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Methods: A community based cross sectional study conducted in Palam Village of New Delhi. A total of 585 patients were interviewed using a self designed, semi structured, pre designed questionnaire. Waist circumference was measured using non stretchable measuring tape and blood pressure was measured using digital blood pressure apparatus. Digital weighing scale was used to measure weight of study subjects. Association between qualitative variables was done using chi square test.

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Burden of Risk Factors of Common Non-Communicable Diseases in Young Adult Women: A Community Based Study in Delhi

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Abstract- *Introduction:* India is passing through an epidemiological transition in health with high rates of urbanization; which in turn leads to economic improvement and one of the effect of this economic improvement is shift in disease spectrum from communicable to non communicable diseases. Non communicable disease contribute to around 5.87 million (60%) of all deaths in India. Women and men have different levels of exposure and vulnerability to Non communicable diseases risk factors. The present study was done in community setting to identify prevalence and distribution of risk factors for common Non communicable diseases among young adult women.

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Results: Majority of study subjects were housewives and belong to upper lower and lower middle socioeconomic status. Half of the study subjects were moderately active. Most of the participants have unhealthy dietary habits. Around 2/3rd of study subjects were taking inadequate servings of fruits and vegetables and almost half of them were consuming salt more than the recommended levels. More than half (57.8%) of married subjects were eating salty food and snacks more than once in a week than the unmarried subjects. Out of 411 study subjects who were consuming inadequate amount of fruits and vegetables in a day, 60.3% belonged to nuclear family 39.6% to joint family.

Conclusion: High risk factors of common non communicable diseases among young adult females is seen in Palam village, New Delhi. There is an urgent need to implement population, individual and programme wide prevention and control interventions to lower serious consequences of Non Communicable Diseases.

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I. Introduction

In India high rates of urbanization has led to economic improvement and one of its effect is shift in disease spectrum from communicable to non communicable diseases(1).Non communicable diseases (NCDs), especially cardiovascular disease, diabetes mellitus, and stroke, have emerged as a major public-health problem in India. NCDs kill 41 million people each year, equivalent to 71% of all deaths globally (2). According to Indian Council of Medical Research (ICMR) report contribution of Non-Communicable Diseases (NCDs) to total death in the country was 61.8% in 2016, as compared to 37.9% in 1990 (3).Due to this epidemiological health transition, India's health system is facing dual challenge. Every year, 15 million people die from a NCD between the ages of 30 and 69 years; over 85% of these "premature" deaths occur in low- and middle-income countries(2). In India, 34.3% of total deaths in age group of 15 to 39 years were due to NCDs in 2016 s. NCDs were the dominant cause of death in those 40 years or older (3), but their onset occurs in younger age. The morbidity and mortality in most productive phase of life is posing serious challenges to Indian society and economy (4). Around the world NCDs affects women and men equally (2)Modifiable behaviours, such as tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol along with metabolic risk factors like raised BP, overweight/obesity, hyperglycemia and hyperlipidemia, all increase the risk of NCDs. Social customs related to physical mobility may reduce women's opportunities for activities thus women are more likely to be obese than men, which leads to their increased vulnerability to non communicable diseases (5) Non communicable diseases result in high health care costs, lost productivity and catastrophic expenses, and even if household has money available for health care, these funds are often spent on men's health needs (6) Deaths of women or men from NCDs during their most productive years (40-60 years) can result in tragedy for families and catastrophic expenditure. The loss of women's labour can push vulnerable families deeper into poverty, particularly in rural areas in developing countries where the number of female-headed households is increasing as men migrate for

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employment. The major impact of adult female mortality on household welfare is well established, including higher mortality amongst small children, food insecurity, children withdrawn from school, increased work burden on children and loss of assets. The burden of NCDs in the family is also borne by girls and women indirectly, as the principal caregivers in many households. Their educational and income earning opportunities are interrupted when having to stay at home to care for a sick family member (2) Moreover, a woman's health status also relates to health and vulnerability to their children. Women's health is therefore critically important to health of future generations (7)

Though many community based studies have been done to assess the prevalence of risk factors of Non communicable diseases but there is still a dearth of such studies among young adult women.

Therefore, the present study was done in community setting to identify prevalence and distribution of risk factors as well as awareness for non communicable diseases among young adult women.

