

Impact of Stress and Stress Management Programmes on Health in Recent Years: A Review

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ABSTRACT

The large Indian population needs to be made aware of its mental health which will generate its own demand. With rising awareness, early recognition of mental problems and access to treatment will follow. The convergence of information and technology in a free society may result in crowd-sourcing which breaks down barriers. True involvement of information and technology is required to bring about a change in mental health awareness. The modern world is facing a pandemic of lifestyle disorders that require changes to be made consciously by individuals themselves, and stress management strategies are the best lifestyle ever designed, that have potential in the prevention, management, and rehabilitation of prevalent lifestyle disorders. Stress is a great challenge of the present civilization, both for diseased as well as healthy individuals, and the time has come to recognize the importance of stress management strategies and making them a part and parcel of daily life.

Keywords: Stress, Mental health, stress management programmes.

INTRODUCTION

The modern world is facing a pandemic of lifestyle disorders that require changes to be made consciously by individuals themselves, and stress management strategies are the best lifestyle ever designed, that have potential in the prevention, management, and rehabilitation of prevalent lifestyle disorders. The Indian Mental Healthcare Act 2017 received presidential assent on April 7th, 2017 and replaced the 1987 Act. The new act intends to align and harmonize existing laws with the Convention on Rights of Persons with Disabilities and its optional protocol which India ratified in 2007. The bill is a big leap in principles with the rights of the mentally ill at its core. ^[1]

Srivastava K et al in 2016 tried to explore the paradigm of mental health awareness as a means of combating stigma. ^[2] The large Indian population needs to be

made aware of its mental health which will generate its own demand. With rising awareness, early recognition of mental problems and access to treatment will follow. ^[2] The convergence of information and technology in a free society may result in crowd-sourcing which breaks down barriers. True involvement of information and technology is required to bring about a change in mental health awareness. ^[2]

Suicides rank high as the cause of human deaths. Stress plays a major role in triggering suicidal events. A study by Kuttichira P published in 2018 ^[3] explored the family suicides committed in Kerala. All the family suicides reported from four central districts of Kerala State during the year 2000 were included in the study. 84 lives were lost in 32 incidents involving 99 persons.

Kalmár S et al in 2013 ^[4] suggested the possibilities of suicide prevention in

adolescents by a holistic approach. Suicide among younger generation is one of the grave public health problems. Different data available from different studies are stated below:

1. In Hungary 1395 young people below 24 years of age lost their lives due to suicide between 2000-2010, among them 1150 were males and 245 females.
2. Epidemiological studies show that, 24.7% of children and adolescents suffer from some form of conduct, behaviour, or other psychiatric disorders.
3. Among adolescents' suicide was the leading cause of death in 2010.
4. Victims of suicide are not healthy either physically and mentally.
5. They suffer from psychiatric, physical, cultural and spiritual disorders.
6. Suicide protective and risk factors according to mental-psychological, physical-biological, spiritual aspects, cultural-social, can be classified.
7. These factors may not necessarily present in all cases.
8. They may vary from one country to another and one person to another.
9. They depend on cultural, political, economic features.

From review of articles published in 2018 it will be evident that evidence-based complementary and alternative medicine (CAM) practices are effective in treatment of various physical and psychological problems and needs to be combined with conventional therapies as an integrative approach in patient care.

To cope with cancer and its treatment-related side effects and toxicities, people are increasingly using complementary and alternative medicine (CAM). Integrative oncology, combines conventional therapies and evidence-based CAM practices, is an emerging discipline in cancer care. An electronic database search (PubMed), revealed 138 relevant clinical trials on the use of yoga in cancer patients. A total of 10,660 cancer patients from 20 countries were recruited in these studies. Most of the studies reported that yoga

improved the physical and psychological symptoms, quality of life, and markers of immunity of the patients, providing a strong support for yoga's integration into conventional cancer care. [5]

A study by Sharma K et al [6] was conducted to investigate the effect of regular meditation practice on EEG brain dynamics in low-frequency bands of long-term Raj yoga meditators. This study suggested a positive impact of meditation on frontal and parietal areas of brain, involved in the processes of regulation of selective and sustained attention as well as provide evidence about their involvement in emotion and cognitive processing.

