide students with tools to cope with personal and professional stress and to foster empathy through intrapersonal knowing. A
convenience sample of 16 students participated in the course, used guided meditation audiotapes at home, and completed journal assignments. Stress and empathy were measured using paired sample t tests. Participation in the intervention significantly reduced students' anxiety (p > .05). Favorable trends were observed in a number of stress dimensions including attitude, time pressure, and total stress. Two dimensions of empathy--personal distress and fantasy--also demonstrated favorable downward trends. Regular home meditation was correlated with additional benefit. Participants reported using meditation in daily life and experiencing greater well-being and improved coping skills as a result of the program. Findings of the study suggested that being mindful may also decrease tendencies to take on others' negative emotions. Coping with stress and fostering the affective domain are important facets of nursing education that may be facilitated by mindfulness training.

**Brown RP, Gerbarg PL. 2005** studied on Sudarshan Kriya Yogic breathing in the treatment of stress, anxiety, and depression. Part II--clinical applications and guidelines. Yogic breathing is a unique method for balancing the autonomic nervous system and influencing psychologic and stress-related disorders. Part I of this series presented a neurophysiologic theory of the effects of Sudarshan Kriya Yoga (SKY). Part II will review clinical studies, our own clinical observations, and guidelines for the safe and effective use of yoga breath techniques in a wide range of clinical conditions. Although more clinical studies are needed to document the benefits of programs that combine pranayama (yogic breathing) asanas (yoga postures), and meditation, there is sufficient evidence to consider Sudarshan Kriya Yoga to be a beneficial, low-risk, low-cost adjunct to the treatment of stress, anxiety, post-traumatic stress disorder (PTSD), depression, stress-related medical illnesses, substance abuse, and rehabilitation of criminal offenders. SKY has been used as a public health intervention to alleviate PTSD.
in survivors of mass disasters. Yoga techniques enhance well-being, mood, attention, mental focus, and stress tolerance. Proper training by a skilled teacher and a 30-minute practice every day will maximize the benefits. Health care providers play a crucial role in encouraging patients to maintain their yoga practices.

Hoffman C, Pilkington K. 2005 studied on Mindfulness-Based Stress Reduction as supportive therapy in cancer care: systematic review. AIM: This paper reports a systematic review and critical appraisal of the evidence on the effectiveness of Mindfulness-Based Stress Reduction for cancer supportive care. The experience of cancer can have a negative impact on both psychological and physical health and on quality of life. Mindfulness-Based Stress Reduction is a therapy package that has been used with patients with a variety of conditions. In order to draw conclusions on its effectiveness for cancer patients, the evidence requires systematic assessment. A comprehensive search of major biomedical and specialist complementary medicine databases was conducted. Additionally, efforts were made to identify unpublished and ongoing research. Relevant research was categorized by study type and appraised according to study design. Clinical commentaries were obtained for each study and included in the review. the result of the study implied that three randomized controlled clinical trials and seven uncontrolled clinical trials were found. A lack of relevant qualitative research studies was identified. Studies report positive results, including improvements in mood, sleep quality and reductions in stress. A dose-response effect has been observed between practice of Mindfulness-Based Stress Reduction and improved outcome. A number of methodological limitations were identified. Modifications to the traditional Mindfulness-Based Stress Reduction programme make comparison between studies difficult and a lack of controlled studies precludes any firm conclusion on efficacy.
Winbush NY, Gross CR. 2007 studied on The effects of mindfulness-based stress reduction on sleep disturbance: a systematic review. Sleep disturbance is common and associated with compromised health status. Cognitive processes characterized by stress and worry can cause, or contribute to, sleep complaints. This study systematically evaluated the evidence that sleep can be improved by mindfulness-based stress reduction (MBSR), a formalized psychoeducational intervention that helps individuals self-manage and reframe worrisome and intrusive thoughts. Articles were identified from searches of Medline, Allied and Complementary Medicine Database, CINAHL, PsycINFO, Digital Dissertations, and the Cochrane Central Register of Controlled Trials. Eligible for inclusion were English language clinical trials of MBSR that reported preintervention and postintervention measures of sleep quality or duration. Studies employing multicomponent interventions were excluded. Studies were reviewed independently by the first and second authors. The result of the study explained that the Thirty-eight articles were identified for review. Seven met inclusion criteria. Lack of standardized outcome measures precluded pooling of results for quantitative data analysis. Sleep report measures varied (standardized scales, single item, and sleep diaries). Four studies (all uncontrolled) found that MBSR significantly improved measures of sleep quality or duration. The remaining studies found no statistically significant difference between treatment and control conditions. The present study showed that the date, controlled studies have not clearly demonstrated the positive effects of MBSR on sleep quality and duration. However, there is some evidence to suggest that increased practice of mindfulness techniques is associated with improved sleep and that MBSR participants experience a decrease in sleep-interfering cognitive processes (eg, worry). More research is needed using standardized sleep scales and methods, with particular attention to the importance of MBSR home practice.
Koerbel LS, Zucker DM. 2007 studied on the suitability of mindfulness-based stress reduction for chronic hepatitis C. As incidence of chronic hepatitis C (CHC) in the United States increases, management of physical and psychological symptoms over the long term becomes crucial. Research has shown meditation to be a valuable tool in reducing such symptoms for various chronic illnesses. In particular, the Mindfulness-Based Stress Reduction (MBSR) program offers curriculum that has been shown to influence both physiology and perception of disease states. Although there has been no direct research to date on the effectiveness of the MBSR program for CHC, several studies have shown significant findings affecting other chronic conditions, including heart disease, fibromyalgia, and HIV. The purpose of this literature review is to examine recent research, summarize findings, and indicate appropriate inclusion of MBSR as a primary, secondary, and tertiary treatment option in conjunction with biomedical care for those diagnosed with CHC. Thusly, nurses can better inform their clients with this condition.

Praissman S. 2008 studied on Mindfulness-based stress reduction: a literature review and clinician's guide. To provide nurse practitioners (NPs) with clinical research about Mindfulness-Based Stress Reduction (MBSR) and demonstrate its usefulness for reducing stress in a variety of populations. A literature review was conducted using the following databases: EBSCO, Cinahl, Pschyline, and Medline. English language articles published between 2000 and 2006 in peer-reviewed journals were reviewed. Search terms "mindfulness,""meditation," and "stress" were used. Additional information was obtained through select, reputable Internet sites. The study concluded that MBSR is an effective treatment for reducing stress and anxiety that accompanies daily life and chronic illness. MBSR is also therapeutic for healthcare providers, enhancing their interactions with patients. No negative side effects from MBSR have been documented. MBSR is a safe, effective, integrative approach for
reducing stress. Patients and healthcare providers experiencing stress or stress-related symptoms benefit from MBSR programs. NPs can safely and effectively use this intervention in a variety of patient populations.

Chiesa A, Serretti A. 2009 studied on Mindfulness-based stress reduction for stress management in healthy people a review and meta-analysis. Mindfulness-based stress reduction (MBSR) is a clinically standardized meditation that has shown consistent efficacy for many mental and physical disorders. Less attention has been given to the possible benefits that it may have in healthy subjects. The aim of the present review and meta-analysis is to better investigate current evidence about the efficacy of MBSR in healthy subjects, with a particular focus on its benefits for stress reduction. MBSR showed a nonspecific effect on stress reduction in comparison to an inactive control, both in reducing stress and in enhancing spirituality values, and a possible specific effect compared to an intervention designed to be structurally equivalent to the meditation program. A direct comparison study between MBSR and standard relaxation training found that both treatments were equally able to reduce stress. Furthermore, MBSR was able to reduce ruminative thinking and trait anxiety, as well as to increase empathy and self-compassion.