II. Material and Methodology

The present study was a community based cross sectional study, conducted in Palam Village, New Delhi.It is one of the field practice area of department of Community Medicine, Lady Hardinge Medical College, New Delhi.The study was carried out from November 2017 to March 2019. Data was collected from January 2018 to December 2018. The study population comprised of all the women of 15 – 24 years of age who were permanent residents of Palam Village (residing for more than 1 year). The sample size was calculated by the formula $N = 4pq/l^2$where p represents prevalence of obesity (BMI > 30) which is 14.6 % obtained from the previous study done by J. S. Thakur et al on Profile of Risk Factors of Non Communicable Diseases in Punjab, Northern India: Results of a State Wide STEPS Survey. 'l' was allowable error, taken as 20% of p. Therefore, a sample size of 585 individuals was taken.Palam village has a population of 12000 & total number of households is 2400 .Sampling unit was household and study unit was young adult women of age 15 to 24 years. Systematic random sampling was applied with sampling interval of 4 (2400/585=4). Area map was made and first household was selected randomly and then every 4^{th} household was visited till the required sample size was obtained. If eligible subject was not found in the 4^{th} household then adjacent household was visited. If more than 1 eligible girl were residing in the same household, then only one was included in the study by random selection. Information regarding risk factors [Physical inactivity, dietary risk factors, stress and behavioral risk factors (tobacco and alcohol use)] for non communicable diseases was collected bysemi structured interviews schedule consisting of socio demographic characteristics, Global Physical Activity Questionnaire (GPAQ) by WHO to assess physical activity level, dietary assessment by pre designed questionnaire, stress assessment using General Health Questionnaire 12 (GHQ 12), behavioral risk factors by pre designed questionnaire. Non stretchable measuring tape, digital weighing scale, portable stadiometer, digital BP apparatus were used to measure waist and hip circumference, weight, height and blood pressure respectively.

III. Results

A total of 604 households were visited and 596 study subjects were enrolled. Eleven study subjects were excluded (6 refused to give consent and 5 were pregnant), hence the data of 585 subjects was analyzed. Majority (70%) of study subjects were married and Hindu by religion (85.7%). More than half (64.7%) of the study subjects belonged to nuclear family. Most (40%) of study subjects were housewives. Out of those who were employed 6.9% were housemaids and classified as unskilled workers and 21% were working in parlors and boutiques and classified under semi skilled workers. Nearly $1/3^{rd}$ of subjects were students, studying in schools and colleges. 9% of women were illiterate. 11% of subjects studied till primary school and 30% till middle school and 27% studied up to high school. 18% of women studied till intermediate. Most of study subjects (44.4%) belonged to lower middle socioeconomic status followed by upper lower socioeconomic status (43.6%) whereas 1.2% belonged to upper socioeconomic status and 3.2% to lower socioeconomic status. 56% (328) of study subjects were vegetarian and 44% (257) non vegetarian. Majority (70.3%) of them were taking inadequate servings of fruits and vegetables. Excessive salt intake was present among all subjects. 56% of study subjects were adding extra salt to their food and 53.6% were consuming salty snacks and salty foods $\geq$1 day/week. Majority (88%) of individuals were using mustard oil for cooking purpose and 2.4% were changing the brand of cooking oil regularly. Majority (72.5) of the study subjects were moderately active and involved in moderate intensity activities. 27% of study subjects had sedentary lifestyle and 0.5% were heavy workers.8.8% of the study subjects were found to be under stress. In more than half (58.46%) of study subjects waist hip circumference ratio was less than 0.85 indicating absence of abdominal obesity. Overall mean BMI of study population was 21.4 kg/m^2 ($\pm$3.03) with the range 16.8 to 30. Majority of study subjects (53.3%) had BMI within normal range. 34.8% were overweight while 7% were underweight and 4.2% were pre obese and obese.

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IV. Discussion

Although the NCD burden has grown, India still does not have sufficiently detailed data on NCDs for research and policy purposes. Most of the studies that have reported prevalence of risk factors of NCDs included wide range of age groups ranging from 15- 60 years, but the study on risk factors among young adult and more specifically in young females are rare. Most of the times, women are victims of the worse deprivation as a consequence of poor empowerment and discriminatory beliefs and practices. Keeping this in view, the present study was conducted in Palam village, Delhi among young adult women of age 15 to 24 years to find the prevalence of risk factors of common NCDs. In the present study, inadequate intake of fruits and vegetables was found in majority (70.3%) of study subjects. This finding was similar to study done by *Vijayakarthikeyan M 89)* where, prevalence of inadequate servings of fruits and vegetables was 62%. Findings of present study is also in agreement with most of the previously done studies (9,10,11,12,13). However, few studies like Mishra et al (14) and Bhattacharjee et al (15) report a higher prevalence of adequate fruits and vegetables intake as compared to current study. This finding in our study might be due to the reason that, a large proportion of study subjects in our study belonged to underprivileged socioeconomic class (upper lower and lower) who might have found it's consumption highly expensive. This was also evident by the finding in our study that, intake of fruits and vegetables was decreased as socioeconomic status decreased among study subjects and this was found highly significant (p value =0.017). Also, preference was given to male members and children of the family, if at all, fruits were bought in the family. Street food was more favoured by working women and students due to its easy availability in their working and school premises. Dislike of most of the vegetables was commonly found among study subjects. Lack of awareness regarding benefits of fruits and vegetables consumption could also be the reason behind such low prevalence of eating fruits and vegetables.

In our study, all of the study subject reported to consume more than 5g salt per day which was in agreement with NCDs country profile 2018 by WHO in which the mean population salt intake in Indian adult women (age: ≥20 years) was reported 9g per day (2) Sedentary lifestyle was reported in nearly one third of study subjects (27%) and they used to spend their leisure time in watching television or using mobile phones. Majority (72.5%) of study population was engaged in moderate level of physical activity like brooming, mopping, washing clothes, walking to and from work or schools. Only 0.5% were heavy worker. The findings of our study were similar to that of Ketkar et al (10), Gupta et al (16). Unlike our study, Valliyot et al(17) reported moderate level of physical activity in only 42% of study subjects.