The aim of a study by Praveena SM et al [7] was to observe the effect of 3-month long Yoga practice on HRV in early postmenopausal women. The study suggested that three-month long Yoga practice improved HRV in early postmenopausal women significantly and has the potential to attenuate the CVD risk in postmenopausal women.

The purpose of a study conducted by Naik GS et al [8] was to assess the effect of a modified form of isolated alternate nostril, slow breathing exercise on perceived stress, and cardiovascular parameters in young, male healthy volunteers. HR, SBP, DBP, and PSS decreased significantly ($P < 0.05$) in the study group following 12 weeks slow breathing exercise training.

The investigation by Joshi SS et al [9] was undertaken to examine the effects of mindfulness-based cognitive therapy (MBCT) on the following factors:

1. Interepisodic symptoms,
2. Emotional regulation,
3. Quality of life in patients with bipolar affective disorder (BPAD) in remission.

Five patients with the diagnosis of BPAD in partial or complete remission were included. Each patient was assessed on the below scales:

- A. Beck Depressive Inventory I
- B. Beck Anxiety Inventory
- C. Difficulties in Emotion Regulation Scale
- D. Acceptance and Action Questionnaire-II

E. The World Health Organization Quality of Life Assessment-BREF.

Following pre assessments, patients underwent 8-10 weeks of MBCT. This study demonstrated that stress management programmes need to be included in treatment of psychiatric disorders along with conventional therapies for better management of patients.

Jamadar C in 2012 [10] studied the relationship between Work Motivation and Occupational Stress among telecom workers. 96 telecom employees from Mysore city were selected for the study. The sample comprised of 48 BSNL employees and 48 Airtel employees. Results revealed the following observations:

1. Dependent (F1) was positively correlated to Organizational Orientation (F2).
2. Material Incentives (F5) was positively correlated to Dependent (F1)
3. Organizational Orientation (F2) and was negatively correlated to Work Group Relations (F3).
4. Job Situation (F6) was positively correlated to Organizational Orientation (F2) and Material Incentives (F5).
5. Occupational Stress was positively correlated to Dependent (F1) ($r=0.236$) and negatively related to Work Group Relations (F5).
6. There were significant differences among these groups on work motivation as well as occupational stress.

Ettner R et al in 2012 [11] stated that literature supporting a relationship between emotions and regulation of blood pressure dated back to early 1900s. The most demonstrated effect was cardiovascular reactivity to stress. Prospective studies have demonstrated that chronic stress as well as enduring traits plays a significant role in the development of hypertension. In this cohort, analysis of results of 195 genetic males seeking contrary hormones for treatment of gender dysphoria revealed a significantly increased prevalence of hypertension.

Schut C et al in 2012 [12] showed that atopic dermatitis increases stress levels and can also be triggered by stress.

Psychological interventions may provide positive effects on skin status, itch and scratching behavior in these patients.

Tomiyama JA et al in 2012 [13] suggested that both animals and humans show a tendency toward eating more "comfort food" following acute stress. Such stress eating may contribute to the epidemic of obesity. Leptin levels have been shown to increase following a laboratory stress challenges. Their study examined the role of leptin reactivity in stress induced eating behavior. Increasing leptin levels during acute stress was one of the factors responsible for lower intake of comfort food. [13]

Steptoe A et al in 2012 [14] reviewed the correlation of stress and cardiovascular diseases. The physiological reaction to psychological stress, involves the hypothalamic-pituitary-adrenocortical and sympatho-adrenomedullary axis. Epidemiological data show that chronic stress increases the occurrence of coronary heart disease (CHD). Increased risk of a first CHD event has been observed in employees who experience work-related stress and individuals who are socially isolated in different studies. Short-term emotional stress may act as a triggering factor for cardiac events in individuals with advanced atherosclerosis. Transient left ventricular apical ballooning cardiomyopathy or stress (Takotsubo) cardiomyopathy, is a well-documented stress-specific coronary syndrome. In patients with CHD, acute psychological stress induces transient myocardial ischemia. Long-term stress may increase the risk of recurrent CHD events and mortality in this group of subjects.

