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Strategic approaches to combat the effect of stress induced eating

Abstract

Stress could be explained as non-specific outcomes of the body to any exterior event that evokes the specific functional reactions of the body's ability to regulate the equilibrium of inner biological mechanisms. 121 million people worldwide are affected by stress which is the common psychological disorder. Stress and anxiety are interrelated. Stress-induced eating is one of the ways to make oneself feel better in stressful condition, thereby increasing the physiologic demands which lead to obesity and further comorbidities as cardiovascular diseases, hypertension and diabetes. Psychological feeding incorporated with stress can be managed by implying healthy eating practices as compared to opting for convenience foods. Strategic approaches as muscles relaxing techniques, transcendental meditation, autogenic training, guided imagery and cognitive behavior therapy should be intervened in managing level of stress in individuals. Stress is inevitable but it can be managed by lifestyle modification such as physical activity, healthy eating and meditation.

Keywords: stress, disability adjusted life years, glucocorticosteroids, HPA axis, deep muscle relaxation, transcendental meditation, autogenic training, guided imagery, cognitive behavioral therapy

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Introduction

Stress is defined as non-specific reaction of the body or mental state to any external stimulus that disturbs the body's ability to regulate the balance of internal biological mechanisms. Stress responses may be caused by many factors. It may be due to social stress which includes personal issues and life happenings or physiological stress including vigorous exercise, pain, feeling of intense heat or cold sensations and psychological or emotional stress for example anxiety, sorrow, fear and chemical stress including imbalance in blood and oxygen supply.[1]

Prevalence

121 million people worldwide are affected by stress; which is the common psychological disorder. The prevalence of this disorder is increasing day by day and one out of seven will suffer a stress episode during his or her lifetime.[2] It is stated by World Health Organization (WHO) that stress is the leading cause of disability and also measured by Years Lived with Disability and is ranked at fourth position as a leading contributor to the global burden of disease. Calculated for all ages it is expected to reach second place in the ranking of Disability Adjusted Life Years (DALY) by the year 2020. However in adolescence it is already at the second position of DALYs, the age between 15 to 44 years.[3] The high rate of stress is increasing stress related eating behaviors and it may add to the increasing ratio of overweight and obesity. Therefore, 64.1% adult women and 72.3% of adult men are overweight or obese.[4] Eating patterns are altered in individuals when they feel themselves to be in any stressful situation either its external or internal. Nearly 20% of the individuals do not change their eating patterns in stressful periods whereas, majority of the individuals altered their dietary patterns, around 40% or more shows increase in their food intake and 40% or less shows decrease in their caloric intake when in stress situation.[5]

Types of stress

Stress could be of two types as if the stress is temporary and for short period so this effect is stated as acute stress. The body notices acute stress as a challenge which could be easily handled for example dealing with a traffic jam. On the other hand, if the individual represents fear, an ongoing problems or irresistible issue in his life, so this situation is referred to as chronic stress. Chronic stress is difficult to manage as compare to acute stress. In contrast, stress which is chronic is difficult to manage. Physiologically, the human body act differently in case of both acute and chronic stress, illustrated in the figures below (Figure 1 & 2).[1]

Stress induced eating

Stress-induced eating could be explained as consumption of food in response to one's feelings not to one's body's need, could be referred as emotional eating behavior. [1] In a stressful situation the level of stress hormone cortisol increases affecting weight and eating patterns resulting in higher intensity cravings for calorie dense and high fat, which eventually leads to gain weight over time. Individuals who are mentally disturbed have poor life styles practices then people without such challenges for example they smoke more, have abnormal cravings for high fat foods, eat less well, are less active, sleep less, obese and are more troubled by stress and anxiety.[6]

