

Review of Literature

As discussed in the previous chapter, the empirical findings on the various threats of the increased rate of depression, poor resilience and self-esteem in the society suggested different frameworks for explaining the causal factors responsible for depression and its negative consequences. The concept becomes clearer but needs further detailed investigation on its prevalence, causes and various intervention plans. The concept has received much attention in the treatment area, especially in the health care settings.

In the constantly changing and challenging society due to globalization and advancement in the technology, every individual is faced with an increasing demand in the skill development to balance their life in various situations. They find it difficult to deal with the daily stressors and challenges which is markedly affecting their mental health. The rate of psychological problems like depression and anxiety are on a high these days. The literature being surveyed includes various studies on dealing with depression, resilience and self-esteem, the significance of treatments and interventions which are directly linked to the present research study.

The research reviews are presented in six sections, each attempting to highlight a particular area and do a comprehensive survey in that pertinent literature.

Section I : Presents the research findings on Mood Disorders, especially Major Depressive Disorder/ Unipolar Depression.

Section II : Details earlier findings on Resilience and Depression.

Section III : Outlines the literature reviews on Self-esteem and Depression.

Section IV : Different types of interventions and its effectiveness on Depression.

Section V : Research findings on the effectiveness of Music Therapy for various disorders.

Section VI : Outlines research findings on the effectiveness of Yoga, especially Pranayama, for various disorders.

Section I: Mood Disorders - Major Depressive Disorder/ Unipolar Depression

Grover, Dutt and Avasthi (2010) conducted a meta analytical study to estimate the prevalence of depression in Indian context. From a meta analytical study which was carried out by compiling 13 different studies on epidemiology of psychiatric disorders with 33572 subjects from the community, it was reported that prevalence of depression was 7.9 to 8.9 per thousand population and the prevalence rates were nearly twice in the urban areas than in the rural areas. The findings with regard to prevalence in urban population are in seen to be similar to the findings of a survey done on the entire adult population of an industrial township, which showed that the prevalence rate for depression to be 19.4 per thousand.

Grover, Dutt and Avasthi (2010) also reported that a large population-based study from South India which screened more than 24,000 subjects in Chennai using Patient Health Questionnaire (PHQ)-12 reported that the overall prevalence of depression was found to be 15.1% after adjusting for age using the 2001 census data. In another study, researchers compared the prevalence of depression in the same catchment area after a period of 20 years (first in 1972 and then in 1992) and reported that the prevalence of depression increased from 49.93 cases per 1000 population to 73.97 cases per 1000 population. Studies done in primary care clinics/center have estimated a prevalence rate of 21-40.45%. Studies done in hospitals have shown that 5 to 26.7% of cases attending the psychiatric outpatient clinics have depression.

Pattanayak and Sagar (2014) reported that world mental health surveys indicate major depression as experienced by 10-15% people in their lifetime and about 5% suffer from major depression in any given year. Lifetime prevalence of all depressive disorders taken together is over 20% that is one in five individuals. In Indian context, a recent large sample survey with rigorous methodology reported an overall prevalence of 15.9% for depression which is similar to western figures. There is some suggestion that the prevalence of depression has increased over past few decades in India. Studies done in primary health care settings in India have found depression in 21-84% of the cases.

Erdemyaka et.al (2014) conducted a study on the prevalence and risk factors of depression among community-dwelling older population in an urban setting in Turkey. This cross-sectional study was conducted among 482 elderly individuals 65 years and over in an urban area using cluster sampling method .Depression in the elderly had been diagnosed by a clinical interview and Geriatric Depression Scale. Data were collected by door-to-door survey. Chi square test was used for statistical analysis. Regression analysis indicated that depression was significantly associated with female gender, being single or divorced, lower educational status, low income, unemployment, and lack of health insurance. Logistic regression analysis revealed that there is a higher depression rate in the elderly with chronic obstructive pulmonary disease, psychiatric disease, cerebrovascular disease, low income and being dependent. The study concluded that depression is common among community-dwelling older people in an urban area of Izmir, Turkey.

A study was conducted by Millera, Ossoa and Kettera (2014) to know the prevalence and burden of Bipolar depression. The study was conducted by reviewing and compiling the literature on the prevalence and burden of syndromal as well as subsyndromal presentations of depression in bipolar disorder patients. The results and the findings reports that there is a predominance of depressive symptoms compared with mood elevation/mixed symptoms in the course of bipolar illness, and thus an overall greater burden in terms of economic costs, functioning, caregiver burden, and suicide.

Topuzoğlu et.al. (2015) conducted a cross-sectional study to assess the prevalence of subthreshold (SubD) and clinicalmajor depressive disorder (MDD) in Izmir, Turkey. Among 5242 eligible households, a total of 4011 individuals were successfully interviewed, yielding a response rate of 76.5%. Prevalence estimates of MDD and SubD depression were found outfrom the responses to the questions of the CIDI section E. Short Form 36 (SF-36) to assess health status and functional impairments in eight scaled scores during the last four weeks. All respondents were questioned about receiving 12-month treatment for any psychological complaints, the route of help-seeking, as well as prescribed medicines and any hospitalization. The results show that one year prevalence estimate for CIDI/DSM IV MDD was 8.2% (95% CI, 7.4–9.1). Less educated, low income, uninsured, low SES, unemployed/disabled and housewives, slum

area residents had higher one year MDD prevalence. Determined prevalence of help seeking from mental health services of SubD and MDD cases were 23.6% and 30.6% respectively. Only 24.8% of clinically depressive patients received minimally adequate treatment. Study concluded that higher MDD prevalence correlates with younger ages, female gender, unemployment, less education, lower monthly income, lower SES and uninsurance. Help seeking from mental health services were low.

Amarasuriya, Jorm and Reavley (2015) examined the prevalence of depression and its correlates among undergraduates' in Sri Lanka. 4304 undergraduates were assessed on the Patient Health Questionnaire-9 and a measure of exposure to threatening life events, with binary logistic regression models used to identify the demographic and life event correlates of screening positive for Major Depressive Disorder (MDD). Results showed that there was a higher likelihood of MDD among those who were older and those living in hostels (compared to home), although no differences were seen between genders or those studying in different faculties. Likelihood of MDD was higher in undergraduates exposed to multiple threatening life events as well as those exposed to physical threat; family deaths; romantic break-ups; a problem with a close associate; educational difficulties; unemployment and domestic violence, and among male undergraduates harassed by another student. So it was concluded that MDD is prevalent in these undergraduates and universities need to develop services to assist them.

The prevalence and correlates of guilt in depression was studied by Singh and Sharma (2013) from North India. One hundred and ten consenting treatment-seeking patients of the Department of Psychiatry, Postgraduate Institute of Medical Education and Research, Chandigarh with a diagnosis of unipolar first episode or recurrent depressive disorder (DD) as per the ICD-10 were recruited in the study (World Health Organization, 1994). They were in various phases of treatment and severity of DD. The patients were assessed once with the 21-item Hamilton Rating Scale for Depression (HRSD), the Beck's Depression Inventory (BDI) and the 'Feelings of Guilt' scale (FG). The FG is a 7-item Likert scale specifically designed for the assessment of guilt in DD. The study scores indicated that most of the participants were severely depressed at assessment. The correlation vanalysis revealed that the total HRSD, BDI, FG scores and age were

positively correlated with each other. When age and gender were controlled for, these correlations remained positive and highly significant (Total FG score with Total HRSD score: Pearson's correlation = 0.77, $df = 106$, $p < 0.01$; with total BDI score: 0.79, 106 and $p < 0.01$ respectively). The results indicated that guilt is common in DD and that FG is more sensitive than HRSD or BDI in the detection of the same. The intensity of the experience of guilt is associated with the severity of depression irrespective of age or gender.

Ying Xu et.al. (2014) did a study to assess the prevalence of depression and examine potential risk factors correlated to depression among nursing college students in China. Seven hundred and sixty three college nursing students were randomly selected to participate in a survey, which included the Center for Epidemiologic Studies Depression Scale (CES-D). The result showed that 22.9% (95% CI: 20.0%–25.9%) of participants reported high score on the CES-D (16 or above). Academic performance, academic stress, interest in majors, occupational future, interpersonal relationship, frequency of exercise, self-reported health status, social support, educational level of father, relationship with parents and making decisions without interference by parents were found to be the major risk factors significantly associated with depression. Backward multivariate logistic regression analysis revealed that lower academic stress and better occupational future were strongly related to lower risk of depression, followed by active use of social support, full making decision power, better relationship with father and higher self-reported health status.