The importance of stress management has been highlighted in European guidelines for cardiovascular disease prevention. But applications of the understanding of stress as a risk factor and the use of stress management strategies in the clinical settings are relatively limited till date. [14]

In Australia, an expert group concluded that there exists strong and

consistent correlation between social isolation, depression, lack of quality social support and heart disease. These factors were considered to be as risky to heart health as abnormal blood lipid levels, high blood pressure and smoking. ^[14]

Some researchers have found a strong link between anxiety and heart disease. A study observed a linear progression between self-reported psychological stress and damage to the carotid artery. The Whitehall Study in the UK conducted among government employees found that those employees with the least control over their work had the highest rates of heart disease. Research is continuing in this area to define more clearly the types of stress that are more likely to trigger cardiovascular disease. ^[14]

Studies have demonstrated that during periods of acute stress there is reduction in blood flow to the heart. Reduction in blood flow may promote the heart to beat irregularly and also increases the chances of blood clotting. Increased incidences of transient myocardial ischemia and coagulability are the two most important factors that may lead to the development of cardiovascular disease. ^[14]

Subjects with atherosclerosis, during periods of acute stress, may experience chest pain. This results due to the vasoconstrictor responses that occur following acute stress. Vasoconstriction further decreases blood flow via the already narrowed vessels in an individual with atherosclerosis. In long standing cases, all these effects may lead to damages of the vascular endothelium. This in turn makes the blood vessels more susceptible to atherosclerosis. Behavioural adjustments may help to decrease cardiovascular risk factors. ^[14]

A study by Nekouei ZK et al in 2014 ^[15] has drawn attention to the psychological risk and protective factors of CHD. The study was aimed to determine the correlations between psychological risk and protective factors with quality of life in patients with CHD. The results of this study

has emphasized the necessity of noticing the psychological factors in primary prevention by preventive programs and in secondary prevention by rehabilitation centers to improve the quality of life of the people with heart diseases.

In a study, Child E et al in 2014 ^[16] compared psychophysiological responses to an acute psychosocial stressor between two groups of individuals: People who perform daily exercise and sedentary subjects. 111 subjects participated in two experimental sessions: Trier Social Stress Test (TSST) and a non-stressful control task. The researchers measured heart rate, blood pressure, cortisol levels, and self-reported mood. Individuals who reported physical exercise at least once per week exhibited lower heart rate. Level of habitual exercise did not influence self-reported mood before the tasks. Non-exercisers reported a greater decline in positive affect after the TSST as comparison to exercisers.

The purpose of a study by Marshall-Fabien GL et al in 2014 ^[17] was to examine whether there are differences in the relationship between stress and social networks on depressive symptoms by ethnic groups. Ethnicity functioned in the study as a proxy for culture. Data were drawn from the National Survey of American Life. Data included older African Americans (837) and Caribbean Blacks (271). The measures of stress were perceived discrimination and material hardship. The measures of social networks were social support and social connectedness. The association between perceived discrimination and depressive symptoms was significant for both groups. The association between material hardship and depressive symptoms was significant only for older African Americans. Results also indicated that compared to African Americans, Caribbean Blacks derived greater protective effects against depression.

Using data from the Wisconsin Longitudinal Study, Pudrovska T et al in 2014 ^[18] explored the effect of job authority on depressive symptoms among white men and women. Women with job authority

exhibited more depressive symptoms than women without job authority. This study highlighted how socioeconomic and cultural effects of masculinities and femininities attenuate or amplify health-promoting resources.