Mechanism

When a person experiences stressful condition, immediately after that the corticotropin-releasing-hormone intermediate the suppression of food intake and therefore which leads to the less need of food consumption, overwhelm the flight or fight or withdrawal behaviors so the stress condition could be deal with. Within few next hours there is release of the hormone a glucocorticoid-mediated stimulation of

hunger and eating behavior. If there is acute stress, it needs body's physical response for example as a predator-prey interaction. Here hypothalamic-pituitary-adrenal axis modulation allows the stressful event to deal with and the energy which is replaced afterwards by body natural mechanism. However, in chronic stress which is an ongoing psychological stress, glucocorticoids level increases chronically leading to chronic stimulation of eating manners and last to excessive weight gain.[7]

Stress and health

Lambert G et al.[8] in 2010 in their thorough meta-analysis examine the link between cardiovascular responses to mental stress and in future cardiovascular disease development. He observed a significant association between exaggerated reactivity and impaired recovery after stress leading to worsening of cardiovascular risk status.[8] Stress causes or contributes to a huge variety of diseases and disorders. It is noteworthy problem of individual and public health which causes many physical and mental issues. It is assessed that about 75% to 90% of the physician visits are just because of the illnesses caused by stress situation. Heart problems, increased level of sugar, increase in weight, immune system dis-functioning, anxiety, depression, headaches, neck and back pain, and sleep disturbance, all are health problems linked with stress. Through a survey, extreme levels of stress were reported by 22% of individual and 39% were reported that during the past year their level of stress had increased (Figure 3).[9,10]

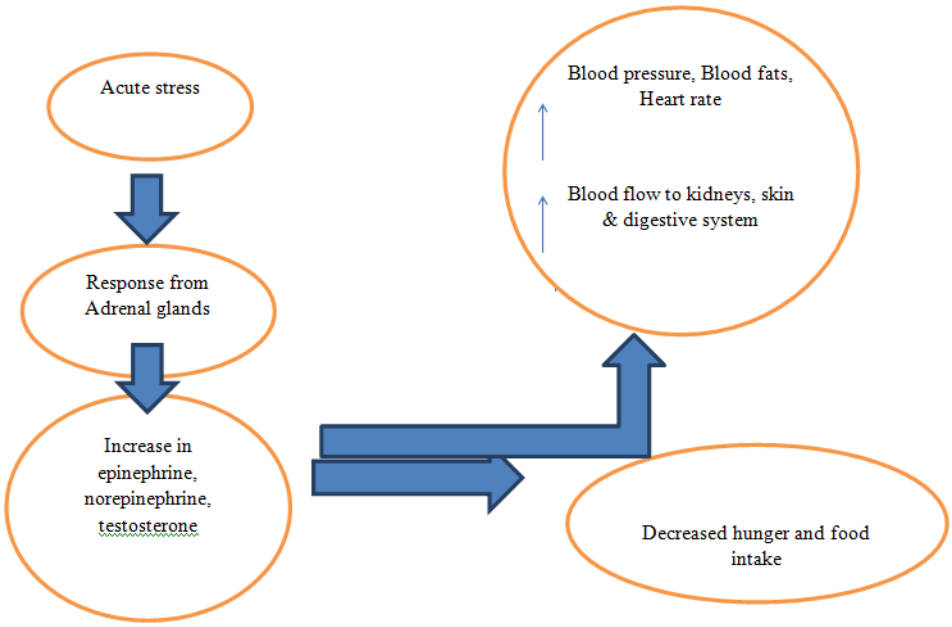

Figure 1 Body action to acute stress.

