



FINANCIAL STRESS INDUCED PHYSIOLOGICAL ALTERATION IN SENSITIVE INDIVIDUALS OF WARDHA DISTRICT DURING COVID 19.

Bhende A.M.¹ and M.S.Ambatkar²

Assist .professor Dept . of Zoology ,Vidya Vikas Mahavidyalaya samudrapur District Wardha , Maharashtra(Corresponding author)

Gmail –gargihridhani2018@gmail.com

Head and Associate Professor Dept. of Zoology Vidya Vikas Mahavidyalaya Samudrapur District Wardha ,Maharashtra

Communicated: 18.06.21

Revision : 23.07.21 & 20.08.2021
Accepted: 29.08.2021

Published: 30.09.2021

ABSTRACT: Multiple lines of evidence indicate that the corona virus disease 2019 (Covid 19) pandemic has profound psychological and social effects which gradually attack on the physical health of the individual. Stress is a part of everyone's life .Certain amount of stress is expected in daily life , but too much stress may be harmful to any individual.When many things feel uncertain or out of our control , one of the most dreadful condition in today's scenario is Covid 19.Some sensitive individuals of Wardha region are exposed to high level of stress due to uncertain condition of corona virus prevailing around them. In this context, physiological investigations were carried out in 50 stressful individuals, on the basis of questionnaire .The serum cortisol, blood sugar and serum lipid (Tg) and very low density lipoprotein (VLDL) were estimated under lipid profile . The result of the study shows a significant change in the level of all physiological parameters in stressful condition in comparison with controls. The stressful individuals had significantly rise in, glucose level , serum triglyceride (Tg) , total cholesterol (Tc) low density lipoprotein cholesterol (LDL) and very low density lipoprotein (VLDL) .There was a significant decreased high density lipoprotein (HDL) in stressed condition.The significant elevation in the level of fasting serum cortisol ($p < 0.05$) reveals that the fact that cortisol is a major stress hormone responsible for the alteration of these all physiological parameter related with psychological and financial stress due to pandemic condition of covid 19.

Key words: - Cortisol, Financial stress, Lipid Profile ,pandemic stress

INTRODUCTION:

Covid 19 has exposed persistent inequalities by income , age , sex ,race , and geographic isolation.Despite recent global health gains , across the world people continue to face complex interconnected threats to their health and well being rooted in social , economic , political and environmental determinants of health .Now a days economic growth coupled with modernization, urbanization and socialization which changed the lifestyle of Indian families .As the covid 19 pandemic and its far reaching implications continue to unfold globally and in our community., its normal for people to experience a wide range of thoughts , feeling and

reactions including feeling stressed ,anxiety worry or fear, sadness , loss of interest in usual enjoyable activities , frustration ,irritability , feeling helpless , feeling disconnected from others and in some heavy financial crisis. These experiences are all undesirable in the face of this significant challenge .There has been loss of life , rapid changes to our way of life and disrupted plans due to travel restrictions and social physical distancing measures in our efforts to slow the spread of transmission . People are naturally concerned for their own and their loved ones health and safety.There is still much uncertainty . Covid 19 has brought a raft of intense new stressors while removing many of the

resources people have traditionally used up to cope with stress. Thousands of people have lost their jobs, some have lost their homes or business. Disrupted routines and the potential for contracting a life-threatening disease may be exacerbating preexisting problems such as mental illness or substance use. People in crisis may avoid hospitals, whether for fear of adding to the burden of already overwhelmed facilities or of catching the virus. This transition from a traditional to modern lifestyle, consumption of diets rich in fats combined with a mental stressor has compounded the problem further. Shift in eating habits and the adoption of a sedentary lifestyle has led to increasing prevalence of lifestyle diseases like obesity, a sedentary lifestyle has led to increasing prevalence of life style diseases like obesity, diabetes, hypertension, coronary heart diseases and cancer across India in these COVID-19 challenge. Today all of us have increasing needs in daily life, when these needs are not met stress builds up the preliminary stage of stress which is not so hazardous but its prolonged stage is very detrimental to humans. Certain amount of stress is expected in daily life, but too much stress is harmful. Stress has become a common and serious problem which is faced by everyone. The problem has become common both in developed and developing countries in this lockdown period now it is called as third wave plague (Sutherland and Cooper, 1990).

The anxiety and the stress level of isolated individuals were at high levels, whereas sleep quality was low (Xiao et al 2020). A number of studies have been performed to examine the effect of COVID-19 crisis on the mental health of the general population.

Hence in the backdrop above information, the present study was carried out to assess the physiological changes occurring in the different stressful communities of society who are exposed to high level of stress in these context. Now it is

cleared some psychologically sensitive communities experience stressful events in their day to day life activities.