Prevalence and clinical characteristics of the DSM IV major depression among general internal medicine patients was studied by Moayedoddin et.al. (2013). Five hundred and fifty seven patients admitted to the IM of the Geneva University Hospital aged 18 to 70 were investigated. The samples were assessed by a clinical psychologist using the SCID (Structured Clinical Interview Depression for DSM-IV) questionnaire. Results showed that 69 patients (12.4%) met diagnostic criteria for MDD (men: 8.8%, women: 16.9%, $p = .004$). Depressed mood (97%), fatigue (91%), and diminished interest and pleasure (81%) were the most prevalent symptoms of depression in the sample. Recurrent thoughts of death were present in 48% of depressed patients.

James et.al. (2015) did a study to estimate the conversion rate from unipolar depression (ICD10 codes F32–F33) to bipolar disorder (BP) (ICD10 codes F31) in an English national cohort. They hypothesized that early-onset BP (age of 18 years) is a more severe form of the disorder, with a more rapid, and higher rate of conversion from depression to BP. The study used English national Hospital Episode Statistics (HES) covering all NHS inpatient and day case admissions between 1999 and 2011. Results indicated the overall rate of conversion from depression to BP for all ages was 5.65% (95% CI: 5.48–5.83) over a minimum 4-year follow-up period. The conversion rate from depression to BP increased in a linear manner with age from 10–14 years – 2.21% (95% CI: 1.16–4.22) to 30–34 years – 7.06% (95% CI: 6.44–7.55) ($F_{1,23} = 77.6$, $p = 0.001$, $R^2 = 0.77$). The time to conversion was constant across the age range. The rate of conversion was higher in females compared to males and in those with psychotic depression compared to non-psychotic depression. The study concluded that increasing conversion rate from depression to bipolar disorder with age, and constant time for conversion across the age range does not support the notion that early-onset BP is a more severe form of the disorder.

In a study, Lojko et.al (2015) investigated atypical features of depression in relation to overweight/obesity in three diagnostic categories: unipolar depression, bipolar depression and dysthymia. Out of 512 depressed patients screened, they recruited 182 research subjects, consisting of 91 pairs, matched by age, gender and diagnosis, in which one member of the pair was within the normal weight range (BMI ≤ 25) and the other was either overweight or obese (BMI > 25). There were 35 pairs with unipolar depression, 27 with bipolar depression and 29 with dysthymia. Symptoms of atypical depression, such as increased appetite, hypersomnia, leaden paralysis, longstanding pattern of interpersonal rejection sensitivity, and, a significant weight gain in the past 3 months, were assessed. Results showed that all the symptoms of atypical depression were significantly more pronounced in those depressed patients with a BMI > 25 , compared with depressed subjects with a normal weight. Except for hypersomnia, these symptoms scored significantly higher in women compared to men. Among the diagnostic categories, symptoms of atypical depression were significantly higher in patients with bipolar disorder compared with both major depressive disorder and dysthymia. The results of the study demonstrated a higher intensity of atypical depression's symptoms in over-

weight/obese depressed patients, confirming the association between obesity and bipolarity.

Holvast et.al. (2015) examined the association between loneliness and the course of depression. They conducted a 2-year follow-up study of a cohort from the Netherlands Study of Depression in Older Persons (NESDO). The study included Dutch adults aged 60–90 years with a diagnosis of major depression, dysthymia, or minor depression according to the criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition. Regression analyses was used to determine associations between loneliness at baseline and both severity and remission of depression at follow-up. Results indicated that among the 285 respondents, 48% were still depressed after 2 years. Loneliness was independently associated with more severe depressive symptoms at follow-up (beta 0.61; 95% CI 0.12–1.11). Very severe loneliness was negatively associated with remission after 2 years compared with no loneliness (OR 0.25; 95% CI 0.08–0.80). The study concluded that the prognosis of late-life depression was adversely affected by loneliness.

A study conducted by Brockmeyer. et.al. (2015) used a prospective, longitudinal design to examine the effects of mood-incongruent processing in a sample of 59 clinically depressed patients. In the study, participants were asked to recall and describe a sad and a happy life event. Participants' utterances were transcribed and analysed using computerized text analysis. The proportion of positive emotion words during sad memory recall was used as an indicator of mood- incongruent processing. The participants were re-assessed, after 6 months, for symptom levels and the criteria of major depressive disorder (MDD) during the follow-up period. Results showed that higher relative frequency of positive emotion words during sad memory recall was associated with less symptoms of depression at follow-up and shorter time to recovery from MDD. The findings of their study highlighted the role of mood-incongruent processing in the maintenance of depression and advocate a stronger focus on mood-incongruent processing in the treatment of depression.

Hsu et.al. (2015) studied the role of rumination and attentional control in the trans diagnostic mechanisms in depression and anxiety. Fifty-one adults undergoing treatment completed measures of self-reported attentional control, rumination, and depression and

anxiety symptoms. A bias-corrected path analysis-based approach was employed to test whether indirect (i.e., mediating) effects of rumination were significantly associated with the direct effects of attentional control on depression and anxiety symptoms. Separate models for depression and anxiety symptoms were tested along with reverse models using attentional control as a proposed mediator. Results indicated that the relationship between attentional control and clinical symptomatology (i.e., both depression and anxiety symptoms) was mediated by rumination. Poor attentional control was associated with more rumination and consequently more severe symptoms of depression and anxiety. The reverse relationship (i.e., attentional control mediating the relationship between rumination and depression or anxiety symptoms) was not significant. The study concluded that attentional control appears to impact depression and anxiety symptoms through rumination. The pathway between poor attentional control and emotion dysregulation via rumination suggests that interventions targeting attentional control may decrease maladaptive ruminative processes, leading to improved emotion regulation and reduced clinical symptomatology.

Depression symptoms during pregnancy in New Zealand were studied by Waldie et.al. (2015). An ethnically and socioeconomically diverse sample of 5664 pregnant women living in New Zealand were interviewed during the third trimester. Antenatal depression (AD) symptoms were assessed using the Edinburgh Postnatal Depression Scale (EPDS). Maternal demographic, physical and mental health, and family and relationship characteristics also were measured. The association between symptoms of AD and maternal characteristics was determined using multiple logistic regressions. The results showed that 11.9% of the participating women had EPDS scores (13 þ) that indicated probable AD. They also found that women from non-European ethnicities, specifically Pacific Islander, Asian and other, were more likely to suffer from AD symptoms. Greater perceived stress during pregnancy and a diagnosis of anxiety both before and during pregnancy were also associated with greater odds of having AD according to the EPDS.

Zeeck et.al. (2015) conducted a study to compare characteristics of patients with depression treated in psychosomatic day hospitals and inpatient units and to compare the effectiveness of both treatment modalities. 604 consecutive patients were assessed at

admission, discharge and a 3-month follow-up. Primary outcome was defined as a reduction of depressive symptomatology (QIDS-C), secondary outcomes comprise overall functioning and quality of life. For a comparison of effectiveness, inpatient and day hospital samples were matched according to known predictors of outcome. Results showed that the few differences found between the inpatient and day hospital sample were related to severity of depression and physical impairment. Inpatients more often got antidepressant medication. Additionally, inpatients were treated significantly longer, due to a subgroup of patients with somatic co-morbidity. There were no differences when comparing effectiveness. So they concluded that for patients with a more severe depression and somatic co-morbidity, inpatient treatment might be preferred as compared to day hospital treatment. However, most patients can be treated in both settings.