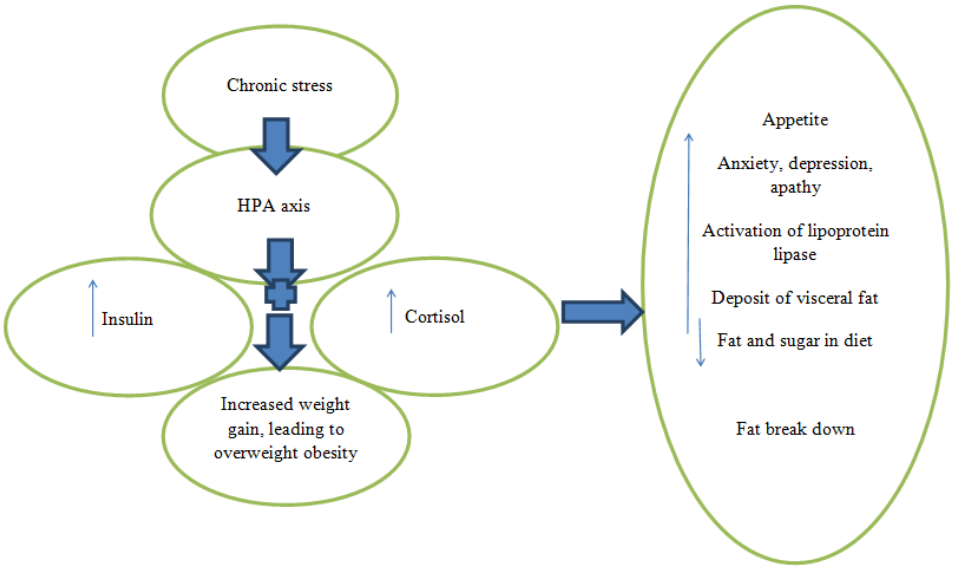

Figure 2 Body actions to chronic stress.

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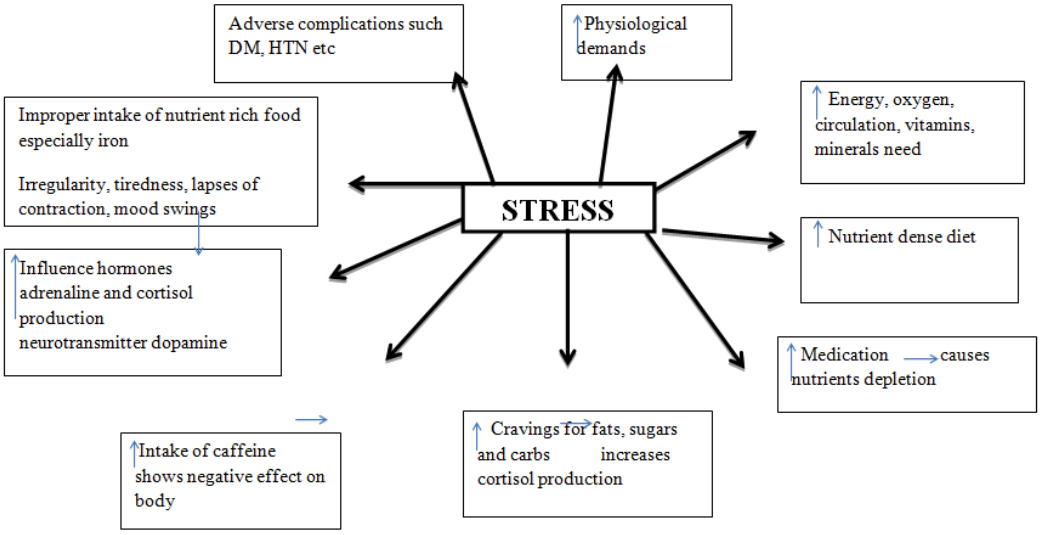

Figure 3 Nutrition, diet and stress; the link between stress and nutritional insufficiency.

Strategies to cope with daily stress

Exercise: Not only relieve stress from stressful condition, but also the interference with them. It also acts as defensive mechanism to the overflow of hormones which accumulate from daily stressful situation. Many other exercise such as that for heart patients, training exercises and mind/body programing's helps to improve human health. Research typically focused on aerobic exercise which is performed about 20-30 minutes. After exercise the feeling calmer effect can last for some hours.[11] Research in both human and animals' trial showed that when body stress is handled by exercise a change in hormones response dopamine and serotonin that lead to affect mood and behaviors.[12]

Meditation: Consuming medicines in meditation deeply affect the body and relax the mind and emotions from stressful condition and helps to release tension in body. Certain hormones are released that improves the health.[13]