Kang YS, Choi SY, 2009 Studied on The effectiveness of a stress coping program based on mindfulness meditation on the stress, anxiety, and depression experienced by nursing students in Korea. The study examined that the effectiveness of a stress coping program based on mindfulness meditation on the stress, anxiety, and depression experienced by nursing students in Korea. A nonequivalent, control group, pre-posttest design was used. A convenience sample of 41 nursing students were randomly assigned to experimental (n=21) and control groups (n=20). Stress was measured with the PWI-SF (5-point) developed by Chang. Anxiety was measured with
Spieberger's state anxiety inventory. Depression was measured with the Beck depression inventory. The experimental group attended 90-min sessions for eight weeks. No intervention was administered to the control group. Nine participants were excluded from the analysis because they did not complete the study due to personal circumstances, resulting in 16 participants in each group for the final analysis. Results for the two groups showed (1) a significant difference in stress scores ($F=6.145$, $p=0.020$), (2) a significant difference in anxiety scores ($F=6.985$, $p=0.013$), and (3) no significant difference in depression scores ($t=1.986$, $p=0.056$). A stress coping program based on mindfulness meditation was an effective intervention for nursing students to decrease their stress and anxiety, and could be used to manage stress in student nurses. In the future, long-term studies should be pursued to standardize and detail the program, with particular emphasis on studies to confirm the effects of the program in patients with diseases, such as cancer.

**Merkes M. 2010** studied on Mindfulness-based stress reduction for people with chronic diseases. Mindfulness-based stress reduction (MBSR) is a structured group program that uses mindfulness meditation to improve well-being and alleviate suffering. This article reviews the impact of MBSR for people with chronic diseases. The review includes original research that was published in English and peer-reviewed and reported outcomes for adults with chronic diseases who had participated in an MBSR program. Fifteen studies were identified. Outcomes related to mental and physical health, well-being, and quality of life. The studies included different research designs, and used self-report and physiological outcome measures. Participants' clinical diagnoses included fibromyalgia, chronic pain, rheumatoid arthritis, type 2 diabetes, chronic fatigue syndrome, multiple chemical sensitivity, and cardiovascular diagnoses. All 15 studies found that participation in an MBSR program resulted in improvements. No negative change was reported between baseline and follow up. Outcomes in regard to specific
variables were difficult to compare and equivocal. Overall, positive change predominated. Chronic diseases are associated with a range of unwelcome psychological and physical consequences. Participation in an MBSR program is likely to result in coping better with symptoms, improved overall well-being and quality of life, and enhanced health outcomes. As an adjunct to standard care, MBSR has potential for much wider application in Australian primary care settings.

Towle N, Nelson MR. 2011 studied on Randomized controlled trial of the effects of mindfulness practice on medical student stress levels. This study aimed that to determine whether the practice of mindfulness reduces the level of stress experienced by senior medical students. We carried out a multicentre, single-blinded, randomised controlled trial with intention-to-treat analysis in three clinical schools attached to the University of Tasmania, Hobart, Tasmania. Participants included 66 medical students in their final 2 years of study in 2009. Participants were block-randomised to either an intervention or a usual care control group. The intervention used an audio CD of guided mindfulness practice designed and produced for this trial. Participants were advised to use the intervention daily over the 8 weeks of the trial. All participants completed two self-report questionnaires, at baseline and at 8 weeks, respectively. The intervention group also completed a questionnaire at 16 weeks to provide follow-up data. The primary outcome measure was the difference over time in scores on the Perceived Stress Scale (PSS). The secondary outcome measure referred to differences over time in scores on the subscales of the Depression, Anxiety and Stress Scale (DASS). The result of the study inferred that the Mean baseline scores on the PSS and the stress component of the DASS were 15.7 (maximal score of 40) and 13.2 (maximal score of 42), respectively, both of which exceed scores in age-matched normative control data. Using multivariable analysis, participants in the intervention group 3.44, 95% demonstrated significant reductions in
scores on the PSS (-0.68; p-confidence interval [CI] - 6.20 to <-0.05) and the anxiety 0.64; p 4.99 to -2.82, 95% CI - component of the DASS (- <0.05). A borderline significant effect was demonstrated on the stress component 7.38 to 0.01; p = 0.05). The study stated that the Mindfulness practice reduced stress and anxiety in senior medical students. Stress is prevalent in medical students and can have adverse effects on both student health and patients.

Michalak J, Heidenreich T. 2011 studied on Mindfulness-based Stress Reduction (MBSR). In the context of an increasing interest in mindfulness-based approaches both in clinical application as well as in the field of research the present paper introduces MBSR (Mindfulness-based Stress Reduction), illustrates the theoretical background of mindfulness practice and reviews the procedures during the cultivation of mindfulness and possible impacting factors. The article also reviews Mindfulness-based Cognitive Therapy (MBCT), which was specifically developed to prevent relapse in patients with depressive disorders. The paper ends with a conclusion for clinical practice.

Armer JM, Stewart BR.2011 studied on Mindfulness-based stress reduction among breast cancer survivors: a literature review and discussion. The search resulted in 26 articles that were narrowed down to 16 by selecting only quantitative studies of MBSR conducted with breast cancer (n = 7) or heterogeneous types of cancer in which the predominant cancer was breast cancer (n = 9). Most studies were one-group pre- and post-test design and examined the effect of MBSR on psychological outcomes. Overall, the studies had large effect sizes on perceived stress and state anxiety and medium effect sizes on symptoms of stress and mood disturbance. Four studies measured biologic outcomes and had small effect sizes, except cytokine production, which showed a large effect size at 6- and 12-month follow-ups.
Fink P, Walach H. 2011 studied on Mindfulness-based stress reduction and mindfulness-based cognitive therapy: a systematic review of randomized controlled trials. Fjorback LO, Arendt M, Ørnøj E, Fink P, Walach H. Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy - a systematic review too systematically of randomized controlled trials. Future RCTs should apply optimal design including active treatment for comparison, properly trained instructors and at least one-year follow-up. Future research should primarily tackle the question of whether the search produced 72 articles, of which 21 were included. MBSR improved mental health in 11 studies compared to wait list control or treatment as usual (TAU) and was as efficacious as active control group in three studies. MBCT reduced the risk of depressive relapse in two studies compared to TAU and was equally efficacious to TAU or an active control group in two studies. Overall, studies showed medium effect sizes. Among other limitations are lack of active control group and long-term follow-up in several studies. Conclusion: were key words. Only randomized controlled trials (RCT) using the standard MBSR/MBCT programme with a minimum of 33 participants were included. Results: mindfulness itself is a decisive ingredient by controlling against other active control conditions or true treatments.

Choi KE, Ostermann T. 2011 studied on Mindfulness-based stress reduction for integrative cancer care: a summary of evidence. This paper provides a comprehensive overview of the relevant existing evidence, and critically appraises the use of mindfulness-based stress reduction (MBSR) in cancer care. Furthermore, a meta-analysis was conducted in order to investigate the effect of MBSR on quality of life (QoL), mood, and distress. Besides 6 reviews (5 systematic, 1 meta-analytic) which are reported separately, a total of 19 original research papers fully met the inclusion criteria for the systematic review. The 19 original papers consisted of 5 randomised controlled trials
(RCTs), 4 non-randomised controlled trials (NRCTs), 9 observational studies (OS) and 1 two-arm observational study. The included outcome measures were QoL, mood, and distress. Cohen's effect size \( d \) was computed for each category. Estimating the effect on QoL, a total of \( n = 248 \) patients out of 6 studies was included and the overall effect size was 0.29 (95% confidence interval (CI) 0.17-0.40; \( p \leq 0.00005 \)). Calculating the effect on mood, a total of \( n = 411 \) patients out of ten studies were included, and the overall effect size was 0.42 (95% CI 0.26-0.58; \( p < 0.0001 \)). Reduction in distress revealed an overall effect size of 0.58 (95% CI 0.45-0.72; \( p < 0.0001 \); \( n = 587 \) patients out of 15 studies). MBSR programmes can improve QoL and mood, and reduce distress in cancer patients. However, there is an urgent need for more high quality RCTs implementing adequate controls, longer follow-up periods, sufficient samples sizes, clear descriptions of patients' psychological profiles, and the accompanying utilization of qualitative measures.