Overweight and obesity was found in 39% of study subjects which is in accordance to NFHS 4 data which reports prevalence of overweight and obesity to be nearly 35% among adult women. In our study 34.8 % of subjects were overweight and 4.2% were obese. This prevalence of overweight and obesity could be attributed to inadequate dietary practices and easy availability and affordability of unhealthy food, lack of physical activity. The findings in present study are in concordance with the findings of study done by Sandhu et al in Delhi(18) (33.1% overweight and 6% obese) and Bhagyalakshmi et al in Gujarat (9). Few (8.8%) study subjects were found to be under stress in our study, comparable to findings of Laskar et al (12).Marital conflicts was the major cause of stress as reported by research participants.

As the prevalence of risk factors of NCDs like inadequate fruit and vegetable consumption, excessive salt intake among young adult women i.e. 15 to 24 years has been found very high in our present study, primary prevention has a major role in preventing occurrence of NCDs in later age. So it is recommended to promote healthy lifestyle in this age group female who will further inculcate these practices in their family. In our study, there was high proportion of school and college going students who had sedentary lifestyle. So knowledge regarding healthy lifestyle like physical activity and healthy diet should be inculcated in students through curriculum and teachers should be trained. Consumption of inadequate fruits and vegetables in a day was found in majority of study subjects. One reason might be fruits are considered expensive. Awareness activities regarding intake of seasonal fruits and vegetables in schools as well as in community should be carried out, which are relatively cost effective but equally nutritious. There should be a restriction and its strict implementation on selling of street and junk food in premises of schools and colleges to discourage its use. Many of the schools and colleges have already implemented this, but it have to be further strengthened and promoted. Mass media campaigns, taxes on unhealthy food, subsidies on healthy foods, mandatory food labeling and marketing restrictions on unhealthy food should be done.

Conflict of Interest: None

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Tables

Table 1: Distribution of study subjects according to Socio Demographic profile

Marital status	Number (%)
Married	408 (70.0)
Unmarried	177 (30.0)
Total	585 (100.0)
Religion	**Number (%)**
Hindu	501 (85.7)
Muslim	84 (14.3)
Total	585 (100.0)
Type of family	**Number (%)**
Nuclear family	378 (64.7)
Joint family	206 (35.3)
Total	585 (100.0)

Nature of occupation	Number (%)
Unskilled worker	40 (6.9)
Semiskilled worker	123 (21.0)
House wife	234 (40.0)
Students	188 (32.1)
Total	585 (100.0)
Education	**Number (%)**
Illiterate	53 (9.0)
Primary	64 (11.0)
Middle	175 (30.0)
High school	159 (27.0)
Intermediate	105 (18.0)
Graduate or Post Graduate	29 (5.0)
Total	585 (100.0)
Socioeconomic status	**Number (%)**
Upper	7 (1.2)
Upper middle	45 (7.6)
Lower middle	259(44.4)
Upper lower	256 (43.6)
Lower	18 (3.2)
Total	585 (100.0)

Table 2: Distribution of study subjects according to dietary habits

Dietary information	Quantity and practices	Number (%)
Consumption of Fruits and Vegetables	<5 Servings/ day	411 (70.3)
	≥5 servings per day	174 (29.7)
Salt intake	<5 gm/day	0
	≥5 gm/ day	585 (100.0)
Extra salt added to food	Yes	328 (56.0)
	No	258 (44.0)
Consumption of Salty foods/Snacks	<1 day/ week	271 (46.32)
	1-3 days/ week	194 (33.16)
	3 – 6 days/ week	79 (13.50)
	Daily	41 (7.0)
Cooking oil	Ghee/ Butter	0
	Mustard oil	515 (88.0)
	Refined oil	68 (11.6)
	Olive Oil	2 (0.4)
Change of cooking oil	Yes	14 (2.4)
	No	571 (97.6)

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Table 3: Distribution of study subjects according to physical activity on the basis of GPAQ (Global Physical Activity Questionnaire)

Physical activity	Number (%)
Sedentary	158 (27.0)
Moderate	424 (72.5)
Heavy	3 (0.5)

Table 4: Distribution of study subjects according to stress (assessed by General Health Questionnaire 12) and waist hip circumference ratio

Stress	Number (%)
Absent	533 (91.2)
Present	52 (8.8)
Total	585 (100.0)
WHCR	**Number (%)**
<0.85	342 (58.46)
≥0.85	243 (41.45)
Total	585 (100.0)

Table 5: Distribution of study subjects according to Body Mass Index

Body Mass Index	Number (%)
18.5 to 22.9 (Normal)	314 (53.3)
23 to 24.9 (Overweight)	205 (34.8)
25 to 29.9 and ≥30 (pre obese and obese)	25 (4.2)
<18.5 (Underweight)	41 (7.0)
Total	585 (100.0)

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