



STRESS AND BURNOUT AS PREDICTORS OF EXAMINATION AMONGST STUDENTS

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ABSTRACT:

Stress is the state resulting from pressure applied to an organism. Which can be caused in humans by external and internal demands called stressors .Stressors can be external and can originates from work and they can be internal initiated by self obligation and psychological strain. In the present study biochemical parameters such as serum cholesterol, triglycerides, total lipids and serum cortisol were estimated in twenty five (n=45) Engineering students of various branches their aged twenty to twenty two years in Wardha district of Maharashtra State (India) exposed to varying degree of examination stress were selected for experimentation purpose. Serum cholesterol, triglycerides, total lipids and serum cortisol exhibited a rise proportional to degree of examination stress .Values of all these parameters attained control level when the stress was over after examination. The rise in level of serum cholesterol, triglycerides and total lipids seems to be due the stress induced changes in cortisol levels at the time of examination in students, because cortisol was a major stress hormone.

Keywords :- Examination stress, serum cholesterol, triglycerides, total lipids, serum cortisol.

INTRODUCTION :

Anxiety or stress is something you have to go through during your examination preparation and hence students must know how to deal with this stress so that they can prepare well for the examination give their best on the day of examination .

Stress has become an inevitable companion of the present day in all walks of life, and is an extremely adaptive phenomenon in human beings, contributing to his/her survival, activities and performance (Pades and Homar 2006) .Academic examination stresses are reported to have a significant impact on the students well being (Loft et al, 2007), and are associated with changes in the mental and physical health such as increasing anxiety, increasing negative mood (Malarkey et al. 1995). During these period sleepless nights, loss. of appetite, rapid pulse, trembling hands are some of the typical manifestations of examination fear Normal sleep tends to fragment and shorten with the articipation of forthcoming high

demands (Akerstedt., 2006 and Akerstedt et al, 2007) .The examinations are important for as the results influence future.

Professional career, social status and their self-esteem (Lazarus, 1966) for some students examinations are: stress inducing events(Folkman and Lazarus, 1985). The stress among students is expressed through its effects on learning (Yerkes, 1908). Although some students may face psychiatric problems like inability to i do school work and the fear of academic failure (Ellis, 1969), the influence of various forms of stress on. Cholesterol level is of increasing interest and importance today.

A number of investigators have found that cholesterol levels are appreciably higher during periods of stress than at other times (Friedmann., 1958 and Wertlake et al., 1958), Mental stress is one of the factors which have been casually linked with hypertension. The biochemical features reflecting the stress level in serum cholesterol and hypercholesteremia is now recognized as a major risk factor in

coronary artery disease. There are, however few studies establishing a relationship between mental stress and serum lipid profile. Examination of stress is quite a well documented fact. Therefore the present study aimed at investigating the changes in lipid level and serum cortisol level during examination stress in college going (polytechnique) students. Stress causing factors such as teachers quality , selection of course /faculty, participation in other activities, participation in household works, feeling of irritation , study time adequacy, concentration in studies , parent satisfaction with educational performance of students , Fear of any subject Satisfaction with education Availability of facilities , meeting parent expectations etc.

MATERIALS AND METHODS :

Twenty five (n=55)polytechnique students of aged eighteen years to twenty two years were selected for the study. They all belong to middle socio economic class of families. Each student was subjected to questionnaires (Pershad et. al, 1985) for scoring of quality of life and sample collection subsequently. The first set of sample was collected two month before the examination when students were busy in participating in college cultural programs which served as control. The second set of sample was drawn two days before the commencement of terminal examination and it serve as pre terminal. The third set of sample was drawn two days before professional examination and it serve as pre professional. The fourth set of sample was drawn after professional examination and it served as post professional examination sample. The level of stress was measured by various physiological parameters like serum cholesterol, serum triglycerides serum lipids and serum cortisol Serum cholesterol was estimated by the method of Ireland J. T. (1941), Serum Triglycerides was estimated by method of Fossati and Prencipe (1982) and total lipids were

estimated by National Cholesterol Program NCEP (Friedwald et al. 1972). The cortisol was estimated by RIA method. The mean of the difference of the values obtained at four occasions were calculated and statistically analyzed by utilizing the paired student's t test.