Progressive muscle relaxation: This technique strengthens and relaxes muscles of the body and is effective in relaxing whole body tension and mental stress. When the body is physically relaxed and outcomes are normal then mental stress is also reduced.[14]

Managing time: Poor time management is the biggest cause to stress. When the managed their time then the control the effect of stress. By avoiding over commitments and learning how to prioritize your work, you can relief from stress and overlap the routine work and family responsibilities. By using daily planner and calendar you can diminish wastage of time and such activities and delaying or postponed some activities.[15]

Support System: Studies showed that the less stress related symptoms are observed when individuals have positive and strong social circle family, loved ones, friends and pets. Stress could be managed effectively with strong support system.[14]

Healthy eating: Feelings of stress and unease tends to be more with hunger and dehydration. By having a nutritious balanced diet and drinking plenty of water stress can be reduced. Psychological stress leads to obesity as dietary behavior's changes from healthy to more unhealthy choices. Emotional eating behavior could be an underlying mediating mechanism. In young children the relationship between emotional eating behavior, dietary patterns and stress is less observed.[16] Stress and emotional eating lead to overweight. This causes formed habits to be used rather than a cognitive appraisal of responses. Glucocorticoids hormone is secreted more in stress which increases hunger for food and insulin promotes food intake causing obesity. Importance of teaching mental education from habitual to thoughtful is emphasized more in reducing stress induced obesity.[17]

Posture check: Improper sitting and standing gestures increases muscle pain and increases tension. In managing stress one must keep notice on his postures regularly while performing daily activities by developing proper working, standing and sitting environment.[14]

Recharging: Mind could be energized by sitting alone for a while. Relaxation breaks in daily life can help you to face the daily challenges easily by relaxing mind and avoiding chronic stress.[14]

Speaking Slowly: To overcome stressful condition one need to speak slowly as it lead to think more clearly and respond reasonably.[14]

Visualization: Giving pleasure and satisfaction relaxes the mind and body. Breathing slowly and visualizing a peaceful setting such as meadows, along mountain stream or by the ocean relaxes the state of mind and control stress situations.[14]

Medical nutritional therapy for stress

Healthy diet which lower risk of stress

Combination of different foods should be taken regular basis. Consumption of legumes, fruits, olive oil, unrefined cereals and vegetables, moderate consumption of dairy products as cheese and yogurt, moderate to high consumption of fish, and low consumption of meat product, are more effective to improve mental health and living standard of human beings.[18] Such types of foods seem to be very helpful to lower the risk of stress and to fight with stress to overcome future related complications caused by stress.[19]

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Nutrients effective for mental health

There is significant proof for different substances that provides nourishment essential for the maintenance of life and for growth. Omega three poly unsaturated fatty acid found very effective in the period of cognitive, social and physical growth that begins at birth and continues through early adulthood and also prove good for cognitive disorders and help to fight with stress.[20] Levomefolic acid seems to be most effective in inhibition and stoppage of human related stress and anxiety. Cobalamin, Ascorbic acid, Tocopherol, Se, Fe, Zn is also effective in the management of stress.[21]

Fruits, vegetables

Food group which is found more effective to enhance memory and fight with stress are fruits and vegetables which have powerful substances that inhibits oxidation.[22]

Food that originate stress

The diet high in empty carbohydrates, saturated fats, red meat and junk food and low in whole grains, fresh fruits and vegetables, poultry, seafood, milk products may cause increase stress level in human and leads towards decline in some type of special substances that is essential, even in very small quantities, for growth or metabolism.