Marchand WR (2012) made a study on Mindfulness-based stress reduction, mindfulness-based cognitive therapy, and Zen meditation for depression, anxiety, pain, and psychological distress. Mindfulness has been described as a practice of learning to focus attention on moment-by moment experience with an attitude of curiosity, openness, and acceptance. Mindfulness practices have become increasingly popular as complementary therapeutic strategies for a variety of medical and psychiatric conditions. This paper provides an overview of three mindfulness interventions that have demonstrated effectiveness for psychiatric symptoms and/or pain. The goal of this review is to provide a synopsis that practicing clinicians can use as a clinical reference concerning Zen meditation, mindfulness-based stress reduction (MBSR), and mindfulness-based cognitive therapy (MBCT). All three approaches originated from Buddhist spiritual practices, but only Zen is an actual Buddhist tradition. MBSR and MBCT are secular, clinically based methods that employ manuals and standardized
techniques. Studies indicate that MBSR and MBCT have broad-spectrum antidepressant and antianxiety effects and decrease general psychological distress. MBCT is strongly recommended as an adjunctive treatment for unipolar depression. The evidence suggests that both MBSR and MBCT have efficacy as adjunctive interventions for anxiety symptoms. MBSR is beneficial for general psychological health and stress management in those with medical and psychiatric illness as well as in healthy individuals. Finally, MBSR and Zen meditation have a role in pain management.

Shiralkar MT, Harris TB,(2013) studied on a systematic review of stress-management programs for medical students. Because medical students experience a considerable amount of stress during training, academic leaders have recognized the importance of developing stress-management programs for medical students. The authors set out to identify all controlled trials of stress-management interventions and determine the efficacy of those interventions. The authors searched the published English-language articles on psycinfo and pubmed, using a combination of the following search terms: stress-management, distress, burnout, coping, medical student, wellness. Both randomized, controlled trials and controlled, non-randomized trials of stress-management programs were selected and critically appraised. A total of 13 randomized, controlled trials or controlled, non-randomized trials were identified. Interventions included self-hypnosis, meditation, and mindfulness-based stress-reduction, feedback on various health habits, educational discussion, changes in the length and type of curriculum, and changes in the grading system. Only one study was identified to be of very high quality, although several had described group differences at baseline, used blinding, had good follow-up, and used validated assessment tools. There was a wide heterogeneity of outcome measures used. Interventions that were supported by a reduction in stress and anxiety in medical students included mindfulness-based stress-reduction or meditation techniques,
self-hypnosis, and pass/fail grading. The study implied that the significant opportunities to advance educational research in this field exist by developing more high-quality studies with particular attention to randomization techniques and standardizing outcome measures.

2.6 ANXIETY AND ACADEMIC ACHIEVEMENT AMONG STUDENTS

Chang AC. 2008 studied on Sources of listening anxiety in learning English as a foreign language. In this study of college students' listening anxiety in learning English in a classroom context, participants were 160 students (47 men and 113 women) ages 18 to 19 years. To address their listening anxiety, participants were chosen from students enrolling in a required listening course. A listening questionnaire was used to assess learners' anxiety about spoken English, its intensity, and the main sources of listening anxiety. Overall, participants showed moderately high intensity of anxiety in listening to spoken English, but were more anxious in testing than in general situations. In contrast to previous research on the nature of spoken English as the main source of listening anxiety, this study found that low confidence in comprehending spoken English, taking English listening courses as a requirement, and worrying about test difficulty were the three main factors contributing to participants' listening anxiety in a classroom context. Participants' learning profiles both in the classroom and outside the class yielded data which provides suggestions for reducing anxiety.

Araki Y. 2008 studied on Japanese college students' pessimism, coping strategies and anxiety: validation of the Japanese Defensive Pessimism Inventory (JDPI)]. The purpose of this study was to develop the Japanese Defensive Pessimism Inventory (JDPI), which measures defensive pessimism in an academic achievement situation for Japanese undergraduate students and differentiates between those who are realistically pessimistic and those who are defensively pessimistic. In Study 1,695 undergraduates completed the
JDPI. A factor analysis revealed that the 24 items of the JDPI comprised four factors: Pessimism, Past experience, Positive reflectivity, and Effort. In Study 2, 618 undergraduates completed the JDPI, the Test Coping Strategy Scale, and the State-Trait Anxiety Inventory. The JDPI had high internal consistency and test-retest reliability. Defensive pessimists and strategic optimists had higher scores on the active coping strategy and lower scores on the avoidant-thinking coping strategy than did realistic pessimists. Furthermore, defensive pessimists and realistic pessimists had higher scores on the state anxiety and lower scores on the optimistic-thinking coping strategy than did strategic optimists. The results indicate that the JDPI had high concurrent validity.

Norgate R, Hadwin JA. 2008 studied on Processing efficiency theory in children: working memory as a mediator between trait anxiety and academic performance. Working memory skills are positively associated with academic performance. In contrast, high levels of trait anxiety are linked with educational underachievement. Based on Eysenck and Calvo's (1992) processing efficiency theory (PET), the present study investigated whether associations between anxiety and educational achievement were mediated via poor working memory performance. Fifty children aged 11-12 years completed verbal (backwards digit span; tapping the phonological store/central executive) and spatial (Corsi blocks; tapping the visuospatial sketchpad/central executive) working memory tasks. Trait anxiety was measured using the State-Trait Anxiety Inventory for Children. Academic performance was assessed using school administered tests of reasoning (Cognitive Abilities Test) and attainment (Standard Assessment Tests). The results showed that the association between trait anxiety and academic performance was significantly mediated by verbal working memory for three of the six academic performance measures (math, quantitative and non-verbal reasoning). Spatial working memory did not significantly mediate the relationship
between trait anxiety and academic performance. On average verbal working memory accounted for 51% of the association between trait anxiety and academic performance, while spatial working memory only accounted for 9%. The findings indicate that PET is a useful framework to assess the impact of children's anxiety on educational achievement.

**Johnson DR, Gronlund SD. 2009** studied on Individuals lower in working memory capacity are particularly vulnerable to anxiety's disruptive effect on performance. Anxiety has a disruptive effect on performance in a number of domains. The purpose of this study was to determine whether individual differences in working memory (WM) capacity are related to an individual's susceptibility to anxiety's detrimental effect on performance. Fifty undergraduate students (28 females) were administered the State-Trait Anxiety Inventory (STAI) (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) to measure trait anxiety and the automated operation span task to measure WM capacity (Unsworth, Heitz, Schrock, & Engle, 2005). Then, they performed a highly demanding dual-task that consisted of a primary short-term memory task and a secondary tone-discrimination task that served as a measure of spare capacity. Anxiety and WM capacity interacted to affect performance on the auditory task so that those low in WM capacity were particularly vulnerable to anxiety's disruptive effect, whereas those high in WM capacity were buffered against anxiety's effect. These findings suggest that WM capacity may be an important factor in determining which individuals underperform on anxiety-provoking tests such as scholastic achievement tests.

**Chen MC, Lin HJ. 2009** studied on Self-efficacy, foreign language anxiety as predictors of academic performance among professional program students in a general English proficiency writing test. Questionnaires were administered to 120 students. Cluster analysis was used to examine whether specific groups could be described by a writing self-efficacy scale, English writing anxiety scale, and a written General English
Proficiency Test. Three clusters were observed. Demographic variables were compared for each cluster, including age, sex, program of study, years of English instruction, native language, and number of English speaking acquaintances. Efforts to reduce writing anxiety and promote writing self-efficacy could enhance writing scores of participants.

