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A Study to Quantify & Compare Stress Levels & Lipid Profile in Working & Non- Working Women of Bangalore

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Abstract

Background- Dyslipidemia is prevalent worldwide, mental stress & sedentary life style being major risk factors. Among working women lack of sleep, long working hours, commuting, meeting deadlines amount to physical stress that is part and parcel of job commitment. In non-working women there is availability of house help at hand & online facilities which reduce their physical activity. Many family issues & odd working hours may add to stress in them. Present study intended to quantify stress levels & compare it with lipid profile in working & non-working women.

Objective-

1) To quantify stress levels & lipid profile in working & non- working women.

2) Compare stress & lipid profile in working & non-working women.

Materials & Method- The study is done on 60 working & non- working women of Bangalore in age group of 20-40 years. Subjects with history of DM, HTN, CVD, thyroid disease were excluded. Informed consent was taken from all participants. After general examination & history taking -Stress score was assessed with perceived stress scale questionnaire. Lipid profile was assessed with 2ml venous sample after 8hrs of fasting. Students 't' test is used for statistical analysis.

Results- Stress levels, LDL & Total cholesterol levels are significantly higher in working women. HDL levels were lower in same with P value of <0.05.

Conclusion- Dyslipidaemia found in working population may be due to increased stress score in them.

***Key Words**: dyslipidaemia, PSS score, working women, stress.*

Introduction

Dyslipidaemia is highly prevalent among women[(1)]. The management of dyslipidaemia is a cornerstone in the prevention of both primary and secondary cardiovascular events, such as myocardial infarction, ischemic stroke, and coronary death[(1)]. It is estimated that one in every two women die of a heart-related disorder, which represents more deaths than due to cancer, chronic lung conditions, and accidents combined. There is a gap of approximately 10 years in mortality rates between women and men[(1)]. Dyslipidaemia contributes to a major portion of Cardio-vascular disease. Mental stress & sedentary life style being the major risk factors[(2)].

Women are the magnificent creation of God, a multi-faceted personality with the power of benevolence, adjustability, integrity and tolerance[(3)].

Women in India have come a long way after independence[(4)]. In Bengaluru, women constitute about 39% of the workforce[(5)]. They have started to reach the highest places and to occupy the most exciting positions of power within the society which is leading women to face more stress at work place[(6)].

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In modern times, higher education facilitated women's entry into gainful employment. [1]

Working women experience high amount of stress in their life. Women in modern global world have to play a dual role as housewife and career builder[3]. Families today are seeing rapid changes due to the increased pace of growth and modernization. Indian women belonging to all classes have entered into various professions which causes stress in their personal and professional life. Among working women lack of sleep, long working hours, commuting, meeting deadlines amount to physical stress that is part and parcel of job commitment[7]. In these women there is also a lack of physical activity due to lack of time in managing both professional & personal life.

In non-working women there is lack of physical activity leading sedentary type of life style. It may be due to modernisation and availability of all facilities at hand, like online grocery shopping, online banking, and house help is also handy further reducing the physical activity in them. They are also stressed in order to meet varied demands of the family members, like odd working hours of partners, schedule of children etc,. This causes stress and lack of physical activity paving way for development of dyslipidaemia in them[2].

Our study aims at assessing the stress levels in both the groups and compares the lipid profile in them.

Objective-

1) To quantify stress levels & lipid profile in working & non- working women.

2) Compare stress & lipid profile in working & non-working women.

Materials and Method

The study was conducted on 60 working and non-working women of Bangalore aged between 20-40 years who were following sedentary life style during December 2017 to May 2018. Informed consent was taken from all participants and ethical clearance was obtained from institutional ethical committee. The participants were divided into 2 groups Group 1 comprising of non-working women and group 2 comprising of working women with 30 participants in each group. Subjects were matched for both age and BMI, women who were in their menstruating phase were excluded from the study.

Subjects with BMI > 30kg/m^2, history of Smoking, Alcohol Intake, Substance Abuse, Dyslipidemia, Diabetes Mellitus, Hypertension, Psychiatric Illness were excluded from the study.

Subjects from both groups were given the Perceived stress score questionnaire[8] and were asked to answer the questionnaire. Has 10 questions, Scores range from 0-40, The answers are graded on a 5-point Likert Scale ranging from never=0, almost never = 1, sometimes = 2, fairly often = 3, to very often = 4, Positively framed questions 4, 5, 7, and 8 are reverse scored, that is never = 4 to very often = 0, and the scores are summed, with Higher scores indicating more perceived stress.

2 ml of Blood samples were obtained from all the participants at 7 am after 8 hours of fasting, for analysis of lipid profile in the biochemistry sample collection room of victoria hospital, Bangalore.

