"TO STUDY ASSOCIATION OF EARLY LIFE FACTORS WITH METABOLIC SYNDROME IN ADOLESCENTS BETWEEN 10-15 YRS OF AGE IN SCHOOLS OF BELAGAVI CITY: A CASE CONTROL STUDY"

BY

(REG NO. BM0117001)

Dissertation

Submitted to the
KLE Academy of Higher Education and Research,
Belagavi, Karnataka
In Partial Fulfillment
of the requirements for the degree of

M. D. (Doctor of Medicine)

IN

PAEDIATRICS

DEPARTMENT OF PEDIATRICS,
JAWAHARLAL NEHRU MEDICAL COLLEGE
BELAGAVI, KARNATAKA

APRIL - 2020

KLE Academy of Higher Education and Research,
Belagavi, Karnataka

Endorsement by the HOD, Principal/Head of the Institution

This is to certify that the dissertation entitled **"TO STUDY ASSOCIATION OF EARLY LIFE FACTORS WITH METABOLIC SYNDROME IN ADOLESCENTS BETWEEN 10-15 YRS OF AGE IN SCHOOLS OF BELAGAVI CITY: A CASE CONTROL STUDY"** is a bonafide research work done by **REG NO. BM0117001.**

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Sir/Madam,

The softcopy of thesis entitled " TO STUDY ASSOCIATION OF EARLY LIFE FACTORS WITH METABOLIC SYNDROME IN ADOLESCENTS BETWEEN 10-15 YRS OF AGE IN SCHOOLS OF BELAGAVI CITY: A CASE CONTROL STUDY." has been submitted for Anti-Plagiarism check through Turnitin software. The scan has been carried out and the scanned output reveals a match percentage of 4% (Four percentage) which is within the acceptable limits of 10% as per the guidelines given by UGC.

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Yours sincerely,

Coordinator
Department of Pediatrics,
J. N. M. C. Belagavi.

Chairman,
Antiplagiarism Committee

LIST OF ABBREVIATIONS USED

IDF	:	International Diabetes Federation
MetS	:	Metabolic Syndrome
CHD	:	Coronary heart disease
DM	:	Diabetes mellitus
BP	:	Blood pressure
SBP	:	Systolic blood pressure
DBP	:	Diastolic blood pressure
PCOS	:	Polycystic ovarian syndrome
WHR	:	Waist hip ratio
BMI	:	Body mass index
TG	:	Triglycerides
HDL	:	High density lipoproteins
IFG	:	Impaired fasting glucose
OR	:	Odds ratio
SD	:	Standard deviation
CI	:	Confidence interval
WHO	:	World Health Organization

NCEP-ATPIII	:	National Cholesterol Education Program Adult Treatment Panel
EGIR	:	European Group for the study of Insulin resistance (EGIR).
NFHS	:	National Family Health survey
IOTF	:	International Obesity Task Force
GDP	:	Gross Domestic Product
CDC	:	Centers for Disease Control and prevention

ABSTRACT

Background: There is an increase in the trend of development of metabolic syndrome in children and adolescents'. The association between early life factors like birth weight, feeding situations and adolescent metabolic syndrome are not clearly understood.

Objective: To study the association of early life factors with metabolic syndrome and metabolic syndrome prevalence in adolescents' between age of 10- 15 years in the schools of Belagavi city.

Methodology: This case control study was conducted in Adolescents' between the age group of 10 to 15 years studying in 5^{th} to 10^{th} standard, during the period of January 2018 to December 2018, in the schools of Belagavi city. A total of 2050 adolescents', from 15 selected schools (stratified by chit method of Belagavi city, were screened for metabolic syndrome. Out of the total adolescents' screened, 400 (186- cases & controls-214) were enrolled as per the selection criteria. . The adolescents' who were having waist circumference ≥90th percentile for that age and gender, using Khadilkar A et.al waist circumference percentile charts for Indian children were taken as cases and remaining were controls (age and gender matched). After enrolment, the student parents were requested to fill up a pre-tested and pre-designed questionnaire which include data regarding socio demographic and family characteristics, physical examination, vitals, dietic history, type and duration of physical activity including number of hours of media exposure, type of media exposure in the past week and early life factors like birth weight , total duration of breast feeding, exclusive breast feeding duration, time of initiation of breastfeeding.

Results: Our study observed that, there was no protective association between the initiation of breastfeeding, exclusive breastfeeding duration, the total duration of breastfeeding and metabolic syndrome. (odds ratio of 3.66, 2.01, 1) respectively. Birth weight shows positive association with metabolic syndrome (odds ratio 7.26). Prevalence of metabolic syndrome in the present was 11% (n=44), prevalence in cases was 15.05% (n=28) and in controls was 7.48 %(n=16). A significant positive association between the components of metabolic syndrome.