Putwain DW, Woods KA, 2010 studied on Personal and situational predictors of test anxiety of students in post-compulsory education. Recent models of evaluation anxiety emphasize the importance of personal knowledge and self-regulatory processes in the development of test anxiety, but do not theorize a route for situational influences. To investigate the relationship between test anxiety and personal knowledge beliefs (achievement goals and perceived academic competence), parental pressure/support, and teachers' achievement goals. One-hundred and seventy five students at a sixth-form college following pre-degree courses in Psychology and Sociology. Self-report data were collected for test anxiety, personal achievement goals, academic self-concept, perceived test competence, teachers' achievement goals, and parental pressure/support. Relationships were examined through correlational and regression analyses. The relationship between test anxiety and personal knowledge beliefs differed for the various components of test anxiety. A mastery-avoidance goal was related to worry and tension, and a performance-approach goal to bodily symptoms. Perceived academic competence was related to worry and tension. Parental pressure was associated with stronger worry and test-irrelevant thinking components directly, and with a stronger bodily symptoms component indirectly through a performance-approach goal. Teachers’ performance-avoidance goals were related to worry, tension, and bodily symptoms indirectly through personal performance-avoidance goals, and in the case of bodily symptoms additionally through a performance-approach goal. The findings of the study provided that the partial support for the self-regulatory model of test anxiety suggesting
that additional routes are required to account for the role of parental pressure and teachers' performance-avoidance goals and a re-examination of the relationship between test anxiety and achievement goals.

**Lench HC, Roe E. 2010** studied on Trait anxiety and achievement goals as predictors of self-reported health in dancers. Psychological characteristics associated with interpreting situations as stressful can impact people's physical health. The present investigation focused on trait anxiety and achievement goals as two such characteristics that may predict health outcomes in dancers, a group prone to chronic stress and injury. Students enrolled in a university dance program (N = 109) completed measures of trait anxiety, achievement goals for dance classes, and current health at the start of an academic term. Health was assessed again at the end of the term. Greater trait anxiety predicted poorer health at the end of the term when controlling for initial health. In addition, the more dancers wanted to avoid performing worse than others (performance-avoidance goals), the poorer was their physical health at term's end. It is concluded that anxiety and performance-avoidance goals may hinder dancers' ability to cope with the physical stress associated with a dance career.

**Parade SH, Blankson AN. 2010** studied on Attachment to parents, social anxiety, and close relationships of female students over the transition to college. The current study examined the process by which attachment to parents influences satisfaction with and ease in forming friendships at college. One hundred seventy-two female college freshmen completed a measure of parental attachment security the summer before their first semester of college (July 2006) and measures to assess satisfaction with and ease in forming close relationships at the end of their first semester (December 2006). Students ranged in age from 18 to 20 years (M = 18.09, SD = 0.33) and were diverse in their racial makeup (30% racial minority). Consistent with predictions derived
from attachment theory, secure attachment to parents was positively associated with ease in forming friendships among racial minority and white participants and satisfaction with friendships among minority participants. Moreover, indirect effects of parental attachment security on relationship outcomes through social anxiety were significant for minority participants but not for white participants. Findings may be useful in the development of retention programs targeted at incoming university freshmen, particularly minority students.

Beilock SL, Gunderson EA, 2010 studied on Female teachers' math anxiety affects girls' math achievement. People's fear and anxiety about doing math-over and above actual math ability--can be an impediment to their math achievement. We show that when the math-anxious individuals are female elementary school teachers, their math anxiety carries negative consequences for the math achievement of their female students. Early elementary school teachers in the United States are almost exclusively female (>90%), and we provide evidence that these female teachers' anxieties relate to girls' math achievement via girls' beliefs about who is good at math. First- and second-grade female teachers completed measures of math anxiety. The math achievement of the students in these teachers' classrooms was also assessed. There was no relation between a teacher's math anxiety and her students' math achievement at the beginning of the school year. By the school year's end, however, the more anxious teachers were about math, the more likely girls (but not boys) were to endorse the commonly held stereotype that "boys are good at math, and girls are good at reading" and the lower these girls' math achievement. Indeed, by the end of the school year, girls who endorsed this stereotype had significantly worse math achievement than girls who did not and than boys overall. In early elementary school, where the teachers are almost all
female, teachers' math anxiety carries consequences for girls' math achievement by influencing girls' beliefs about who is good at math.

Nasir Mahmood 2010, studied on The Relationship between Test Anxiety and Academic Achievement. The major aim of this research study was to explore the relationship between test anxiety and academic achievement of students at the post graduate level. A sample of 414 students was randomly selected from seven different science departments in a public sector university in Lahore, Pakistan. Data were collected by using the Test Anxiety Inventory (TAI) developed by Spielberger. Pearson correlation, multivariate statistics and regression analyses were run for data analysis. It was found that a significant negative relationship exists between test anxiety scores and students’ achievement scores. Results showed that a cognitive factor (worry) contributes more in test anxiety than affective factors (emotional). Therefore, it is concluded that test anxiety is one of the factors which are responsible for students’ underachievement and low performance but it can be managed by appropriate training of students in dealing with factors causing test anxiety.

Haiyan Bai. 2011 studied on Cross-validating a bidimensional mathematics anxiety scale. The psychometric properties of a 14-item bidimensional Mathematics Anxiety Scale-Revised (MAS-R) were empirically cross-validated with two independent samples consisting of 647 secondary school students. An exploratory factor analysis on the scale yielded strong construct validity with a clear two-factor structure. The results from a confirmatory factor analysis indicated an excellent model-fit ($\chi^2(2) = 98.32, \text{df} = 62; \text{normed fit index} = .92, \text{comparative fit index} = .97; \text{root mean square error of approximation} = .04$). The internal consistency (.85), test-retest reliability (.71), interfactor correlation (.26, $p < .001$), and positive discrimination power indicated that MAS-R is a psychometrically reliable and valid instrument for measuring
mathematics anxiety. Math anxiety, as measured by MAS-R, correlated negatively with student achievement scores ($r = -0.38$), suggesting that MAS-R may be a useful tool for classroom teachers and other educational personnel tasked with identifying students at risk of reduced math achievement because of anxiety.

Luttenberger S, Paechter M.2011 studied on Academic self-concept, learning motivation, and test anxiety of the underestimated student. Teachers' judgments of student performance on a standardized achievement test often result in an overestimation of students' abilities. In the majority of cases, a larger group of overestimated students and a smaller group of underestimated students are formed by these judgments. AIMS. In this research study, the consequences of the underestimation of students' mathematical performance potential were examined. Two hundred and thirty-five fourth grade students and their fourteen mathematics teachers took part in the investigation. Students worked on a standardized mathematics achievement test and completed a self-description questionnaire about motivation and affect. Teachers estimated each individual student's potential with regard to mathematics test performance as well as students' expectancy for success, level of aspiration, academic self-concept, learning motivation, and test anxiety. The differences between teachers' judgments on students' test performance and students' actual performance were used to build groups of underestimated and overestimated students. The result of the study implied that the Underestimated students displayed equal levels of test performance, learning motivation, and level of aspiration in comparison with overestimated students, but had lower expectancy for success, lower academic self-concept, and experienced more test anxiety. Teachers expected that underestimated students would receive lower grades on the next mathematics test, believed that students were satisfied with lower grades, and assumed that the students have weaker learning motivation than their overestimated classmates.
Ruble DN, Fuligni AJ. 2011 studied on Ethnic stigma, academic anxiety, and intrinsic motivation in middle childhood. Previous research addressing the dynamics of stigma and academics has focused on African American adolescents and adults. The present study examined stigma awareness, academic anxiety, and intrinsic motivation among 451 young (ages 6-11) and diverse (African American, Chinese, Dominican, Russian, and European American) students. Results indicated that ethnic-minority children reported higher stigma awareness than European American children. For all children, stigma awareness was associated with higher academic anxiety and lower intrinsic motivation. Despite these associations, ethnic-minority children reported higher levels of intrinsic motivation than their European American peers. A significant portion of the higher intrinsic motivation among Dominican students was associated with their higher levels of school belonging, suggesting that supportive school environments may be important sources of intrinsic motivation among some ethnic-minority children.