A study by Yang Y et al in 2014 [19] observed the influence of psychological resilience on the onset of activities of daily living (ADL) disability among Chinese older adults. The findings were as follows:

1. Higher levels of resilience at the baseline were significantly associated with reduced risk of becoming ADL disabled during the 3 year follow up period.
2. Resilience by age interaction was detected.
3. Higher levels of resilience were more protective against the onset of disability for the younger old than the oldest old.
4. Psychological resilience was a protective factor against ADL disability.
5. The benefits were only significant for older adults.

The purpose of this study by Businelle MS et al in 2014 [20] was to examine the relationships between demographic variables, socioeconomic status, and mental health. The study also explored the influence of life stressors on these relationships. Findings of the study suggested that reducing exposure to stressors or improving coping skills with life stressors may both improve mental health and thereby reduce health disparities.

The variant at rs1006737 in the L-type voltage-gated calcium channel (alpha 1c subunit) CACNA1C gene has been found to be associated with schizophrenia and bipolar disorder. Lancaster TM et al in 2014 [21] investigated whether this risk variant affects reward responsiveness. Reward processing is one of the central cognitive-motivational domain. 164 young, healthy adults were included in the study. The rs1006737 risk genotype was associated with blunted reward responsiveness. This finding suggested that the CACNA1C risk locus may have a role in neural pathways

that facilitate value representation for rewarding stimuli. Impaired reward processing may contribute to anhedonia and other clinical features common to affective and psychotic disorders.

The aim of a study conducted by Akmeşe ZB et al in 2014 [22] was to investigate the effects of PMR training accompanied by music on perceived pain and quality of life (QOL) in pregnant females with low back pain (LBP). 66 pregnant women were randomly assigned to a PMR group and a control group. The intervention group showed significant improvement in all QOL subscales and perceived pain following the intervention. The intervention group experienced a greater decrease in perceived pain and improved QOL.

In a study Deurzen I V et al in 2015 [23] addressed the idea that income inequality can get under the skin and worsen the symptoms of depression. They observed that individuals in countries with greater income inequalities reported more depressive symptoms. It was seen that coping resources can protect against the stress of living in a society with high income inequality.

Akgün Şahin Z et al in 2015 [24] studied the effects of Progressive Muscle Relaxation Technique (PMTR) on fatigue and sleep quality on 45 patients with COPD. It was observed that Progressive Muscle Relaxation Training decreased patients' fatigue level and improved their quality of sleep.

A study by Yilmaz SG et al in 2015 [25] was conducted to observe the effect of progressive relaxation exercises on anxiety and comfort level of breast cancer patients receiving chemotherapy. Patients were divided into two groups: experimental (30) and control (30) groups. Patient state of anxiety post-test mean scores were 36.2±8.21 in experimental group and 43.4±7.96 in control group (p<0.05). The general comfort scale in post-test mean scores were 149.5±13.9 in experimental group and 137.7±15.0 in control group (p<0.05).

Nagma S et al in 2015 [26] conducted a study to observe the effect of perceived stress on menstrual cycle length, regularity and dysmenorrhea. The study concluded that high stress levels were associated with only menstrual irregularities and not with duration, amount of flow and dysmenorrhea.

In a study by Albert K et al in 2015, [27] brain activity and mood response to psychosocial stress was examined normally cycling women at either the high or low estradiol phase of the menstrual cycle. Twenty-eight subjects were exposed to the Montreal Imaging Stress Task (MIST), with brain activity determined through functional magnetic resonance imaging. Behavioral response was assessed with subjective mood and stress measures. The following observations were made:

1. Brain activity responses to psychosocial stress differed between women in the low versus high estrogen phase of the menstrual cycle.
2. Women with high estradiol levels showed significantly less deactivation in limbic regions during psychosocial stress compared to women with low estradiol levels.
3. Women with higher estradiol levels also had less subjective distress in response to the MIST than women with lower estradiol levels.