Reductions in anxiety and depression in patients completing the Coordinated Anxiety Learning and Management program were studied by Bomyea et.al. (2015). Research demonstrates that both types of symptoms independently improve when treating anxious patients with co-occurring depression. The study examined how reductions in anxiety and depression may be interrelated both during treatment, as well as over time following treatment. Five hundred and three individuals with one or more DSM-IV anxiety disorders completed a collaborative care anxiety management program. Anxiety and depression were assessed at each treatment session (i.e., session by session data) and also at 6, 12, and 18-month post-baseline assessments (i.e., long-term outcomes data). Mediation analysis was used to know the changes in symptoms in session by session data and long-term outcomes data. It was reported that anxiety and depression changed reciprocally in session by session data; change in anxiety mediated change in depression to a greater extent than vice versa. In the long-term outcomes data, change in anxiety mediated change in depression. The reverse mediation model of the long-term outcomes period revealed that accounting for changes in depression altered the effect of time on anxiety. The study concluded that temporal change during active treatment may share similarities with those related to maintaining gains after treatment, although differences arose in the reverse mediation models.

A study was conducted by Grover et.al. (2012) to study the explanatory models of patients with first episode depression presenting to a tertiary care hospital located in

North-western India. One hundred sixty four consecutive patients with diagnosis of first episode depression (except severe depression with psychotic symptoms) according to the International Classification of Diseases-10th Revision (ICD-10) and 18 years of age were evaluated for their explanatory models using the causal models section of Explanatory Model Interview Catalogue (EMIC). The most common explanations given were categorized into Karma-deed- heredity category (77.4%), followed by psychological explanations (62.2%), weakness (50%) and social causes (40.2%). Among the various specific causes the commonly reported explanations by at least one- fourth of the sample were: will of god (51.2%), fate/chance (40.9%), weakness of nerves (37.8%), general weakness (34.7%), bad deeds (26.2%), evil eye (24.4%) and family problems (21.9%). There was some influence of socio demographic features on the explanations given by the patients. The study concluded that patients with first episode depression have multiple explanatory models for their symptoms of depression which are slightly different than those reported in previous studies done from other parts of India.

The role of pro-inflammatory cytokines in neuroinflammation, neurogenesis and the neuro endocrine system in major depression was studied by Kim et.al. (2015). Cytokines are pleiotropic molecules with important roles in inflammatory responses. Pro-inflammatory cytokines and neuroinflammation are important not only in inflammatory responses but also in neurogenesis and neuroprotection. Studies revealed that sustained stress and the subsequent release of pro-inflammatory cytokines lead to chronic neuroinflammation, which contributes to depression. Hippocampal glucocorticoid receptors (GRs) and the associated hypothalamus–pituitary–adrenal (HPA) axis have close interactions with pro-inflammatory cytokines and neuroinflammation. Elevated pro-inflammatory cytokine levels and GR functional resistance are among the most widely investigated factors in the pathophysiology of depression. In brief, chronic neuroinflammation inhibits GR function, which in turn exacerbates pro-inflammatory cytokine activity and aggravates chronic neuroinflammation. On the other hand, neuroinflammation causes an imbalance between oxidative stress and the anti-oxidant system, which is also associated with depression.

Gaus et.al. (2015) conducted a study to analyze if men and women with epilepsy differ with regard to anxiety and depressive symptoms and to identify possible predictors.

Self-report questionnaires, including the depression module of the Patient Health Questionnaire (PHQ-9), the anxiety module of the Hospital Anxiety and Depression Scale (HADS-A) and the subscales “medication effects” and “seizure worry” of the Patient-weighted Quality of Life in Epilepsy Inventory-31-P (QOLIE-31-P) were used in the study. Results showed that there was no gender difference in extent of anxiety ($p = .532$), which was mainly due to higher anxiety levels in men compared to the general population. But the gender difference in depressive symptoms was significant ($p = .009$), with female patients being more affected. The most important predictors for anxiety and depressive symptoms were detrimental effects of medication (QOL medication effects) and of seizure worry (QOL seizure worry). Moreover, these predictors were more closely associated with anxiety and depressive symptoms in men.

Mathew et.al. (2013) conducted a study to understand the predictors of depression among patients with diabetes mellitus in Southern India. They conducted a cross-sectional study among 100 patients with type 2 diabetes mellitus attending the diabetic clinic of a tertiary care hospital. Depression was assessed using Patient Health Questionnaire-9 (PHQ-9). Chi-square test, Mann Whitney U and Pearson correlation tests were done. Logistic regression was carried out to determine the predictors of depression. Results of the study showed that the prevalence of depression was 49% (95% CI 39.1–58.9%). The predictors of depression were female gender, elevated fasting blood sugar (FBS) level, physical disability and lack of physician’s advice about lifestyle modifications. FBS values were significantly higher in depressed individuals as compared to the non-depressed (p value 0.002). There was a significant positive correlation ($r = 0.38$, p value 0.01) between PHQ-9 scores and the FBS values of the diabetic subjects. The study concluded that subjects with diabetes are highly prone for co morbid depression.

Kulesza, Raguram and Rao (2014) conducted a study to understand the perceived mental health related stigma, gender, and depressive symptom severity in a psychiatric facility in South India. Participants were 60 individuals seeking care at a psychiatric clinic in Bangalore, India. The majority of participants were female with a mean age of 36 years ($SD = 9.75$). Results indicated that there were no significant differences between men ($M = 28.96$; $SD = 9.85$) and women ($M = 33.03$; $SD = 12.08$) on depression severity.

But women ($M = 10.09$, $SD = 8.23$) reported significantly more perceived stigma than men ($M = 5.79$, $SD = 5.86$), $t(58) = 2.30$, $p = .02$. They concluded that men and women seeking psychiatric services at the psychiatric clinic in India report similar levels of depression severity, but women reported more perceived mental illness stigma.

Kim (2015) investigated the health behaviors and risk factors for self-reported depression in Korean working women. The study used a secondary analysis from the fifth Korean National Health and Nutrition Examination Survey (KNHANES-V) for the Health Examination Survey and Health Behavior Survey, using stratified, multi-stage, cluster-sampling design to obtain a nationally representative sample. Multiple logistic regression analysis was employed to compute the odds ratio (OR) between health behaviors and depression to identify the health behaviors and the risk factors for depression with adjustment for the complex sample design of the survey. It was found that the prevalence rate of depression was 15.5% among working women. Results showed that depression was more common in older female workers and in those with part-time job. In a multiple logistic regression analysis, significant variables of depression were marital status, smoking status, stress, employment condition and health status. The study concluded that the factors leading to depression were marital status, smoking, stress, employment condition and self-reported health status.

Hughes-Morley et.al. (2014) conducted a review based study to identify the factors affecting recruitment into depression trials and to develop a conceptual framework through systematic assessment of published qualitative research. The results indicated that the decision to enter a depression trial is made by patients is based on the patient's health state at the time of being approached to participate; on their attitude towards the research and trial interventions; and on the extent to which patients become engaged with the trial. The results also highlights that the decision to participate by the patient involves a judgement between risk and reward. The study concluded that this review have implications for the design of interventions to improve recruitment into depression trials. Such interventions may aim to diminish the perceived risks and increase the perceived rewards of participation in the therapy.

Section II: DEPRESSION AND RESILIENCE

Min and Chae (2014) investigated the role of protective factors for suicidal ideation, which include resilience and social support among psychiatric patients with depression and/or anxiety disorders who are at increased risk of suicide. A total of 436 patients diagnosed with depression and/or anxiety disorders were studied. Results indicated that moderate-severe suicidal ideation was reported in 24.5% of the sample. It was also found that high depression and anxiety were independently associated with moderate-severe suicidal ideation among risk factors whereas resilience was not. In the multiple logistic regression model that examined interaction effects between risk and protective factors, the interactions between resilience and depression ($p = .001$) and between resilience and anxiety were significant ($p = .021$). A higher level of resilience was found to be protective against moderate-severe suicide ideation among those with higher levels of depression or anxiety symptoms.

Rainey et.al (2014) conducted a study to determine the stability of resilience and its association with depressive symptoms. The study included 110 adults admitted to a Level I trauma center. Resilience and depression were measured at baseline and 12 months. Injury-related variables included Glasgow Coma Scale, Injury Severity Score, etiology of injury, and type of injury. Analysis revealed that resilience remained stable over 12 months regardless of injury severity, etiology, or type and negative correlations were found between baseline resilience and 12-month depression ($P , .01$), as well as Glasgow Coma Scale and depression ($P 5 .001$). The study concluded that injured individuals with low resilience are more likely to be depressed at 12 months. So assessing resilience at the time of injury may be useful in identifying those at risk for depression 1 year later.