MATERIALS AND METHODS:

The especially for people with a history of psychiatric disorders, COVID-19 survivors and older adults. Research studies are needed of how mental health consequences can be altered the physiological variations. The stress condition in various individuals belonging to different communities was assessed using a standardized questionnaire. The questionnaire is an indicator of the stress that the respondents are experiencing within these COVID-19. Those who are high stress score known as stressed group and those who have less stressed score known as control group on the basis of stress questionnaire. The blood samples were collected during fasting from antecubital vein. The serum cortisol was estimated by RIA method. The triglycerides (Tg) were estimated by GPO trinder method (Trinder et al., 1969), Total cholesterol (Tc) was estimated by CHOD PAP method (Allia et al., 1970), Low density lipoprotein cholesterol (LDL) was estimated by National Cholesterol Education Program NCEP (Friedwald et al., 1972), Very low density lipoprotein (VLDL) estimated by National Cholesterol Education Program (Friedwald et al., 1972) by analyzer method and the blood glucose was estimated by God Cod Method.

RESULT & DISCUSSION:

Chronic stress can contribute to several harmful physiological events due to release of cortisol in response to stress (Ely, 1995; McEwen, 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 etal ., 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 etal .(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 etal., 1998;Mancas etal ., 2008;Fan etal 2010) .

Results of this point towards the importance and contribution of stress in cholesterol level increased in the various communities from Wardha District . HDL is one of the major carriers of cholesterol in the blood. It attracts

particular attention because in contrast with other lipoproteins as many physiological functions of HDL influence the cardiovascular system in favourable. The functions of HDL that have recently attracted attention include anti-inflammatory and anti-oxidant activities.

High antioxidant and anti-inflammatory activities of HDL are associated with protection from cardiovascular deficiency of HDL. Further numerous epidemiological studies have shown a protective association between HDL cholesterol and cognitive impairment .Lifestyles interventions proven to increase HDL cholesterol levels including healthy diet , regular exercise weight control and smoking cessation have also been shown to provide neuro – protective effects.

SUMMARY AND CONCLUSION:

In summary , studies indicate that the covid 19 pandemic is associated with distress , anxiety , fear of contagious , depression due to financial crisis insomnia in the general population. Health care professionals are especially distressed.

Maintain day to day activities and a routine as much as possible because healthy routine can have positive impact on the health .Stay connected and receiving support from others has a powerful effect on helping us cope with stress. Everyone should learn that stress is also the part of life , we live in a world of uncertainty and challenges pressure and tensions are the part of life but staying calm through them is living life .

REFERENCES:

- Behere , P.B. and A.S.Bansal (2009):Farmer Suicide . Every suicide .Every body,s Concern, J.Mahatma Gandhi INS.Medical Sci .,14:14-6
- Belic, K.,Emdad , R. and T. Theorell(1998):Occupational profile and cardiac risk .Possible ;Possible mechanisms and implications for

- professional drivers , *J. of physiology* ,11 (1);37-57.
- Daicoff , Susan (1997),*Lawyres know themselves : A review of empirical research on Attorney attributes bearing on professionalism .American University Law Review* , 46(1):3-14.
- Eaton , W.W.,Mandel , W. and R.Garrison (1990):*Occupations and the prevalence Major depressive Disorders .Journal of Occupational Medicine* , 32 :1083-1132.
- Ely.D.L.(1995):*Organization of cardiovascular and neurohumoral responses to stress:implications for health and disease .Annals of the New York Academy of Sciences (Reprinteded from stress)*,77:594-608.
- Fan,A.Z.(2010):*Physiological distress associated with self reported high blood pressure and high blood cholesterol in U.S. Adults, Int .J.Public Health*, 54 Suppl1:94-99.
- Field , T., Hernandezreif ,D.,Schanberg , M. and S.Kuhn (2005) ;*Cortisol decrease and serotonin and dopamine increase following massage therapy . International J.of Neuroscience*, 11 (10)1397-141 .
- Romero L.Michael and K. Luke Butler (2007);*Endocrinology of stress, International J.Of comparative Psychology* . Vol.20, 89-95.
- Sweeny , J.,(1998).*The devastation of depression :Lawyrs are at greater risk. It is an impairment to take seriously.American Bar Association , Bar Leader Magazine*, 22(11):3.
- Sutherland , V.J. and C.L.Cooper (1990).*Understanding stress :Apsychological perspective for health professionals London. Educational studies*, 8(2):203-221.
- Wallerius, S.R. and T.Rosmond L.Jung (2003):*Rise in morning saliva cortisol is associated with abdominal obesity in men : a preliminary report, Journal of Endocrinology Investigation* ,26:616-619.
- Wang C,Pan R,Wan X,Tan Y,Xu L,Ho,CS. etal.*Immediate psychological responses and associated factors during the initial stage of the 2019 corona virus Disease (Covid 19) epidemic among the general population in China .International journal Res Public Health* 2020.17:1729.
- Verma , S.(2008a) :*Stress Questionnaire for Lawyers. Implications of burnout and psychological Stressors for the job Satisfaction among male and female lawyers. Unpublished M.Phil.Thesis Himachal Pradesh University, Shimla , (India)*.
- Xiao H , Zhang Y, Kong D, Li S,Yang N.*Social capital and sleep quality in individuals who self isolated for 14 days during the Corona virus 2019(Covid 19) outbreak in January 2020 in china .Med .Science Monit* , 26 :e923921.