The study concluded that in normally cycling premenopausal women, high estradiol levels attenuate the brain activation changes and negative mood response to psychosocial stress.

The study by Chandra S et al in 2016 [28] was focused on analyzing the effects of Sudarshan Kriya yoga (SKY) on brain signals during a working memory (WM) task. To evaluate the effects of SKY on WM capacity (WMC), the researchers chose a control group for contriving a cogent comparison that could be corroborated using statistical tests. SKY was found to promote the efficient use of energy and power spectral density (PSD) for different brain rhythms in the desired locations as depicted by the gamma, alpha, and theta 2 bands. It

was found that gamma PSD was reduced for both phases of memory in the experimental group. Alpha energy increased during the retrieval phase in the experimental group after SKY. Theta 1 rhythm was not affected by SKY, but theta 2 showed left hemispheric activation. Theta rhythm was associated with memory consolidation. SKY showed minimized energy losses while performing the task.

A study by Vinay AV et al in 2016 [29] was intended to assess the influence of short-term practice of yoga on heart rate variability (HRV). It was concluded that autonomic balance tilts toward parasympathetic predominance after 1 month practice of yoga. [28]

Singh K et al in 2016 [30] conducted a study to measure the effect of the right and left nostril yoga breathing on frontal hemodynamic responses in 32 right handed healthy males. The study concluded that RNYB increased oxygenation and blood volume in the left PFC as compared to BA and LNYB. This supports the relationship between nasal cycle and ultradian rhythm of cerebral dominance and suggests a possible application of uninostril yoga breathing in the management of psychopathological states which show lateralized cerebral dysfunctions. [30]

The Home Guards (HG) usually work in a very stressful situation during election, managing traffic and other crowded places. It is essential in present day circumstances that they have to manage their emotions and cope up with different stressful situations. To observe the efficacy of integrated Yoga module (IYM) on emotions of HGs Amarnath B et al in 2016 [31] conducted a study. The results suggested that IYM is cost-effective intervention and helps HGs for coping up with emotions in stressful situations.

The fMRI study by Chung KC et al in 2016 [32] was aimed to examine psychosocial stress reactions induced by mental arithmetic and social evaluation on behavioral and hormonal levels.

46 participants included in the study were as follows:

A. 15 naturally cycling females in their early follicular phase (EF)

B. 15 females on hormonal contraceptives (HC)

C. 16 males

On a neural level there were 40 participants: 13 EF-females, 13 HC-females and 14 males.

No gender differences emerged in subjective ratings and performance during stress, neural activation patterns differed significantly. Also, ANDR attenuated the post-stress increase of negative mood in all participants. Region of interest analyses showed that irrespective of treatment, males showed stronger activation of the dorsolateral prefrontal cortex (DLPFC) than females. At the whole brain level, gender differences emerged indicating stronger fronto-parietal activation in males compared to HC-females on both treatments. Males showed stronger visual and fusiform activation than EF-females under ANDR. Error ratio in the ANDR-stress conditions were positively associated with their post-stress cortisol levels and increase in subjective stress in males. Male DLPFC activity in the ANDR-stress condition was negatively associated with trait anxiety. Compared to HC-females, EF-females showed stronger activation of arousal-related areas under placebo treatment. These findings suggested that the male stress reactions under social evaluative threats were stronger than female stress reactions as a function of ANDR.

To observe the effects of integrated yoga on bone mineral density (BMD) in postmenopausal women with osteoporosis Motorwala ZS et al [33] conducted a study in 2016. Integrated yoga was found to be a safe mode of physical activity which included weight bearing as well as not weight bearing asanas, Pranayama, and suryanamaskar. All of these maneuvers helped to induce improvement in BMD in postmenopausal osteoporotic changes in females.