Conclusion: The present study showed no protective association between the initiation of breastfeeding, exclusive breastfeeding duration, the total duration of breastfeeding and metabolic syndrome. However Birth weight shows positive association with metabolic syndrome. This study shows that, there was increase in the prevalence of metabolic syndrome among the study population.

Keywords: Adolescents; Metabolic syndrome; Overweight; Obesity; Early life factors

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INTRODUCTION

Metabolic syndrome is a set of cardiovascular abnormalities, which include central obesity, raised blood pressure, abnormal lipid levels, and raised blood sugar levels.[3,4] Metabolic syndrome is becoming a global health concern, in children and adolescents' because it is increasing trend, especially developing country like India. Globally the prevalence of metabolic syndrome ranges from 0.2% to 38.9% and in India the prevalence ranges from 1.5%-9.9% .[4-11]

There is an increase in the trend of development of metabolic syndrome in children and adolescents'. This is a major global health issue today. There are multiple factors which play role in development of metabolic syndrome among them obesity is a major risk factor.[12]

Children in lower- and middle-income nations are more susceptible to inadequate pre-natal, infant, and young child nutrition. At the same time, these children are subjected to elevated-fat, sugar, salt, energy-dense and micronutrient-deficient foods, which will lower the cost and also lower the nutrient value. These patterns of diet with physical inactivity, results in increment in juvenile obesity.[15]

Obese children are at increased risk to development of metabolic syndrome[17]. In childhood, Metabolic syndrome can lead to many diseases like-diabetes mellitus (DM), hypertension (HTN), cardiovascular diseases (CVD), atherosclerosis, respiratory disorders, infertility in females, depression, anxiety, nonalcoholic liver disease, discrimination in both social and in the workplace [1,18].

The association between early life factors like birth weight, feeding situations and adolescent metabolic syndrome are not clearly understood. There are very few studies showing association between early life factors and metabolic syndrome.[19,20]

It is crucial to identify this association to formulate strategies to prevent and plan interventions to minimize the risks for development of metabolic syndrome.

However there are no studies clearly defining association between metabolic syndrome and early life factors like birth weight , feeding situations especially in our setting.

Therefore the present study aims to identify association of early life factors with metabolic syndrome and it's prevalence in adolescents' between age of 10- 15 yrs in the schools of Belagavi.

OBJECTIVES

PRIMARY OBJECTIVE :

To study the association of early life factors with metabolic syndrome in adolescents' between age of 10- 15 yrs in the schools of Belagavi city.

SECONDARY OBJECTIVE :

To study the metabolic syndrome prevalence in children and adolescents' between age of 10- 15 yrs in the schools of Belagavi city.

REVIEW OF LITERATURE

Prior to 1960s, the 10-20 year of age group were regarded primarily as healthy period of life. The visits to the doctors were prompted by problems like infections, short stature, endocrine dysfunction, trauma, acne, menstrual disturbances, psychosocial and behavioral problems. Teenage health has gained global consideration over the last 20 years. Twentieth century has fortunately, brought many issues of the adolescents' and their medical problems to the forefront.

Increasing investment in improving the health status of adolescents' will also have an impact on achieving several of the Millennium Development Goals (MDGs) that includes gender equality, education status and improving mother and child health. About one fourth of Indian population comprises of adolescents' representing a energetic human resource. Hence it is very important to strengthen efforts and frame innovative ideas to channelize adolescents' energies in a constructive direction.

Metabolic syndrome

Metabolic syndrome is a complex risk factor that arises from abnormal insulin sensitivity, irregular adipose tissue deposition and function. It is a risk factor for atherosclerosis, hyperglycemia, fatty liver and cancers. The clinical manifestations of this syndrome in adolescents' include raised blood pressure levels, abdominal obesity, hyperglycemia, raised acylglycerol levels and reduced levels of HDL-C. Metabolic syndrome has been diagnosed using the following criteria's.

Several authors considered the necessity of having an adapted definition for MetS in children and adolescents'. It is vital to employ age- and gender-specific limits

as reference values. Several definitions for pediatric MetS have been proposed since 2003.