RESULTS AND DISCUSSION :

In the present study serum cholesterol, serum lipids, serum triglyceride and serum cortisol levels of 45 Engineering student were examined on four occasions (control, pre terminal, pre professional and post professional periods). In the present study it was found that the serum cholesterol, serum triglycerides, serum lipids and serum cortisol becomes significantly increased before pre terminal examination and exhibited a further increase before pre professional examination. The mean of difference of these values was highly significant ($P < 0.001$). The increased levels of serum cholesterol, serum triglycerides, serum lipids and serum cortisol turned to control level after the examination stress was over (Table 1) However this difference in these physiological parameters between control and post professional values was not statistically significant ($P > 0.05$). These rising levels returned to normal after examination stress was over (Post professional period, $P > 0.05$). Similar findings were reported by Wertlake et al. (1958) and Pruessner et al., (2003), examination stress were associated with elevated basal cortisol level, which ultimately rise to serum cholesterol, serum triglycerides and total lipid levels. There was also evidence ($p < 0.001$) to conclude that serum cortisol were significantly increased at the time of stress (Qureshi et al., 2009). Similar findings were reported by Friedmann et al., (1958) who stated that examination stress produces changes in serum cholesterol and serum cortisol. There is also strong evidence that the effect of hormones on lipid metabolism has been implicated and claimed (Patterson et al., 1993).

Chronic stress can contribute to several harmful physiological events due to release of cortisol in response to stress (Ely , 1995;McEven , 1980;Vicennati et al ., 2002;Wallerius et al ., 2003).In addition ,high blood pressure , elevated lipids , and hyperglycemia with elevated glucose level had been linked to elevated cortisol level. Romero and Butler , (2007) stated that the primary steroids released in response to stressor are the glucocorticoids like cortisol and corticosterone.

The classic effect of glucocorticoids increase blood glucose by converting protein to glycogen there by indirectly increasing glycogen breakdown in glucose by Epinephrine and Nor epinephrine and by stimulating the catabolism of protein to form new glucose in a process called gluconeogenesis .The glucocorticoids reduce the uptake of blood glucose by target tissue resulting in higher blood glucose concentration available to tissues involved in responding to stress. Glucocorticoids do this by stimulating the internalization of glucose utilization , the sum of which across multiple target tissues results in higher blood glucose concentration .Tissues that need extra glucose in respond to the stressor compensate for the glucocorticoids effect and essentially have preferential access to the increased pool of blood glucose .Our findings were also similar to these results.

The previous literature indicates that the cortisol levels are strongly affected by the stress

.Anorexia nervosa may be associated with increase in cortisol level(Field et al ., 2005)

.Cardiovascular disease remains the leading cause of death and disability in industrialized nations .Epidemiological data demonstrate that poor dietary choice ,lack of exercise , smoking , obesity , stress and pollution all increased cardiovascular risk.Agarwal et al .(1997)investigated the effect of stress on TG Level and on Tc during stressed condition.The results indicate that serum Tg level significantly

increased in stressed condition ($p < 0.05$).The cause of rise in serum triglycerides levels may be due to peripheral lipolysis under the hormonal influence . The association of Tg , Tc and stress has been investigated in previous studies (Belic et al., 1998;Mancas et al ., 2008;Fan et al 2010) .

The incidence of coronary heart disease has shown an increase during past few years. Considerable evidence has now been accumulated indicating that rise in serum cholesterol and serum cortisol is closely linked with stress and this rise is a risk factor of coronary artery disease. Chronic stress can contribute to several harmful physiological events. There is also strong evidence that during Fasting, awakening, and psychosocial stress body releases cortisol (Ely 1995, Vicennati et al., 2002 and Wallerius et al., 2002). In addition high blood pressure, elevated lipids, and hyperglycemia elevated glucose have been linked to elevated cortisol levels

(Andrews et al., 2002, Marieni et al., 2002)

Every person has his own optimal level of worry and anxiety, which helps him/ her to achieve the best results. The individual must learn how to control the stress and extra anxiety, stated that there is definite relationship between mental, emotional stress, serum cholesterol levels and serum cortisol level.

SUGGESTION AND RECOMMENDATION :

The approach of parents about their growing child should more friendly. The advice to the children of today is that they have the faith that they can lead a fruitful and happy life. It is important that they contribute something to the community. They should understand that stress. is also the part of life and how we handle stress is what makes a successful. There is no place in our system for creativity, learning ability or personality development. They should learn life and social skills in school or colleges how to cope with life, unfortunately it is not done.

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Table no. 1- levels of serum cholesterol, tryglycerides, lipids and serum of engineering student at different stress condition (n= 55).

Condition	Serum Cholesterol (mg/dl)	Serum Triglycerides (mg/dl)	Serum Lipids (mg/dl)	Serum Cortisol (mg/dl)
Control	154.82 ± 5.13	71.18 ± 8.69	420.24 ± 18.18	11.28 ± 95
Pre terminal	169.27± 5.46	76.26 ± 8.99	433.14 ± 18.16	18.72 ± 3.76
Pre professional	172.48 ± 6.08	86.07 ± 7.55	466.14 ± 19.16	24.82 ± 3.76
Post professional	149.89 ± 5.97	64.72 ± 9.95	422.34 ± 19.29	36.68 ± 4.98

Significant at P> 0.05, mean ± SD

FIG. 1 Shows a level of serum cholesterol ,serum triglyceride ,serum lipids and serum cortisol was significantly higher in pre terminal and pre professional condition than control and post professional.