Chung KC et al in 2016 [34] conducted a fMRI study, aimed to examine psychosocial stress reactions on behavioral, hormonal and neural levels in 31 naturally cycling females, between 15 early follicular (EF) and 16 mid-luteal (ML) females tested with ANDR and placebo treatment in a repeated-measures design. Regardless of odor stimulation, psychosocial stress (i.e., mental arithmetic task with social evaluative threat) led to elevated negative mood and anxiety in all these females. A negative association of social threat related to amygdala activation and competence ratings appeared in ML-females, indicating enhanced threat processing by ANDR, particularly in ML-females who felt less competent early in the stress experience. Besides, ML-females showed reduced performance and stronger stress-related hippocampus activation compared to EF-females under ANDR. Hippocampal activation in ML-females was also correlated positively with post-stress subjective stress. The researchers suggested that ANDR enhanced initial evaluation of self-related social threat in ML-females. Female stress reactions were related to stress sensitivity through enhanced awareness and processing of social cues in a stressful context, with menstrual cycle phase playing a critical factor.

A study was conducted by Polsgrove MJ et al in 2016 [35] to determine the impact of yoga on male college athletes. Results suggested that regular yoga practice may increase the flexibility and balance as well as whole body measures of athletes and therefore, may enhance athletic performances that require these measures.

A study was conducted by Ghar M et al in 2016 [36] to evaluate the effects of Raj yoga on stress management in healthy young adults of an urban population of a developing country. They concluded that cardiorespiratory fitness parameters in young adults are correlated with perceived stress.

A study by Goldstein MR et al in 2016 [37] was aimed to assess the effects of

YES+, a yogic breathing-based life skills workshop, on multiple measures of well-being and physiological stress response. The findings suggested that a life skills workshop integrating yogic breathing techniques may provide self-empowering tools for enhancing well-being in young adults³⁶¹.

An assessment of perceived stress and its relation to general psychopathology, the pattern of coping, and burnout in the final-year medical student was done to bring out clear nature, pattern, and extent of the problem by Singh S et al in 2016. [38] Perceived stress had statistically significant association with general psychopathology and depressive-anxiety component of burnout. Acceptance, positive reframing, humor, planning, and active coping correlated with lower score on perceived stress. Higher score on perceived stress was associated with higher scores on general psychopathology and burnout.

A study by Sudharkodhy S et al in 2016 [39] was aimed to assess the perceived stress, anxiety, and HRV in 1st year medical students and to correlate stress and anxiety to HRV. This study suggested that during anxiety there is increased activity toward sympathetic.

Hassanpour-Dehkordi A et al in 2016 [40] conducted a study in Iran to investigate the effect of progressive muscle relaxation on elderly's quality of life. After intervention, quality of life increased significantly in the subjects undergoing muscular progressive relaxation and fatigue severity decreased significantly in the intervention group compared to prior to intervention. In addition, there was a statistically significant difference in mean score of physical performance, restricted activity after physical problem, energy, socially function, physical pain, overall hygiene, and quality of life between intervention and control groups.

The study by Vinothkumar M et al in 2016 [41] was conducted to evaluate "mindfulness" as a mediator of coping, perceived stress, and job satisfaction among

medical interns. Adaptive coping strategies were found to be significantly associated with greater mindfulness and lower perceived stress. Mindfulness was negatively correlated with perceived stress and nonadaptive coping strategies. Relationship between perceived stress and adaptive coping strategies was significantly mediated by mindfulness.

Sudhanshu A et al in 2017 [42] conducted a study to evaluate the efficacy of yoga therapy in the management of periodontal disease with reference to stress. The study observed beneficial effect of yoga in periodontal disease and stress management of these patients.

Rshikesan P B et al in 2017 [43] conducted a study to assess the effect of integrated approach of yoga therapy (IAYT) on quality of sleep and body composition in obese adult males. The researchers suggested that yoga practice may reduce obesity and quality of sleep.

Shasti VV et al in 2017 [44] studied the effects of Yoga Pranayama (YP) and Vedic Mathematics (VM) on emotion regulation, mindfulness and aggression. Mindfulness improved significantly for the VM group. Post hoc correlation analysis directly linked increased mindfulness to decreased aggression.