Data was analyzed using Microsoft excel 2010, expressed as Mean $\pm$ SD. Students 't' test is used for statistical analysis. P value of <0.05 was taken as statistically significant.

Results

Working women showed significant increase in PSS score than Non-working women.

Table 1: Demographic data of the participants

	Group 1	Group 2	P value
AGE	30.9+5.9 Yrs	30.5+4.5 Yrs	0.811
BMI	23.42+2.28kg/m2	24.69+3.28 kg/m2	0.087
PSS Score	20.2+2.99	25.3+3.90	<0.001*

Table 2: Lipid profile of all participants.

Group 1		Group 2	P value
125.1+14.41	Total Cholesterol	146+18.41	<0.001*
44.3+14.06	HDL	38.2+5.71	0.0318
90.54+9.81	LDL	117.8+30.38	<0.001*
116.1+45.92	Triglycerides	137.8+19.54	0.020
83.5+11.68	Non-HDL cholesterol	107.9+19.40	<0.001*
2.82+0.76	TC/HDL ratio	3.9+0.73	<0.001*

*** indicates statistically significant change** Working women have higher levels of Total cholesterol, LDL, triglycerides, Non- HDL cholesterol & total cholesterol HDL ratio, the increase was statistically significant with p value <0.001.

Discussion

Working women have more stress than the non-working women. Women are Expected to be perfect home maker & mother. Ones who go out of their way often end up with a stressful life[7]. Stress in general and job stress in particular-part & parcel of their life[4]. Job stress- alters the homeostasis by Altered sleep wake cycle. Abnormal eating patterns. Stress is inevitable due to Increased competition, lack of co-operation from both sectors of life[9].

Chronic Stress leads to altered lipid metabolism by several mechanisms which interact with each other leading to Dyslipidemia[11] . The following figure is a schematic representation of the cascade of events which leads to Dyslipidaemia.

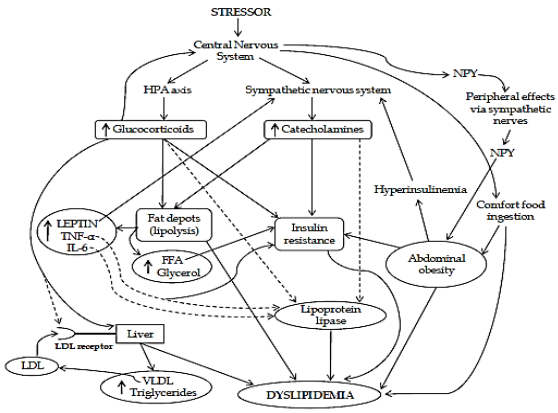

Figure 1. Hypothalamic-pituitary-adrenal axis (HPA), low-density lipoprotein (LDL), very low- density lipoprotein (VLDL), free fatty acids (FFA), neuropeptide Y (NPY), tumor necrosis factor (TNF-α), interleukin 6 (IL-6). Solid arrows show stimulatory effects; dashed arrows indicate inhibitory effects.

Chronic stress causes the activation of HYPOTHALAMO-PTUITARY ADRENAL axis, leading to increased secretion of glucocorticoids and catecholamines, which in turn causes hyperinsulinemia, insulin resistanc, increased fat deposits and increased levels of **leptin**[11] . They also inhibit the activity of Lipoprotein lipase which inturn causes accumulation of fats leading to DYSLIPIDEMIA. Another mechanism through which stress acts is the release of Neuropeptide Y which causes abdominal obesity which in turn triggers the cascade of insulin resistance and dyslipidemia[11] . Another proposed mechanism is that chronic stress induces binge eating phenomenon in which person eats comforting foods which are loaded with fats and carbohydrates which in turn leads to Dyslipidemia[11] .

In a study done on working women in Hyderabad, there was a higher level of occupational stress among married working women as explained in terms of traditional trends, demands of society and responsibilities assigned to them as a mother, wife, and homemaker[12]. In another study done on software employees, there was no significant difference in the level of job stress among married and unmarried working women[13].

Conclusion

Working women had more perceived stress score than non- working women. Dyslipidaemia found in working women may be attributed to chronic stress in them.

Limitations

It is done only in one pattern of job, can be done in many patterns of job to compare the effects. Done only in women of Bangalore- need to do in all cities to generalise the findings.

Implications

Stress relieving activities can be promoted in the job sectors in order to reduce the Stress in working population. Following activities can be tried

- Meditation
- Art promoting activities- painting/singing/ dancing.
- Yoga exercise
- Routine get-togethers.

Conflict of Intrest: Nil

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Consent:- Taken from all participants.

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