Lui et.al. (2015) in a study done on 128 community-dwelling and medically stable patients with echo cardiographically documented heart failure in Northern Taiwan ,found that depressive symptoms were significantly associated with both physical and psychological health status in patients with heart failure. They also found that resilience mediated the relationship between depressive symptoms and psychological health status but not that between depressive symptoms and physical health status. They concluded

that depressive symptoms are risk factors for poor health status in patients with heart failure. However, enhancing resilience may facilitate improving psychological health.

Askeland et.al (2015) conducted a study to investigate mental health and resilience in adolescents who have been internationally adopted and their non-adopted peers and also to examine the potential interaction between adoption status and resilience on mental health problems. They found that the adoptees reported more symptoms of depression, attention-deficit / hyperactivity disorder (ADHD), obsessive compulsive disorder (OCD) and perfectionism than non-adopted adolescents, but there were no differences regarding resilience. The results also showed that adolescents with higher resilience scores reported fewer symptoms of mental health problems, however, no interaction effects were found for adoption status and total resilience score on measures of mental health problems.

Wingo et.al. (2010) studied the moderating effects of resilience on depression in individuals with a history of childhood abuse or trauma exposure. They found that childhood abuse, resilience and other trauma and resilience interaction, all were significantly associated with depression severity, even after adjusting for age, sex, race, education, employment, income, marital status, and family psychiatric history. Childhood abuse and trauma exposure contributed to depressive symptom severity while resilience mitigated it. They concluded that resilience moderates depressive symptom severity in individuals exposed to childhood abuse or other traumas both as a main effect and an interaction with traumaexposure.

Kesebir et. al. (2013) in a study to investigate the presence of a relationship between affective temperament and resilience in patients with major depressive disorder (MDD) diagnosis, observed a strong relationship between resilience and hyperthymic temperament both in depressive and healthy individuals. An inverse relation between psychological resilience and irritable and anxious temperament in both groups were observed. A negative correlation was observed between irritable temperament and family cohesion in depressive disorder group, while in healthy individuals a strong correlation was observed between family cohesion and depressive and anxious temperament, and a weak correlation between family cohesion and hyperthymic temperament. They

concluded that there is a strong relationship between hyperthymic temperament and psychological resilience in MDD.

Mosqueiro, Rocha and Fleck (2015) evaluated the association between intrinsic religiosity and resilient psychological characteristics in depressed inpatients. In the sample of depressed inpatients, intrinsic religiosity was found to be associated with resilience, quality of life, and fewer previous suicide attempts. The findings of the study supported the relevance of religiosity assessments in mental health practice and also supported the hypothesis that resilient psychological characteristics may mediate the positive effects of intrinsic religiosity in depression.

Findings from a study done by Le et.al. (2015) for understanding the interrelations among social support, resilience, and geriatric depression indicated a significant indirect effect of social support on geriatric depression through the mediation of resilience, by controlling demographic variables. An identical influencing pattern between problem-solving resilience and emotion regulation resilience were also found in the study suggesting a similar mediation role in linking social support and geriatric depression.

Waugh and Koster (2014) in their study conceptualizes resilience as a dynamic process that may be deficient in people in remission from depression, rather than as a static personal quality that is unattainable to people who have experienced psychopathology. They suggested the three aspects of resilience that are the most important to target to prevent recurrence of depression: (1) improving stress recovery from minor daily stressors that may aid remitted people in coping with major stressors, (2) increasing positivity, like promoting positive emotions during stress, and (3) training flexibility—the ability to identify different demands in the environment and employ the appropriate coping strategy to meet those demands.

Hiyoshi et.al. (2015) in a Swedish cohort study tested whether low psychological stress resilience assessed in adolescence is associated with an increased risk of receiving medication for depression and anxiety in middle age. Results indicated that low stress resilience in adolescence is associated with an increased risk for antidepressant and anxiolytics medication over 30 years later, in part mediated through developmental factors in adolescence and socioeconomic circumstances in adulthood. They also found

that low stress resilience can diminish or eliminate the inverse association of higher cognitive function with antidepressant medication.

Section III: DEPRESSION AND SELF-ESTEEM

Wegener et.al. (2014) assume that depressed individuals experience a permanent threat to their selves resulting in enduring processes of ISEC. They hypothesized that ISEC as measured by implicit self-esteem will decrease when individuals recover from depression. Forty five patients with major depression were given an integrative in-patient treatment in the Psychosomatic University Hospital Bonn, Germany. Depression was measured by the depression score of the Hospital Anxiety and Depression Scale (HADS-D). Self-esteem was assessed explicitly using the Rosenberg Self-Esteem Scale (RSES) and implicitly by the Implicit Association Test (IAT) and the Name Letter Test (NLT). Results revealed that depression scores declined during the eight weeks of treatment and explicit self-esteem rose. Both measures of implicit self-esteem decreased, indicating reduced processes of ISEC. The results indicated support the concept of ISEC and demonstrate the relevance of implicit self-esteem and self-esteem compensation for the understanding of depression.

Wang et.al. (2012) conducted a study to examine differences in the level of self-esteem among adolescents with different roles in aggression involvement (aggression perpetrators, victims, perpetrator-victims and neutrals) according to gender and to examine the moderating effects of depression and family support on association between aggression involvement and self-esteem. The results showed that, aggression victims had lower self-esteem than those in the other three groups ($t Z -2.940$ to 2.173 , $p < 0.05$) in females and there was no significant difference in self-esteem among perpetrators, perpetrator-victims, and neutrals ($t Z 0.693$ to 0.933 , $p > 0.05$). In males, self-esteem in victims and perpetrator-victims was lower than in neutrals and perpetrators ($t Z -3.339$ to -2.704 , $p < 0.01$); however, there was no difference in self-esteem between victims and perpetrator-victims ($t Z -1.115$, $p > 0.05$) or between perpetrators and neutrals ($t Z -1.396$, $p > 0.05$). Family support was found to have a moderating effect on the association between self-esteem and victimization in males. Depression also had a moderating effect on the association between self-esteem and perpetration-victimization and victimization in males. The results indicate that the moderating effects of depression and family support

should be considered when developing intervention strategies to raise self-esteem in adolescents with aggression involvement.

Associations between body weight and depression, social phobia, insomnia, and self-esteem among Taiwanese adolescents were studied by Lee and Yen (2014). The results showed that both overweight ($p < 0.05$) and obese adolescents ($p < 0.001$) had a lower level of self-esteem than did those of average weight; however, no significant differences in depression, social phobia, or insomnia were found between those who were overweight/obese and those of average weight. There were no significant differences in the four mental health indicators found between those who were underweight and those of average weight.

Tuijil et.al. (2013) conducted a study that aimed to test the association between implicit and explicit self-esteem and symptoms of adolescent depression and social anxiety disorder. Participants of the study were 1641 first and second year pupils of secondary schools in the Netherlands. The Rosenberg Self-Esteem Scale, self-esteem Implicit Association Test and Revised Child Anxiety and Depression Scale were completed to measure explicit self-esteem, implicit self-esteem and symptoms of social anxiety disorder (SAD) and major depressive disorder (MDD), respectively, at baseline and two- year follow-up. Results showed that explicit self-esteem at baseline was associated with symptoms of MDD and SAD at follow-up. Symptomatology at baseline was not associated with explicit self-esteem at follow-up. It also proved that implicit self-esteem was not associated with symptoms of MDD or SAD in either direction.

Xu et.al. (2013) examined 133 people with schizophrenia and 50 healthy controls and indicated that compared to the controls, people with schizophrenia showed lower self-esteem, higher levels of dysfunctional beliefs and negative coping styles. Results revealed that only low frustration tolerance, problem solving and self-blame were found to be the independent correlates of depression in schizophrenia.

In a cross sectional study, Millings et.al. (2012) examined the relationship between School connectedness (SC) and symptoms of low mood is dampened or moderated by self-esteem (SE) and peer attachment style. The study included 5022 adolescents (aged 11–16) who completed a battery of questionnaires in school, including

measures of low mood, SC, SE, and peer attachment style. The results showed that the relationship between SC and low mood was reduced by the inclusion of SE and peer attachment style. Peer attachment style was found to be the largest predictor of low mood. The relationship between SC and low mood was not moderated by SE or peer attachment style. They concluded that interventions for adolescent depression may be most effective by focusing on increasing SE and fostering secure attachments, rather than solely focusing on increasing SC.