Criteria for diagnosis

"The IDF consensus definition of metabolic syndrome in children and adolescents' .[15]

Age group (years 10–<16)

- obesity
    - Waist circumference

      ≥90th percentile or adult cut-off if lower

      Adult cutoff for South Asians

        - ≥ 90 cm in boys
        - ≥ 80 cm in girls;

  Plus two of the following

- Blood pressure ≥ 130/85 mm Hg (or drug therapy for hypertension)
- Fasting glucose ≥ 100 mg/deciliter (or drug therapy for hyperglycemia)
- Triglycerides ≥ 150 mg/deciliter (or drug therapy for hypertriglyceridemia)
- HDL-C < 40 mg/deciliter in boys and girls (or drug therapy for reduced HDL-C)."

"Cook et al.[21]

Any of the three criteria

1. Abdominal obesity (waist circumference the age- and sex-specific ≥90th percentile for this population).
2. Elevated blood pressure (systolic and/or diastolic blood pressure ≥ the age-, sex-, and height-specific 90th percentile.)
3. Low high-density lipoprotein-cholesterol (hdl-c) level (≤40 mg/deciliter).
4. Elevated serum triglycerides (tgs; ≥110 mg/deciliter); and 5) elevated fpg (≥110 mg/deciliter)."

EPIDEMIOLOGY

PREVALANCE

Metabolic syndrome prevalence in children widely varies, it ranges from 0.2% to 38.9%.[4]This variation is due to different definition and criteria have been used. In a systematic review which consists of 85 various studies in children and adolescents' data shows, the prevalence of metabolic syndrome in entire populations was 3.3% (0–19.2%), in obese people was 29.2% (10–66%) and in overweight kids was 11.9% (2.8–29.3%), the prevalence was 0–1% in normal populations .[22]

In a Turkey study shows the prevalence of metabolic syndrome among 614 adolescents between age group of 12-18 years was 33%, compared to Korean study showing prevalence 6.4%between the age group of 10-19 years. [23]A Jordanian study conducted in adolescents between the age group of 7 -18 years, shows prevalence of 5.5%.[25]All these studies have used IDF criteria for diagnosis.

A Indian study conducted Chandigarh, which uses ATP III criteria for the diagnosis for MetS in adolescents of north India revealed that the prevalence was 4.2%, 11.5% and 36.6% in normal, heavy weight and obese adolescents' respectively. [24]

RACE

The prevalence is also less in Caucasian compared to Hispanics [(27,28)]. This has been established in certain adult populations, like Asians, Hispanics, and Americans [(30,31)].

GENDER

The distribution of Metabolic syndrome in boys (24%) and girls (23%) is similar, but numerous different considerations are exclusive to girls with metabolic syndrome.[32] cardiovascular complications elevated in both boys and girls. Researchers reported similar prevalence in both boys and girls but national multiethnic study shows prevalence, 6.1% in boys and in girls 2.1%. [35]

AGE

Obesity shows secular trend and onset is presumed as early as infancy. Recent trend shows high prevalence in kindergartens. This largely attributed to feeding patterns. The second peak of prevalence was seen at 11-13 yrs old, this can explained by pubertal fat deposition under the action of sex steroids and androgens. This obesity directing to metabolic syndrome in adolescents'. In an Indian study conducted in Chandigarh showed that there was no sex difference.[6]

Socio- economic status

In developing countries, more prevalence of metabolic syndrome was seen in lower socioeconomic status, whereas developed countries more prevalence in a higher socioeconomic status population.[41,42] A study from Delhi schools reported higher prevalence in a higher socioeconomic population.[44] However recent Indian reports are contrary to above relation as the prevalence of obesity is similar in children from private (high and middle income) and government schools (low income)[43].

Educational status of parents: Among Indians, metabolic syndrome was prevalent in 19% males with higher educational status and 25% in those with lower educational status. [45]

Risk factors

Overweight and obesity

Obesity and overweight are 2 different terms used interchangeably most of the time. Excess of fat and other tissue is called as overweight, whereas excess of only body fat is called as obesity. [14]

Many nations have issued BMI for age for their local population. In the United States, CDC charts are being used for overweight and obesity. In India we use BMI and skin fold thickness as indices for obesity for school children of India, which was described by Agarwal et al study. [6,42]

Dysregulation of calorie intake and energy expenditure leads to obesity. There is complex interplay between each individual's genetic composition and the environment effects the complex system that controls the hunger and energy

expenditures. The majority of obese children do not have an underlying secondary treatable cause of increased weight.[46,47]

The complication of obesity and overweight include psychosocial distress, dyslipidaemia, hypertension, type II diabetes mellitus, ovarian hypergonadism , metabolic syndrome, respiratory embarrassment [obstructive respiratory airway disease, pickwickian syndrome, slipped femoral epiphysis, flat feet, hepatic steatosis, reduced bone density, increased skeletal growth, early puberty[reduced final height], pseudo tumor cerebri, cholelithiasis, raised c-reactive protein/systemic inflammation.[48]

Metabolic syndrome prevalence was increased with the severity of obesity, this observation found by the study conducted in a Yale University School of Medicine involving 439 children. With increasing insulin resistance the metabolic syndrome prevalence increasing (p - <0.0001)[2] .