Putwain DW, Symes W. 2012 studied on Achievement goals as mediators of the relationship between competence beliefs and test anxiety. Previous work suggests that the expectation of failure is related to higher test anxiety and achievement goals grounded in a fear of failure. To test the hypothesis, based on the work of Elliot and Pekrun (2007), that the relationship between perceived competence and test anxiety is mediated by achievement goal orientations. Self-report data were collected from 275 students in post-compulsory education following courses in A Level Psychology. The result of the study examined that the Competence beliefs were inversely related to the worry and tension components of test anxiety, both directly and indirectly through a performance-avoidance goal orientation. A mastery-avoidance goal orientation offered an indirect route from competence beliefs to worry only. The findings of the study provided that the partial support for Elliot and Pekrun's (2007) model. Although significant mediating
effects were found for mastery-avoidance and performance-avoidance goals, they were small and there may be other mechanisms to account for the relations between competence beliefs and test anxiety.

Denton CA, Taylor P. 2012 studied on Anxiety and inattention as predictors of achievement in early elementary school children. The objective of this study was to examine the relations among anxiety, inattention, and math/reading achievement, as well as the mediating/moderating role of inattention in the anxiety-achievement association both concurrently and longitudinally. Participants included 161 ethnically diverse children (aged 6-8) and their teachers. At the middle and end of first grade (approximately 5 months apart), students completed measures of anxiety and achievement while their teachers completed a measure of inattention. For the concurrent analyses, greater harm avoidance anxiety was associated with better attention, which was in turn related to better achievement. For the longitudinal analyses, mid-year inattention interacted with harm avoidance and separation anxiety to predict end of year reading fluency. For those rated as more attentive, greater separation anxiety symptoms were associated with decreased fluency performance while greater harm avoidance symptoms were associated with increased performance. Findings were discussed in terms of the importance of considering socioemotional variables in the study of children's academic achievement and the potential utility of early anxiety prevention/intervention programs, especially for children experiencing academic difficulties who also show internalizing behaviors.

Majkowicz M, Budzinski W. 2012 studied on Academic achievement, depression and anxiety during medical education predict the styles of success in a medical career: A 10-year longitudinal study our study investigated the styles of success in the medical career in young physicians, in comparison with the same subjects examined 4-10
years earlier. The participants were first studied when they applied to the medical university (1999). Questionnaires were sent to all students each year (2000-2005). Fifty-four medical doctors participated in the first phase of the study completed a questionnaire four years after graduation. The current questionnaire included measures of burnout, satisfaction with medicine as a career, quality of life (QOL) and postgraduate examination results. Previous questionnaires had included measures of academic achievement, depression and anxiety. The result of the study inferred that the describe three different styles of success, which can be predicted during medical education. Physicians with the best professional competence have the lowest income. However, physicians with the lowest professional competence gain the highest income. Those with the highest QOL (general well-being and life satisfaction) have the lowest professional stress and vulnerability to burnout. Anxiety and academic achievement (during the second and fourth year of study) are the significant predictors of specific style belonging.

Buelow MT, Frakey LL. 2013 studied on Math Anxiety Differentially Affects WAIS-IV Arithmetic Performance in Undergraduates. Previous research has shown that math anxiety can influence the math performance level; however, to date, it is unknown whether math anxiety influences performance on working memory tasks during neuropsychological evaluation. In the present study, 172 undergraduate students completed measures of math achievement (the Math Computation subtest from the Wide Range Achievement Test-IV), math anxiety (the Math Anxiety Rating Scale-Revised), general test anxiety (from the Adult Manifest Anxiety Scale-College version), and the three Working Memory Index tasks from the Wechsler Adult Intelligence Scale-IV Edition (WAIS-IV; Digit Span [DS], Arithmetic, Letter-Number Sequencing [LNS]). Results indicated that
math anxiety predicted performance on Arithmetic, but not DS or LNS, above and beyond the effects of gender, general test anxiety, and math performance level. Our findings suggest that math anxiety can negatively influence WAIS-IV working memory subtest scores. Implications for clinical practice include the utilization of LNS in individuals expressing high math anxiety.

2.7 DEPRESSION AND ACADEMIC ACHIEVEMENT

Hsu K, Herman K. 1996 studied on Depression and academic impairment in college students. Impairment from depression and its impact on productivity are of profound societal importance. We report the results of an evaluation of depression and academic impairment in university students, using standardized measures. Sixty-three students completed the Beck Depression Inventory and the work role section from the Social Adjustment Scale-Self Report. Academic impairment, manifested as missed time from class, decreased academic productivity, and significant interpersonal problems at school, was seen in 92% of the students. More severe depression was related to a higher level of impairment. At all levels of depression, affective impairment-inadequacy, distress, and disinterest in school was more prevalent than was academic impairment. The risk of academic impairment became likely at only moderate-to-severe levels of depression. Discussing the implications of depression with students and aggressively pursuing both medication and nonmedication therapies are essential in preventing the high morbidity associated with untreated depression.

Grieve AJ, Tluczek A, 2011 studied on Associations between academic achievement and psychosocial variables in adolescents with cystic fibrosis. Cystic fibrosis (CF) is a chronic genetic disease that leads to the accumulation of thick mucus in multiple organ systems, leading to chronic lung infection and affecting the body's ability to absorb nutrients necessary for growth and development. This cross-sectional,
correlational study examined the potential effects of CF on students' psychosocial and academic development. Forty adolescents with CF completed a battery of neuropsychological and psychosocial measures. Their school records were reviewed to abstract information about standardized achievement testing results and grade point average (GPA). Academic outcomes were hypothesized to be associated with (1) self-efficacy, (2) disease and school-specific coping strategies, (3) attitude to school, and (4) depression. The result of the study inferred that the cognitive and academic scores were within the normal range, and self-efficacy had the strongest association with standardized cognitive and academic measures and high school grades. School absences were associated with GPA, but not standardized test scores.

Wang KT. 2012 studied on Personal and family perfectionism of Taiwanese college students: relationships with depression, self-esteem, achievement motivation, and academic grades. An increasing number of perfectionism studies have been conducted across different countries outside of the Western framework. Using an international egalitarian approach that adopts indigenous frameworks and concepts from the cultural context of the population studied is imperative. This study examines different groups of perfectionists with a sample of 348 Taiwanese college students, emphasizing the collectivistic culture. In particular, this is a follow-up study to further explore characteristics of a group with low standards/high discrepancy--a feeling that they are not good enough despite having low standards--found in a previous study with Taiwanese students. More specifically, this study investigates whether the source of the high discrepancy scores among this group is related to having higher perfectionistic standards from their family. Perfectionism was examined not only from a personal/individualistic perspective, but also from a familistic dimension to reflect Taiwanese collectivistic cultural values. Results partially supported the hypotheses--this group reported having
higher family discrepancy, but not family standards, than nonperfectionists. However, this group of participants reported lower academic grades, which implies the possibility of their discrepancy being associated with poorer performance. Four cluster groups—adaptive perfectionists, maladaptive perfectionists, non-perfectionists, and those with low standards/high discrepancy—were compared on their levels of depression, self-esteem, achievement motivation, and academic grades. Maladaptive perfectionists reported the highest depression level, while adaptive perfectionists reported the highest self-esteem. Results also show that aspects of personal perfectionism and family perfectionism related to self-esteem differently among this sample. Findings and implications are discussed with consideration of the collectivistic cultural context in Taiwan.

Washburn C, Mirwaldt P. 2012 studied on Stress and depression in students: the mediating role of stress management self-efficacy. The prevalence of mental health issues appears to be increasing. Stress that leads to depression may be mediated if people believe that they have the wherewithal to manage it. The aim of this study was to examine the extent to which the relationship between adverse stress and depression is mediated by university students' perceived ability to manage their stress. Students were sampled randomly at a Canadian university in 2006 (n = 2,147) and 2008 (n = 2,292). Data about students' stress (1 item), depression (4 items), stress management self-efficacy (4 items), and their demographics were obtained via the online National College Health Assessment survey and analyzed using confirmatory factor analysis and latent variable mediation modeling. The result of the study showed that the Greater stress management self-efficacy was associated with lower depression scores for students whose stress impeded their academic performance, irrespective of their gender and age (total Rdepression = 41%). The relationship between stress and depression was mediated
partially by stress management self-efficacy (37% to 55% mediation, depending on the severity of stress).