Table No. 1

Groups	Blood glucose (mg/dl)	Tryglerides Tg(mg/dl)	Total Cholesterol (mg/dl)	High density lipoprotein cholesterol (mg/dl)	Low density lipoprotein cholesterol (LDL)	Very low density lipoprotein cholesterol (VLDL)	Serum Cortisol(ng/ml)
Control	92.12±11.50	113.32±18.50	203.84±23.22	62.93±7.97	125.968±12.58	32.45±7.83	10.48±1.25
Stressed	102.34±12.36	127.79±14.93	217.12±28.83	52.28±8.50	144.67±17.85	43.34±5.58	18.08±2.19

Table No. 1 shows the level of different physiological parameters in different communities from wardha District .Laboratory data exhibits a remarkable change in the level of all the parameters except HDL which was found moderately reduced in stressful condition ($p>0.05$) with respect to normal control values. The level of serum ,Tc, Tg ,LDL,VLDL ,Blood glucose level and serum cortisol were raised significantly ($p<0.05$) during stressful condition. Table No. 1 indicates that Total Cholesterol (Tc) increased by 6%, Triglycerides (Tg)increased by 8.8%, Very low density lipoprotein (VLDL) increased BY 9.2% ,Low density lipoprotein (LDL) increased by 2.23%.Blood glucose level increased by 16% and serum cortisol increased by 5% during stressful condition except in case of High Density Lipoprotein know as good cholesterol that protects the individual from cardiovascular diseases and heart attacks which is decreased by 3% during stressful condition.

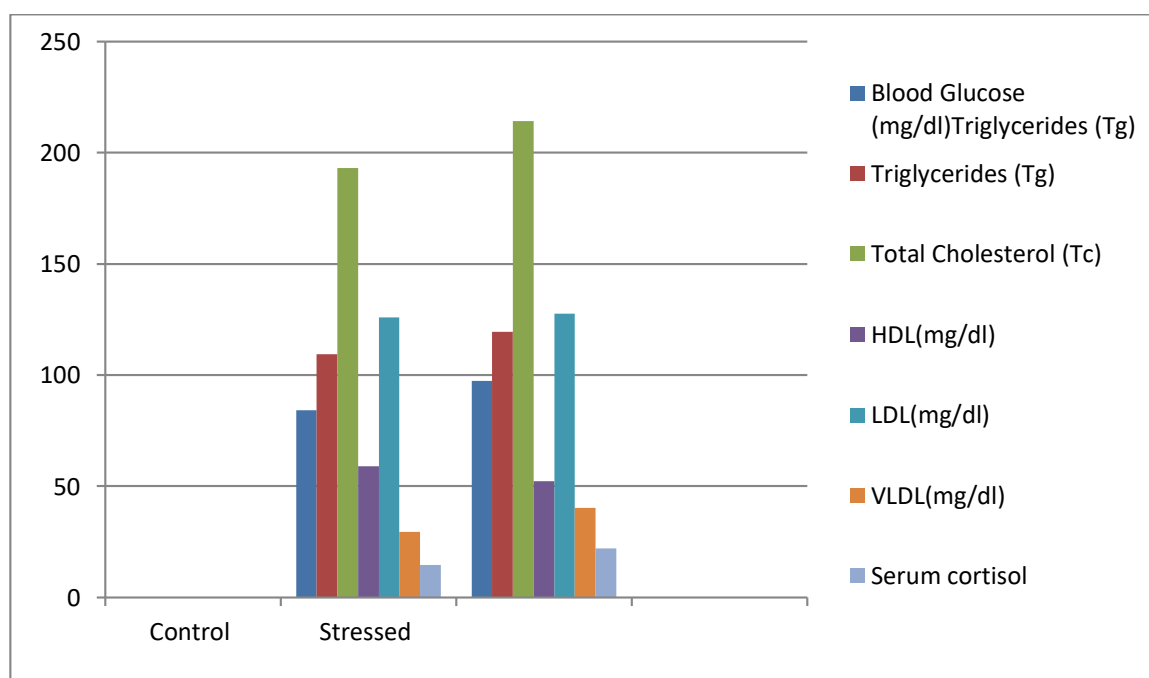


Figure 1 :Comparative Assessment of Blood Sugar,Triglycerides , Total Cholesterol, High density lipoprotein cholesterol ,Low density lipoprotein cholesterol ,Very low density lipoprotein cholesterol ,Serum cortisol in different stressful and control individuals from Wardha District .)