Foods that releases stress

Combination of different foods as fresh plant (fruit, vegetable) and animal (lean meat) based products natural or unprocessed grains, Soya Paneer, legume ,milk products, edible oily seeds such as walnuts, pistachios, almonds are more effective to deal with stress as compared unnatural options and routine may cause increase level of stress in human beings (Table 1).[23–27]

Table 1 Foods that releases stress

Food	Important element	Effect on body	References
Comfort foods, like a bowl of oatmeal	Increase level of serotonin	Act as calming brain chemical	Gonzalez MJ et al.[24]
Complex carbs (cereals, pasta, whole-grain breads)	Signaling production of serotonin from brain	Take longer to digest, Stabilizes blood sugar level	Gonzalez MJ et al.[24]
Oranges	Vitamin C	Normalize the levels of cortisol more quickly	Gonzalez MJ et al.[24]
Fatty fish	Omega 3 fatty acid	May protect from heart disease, depression, menstrual syndrome Can prevent surges in stress hormones	Bradbury J et al.[25]
Avocado	Guacamole	Good choice when you have cravings for high fat food	Gonzalez MJ et al.[24]
Almonds	Vitamin E, B Vitamins	Makes you more resistant during sessions of stress or depression	Gonzalez MJ et al.[24]
Raw vegetables		Munching raw vegetables helps release a tightened jaw, and can release tension.	Gonzalez MJ et al.[24]
Bed time snacks	Serotonin	Secretion of serotonin increases which helps you to sleep better	Gonzalez MJ et al.[24]
Milk	Calcium	Provides comfort from anxiety and mood swings	Gonzalez MJ et al.[24]
Nuts	Healthy fats	Reduces the effects of stress on body	Gonzalez MJ et al.[24]
Dark chocolate	Reduces stress hormones such as cortisol	Relaxes blood vessels, increases feel-good neurotransmitters and improves mood	Singh K[27]
Spinach and green leafy vegetables	Magnesium, folic acid	Mood booster folic acid in the diet is correlated with lower risk of depression symptoms	Volicer L[26]
Green tea	L-Theanine (amino acid), antioxidants	Best stress relief beverage	Gonzalez MJ et al.[24]
Banana	Tryptophan	Offers serious mood lifting power	Singh K[27]

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Barriers which ultimately leads toward stress

Many studies show that there are numbers of barriers in choosing more nutritious food, e.g. Simply accessible of prepackaged, too little nutritious options, more appealing flavor of processed food items. The 2nd most important hurdle is relating unnatural edible items with pleasing notion like as relationship. Ranking, interpersonal relationship, lifestyle, oneness, likeness are major problems that interfere between selection and decline of different type of food items.[28]

Harmful etiquette

Bad dietary habits and poor quality nap are worse patterns which may cause tension, and over all prove a curse for health of a person which may lead future complications, to avoid such type of circumstances take first meal of the day on regularly basis and for that choose beneficial or wholesome foods to combat with stress.[29]

Sleep and stress

Lower quantity of sleep may increase the level of stress. According to U.S organization seven to nine hour is the best duration for appropriate sleep in 24 hour. Poor sleep is also associated with decrease in well-being and may also cause weight gain which may lead to farther complications.[30] Wakefulness not even increase tension and anxiety but also dual the chances of heavy-heartedness which may lead towards stress.[31]

Socialness and stress

In present-time, automated state show more Socialness specially in U.S. This thing may lead towards more stressful for people. The power is admirable but its outcome may be doubtful. In these days preference are given to external influences instead of internal which may also cause stress.[32]

Stress, well-being and ailment

Daily Hectic routine may contribute to stress which may cause farther complications e.g CVD and in some cases it may cause blood pressure and psychological feeding.[33–35]

Approaches, helpful in reducing stress level

Deep muscle relaxation

This approach is very helpful in reducing stress. It is helpful for both body and mind. This method is taught by a counselor, after that for fifteen to twenty minute this activity is performed two to three times daily.[36]

Advantages: This method is very effective to improve the quality of nap or lower the risk of insomnia, hypertension, migraine.[37,38]

Transcendental meditation

The spiritual thought is also beneficial in lowering anxiety or tension. A special teacher is required to perform this approach practically. This approach is a totally different condition than normal routine life and nightmare. Effective method to fight with anxiety.[39]