McArdle JJ, Hamagami F. 2012 studied on Potential causal relationship between depressive symptoms and academic achievement in the Hawaiian high schools health survey using contemporary longitudinal latent variable change models. There is a relatively consistent negative relationship between adolescent depressive symptoms and educational achievement (e.g., grade point average [GPA]). However, the causal direction for this association is less certain due to the lack of longitudinal data with both indicators measured across at least 2 time periods and due to the lack of application of more sophisticated contemporary statistical techniques. We present multivariate results from a large longitudinal cohort-sequential study of high school students (N = 7,317) with measures of self-reported depressive symptoms and self-reported GPAs across multiple time points (following McArdle, 2009, and McArdle, Johnson, Hishinuma, Miyamoto, & Andrade, 2001) using an ethnically diverse sample from Hawai’i. Contemporary statistical techniques included bivariate dynamic structural equation modeling (DSEM), multigroup ethnic and gender DSEMs, ordinal scale measurement of key outcomes, and imputation for incomplete longitudinal data. The findings suggest that depressive symptoms affect subsequent academic achievement and not the other way around, especially for Native Hawaiians compared with female non-Hawaiians. We further discuss the scientific, applied, and methodological-statistical implications of the results, including the need for further theorizing and research on mediating variables. We also discuss the need for increased prevention, early intervention, screening, identification, and treatment of depressive symptoms and disorders. Finally, we argue for utilization of more contemporary methodological-statistical techniques, especially when violating parametric test assumptions.
Elion AA, Wang KT, 2012 studied on Perfectionism in African American students: relationship to racial identity, GPA, self-esteem, and depression. This study examined 219 African American college students at predominantly White universities using the constructs of perfectionism, academic achievement, self-esteem, depression, and racial identity. Cluster analysis was performed using the Almost Perfect Scale-Revised (APS-R), which yielded three clusters that represented adaptive perfectionists, maladaptive perfectionists, and nonperfectionists. These three groups were compared on their scores on the Rosenberg Self-Esteem Scale (RSES), the Center for Epidemiological Studies-Depression Scale (CES-D), the Cross Racial Identity Scale (CRIS), and Grade Point Average (GPA). Adaptive perfectionists reported higher self-esteem and lower depression scores than both the nonperfectionists and maladaptive perfectionists. Adaptive perfectionists had higher GPAs than nonperfectionists. On the racial identity scales, maladaptive perfectionists had higher scores on Pre-Encounter Self Hatred and Immersion-Emersion Anti-White subscales than adaptive perfectionists. The cultural and counseling implications of this study are discussed and integrated. Finally, recommendations are made for future studies of African American college students and perfectionism.

Issa M, Barah F. 2012 studied on A longitudinal investigation of depressive symptoms in undergraduate students of pharmacy in Syria. This prospective longitudinal study investigated depressive symptoms and its association with students' demographic, academic, and health factors in undergraduate students of pharmacy in Syria. Students attending any year (1st to 5th year) were assessed in the first semester (time 1) and in the second semester (time 2). An academic year comprises two semesters of 16 weeks each. Data for 450 students were analyzed at time 1, and 262 students were assessed at the two time points. Our results showed that most of the students experienced depressive
symptoms, with a substantial percentage presenting moderate to severe levels of symptoms (35% or 450 students at time 1; 23% or 262 students at time 2). Across the two semesters, a significant decrease in depressive symptoms was observed for students with complete data at the two time points. Depressive symptoms at time 2 increased significantly with increasing depressive scores at time 1 and decreasing students’ expectations about their academic performance. Our results support the clear need for dynamic, full-time, and accessible psychological services at the university to promote and assess mental health and to deliver psychological interventions to students at need.

Huber LR, Arif AA. 2012 studied on Depressive symptoms and academic performance of North Carolina college students. Depression negatively affects cognitive functioning and, consequently, academic performance. Studies of this association have yielded conflicting results and have not fully considered other factors that may play a role in academic performance. This study examines the relation between depression and academic performance in students at a large urban university in North Carolina. We analyzed data from student responses to the 2008 cross-sectional National College Health Assessment to create categories of depressive symptomatology. E-mail invitations to participate in the assessment were sent to 8,000 students at the university in an effort to obtain at least 900 responses, the minimum number considered valid for a campus of its size. We analyzed the responses of the 1,280 undergraduates who completed the survey. Logistic regression analyses were performed to examine associations between depressive symptoms and academic performance in this group. The result of the study examined that the Students in the second, third, and fourth quartiles of depressive symptomatology had increased, though statistically non-significant, odds of having a lower cumulative grade average, even after adjustment for age, sex, year in school, race/ethnicity, substance use, and level of credit-card debt. This difference was most pronounced among students in the
second quartile of depressive symptomatology. This cross-sectional study did not allow for evaluation of causality. In addition, the self-report nature of this questionnaire could have led to some inaccuracy in reporting.

**Aselton P. 2012** studied on Sources of stress and coping in American college students who have been diagnosed with depression. The study aims to explore the sources of stress in American college students who had been treated for depression and to discern their coping mechanisms. A phenomenological approach using Seidman's guide to in-depth qualitative interviews using a three-part approach was used in the study. Online in-depth interviews utilizing e-mail with asynchronous communication were used. Sources of stress included roommate issues, academic problems, financial and career concerns, and pressure from family. Exercise, talking to friends, self-talk, deep breathing, journaling, marijuana use, and listening to music were common coping mechanisms. The study concluded that the College students who have been treated for depression are under increasing stress today from a variety of sources. Nonmedical methods of coping were often cited as more effective than medication therapy.

**Hashim HA, Rosmatunisah A. 2012** studied on Relationships between negative affect and academic achievement among secondary school students: the mediating effects of habituated exercise. The current study was undertaken to examine the associations between self-determination, exercise habit, anxiety, depression, stress, and academic achievement among adolescents aged 13 and 14 years in eastern Malaysia. The sample consisted of 750 secondary school students (mean age = 13.4 years, SD = 0.49). Participants completed self-report measures of exercise behavioral regulation, negative effect, and exercise habit strength. Midyear exam results were used as an indicator of academic performance. Structural equation modeling was used to analyze the data. The results of the study implied that the structural equation modeling revealed a close model
fit for the hypothesized model, which indicates that higher levels of self-determination were positively associated with habituated exercise behavior. In turn, exercise habit strength fostered academic achievement and buffered the debilitative effect of stress, depression, and anxiety on student academic performance. The analysis of model invariance revealed a non significant difference between male and female subjects. The findings of the study supported that the notion that habituated exercise fosters academic performance. In addition, we found that habituated exercise buffers the combined effects of stress, anxiety and depression on academic performance. The finding also supports the roles of self-determination in promoting exercise habituation.

2.8 STRESS AND ACADEMIC ACHIEVEMENT AMONG STUDENTS

Chavajay P, Skowronek J. 2008 studied on Aspects of acculturation stress among international students attending a university in the USA. Acculturation stress reported by 130 international students attending a university in Utah for about 2 yr. was examined. On the Acculturative Stress Scale for International Students, few students reported experiencing acculturation stress, but responses to four open-ended questions indicated many students perceived experience of acculturation stresses related to discrimination, feelings of loneliness, and academic concerns. The contrast of findings for the scale scores and the open-ended questions indicate the complexity of assessing international students' acculturation experiences of living and studying in the USA and suggest the usefulness of complementary methodologies for assessing such experience.