Jang et.al. (2014) did a cross-sectional study to investigate the relationships of anger, self-esteem, and depression with suicidal ideation. They conducted a survey in a wide range of community areas across Jeollabuk-do Province, Korea. A total of 2964 subjects (mean age $\frac{1}{4}$ 44.4 yr) participated in the study and hierarchical regression was used to investigate predictors of suicidal ideation in terms of their socio demographic characteristics, depression, self-esteem, and anger. The analyses revealed that anger and self-esteem were significantly associated with suicidal ideation regardless of age and after controlling for depression. Moderation analysis showed that the impact of anger on suicidal ideation was significantly greater among females than males in adolescents, but not in other age groups. It was also found that there were some differences in socio demographic predictors of suicidal ideation among age groups. Gender and family harmony in adolescents, marital status and family harmony in middle-aged individuals, and economic status and family harmony in elderly individuals were found to be predictors of suicide. The results revealed that anger and self-esteem play important roles in suicidal ideation beyond the effect of depression.

Doron et.al. (2012) studied relationships between cognitive coping, self-esteem, anxiety and depression. In the study, 334 French adults were examined for the ways in which people may combine the use of several cognitive coping strategies and investigated whether depression, self-esteem, and state- and trait-anxiety would differ across distinctive cognitive coping profile. A two-phased cluster analytic model was employed to derive clusters of cognitive coping profile. Three profiles that differed according to the levels of depression, self-esteem, and state- and trait-anxiety were identified. The study concluded that research should therefore not focus on a single cognitive coping strategy,

but on all cognitive coping strategies that are used simultaneously to investigate the relation between cognitive coping and emotional problems.

Lee and Koo (2015) examined a possible pathway to better understand the relationships between attachment schema and maternal depression through self-esteem and maternal self-efficacy. In the study, 176 mothers who visited pediatrics centers completed questionnaires regarding attachment style, self-esteem, maternal self-efficacy, and depression. The results showed that self-esteem well mediated the relationship between preoccupied attachment and maternal depression and partially mediated the association between fearful attachment and maternal depression. The mediating effects of self-esteem in the relationship between insecure attachments (preoccupied and fearful types) were again moderated by the mother's parenting efficacy. The results showed that mothers with high maternal efficacy (scores $P > 32$, upper 10th percentile) were protected from the detrimental impact of attachment insecurity and low self-esteem on maternal depression, compared with mothers with low parenting-efficacy.

A cross-cultural study was conducted by Li et.al. (2015) on self-esteem and its association with depression among Chinese, Italian and Costa Rican adolescents. The RSES and the Children's Depression Inventory were given to Chinese ($N = 350$), Italian ($N = 352$), and Costa Rican ($N = 343$) adolescents. The results indicated that Costa Rican adolescents scored higher on positive and negative self-esteem than their Chinese and Italian counterparts. It was concluded that both positive and negative self-esteem was related to depression across cultures. They also found that there are both cultural differences and similarities in self-esteem.

Shi et.al. (2015) examined the correlations between big five personality traits and depressive symptoms among Chinese undergraduate medical students, and to explore the mediating role of self-esteem on the correlations. Big Five Inventory, the Center for Epidemiologic Studies Depression Scale, Rosenberg's Self-Esteem scale, and socio-demographic section were given to 2000 undergraduate medical students at four medical colleges and universities in Liaoning province, China, in June 2014. After adjustment for age and gender, it was found that agreeableness ($b = -0.329$) and openness ($b = -0.096$) were negatively related to depressive symptoms, while neuroticism ($b = 0.245$) was

positively related to the symptoms. Self-esteem functioned as a mediator in the relationship between agreeableness, openness, neuroticism and depressive symptoms.

Chih-Che Lin (2015) examined both the mediation effects of self-esteem and psychological well-being for the relationship between gratitude and depression in late adolescence. The study included two hundred and thirty-five Taiwanese university students who completed the measures of gratitude, self-esteem, psychological well-being, and depression. Path analysis was used and the results indicated that self-esteem and psychological well-being acted as full mediators of the association between gratitude and depression. The identified model in the study also revealed a significant path from gratitude through self-esteem and psychological well-being to depression.

Moroz and Dunkley (2015) did a study to understand the links among self-critical (SC) perfectionism, self-esteem, experiential avoidance, and depressive symptoms. Self-report questionnaires assessing perfectionism dimensions, self-esteem, experiential avoidance, and depressive symptoms were administered. The results of confirmatory factor analysis supported SC perfectionism, self-esteem, experiential avoidance, and depressive symptoms as distinct, but related, constructs. The results of Structural equation modeling (SEM) demonstrated that the relation between SC perfectionism and depressive symptoms was mediated by lower self-esteem. SEM also showed that experiential avoidance independently mediated the relation between SC perfectionism and depressive symptoms, controlling for the effects of lower self-esteem.

Section IV: DEPRESSION AND PSYCHOTHERAPY

Steinert et.al. (2014) conducted a meta-analytical study on the relapse rates after psychotherapy for depression and its long term effectiveness. The study investigated overall rates of relapse more than two years after psychotherapy (meta-analysis 1), and if psychotherapy has more enduring effects than non-psychotherapeutic comparison conditions (e.g. pharmacotherapy, treatment as overall relapse rate at long-term follow-up was 0.39 (95% CI 0.29, 0.50). Psychotherapy resulted in significantly less relapses (53.1% vs. 71.1%, OR 0.51; 95% CI 0.32, 0.82, $p < 0.005$) than comparison treatments. The study concluded that the relapse rate more than two years after psychotherapy is relatively high, but significantly lower compared to non-psychotherapeutic treatments.

Cooper et.al. (2015) conducted a study on the therapeutic alliance and therapist adherence as predictors of dropout from cognitive therapy for depression when combined with antidepressant medication. Patients were randomly assigned to the CT plus pharmacotherapy condition of a clinical trial for chronic or recurrent depression. The researchers examined observer-rated alliance and therapist adherence in the first three CT sessions as potential predictors of treatment dropout in a sample of 176 patients. Results indicated that the therapeutic alliance and one facet of therapist adherence (i.e., Behavioral Methods/Home work) predicted reduced odds of dropout. Therapist use of Negotiating/Structuring predicted greater likelihood of dropout. Results are consistent with the possibility that the therapeutic alliance and therapists' focus on homework and behavioral methods promote treatment retention in combined treatment for depression.

Conklin and Strunk (2015) did a study on the immediate effects of homework engagement in cognitive therapy for depression. They examined the relation of specific aspects of homework engagement and symptom change over successive session-to-session intervals. In a sample of 53 depressed adults participating in CT, the relation of observer-rated homework engagement and session-to-session symptom change across the first five sessions were examined. Within patient (and not between patient) variability in homework engagement was significantly related to greater session-to-session symptom improvements. Secondary analyses suggested that observer ratings of the effort patients made on homework and the completion of cognitive homework were the numerically strongest predictors of depressive symptom improvements. The results indicated that patient engagement with homework assignments appears to be an important predictor of early session-to-session symptom improvements.

Effectiveness of Acceptance and Commitment Therapy in treating depression and suicidal ideation in Veterans was done by Walser et.al (2015). The study examined the effects of Acceptance and Commitment Therapy for depression (ACT-D), and the specific effects of experiential acceptance and mindfulness, in reducing suicidal ideation (SI) and depression among Veterans. The study included 981 Veterans, 76% male, mean age 50.5 years. Depression severity and SI were assessed using the BDI-II. Experiential acceptance and mindfulness were measured with the Acceptance and Action

Questionnaire-II (AAQ-II) and the Five Facet Mindfulness Questionnaire, respectively. Results concluded that veterans receiving ACT-D demonstrated decreased depression severity and decreased odds of SI during treatment. Increases in experiential acceptance and mindfulness scores were associated with reduction in depression severity across time and increases in experiential acceptance scores were associated with reductions in SI across time.