Much Straightforward or comfortably method, you need twenty min session regularly in 24 hours with a most peaceful condition of mind and body and restate a same resonate for the consciousness of a person.[40]

By practically implication of this procedure on routinely basis, effective to raise intelligence understanding power of a man or handle tension, also raise consciousness level.[41,42]

Advantages: This approach is worthwhile to reduce such alarming condition,[43] also useful to minimize nervousness, discomfort , sadness and boost temper,confidence.[44]

□utogenic Training (AT)

This is a technique of self-hypnosis. The technique consists of a series of six mental exercises used to elicit the bodily sensations of warmth and heaviness. This has the effect of producing the physiological changes of the relaxation response. In this unique type of body movement needed to perform practically for a specific period of time in 24 hours.

Advantages: useful for insomnia, high blood pressure, CVD, hypochondriasis, worry, persistent mild depression.[45]

Guided imagery

Powerful approach in which strong image relate to a specific thing can be achieved.[46] Special teacher is require to perform it practically, the main purpose of this method is to realize an individual about the dark side in himself and then utilize these things as powerful agents to correct effectively after a specific time duration. The contributor must needed 5 senses eye, hearing, smell, touch, proprioceptive, & enjoyable location use actively during practice.[47]

Advantages: This approach show good results in lowering anxiety or effective to fight with stress.[48] also helpful therapy for discouragement[49] useful to reduce weight in obese people, or highly unpleasant physical sensation caused by illness or injury.[50]

Cognitive behavioral therapy

It is common type of talk therapy. Limited numbers of sessions are attended in a structured way with a mental health counselor psychotherapist or therapist. This method is useful for an individual which shows active participation.[51] This approach is useful to improve the quality and quantity of sleep, also good in the treatment of migraine, or helpful to combat with tension, worry, or stress.[52] Main purpose of this procedure is to improve person`s ability or functioning of brain through different thinking ornamentation.[53]

Advantages: This approach is very useful in treating disappointment, nervousness and relaxing mental or emotional state of the body.[54–56]

Discussion

Stress if not controlled or managed properly results in many consequences and lead to multiple disorders. In stress situation majority of the individuals altered their dietary patterns. Dallman MF in his study founded the same results that in stress dietary intake of most of the individuals changes. Some of these increase food intake and some of them decrease their food consumption.[5] Most of the individuals increases consumption of fatty and sugary foods leading to obesity. Luba Sominsky and Sarah J. Spencer in their study concluded same that individuals who are mentally disturbed have poor life styles practices then people without such challenges for example they smoke more, have abnormal cravings for high fat foods, eat less well, are less active, sleep less, obese and are more troubled by stress and anxiety.[6] Stress could be managed and controlled by some of the

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strategies which are to cope with daily situations. Meditation, time management, exercise, healthy eating, relaxing, slowly speaking and visualization etc. are some of the strategies to manage this condition. Greenwood BN and Fleshner M, Montes MV and Kravitz L, Forbus P *et al.,* in their studies founded the same strategies which showed effective results in coping the stressful situation.[12,14,15] Stress could also be relieved through proper dietary patterns and some comfort foods which help in releasing stress. Complex carbohydrates, some fruits and vegetables, nuts, dairy products, green tea and chocolates are some of the comfort foods which helps to reduce stress. Gonzalez MJ and Miranda-Massari JR in their study also founded some of the food items which relaxes mind and body.[24] Some harmful etiquettes and bad `attitude towards health care also leads to stress. To overcome stress situation proper sleep in mandatory with healthy food intake.

Conclusion

In a stressful situation, the level of stress hormone cortisol increases; affecting weight and eating patterns resulting in cravings for calorie dense and high fat foods, which eventually lead to gain weight over time. Combination of different food items is very effective in improving mental health and living standard of human beings. Food group which is found more effective to enhance memory and fight with stress are fruits and vegetables that aid in inhibiting oxidation.

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Conflicts of interests

The authors have no conflicts of interest to declare.

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