Murphy RJ, Gray SA, 2009 studied on A comparative study of professional student stress. A study was conducted involving a group of 290 medical and dental students to directly compare perceived stress levels encountered during their education. A modified questionnaire based on Garbee et al.’s Dental Environmental Stress survey was provided to the students by either email or paper. The purpose of the investigation was to
determine if the sources of stress reported by medical and dental students, both male and female, were due to common factors. A multivariate statistical analysis was also conducted to measure stress differences by year in school. Through factor analysis, the survey question responses were grouped into five causal categories: academic performance, faculty relations, patient and clinic responsibilities, personal life issues, and professional identity. The overall findings show that dental students had greater levels of stress than medical students in three of the five categories. The only category in which medical students demonstrated greater stress levels than dental students was in professional identity. Measures of comparative levels of stress between male and female students for either profession did not demonstrate any significant differences. Stress levels related to clinical work varied significantly between the type of professional student and his or her year in school.

Yucha CB, Kowalski S 2009 studied on Student stress and academic performance: home hospital program. The purpose of this study was to evaluate whether nursing students assigned to a home hospital experience less stress and improved academic performance. Students were assigned to a home hospital clinical placement (n = 78) or a control clinical placement (n = 79). Stress was measured using the Student Nurse Stress Index (SNSI) and Spielberger's State Anxiety Inventory. Academic performance included score on the RN CAT, a standardized mock NCLEX-RN(®)-type test; nursing grade point average; and first attempt pass-fail on the NCLEX-RN. There were no statistically significant differences between the two groups for age, gender, marital status, ethnicity, or score on the nurse entrance examination. There were significant changes in SNSI over time but not between groups. Academic load and state anxiety showed an interaction of time by group, with the home hospital group showing reductions over time, compared with the control group.
Yusoff MS, Abdul Rahim AF. 2010 studied on Prevalence and Sources of Stress among University Sains Malaysia Medical Students. Being in medical school has always been regarded as highly stressful. Excessive stress causes physical and mental health problems. Persistent stress can impair students' academic achievement and personal or professional development. The aim of this study is to explore the nature of stress among medical students by determining the prevalence, sources and pattern of stress and the factors affecting it. We chose a cross-sectional study design utilizing validated questionnaires, the 12 items General Health Questionnaire (GHQ-12) and Medical Student Stressor Questionnaire (MSSQ), to evaluate stress levels and stressors. School and ethical committee clearance were obtained prior to the study. Data were analyzed using SPSS version 12. The result of the study showed that the medical students who were administered the questionnaire, 761 (72%) respondents participated in this study. The prevalence of stress among the medical students was 29.6%. The top 10 stressors were academic-related. Prevalence of stress for the first, second, third, fourth and fifth year students was 26.3%, 36.5 %, 31.4%, 35.3% and 21.9%, respectively. Year of study was the only significant factor affecting stress among medical students (P-value < 0.05). The study concluded that the prevalence of stress among medical students in USM is high. Academic-related problems were the major stressor among medical students. Year of study was the factor most significantly associated with medical students' stress. There was a bimodal pattern of the stress level throughout the year of study.

Silverstein ST, Kritz-Silverstein D. 2010 studied on A longitudinal study of stress in first-year dental students. This study examines the association of stress with performance and health in first-year dental students and changes in the amount and sources of stress over one year. Students at four U.S. dental schools completed the Dental Environment Stress (DES) scale, Perceived Stress Scale (PSS), stress rating, and
demographic questions at the start of their first year of school (baseline), 11.7 weeks, and one year later when first-year GPA, illnesses, health ratings, and symptom frequency were also assessed. Overall, 296 (186 men, 110 women) responded at baseline and after one year; 205 responded all three times. Stress scores were negatively correlated with GPA (DES, p=.006; PSS, p=.04; stress rating, p=.002) and with physical and emotional health ratings (p's< or =.002), but positively associated with illness (p<.05), symptoms (p<.0001), and symptom frequency (p's<.05). Stress was higher after one year (p's<.001) and varied by school (p<.0001). Women (p<.01), younger (p<.003), and single students (p<.03) had higher stress at baseline, but after one year, there were no differences by gender, age, or marital status. Ratings for items on the Dental Environment Stress scale related to schoolwork were high at baseline and increased further by one year (p's< or =.0001); items related to school atmosphere had low ratings initially with large increases over time (p's<.0001). In conclusion, stress increases over time in first-year dental students and is related to detrimental effects on performance and health. Variation between schools may reflect different teaching methods. Changes in sources of stress may reflect the different contributions of anticipatory and situational stress over time. First-year dental students may benefit from stress reduction programs.

Barriball L, Fitzpatrick J, 2011 studied on Emotional intelligence: its relationship to stress, coping, well-being and professional performance in nursing students. Emotional intelligence (EI) has been highlighted as an important theoretical and practical construct. It has the potential to enable individuals to cope better and experience less stress thus contributing to a healthy and stable workforce. The study aimed to explore the EI of nursing students (n=130, 52.0%) and its relationship to perceived stress, coping strategies, subjective well-being, perceived nursing competency and academic performance. Students were on the adult pathway of a nursing diploma or degree...
A prospective correlation survey design was adopted. Three methods of data collection were used: i) A self-report questionnaire; ii) an audit of students' academic performance; and iii) mapping of EI teaching in the curricula. Emotional intelligence was positively related to well-being ($p<0.05$), problem-focused coping ($p<0.05$) and perceived nursing competency ($p<0.05$), and negatively related to perceived stress ($p<0.05$). The findings suggest that increased feelings of control and emotional competence assist nursing students to adopt active and effective coping strategies when dealing with stress, which in turn enhances their subjective well-being. This study highlights the potential value of facilitating the EI of students of nursing and other healthcare professions.

Al Mohrij SI, Al Ohali TA. 2011 studied on Evaluation of stress in final-year Saudi dental students using salivary cortisol as a biomarker. The aims of this study were to identify the perceived sources of stress in final-year dental students studying in a private dental school in Riyadh, Saudi Arabia, using a modified dental environmental stress (DES) scale and to correlate these findings, at various times in the semester, with the level of acute stress measured with salivary cortisol as a biomarker. A total of forty final-year students were administered a modified DES questionnaire consisting of twenty-five questions to determine the perceived causes of stress. Salivary cortisol levels during the first week of the semester, the final week of clinical training, and one hour before the final didactic examination were assessed. Baseline cortisol levels were significantly lower than the cortisol levels in the clinic, and both these values were significantly lower than the salivary cortisol levels before the examination ($p<0.001$). Comparison of cortisol levels to the perceived sources of stress and demographic data collected showed that certain discrepancies may exist between the perceived and actual stress felt by dental students at different times in the academic semester.
Mewaldt S, O'Connor K. 2011 studied on Behavioral and physiological correlates of stress related to examination performance in college chemistry students. This study was designed to assess physiological and behavioral correlates of academic stress during a college course in organic chemistry in the USA. Participants (45 females, 46 males, and mean age 19.88 years) were screened for their basal hypothalamic-pituitary-adrenocortical activity using saliva samples collected at the beginning of the course and after each major test. Displacement activities (DAs) were observed during each test by videotaping students' behavior when they were taking the tests. These variables were then used as predictors of the students' achievement as measured by their grade point average (GPA) scores, American College Testing (ACT) scores, and their final grade in the class. Ninety-one students, enrolled in Organic Chemistry I at Marshall University during the summer of 2009, were recruited for this study. It was found that individual differences in the physiological stress responses are a factor in predicting the students' ability to pass a challenging class. A logistic model built on GPA, DAs during stress, and salivary hormone (cortisol and dehydroepiandrosterone) concentrations was able to correctly classify almost 90% of the students passing the class. The same model was not nearly as successful in determining the possible factors behind failing the class, because the classification success was just 52%, a figure close to chance. We conclude that a clear set of characteristics related to the students' ability and resilience to psychological stress are necessary to succeed in a challenging class. The reason behind dropping or failing a class could be less defined. These data indicated that investigating the physiological and behavioral propensities associated with psychological stress can help us better understand an individual's coping responses to a long-term challenging situation.