Zubala et.al. (2014) presented a descriptive study on art therapy practices in persons suffering from depression based on qualitative findings from a nationwide survey in U.K. Depression is in multiple therapeutic needs that require flexibility and vast knowledge from therapists. In the study the arts therapists agree that the varied nature of depression influenced the chosen techniques the complexity of depression means that it may not be successfully addressed with a single intervention. Arts therapists also suggested that the concepts of time, motivation, reconnecting, 'desired state' and re-parenting play important roles in the development of a meaningful and effective therapeutic process and are especially relevant in addressing depression. From the results, it was recognized that while verbal communication has an important role in therapy, creative expression and communication through arts media adds a valuable dimension to the process. Creativity may be especially beneficial to clients with depression by helping them to reconnect to others and feelings, express emotions and generate new hopes and meaning.

Carter et.al (2010) examined patient predictors of response to interpersonal psychotherapy (IPT) and cognitive behavior therapy (CBT). The participants of the study were 177 adults with a primary diagnosis of major depressive disorder randomized to 16 weekly sessions of either IPT or CBT. Pre and post treatment depressive symptomatology was assessed by the Montgomery Asberg Depression Rating Scale. Results indicated that general predictors of response were perceived logicalness of therapy, recurrent depression and childhood reasons for depression. It was found that increasing co morbid personality disorder symptoms was associated with decreases in response to IPT but not CBT.

Schramm et.al. (2010) compared the effectiveness of Cognitive Behavioral Analysis System of Psychotherapy (CBASP) and Interpersonal psychotherapy (IPT) for

early-onset chronic depression. Thirty patients with early-onset chronic depression were randomized to 22 sessions of CBASP or IPT provided in 16 weeks. Primary outcome was the score on the 24-item Hamilton Rating Scale for Depression (HRSD) assessed post treatment by an independent blinded evaluator. Secondary endpoints were, among others, remission (HRSD \leq 8) rates and the Beck Depression Inventory (BDI). The study included a prospective naturalistic 12-month follow-up. Results revealed that there was no significant difference in post treatment HRSD scores between the CBASP and the IPT condition, but in self-rated BDI scores. It was found that there is a significantly higher remission rate in the CBASP (57%) as compared to the IPT (20%) group. No significant differences were found in the self-reported symptom level (BDI) one year post treatment. Results indicated that the primary outcome was not significant but secondary measures showed relevant benefits of CBASP over IPT. It was found that the preliminary evidence that in early-onset chronic depression, an approach specifically designed for this patient population was superior to a method originally developed for the treatment of acute depressive episodes.

Cuijpers et.al. (2012) conducted a systematic review and meta-analytical study on psychotherapy for depression in which outcomes on suicidality and hopelessness were reported. In the study thirteen reviews (with 616 patients) were included, three of which examined the effects of psychotherapy for depression on suicidal ideation and suicide risk, and eleven on hopelessness. No studies were found with suicide attempts or completed suicides as the outcome variables. The effects on suicidal ideation and suicide risk were small ($g = 0.12$; 95% CI: - 0.20–0.44) and not statistically significant. There was insufficient evidence for the assumption that suicidality in depressed patients can be reduced with psychotherapy for depression. Although psychotherapy of depression may have small positive effects on suicidality, reviewed data suggested that psychotherapy for depression cannot be considered to be a sufficient treatment. The effects on hopelessness are probably higher.

Cuijpers et.al. (2013) conducted another study to examine the association between the effects of psychotherapy for adult depression and several indicators of amount, frequency and intensity of therapy. The study included 70 reviews (92 comparisons) with 5403 patients, in which individual psychotherapy was compared with a control group

(e.g. waiting list, care-as-usual). Results showed that there was only a small association between number of therapy sessions and effect size, and this association was no longer significant when the analysis adjusted for other characteristics of the studies. The multivariable analyses also found that there is no significant association with the total contact time or duration of the therapy. However, there was a strong association between number of sessions per week and effect size. An increase from one to two sessions per week increased the effect size with $g \approx 0.45$, while keeping the total number of treatment sessions constant.

Swan et.al. (2013) examined the outcome of Cognitive Behavioural Analysis System of Psychotherapy (CBASP), to assess the acceptability and utility of this novel treatment in routine clinical practice within the U.K. National Health Service. An open trial of CBASP was done on a sample of 115 referred patients within primary and secondary care. Diagnostic interview and standardized outcome measures were administered before and after 6 months of CBASP with a trained, accredited therapist. Results indicated that 30% met criteria for remission ($r \geq 8$ HRSD-24 score) and a further 30% met criteria for clinically significant change ($r \geq 4$ and $r \geq 15$ HRSD-24 plus 50% reduction in baseline score). Thirty-nine per cent made “No change”. Group measures of quality of life, social functioning and interpersonal functioning also seem to be improved. The study concluded that CBASP is an acceptable therapy for a large proportion of patients with chronic depression and was associated with clinically significant change in 60% of completers.

Effect of specific psychotherapy for chronic depression on neural Responses to emotional faces was studied by Klein et.al (2014). Ten patients with a DSM-IV diagnosis of Chronic Depression (CD) were given a 12 week specialized psychotherapy (CBASP). All subjects participated in a prospective study with functional magnetic resonance imaging (fMRI) at baseline and after 12 weeks. The subjects performed an implicit and explicit emotional processing task while watching dynamic displays of neutral, positive (happy) and negative (fearful and sad) facial expressions during the fMRI scan. Effects of treatment were analyzed based on two anatomically defined regions of interest (ROI): the amygdala and the cingulum. Results showed that 60% of patients responded to treatment. Patients with CD reported increased arousal to negative emotional expression and also

showed an increase in left amygdala reactivity during implicit processing of emotional expressions following psychotherapy. No significant effect for the cingulum was observed.

A comparative study of narrative therapy and cognitive-behavioral therapy on depression was done by Lopes et.al (2014). In the study results showed that depressed patients who received narrative therapy (NT) showed significant reductions in depressive symptoms with comparable outcomes to cognitive-behavioral therapy (CBT) when patients completed treatment.

Early brain changes associated with psychotherapy in major depressive disorder was studied by Huang et.al. (2015) using by resting-state fMRI. A total of 23 MDD patients and 20 healthy controls were enrolled in the study. The early neural effects within 5 weeks of guided imagery—a psychotherapeutic method for treating depression—were assessed through resting-state functional magnetic resonance imaging using the regional homogeneity analytical method. Results indicated that regional homogeneity in the baseline was reduced in cortical regions and increased in limbic areas in the pre-treatment scans of MDD patients as compared to controls. After 5 weeks of guided imagery therapy, regional homogeneity in the ventromedial prefrontal cortex and the anterior cingulate gyrus were increased. There was a positive correlation between higher pre-treatment regional homogeneity in the dorsal anterior cingulate gyrus and an improved response to guided imagery therapy. So it was concluded that the changes in regional homogeneity induced by guided imagery therapy demonstrate that this method of psychotherapy takes effect through a “top-down” mechanism.

Rawson et.al. (2015) studied the impact of exercise on depression and anxiety symptoms among abstinent Methamphetamine (MA)-Dependent Individuals in a residential treatment setting. One hundred thirty-five MA-dependent individuals, newly enrolled in residential treatment, were randomly assigned to receive either a 3-times-per-week, 60-minute structured exercise program for 8 weeks (24 sessions) or an equivalent number of health education sessions. They examined changes in weekly total depression and anxiety scores by using the Beck Depression Inventory and Beck Anxiety Inventory over the 8-week study period. Results indicated a significant effect of exercise on reducing depression ($\beta = -0.63$, $P = 0.001$) and anxiety ($\beta = -0.95$, $P = 0.001$) symptoms (total

scores) over the 8-week period compared to a health education control group. A significant dose interaction effect between session attendance and exercise was also found on reducing depression ($\beta = -0.61$, $P < 0.001$) and anxiety symptoms ($\beta = -0.22$, $P = 0.009$) over time compared to the control group. The study supported the role of a structured exercise program as an effective intervention for improving symptoms of depression and anxiety associated with MA abstinence.

Lopes et.al. (2013) conducted a study to explore predictors of dropout in a controlled clinical trial of psychotherapy for moderate depression. Logistic regression analysis was used in the study which revealed the following results: (1) treatment assignment did not predict dropout, (2) clients taking psychiatric medication at intake were 80% less likely to drop out from therapy, compared to clients who were not taking medication, and (3) clients presenting anxious comorbidity at intake were 82% less likely to dropout compared to those clients not presenting anxious comorbidity.