Bhat RK et al in 2017 [45] conducted a study to evaluate diabetes from electrophotonic imaging (EPI) perspective. Objectives of the study were as follows: (1) Compare various EPI parameters in normal, prediabetic and diabetic patients. (2) Find difference in controlled and uncontrolled diabetes. (3) Study the effect of 7 days of diabetes-specific yoga program.

There was a significant difference in EPI parameters between normal, prediabetics and diabetic individuals. Immune organs showed significant differences in EPI during comparison of controlled and uncontrolled diabetes.

A study by Chandra S et al in 2017 [46] was focused on analyzing the effects of Sudarshan Kriya yoga (SKY) on EEG. They observed that alpha band power decreases in

the frontal lobe of the brain with increasing mental stress. Frontal lobe asymmetry decreases with increasing stress tolerance.

To determine effect of Kundalini Yoga (KY) on the perception of psychological stress, the salivary levels of cortisol and alpha-amylase activity a study was conducted by Garcia-Sesnich JN et al in 2017. [47] KY practice had an immediate effect on salivary cortisol levels. A significant decrease of perceived stress scores in the study group was also found.

Aim of the study conducted by Chauhan A et al in 2017 [48] was to evaluate the effect of 1-month yoga practice on body mass index, and blood pressure. Yoga practice decreased BMI, systolic BP, and diastolic BP.

The aim of this study conducted by Essa RM et al in 2016 [49] was to determine the effect of progressive muscle relaxation technique on stress, anxiety and depression after hysterectomy. The study concluded that the women who received progressive muscle relaxation therapy as an adjuvant therapy after hysterectomy demonstrated lower stress, anxiety, depression levels. [49]

Divya T S et al in 2017 [50] conducted an interventional study on healthy volunteers. The aim of the study was to analyze the impact of short-term yoga training on cardiorespiratory profile, autonomic function tests, lipid profile, thyroid function tests. There was significant reduction in systolic blood pressure, diastolic blood pressure, resting heart rate, and mean blood pressure. There was significant increase in forced vital capacity, forced expiratory volume, peak expiratory flow rate. A significant reduction in body mass index was observed. Effects on metabolic parameters were: significant reduction in fasting blood sugar, total cholesterol, triglycerides low-density lipoprotein levels, significant increase in high-density lipoprotein.

The objective of a study by Sreedhar D et al in 2017 [51] was to investigate gender differences in the clinical presentation of FEM (First episode of mania) and the 5-year

course of Bipolar Disorder (BD) following a FEM. Data were collected from the patient records at the National Institute of Mental Health and Neurosciences. 108 patients included in study belonged to two groups: patients who received a diagnosis of mania with/without psychotic symptoms and patients with a diagnosis of BD - mania with/without psychotic symptoms. Details studied were sociodemographic, clinical, treatment details of FEM and the course of BD.

1. Among the 108 patients, 39 were females and 69 were males.
2. Mean age at onset of illness, mean age at first presentation to the hospital, and the mean duration of the first manic episode were comparable in the two groups.
3. 41% females and 33.33% males had experienced at least one prior depressive episode, which was comparable.
4. In FEM, increased activity levels were found to be significantly more in females.
5. Other manic symptoms were not significantly different among the two groups.
6. There were no significant gender differences in terms of the treatment prescribed for the FEM. Time to recovery (as per ICD-10) were similar in both groups.
7. No significant differences were observed between the genders with respect to the drug class of the medication prescribed, adverse effects, compliance, and number of follow-up.
8. During 5-year follow-up period, the total number of mood episodes, hypomanic, depressive, and manic episodes in the two groups was comparable.

The aim of this study conducted by Menon V et al in 2017 [52] was to assess short-term effect of adjunctive single session cognitive behavior therapy (CBT)-based counseling for patients with MUS. Patients with MUS were to receive either the single session counseling (intervention group) and control group received treatment as usual. The two groups were assessed at baseline and after 1 month for change in outcome measures. Both groups did not

differ on change in the primary outcome measure: Patient Health Questionnaire. At follow-up, the intervention group showed statistically greater reduction in the number of workday lost.