Proskuriakova LA. 2011 studied on Evaluation of the mental status of high school students and its correction program. Mental health indicators were studied using
the cross-sectional method in students over 3 years of their education (2005-2008). A representative sample comprised 1787 first-to-third-year students from three largest high schools in the city. The regularities of the students’ mental changes were defined during education: with the advancing ages of the examinees, the indicators of attention and logical thought increased due to the occurrence of neuroemotional imbalance (the emergence of depression and lower adaptation level; \( p \leq 0.05 \)). A comprehensive target health protection program for high school students has been elaborated and introduced.

Reilly C, Neville BG. 2011 studied on Academic achievement in children with epilepsy: a review. To examine published studies which have focussed on academic achievement in children with epilepsy with respect to prevalence rates of academic difficulties and possible correlates of academic achievement. This review examines studies which have focussed on prevalence rates of academic difficulties and correlates of academic achievement in children with epilepsy from 1990 to 2010. Prevalence rates of low academic achievement and academic underachievement are reported and correlates of academic achievement including seizure/epilepsy variables, demographic variables, and child/family variables are examined with respect to published studies. The study inferred that the Published studies suggested that low academic achievement is more common than academic underachievement (achievement below that expected on basis of IQ scores) and it is not clear from published studies if rates of academic underachievement are significantly higher than in the general population. Clear patterns with regard to the identification of correlates of academic underachievement have not emerged although low achievement may be influenced in many cases by lower than average levels of cognitive functioning. Most studies have not focused on the IQ-achievement discrepancy definitions of (specific) learning disability. The study examined that the Children with
epilepsy who are experiencing academic difficulties may not qualify for formal educational supports to address these difficulties if eligibility criteria for such supports stress an IQ-achievement discrepancy.

**Oswalt SB, Wyatt TJ. 2011** studied on Sexual orientation and differences in mental health, stress, and academic performance in a national sample of U.S. college students. This study examined the relationships of mental health issues and sexual orientation in a national sample of college students. Using the Fall 2009 American College Health Association-National College Health Assessment, responses from heterosexual, gay, lesbian, bisexual, and unsure students (N = 27,454) relating to mental health issues and impact of these issues on academics were examined. The findings indicate that gay, lesbian, bisexual, and unsure students consistently reported higher levels of mental health issues and a more frequent impact on academics because of these issues than heterosexual students. Bisexuals frequently reported higher levels than students identifying as gay, lesbian, and unsure.

**Maksimović J, Maksimović M. 2012** studied on Gender differences in academic stress and burnout among medical students in final years of education. The educational process brings a considerable amount of stress to medical students that can influence mental health status and contribute to further professional burnout. The authors assessed the academic stress influences, mental health status and burnout syndrome, with the intent to find different patterns in female and male medical students. The applied cross sectional study was in the form of an anonymous questionnaire which included: socio-demographic data, self-reported health status and influence of studying activities on stress level in 755 medical students who attended two final years. Mental health status was explored by the General Health Questionnaire (GHQ-12), and Maslach Burnout Inventory (MBI). The study implied that the Female students assessed their physical health status
and general stress level as worse compared to males (p<0.001). Exams were described as a high stressor in about 50% of all examined students. However, this stressor was significantly more frequent in female students (p<0.001). Female students frequently declared high stressful effects of contacts with patients (p=0.009) and autopsy (p<0.001). The scores of the GHQ-12 questionnaire were above the threshold or high in 51.5% of all students, and also significantly higher in females (p=0.001). High scores were found among 52.6% of all examined students on MBI subscale of Depersonalization, and 33.6% on MBI subscale of Emotional exhaustion without gender difference. Measures for prevention of academic distress should be targeted at optimization of the educational process, development of the clinical skills and professionalism, with special concern to female students who manifested high vulnerability.

Schéle IA, Hedman LR, Hammarström A. 2012 studied on A model of psychosocial work environment, stress, and satisfaction among dental students in Sweden. Dental students are often described as stressed. The stress has, among other things, been connected to stressors in their psychosocial environment and inconsistent feedback. The hypothesis of this study was that the psychosocial work environment in dental schools leads to stress and affects the satisfaction of dental students and that tolerance for ambiguity shields students from stress. A web-based survey was sent to the entire Swedish dental student population in clinical training (N=805); the response rate was 40 percent. Structural equation modeling used in the analyses contains four main constructs: psychosocial work environment, tolerance for ambiguity, perceived stress, and student satisfaction ($\chi^2$=267.437, d.f.=174, p<0.001, Normed $\chi^2$=1.537, RMSEA=0.041, CFI=0.98). Psychosocial work environment influenced both perceived stress and satisfaction: it accounted for almost all of the explained variance in perceived stress for women, while about half of the variance for the men was explained by tolerance for
ambiguity. This study concluded that about 40 percent of the total perceived stress of these female dental students was related to their psychosocial work environment. Tolerance for ambiguity shielded men but not women from stress. An improved psychosocial work environment in dental schools would decrease the stress of both male and female dental students.

**Liu Y, Lu Z. 2012** studied on Chinese high school students' academic stress and depressive symptoms: gender and school climate as moderators. In a sample of 368 Chinese high school students, the present study examined the different effects of Chinese high school students' academic stress on their depressive symptoms and the moderating effects of gender and students' perceptions of school climate on the relationships between their academic stress and depressive symptoms. Regression mixture model identified two different kinds of subgroups in the effects of students' academic stress on their depressive symptoms. One subgroup contained 90% of the students. In this subgroup, the students' perceptions of academic stress from lack of achievement positively predicted their depressive symptoms. For the other 10% of the students, academic stress did not significantly predict their depressive symptoms. Next, multinomial regression analysis revealed that girls or students who had high levels of achievement orientation were more likely to be in the first subgroup. The findings suggested that gender and students' perceptions of school climate could moderate the relationships between Chinese high school students' academic stress and their depressive symptoms.

### 2.9 SYNTHESIS OF THE STUDY

The investigator reviewed a number of studies related to mindfulness meditation.

a, serretti a. (2011) roth hd, britton wb. (2011), sipe we, eisendrath sj(2012), roberts-wolfe d, sacchet m(2012), and roth h, britton w (2012) studied on short-term meditation training improves attention and self-regulation, mindfulness meditation for veterans implications for occupational health, effects of mindfulness training on body awareness to sexual stimuli, mindfulness-based cognitive therapy and mindfulness training alters emotional memory recall compared to active controls.

The investigator also reviewed a number of studies related to mindfulness meditation and anxiety.laugharne j, janca a(2008), krisanaprapkornkit t, sriraj w ( 2009), sears s, kraus s ( 2009), stefan g. hofmann (2010), mcduffie j, strauss jl(2011), tanay g, lotan g, bernstein a (2012), dachman l, lejuez cw (2012), vazquez-montes m, williams jm(2012), vøllestad j, nielsen mb (2012), kumar n, balkrishna a (2012), jacka fn, schweitzer i (2012), monti da, kash km(2012), sharma mp, mao a, (2012), chen y, yang x (2012), john m. grohol (2012), teresa m edenfield (2012 ), mark g. williams (2012) studied on meditation therapy for anxiety disorders, the effects of mindfulness meditation on anxiety , effect of mindfulness-based therapy on anxiety and depression, mindfulness based cognitive therapy for psychiatric disorders ,mindfulness-based eating awareness training for treating binge eating disorder the conceptual foundation, an overview of complementary and alternative medicine therapies for anxiety and depressive disorders.


The objectives given from the reviewed studies were to find the mindfulness meditation produced a significant decrease in anxiety, stress and depression and increase in their academic achievement. It is concluded that mindfulness meditation the level of attention, memory and decrease the level of anxiety, stress and depression. Among the reviewed studies, a few studies were done to the students, but no studies were made with the combination of anxiety, stress and depression related with academic achievement. Hence an attempt was made by the investigator to take up a research on efficacy of mindfulness meditation therapy on anxiety, depression and stress in facilitating academic achievement among +2 students in trichy district.

As for the design of the study, all the studies were of experimental design. In this research pre-test/post-test design is followed for analyzing the effect of mindfulness meditation on academic achievement.