A systematic review of randomised controlled trials of group psychotherapy in adults with sub-threshold depression has been conducted by Krishna et.al. (2015) to find out its effect on depressive symptomatology and prevention of incident major depression. Eight studies from six clinical trials met the inclusion criteria. Group psychotherapy was found to be an effective intervention for reducing depressive symptoms in adults with sub-threshold depression in comparison to waiting list controls (MD = -3.48, 95% CI: -5.02, -1.93). The reported benefits for group intervention in reducing depressive symptoms in comparison to other active interventions did not reach statistical significance (MD = 0.37 95% CI: -1.29, 2.04). The benefit of group psychotherapy at follow-up is not maintained. Group psychotherapies do not appear to reduce the risk of incident depressive disorder during the follow up (RR = 1.15 95% CI: 0.85, 1.54). The results of this meta-analysis concluded that group CBT interventions for patients with sub-threshold depression have a significant effect on depressive symptomatology at post treatment in both working age and older adult population. However it does not appear to reduce the incidence of major depressive disorders and has minimal or no effect on depressive symptomatology during follow-up.

Section V : EFFECT OF MUSIC THERAPY FOR VARIOUS DISORDERS

The growing evidence base for music therapy in mental health care supports the development of the profession in modern day mental health services. A review of controlled studies done by Edwards (2006) concluded that music therapy is “a structured interaction that patients are able to use to participate successfully, manage some of their symptoms, and express feelings relating to their experiences”.

Lin et al. (2011) reviewed almost 100 studies of music therapy and mental health and concluded that music as used by music therapists result in clinical improvement. They found no demonstrable evidence that simply listening to music had the same type of result. Therefore, it may be that a purposeful and professional design for delivering music, coupled with other factors (such as actually making music as part of therapy, or the interaction with a therapist), will potentiate the therapeutic effectiveness of music.

Grocke et al. (2008) in a study said that music therapy is a proven beneficial intervention for people with enduring mental illness which may bring about improvements in social functioning, global state and mental state. Studies have stated that music stimulates specific brain processes that are related to emotional behavior and sensory-emotional processing. It was also reported that music can be used to reduce stress levels effectively.

Silverman (2010) conducted a study on perceptions of music therapy interventions in patients with severe mental illness. Five different commonly utilized music therapy sessions were given to an inpatient unit. Participants rated an individual music game as the most helpful and a group music game as the most enjoyable on separate Likert-Type Scales. The researcher conducted an individual interview with each participant after the sessions. Analyses of participant interviews indicated that participants (1) were able to articulate what they had done in the group music therapy intervention, (2) were able to explain the purpose and general group objective of the session, and (3) supported the use of music therapy on the unit. The analyses of qualitative and quantitative data revealed that there were no overt differences between music therapy intervention types.

Wang et.al. (2013) conducted a meta-analysis of 10 randomized studies to evaluate the efficacy of music therapy for acute and chronic sleep disorders in adults. The results indicated that the sleep quality was improved significantly by music (standard mean difference: -0.63; 95% CI: -0.92 to -0.34; $p < 0.001$), with significant heterogeneity across studies. Conclusion of the study was that music can assist in improving sleep quality of patients with acute and chronic sleep disorders. They also concluded that for chronic sleep disorders, music showed a cumulative dose effect.

Gue'tin (2008) conducted a prospective, observational study to evaluate the effect of music therapy on mood, anxiety and depression in institutionalized patients with traumatic brain injury. Thirteen patients with traumatic brain injury were included in the study who took part in individual, weekly, 1-hour music therapy sessions over a period of 20 weeks. Each session was divided into two 30-minute periods – one devoted to listening to music (receptive music therapy) and the other to playing an instrument (active music therapy). Their mood (on the face scale) and anxiety–depression (on the Hospital Anxiety and Depression [HAD] Scale) were measured at weeks 1, 5, 10, 15 and 20. Mood was assessed immediately before and after the first music therapy session and every fifth session. Results suggested that music therapy enabled a significant improvement in mood, from the first session onwards. Music therapy also led to a significant reduction in anxiety–depression ($p < 0.05$) from week 10 onwards and up until the end of the study (week 20). The results confirmed the usefulness of music therapy in the treatment of anxiety–depression and mood in patients with traumatic brain injury. They suggested that Music therapy could usefully form an integral part of the management programme for these patients.

Effects of music therapy on psychiatric patients' proactive coping skills were done by Silverman (2011). The study showed that the participants in the music therapy condition had higher proactive coping skills than participants in the psychoeducational control condition. During the follow-up interview, most participants from both treatment groups noted that they had used music as a coping skill. A second study was conducted to compare the effects of music therapy and psycho education on the proactive coping skills of psychiatric patients immediately after a single treatment session. Statistical analysis indicated that participants in the music therapy condition tended to have slightly higher

proactive coping skills scores than participants in the psycho educational control condition, though differences were not significant.

Silverman and Rosenow (2013) did an exploratory study to determine the immediate quantitative effects of single recreational music therapy interventions on mood utilizing a pre- posttest research design. Forty-one acute psychiatric inpatients were selected for the study. The researchers compared pre- and posttest measures in participants' moods with 10 different recreational music therapy interventions using the Quick Mood Scale. Results indicated that there was a positive and significant immediate change in four mood factors after a single recreational music therapy session: (a) wide awake/drowsy, (b) relaxed/anxious, (c) cheerful/depressed, and (d) friendly/aggressive. There were no significant between-intervention differences concerning mood or posttest measures of perceived helpfulness and enjoyment. From the results of this study, it can be concluded that recreational music therapy interventions can have an immediate positive impact on acute psychiatric inpatients' moods.

Nowak (2014) did a study to compare the interaction with psychophysiological reactions of different types of interventions using visualization. The reactions, including respiratory rate, galvanic skin response, heart rate, and blood pressure, were measured with a polygraph. Healthy non musician adults (n = 20) were randomly assigned to three groups: group M listened to music, group T listened to text with verbal visualization instructions, and group M+T listened to the music and text combined. The analysis found that the musical piece chosen for the experiment evoked the lowest psycho- physiological responses in comparison to the T and M+T condition and therefore may have the highest potential for psycho- physiological relaxation, while the added element of text provoked stronger reactions in this area. It seems that the presence of text intensified the experience. So the results suggested that music alone may lead to the most positive outcomes if the goal is to relax the client, while words may be more useful if the client needs activation and emotional arousal. Music with text seems to be an optimal solution if the therapist wants to achieve visualization while at the same time ensuring that interaction will be gentle.

Chan, Chan and Mok (2010) conducted a study on the effects of music on depression and sleep quality in elderly people. In total, 42 elderly people (21 using music

and 21 controls) completed the study after being recruited in one community services centre in Hongkong. Participants listened to their choice of music for 30 min per week, for 4 weeks. The main outcome measures like Blood pressure, heart rate, depression levels and sleep quality variables were collected once a week for 4 weeks. There were statistically significant reductions in geriatric depression scores and sleep quality at week 4 in the experimental group. In the control group, there were no statistically significant reductions in depression and improvement of sleep quality over the 4 weeks. However, for all the outcome measures, no significant differences were found between groups over the 4 weeks. The findings of the study contributed to knowledge about the effectiveness of soft slow music used as an intervention to improve depression and sleep quality in elderly people.

Martin (2014) in a narrative review summarised the benefits of music in terms of reducing stress, anxiety, labour pain and depression in childbearing women. In neonates, music has been shown to reduce number of days to discharge, reduce pain response behaviours, increase weight gain, improve parent/infant intimacy, improve oxygen saturation, increase formula intake, stabilize vital signs and increase parental reports of calmed infants.

Kwon, Gang and Oh (2013) examined the effect of group music therapy on brain waves, behavior, and cognitive function among patients with chronic schizophrenia. Results indicated that after participating in 13 sessions of the group music therapy, alpha waves measured from eight different sites were consistently present for the experimental group ($p = .006$) than the control group, revealing that the participants in the music therapy may have experienced more joyful emotions throughout the sessions. The experimental group also showed improved cognitive function and positive behavior (social competence, social interest and personal neatness) while their negative behaviors were significantly less than those of the control group. The study concluded that the group music therapy was an effective intervention for improving emotional relaxation, cognitive processing abilities along with positive behavioral changes in patients with chronic schizophrenia.