Damegunta SR et al in 2017 [53] presented a cross-sectional data from a prospective study conducted to estimate the 10 years' cardiovascular risk in a BD population. Using the Framingham 10-year risk questionnaire, the CHD risk for each patient was calculated. Observations were as follows:

1. In BD patients the risk of developing a future cardiovascular event was 3.26%.
2. Higher age at onset of illness, waist-hip ratio, total cholesterol, unemployment showed a strong positive correlation with future CHD risk.
3. Administration of lithium, valproate, for management of BD, higher socioeconomic status and educational status, nonsmokers were negatively associated with the future CHD risk.
4. There was a significant association between BD and metabolic factors, sociodemographic variables.

The aim of this study by Joshi P et al in 2017 [54] was to find the association of the following:

- A. Chronic disease prevalence (CDP) with suicide-related ideation (SI) and suicide attempt (SA)
- B. Combined effect of CDP and quality of life (QoL) with SI or SA.

The results suggested that suicide-related behavior could be predicted by the prevalence of chronic disease and low QoL.

A study by Jha A et al in 2017 [55] was aimed to conduct a preliminary investigation of prevalence and feasibility of brief therapy for posttraumatic stress disorder (PTSD) among earthquake survivors. In April 2015, a major earthquake struck northern regions of Nepal. This earthquake affected one-third of the population. A team of local nonspecialist mental health volunteers was trained to identify survivors with PTSD. The study used the PTSD checklist for Diagnostic and

Statistical Manual of Mental Disorders (Fifth Edition). The following observations were made:

1. 333 survivors were surveyed with PCL-5 as the screening instrument
2. Cutoff score of 38 or more for diagnosing PTSD.
3. PTSD prevalence of 33% was noted in 2015 and 28.5% in 2016.
4. This drop of 4.5% prevalence in the intervening 8 months suggested that a significant number of survivors were still suffering from PTSD.
5. Most participants were female.
6. Compared to the brief (four sessions) individual NET-revised, a group-based CFBT was more acceptable.
7. PTSD is common following earthquake trauma.
8. PTSD should be included in future disaster management plans.

A randomized controlled trial was conducted by Yilmaz CK et al in 2017 [56] to investigate the effect of progressive muscle relaxation exercises on dyspnea, fatigue, sleep quality in patients with chronic obstructive pulmonary disease. The decrease in the mean dyspnea, sleep scores, fatigue, in the intervention group was significantly more pronounced than in the control group.

A study was conducted by Karbandi S et al in 2017 [57] to observe the effect of the progressive muscle relaxation (PMR) on the self-efficacy of breastfeeding. The researchers suggested that PMR technique facilitates the self-efficacy of breastfeeding in mothers with preterm infants and should be considered as an effective strategy to improve nursing care and the provision of better support services for mothers who breastfeed their infants.

A study by Bala R et al in 2017 [58] was designed to assess the impact of yoga–Preksha meditation on obesity in sportspersons. The results showed that there was a significant reduction in body weight and BMI in the experimental group.

A study by Hotkar JM et al in 2017 [59] was conducted to study the effect of

Sahaja Yoga meditation on stress levels of school children of 8th grade. The results of the study showed a significant decrease in academic stress after 6 weeks of Sahaja Yoga meditation program.

The aim of this study by Jali MV et al in 2017^[60] was to investigate the effect of yoga therapy and its influence on blood glucose parameters in patients of type 2 diabetes mellitus. The results of the study demonstrated that yoga is effective in reducing the blood glucose levels in patients with type 2 diabetes mellitus.

CONCLUSIONS

From the above discussions it is evident that stress is a great challenge of the present civilization, both for diseased as well as healthy individuals, and the time has come recognize the importance of stress management strategies and making them a part and parcel of daily life.

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