Erkilla et al (2011) in a study on the effectiveness of music therapy found that participants receiving music therapy plus standard care showed greater improvement

than those receiving standard care only in depression symptoms (mean difference 4.65, 95% CI 0.59 to 8.70), anxiety symptoms (1.82, 95% CI 0.09 to 3.55) and general functioning (74.58, 95% CI 78.93 to 70.24) at 3-month follow-up. The response rate was significantly higher for the music therapy plus standard care group than for the standard care only group (odds ratio 2.96, 95% CI 1.01 to 9.02). They concluded that individual music therapy combined with standard care is effective for depression among working-age people with depression.

Perez et.al. (2010) reported in a study the effects of music on depression and compares them with the effects of psychotherapy. There are mainly three conventional treatments for depression: psychotherapy, pharmaceutical treatments, and electroconvulsive therapy. A randomized controlled study was conducted on a sample of 79 patients aged 25–60 years with low- and medium-grade depression. The Zung Depression Scale was employed for selection purposes. Patients were randomly assigned to the music-therapy group (classical and baroque music) (n = 41), or the psychotherapy group based on conductive-behavioral therapy (n = 38). The music therapy was given 50 minutes a day, every day, for eight weeks. It was found that the music-therapy group had less depressive symptoms than the psychotherapy group, and this was proven to be statistically significant with the Friedman test. So the study proposed that patients with low- and medium-grade depression can use music to enhance the effects of psychological support.

Priyadarsini and Rohini (2015) conducted a study on the effect of Carnatic music and Pranayama on depression and resilience in mild depressives. The results showed that the level of depression was reduced significantly after the intervention of Carnatic music and pranayama. The level of resilience was found to be improved after the treatment.

Section VI: EFFECT OF YOGA/PRANAYAMA FOR VARIOUS DISORDERS

Pasco and Bauer (2010) conducted a systematic review of randomized control trials on the effects of yoga on stress measures and mood. It focused on studies collecting Physiological parameters such as blood pressure, heart rate, cortisol, peripheral cytokine expression and/ or structural and functional brain measures in regions involved in stress and mood regulation. The 25 randomized control studies discussed provided evidence to

suggest that yoga practice leads to better regulation of the sympathetic nervous system and hypothalamic-pituitary-adrenal system, as well as a decrease in depressive and anxious symptoms in a range of populations.

Vedamurthachar et.al. (2006) conducted a study on the anti-depressant effect of Sudarsana Kriya Yoga (SKY) therapy in alcoholics. After a week of detoxification management consenting subjects (n = 60) were equally randomized to receive SKYtherapy or not (controls) for a two-week study. SKY therapy included alternate day practice of specified breathing exercise under supervision of a trained therapist. Subjects completed the Beck Depression Inventory (BDI) before and after the two weeks of this intervention. Morning plasma cortisol, ACTH and prolactin too were measured before and at the end of two weeks. Results reported a reduction in BDI scores occurred in both groups but significantly more so in SKY group. In both groups plasma cortisol as well as ACTH fell after two weeks but significantly more so in SKY group. Reduction in BDI scores correlated with that in cortisol in SKY but not in control group. Conclusion of the study was that the reduction in stress-hormone levels (cortisol and ACTH) along with BDI reductions possibly supports a biological mechanism of SKY in producing beneficial effects.

Effect of integrated yoga on anxiety, depression and well-being in normal pregnancy was studied by Sathyapriya et.al. (2013). Ninety-six women in 20th week of normal pregnancy were studied. Yoga group (n = 51) practiced integrated yoga and control group (n = 45) did standard antenatal exercises, one hour daily, from 20th to 36th week of gestation. Results indicated that there was significant difference between groups (Mann-Whitney $p < 0.001$) in all variables. There were significant changes within groups (Wilcoxon's $p < 0.001$) in both groups. Pregnancy related experience (PEQ) reduced in yoga by 26.86%, State (STAI I) anxiety (decreased 15.65% in yoga, increased 13.76% in control), Trait (STAI II) anxiety (decreased 8.97% in yoga, increased 5.02% in control) and Depression (HADS) (decreased 30.67% in yoga, increased 3.57% in control). So they concluded that Yoga reduces anxiety, depression and pregnancy related uncomfortable experiences.

Jerath et.al. (2006) studied how Pranayamic breathing functionally resets the autonomic nervous system. Pranayamic breathing defined as a manipulation of breath movement, has been shown to contribute to a physiologic response characterized by the presence of decreased oxygen consumption, decreased heart rate, and decreased blood pressure, as well as increased theta wave amplitude in EEG recordings, increased parasympathetic activity accompanied by the experience of alertness and reinvigoration. The mechanism of how pranayamic breathing interacts with the nervous system affecting metabolism and autonomic functions remains to be clearly understood. The study concluded that slow pranayamic breathing generates inhibitory signals and hyperpolarizing current within neural and non-neural tissue by mechanically stretching tissues during breath inhalation and retention. It is likely that inhibitory impulses in cooperation with hyperpolarization current initiates the synchronization of neural elements in the central nervous system, peripheral nervous system, and surrounding tissues ultimately causing shifts in the autonomic balance towards parasympathetic dominance.

Kinser et.al. (2013) conducted a randomized, controlled, mixed-methods study on Feasibility, acceptability, and effects of gentle Hatha Yoga for women with major depression. The study compared an 8-week yoga intervention with an attention-control activity in 27 women with MDD. Results indicated that there was a decrease in depression over time in both the yoga group and the attention-control group, with the yoga group having a unique trend in decreased ruminations. Participants in the yoga group reported experiencing increased connectedness and gaining a coping strategy through yoga.

Taspinar et.al. (2014) did a study to compare the effects of hatha yoga and resistance exercises on mental health and well-being in sedentary adults. Fifty-one participants aged means (SD) 25.6 (5.7) years were randomly divided into three groups: Hatha Yoga Group, Resistance Exercise Group and Control Group. The Hatha Yoga Group and Resistance Exercise Group participated in sessions three days per week for 7 weeks and the Control Group did not participate in any sessions. All the subjects were evaluated through the Rosenberg Self-Esteem Scale, Beck Depression Inventory, Body Cathexis Scale, Nottingham Health Profile and Visual Analog Scale for fatigue pre-and post-session. Significant improvements were found in terms of all outcome measures in

the Hatha Yoga Group and the resistance exercise group. No improvements were found in the Control Group. Hatha yoga more improved the dimensions fatigue, self-esteem, and quality of life, whilst resistance exercise training more improved body image. Hatha yoga and resistance exercise decreased depression symptoms at a similar level.

Effects of yoga on brain waves and structural activation was studied by Desai, Tailor and Bhatt (2015). After a narrowed search through a set of specific inclusion and exclusion criteria, 15 articles were used in this review. The study concluded that breathing, meditation, and posture-based yoga increased overall brain wave activity. Increases in gray matter along with increases in amygdala and frontal cortex activation were found to be evident after a yoga intervention.

Silva, Ravindran and Ravindran (2008) in a review study found that in depressive disorders, yoga may be comparable to medication and the combination superior to medication alone. There is reasonable evidence for its use as second-line mono therapy or augmentation to medication in mild to moderate major depression and dysthymia, with early evidence of benefit in more severe depression. In anxiety disorders, yoga may be superior to medication for a subgroup of patients, but its benefits in specific conditions are still largely unknown. Yoga appears to be superior to no treatment and progressive relaxation for both depression and anxiety, and may benefit mood and anxiety symptoms associated with medical illness. It shows good safety and tolerability in short-term treatment. They concluded that reasonable evidence supports the benefit of yoga in specific depressive disorders.

Varambally and Gangadhar (2012) in a literature review study done on Yoga as spiritual practice with therapeutic value in psychiatry suggested that yoga can lead to significant symptomatic improvements in psychiatric disorders, along with neurobiological effects which may underlie these changes. They also suggested that mental health professionals should be open to the potential benefits of spiritual practices for their patients, either as complementary interventions to modern treatments or as sole treatment in some disorders.