The prevalence of 2.2% was seen in the study conducted in Tukey using ATP-III criteria, which is ten times less compared to overweight and obese individuals. [23]

A cross sectional study conducted in Chandigarh, in school children aged 12-17 yrs showing prevalence of metabolic syndrome was 4.2%. This study shows LDL levels were most common component and abdominal obesity was least common component of obesity. [25]

The reported prevalence from Chennai was 17.8% in boys and 15.8% in girls were overweight, whereas obesity prevalence was 3.6% in boys and 2.7% in girls. In a school of Delhi a study by Kapil et.al shows the obesity prevalence was 7.4%. [3]

In a Mysore study on 43,152 school children were enrolled. This study shows obese and overweight prevalence was 3.4% and 8.5%, respectively[49]. In Khon Kaen (Thailand) school survey of 2156 children aged 10–15 years ,28% were overweight [50].

The reasons for obesity during childhood are;[42,51,52,]

Breastfeeding:

Breast feeding duration and exclusive breast feeding with respect to metabolic syndrome are the most widely discussed hot topics in the present scenario. Nine systematic analysis have shown the protective association between metabolic syndrome and breast feeding.[53] There was thirteen percent lesser risk of obesity with breast feeding.

Birth weight:

Birth weight serves as the most important indicator of intrauterine environment experienced by fetus.[55] Studies have shown high birth weight was associated with metabolic syndrome as well as low birth weight.[54] These two parameters leads to obesity by different mechanisms.[19] In that LBW can be explained by enhanced initial growth.

Dietary factors (Commercial baby foods):

The marketing of baby foods has been increased recently. They use variety of flavors that gives good taste to the food stuffs, these foods are consumed for prolonged and in excessive amount. Now a days mothers prefer commercial food rather than home made food because of ease of preparation. The commercial

preparations contains high calories and deprived of nutrients, so children those who consume chips, pizzas etc. are more prone for development of obesity.

Social factors:

As there is increase in the per capita income there is increase in the social gatherings, functions, celebrations, these occasions leading on to the heavy meal that leads to obesity. Now a days we are observing the increase the obesity in low and middle income families due to their wrong dietary practices because of financial constraints.

Television / computer:

Now a days children are so much addicted to television and computer, it is becoming part of their life. Long duration and late night TV watching leads to sleep deprivation and excessive munching leading on to obesity.

Lack of activity:

Decreased level of activity leads to obesity by positive energy balance, by accumulating adipose tissue. This is mainly due to prolonged school hours, excessive involvement in social media. All these leads physical inactivity.

Sleep:

A recently conducted study by wang et.al shows that, both short and long duration of sleep are responsible for development of obesity in children. As the short duration of sleep leads to increased intake of food and further obesity. [1]

Role of epigenetics:

Epigenetic mechanisms will lead to alteration in offspring growth and development by various pathways[56]. Recent studies revealed MetS commencement involves epigenetic mechanisms[57]. The concept of "gestational programming'' leads to altered organ response, cellular response and genetic expression[58] .

Diabetes mellitus

As we already know that diabetes mellitus is due to defective insulin action and secretion leadig to hyperglycemia[59].

The pathophysiology of type II diabetes mellitus is complex and multiple-factors involved in it. It is believed that insulin resistance and enhanced circulating insulin concentration leads to obesity. After some point of time will lead to dietary glucose intolerance. This will results in type II diabetes mellitus. It is well known fact that obese persons may develop different levels of insulin resistance, and all individuals will not develop glucose intolerance.[41]

Pathophysiology

There is altered function of adipose tissue and irregular deposition of adipose tissue leads to release of proinflammatory cytokines, abnormal insulin receptor signaling leads to insulin resistance, decreased insulin secretion, increased free fatty acid levels and this ultimately responsible for metabolic syndrome [61,62].

The central distribution of adipose tissue is most dangerous because it represents the visceral and intraabdominal fat , which is impervious to the insulin and also responsible for toxic levels of free fatty levels in the blood, which further initiates

the inflammatory cascade.[64]This is further responsible for release of adiponectin, leptin ,TNF. [65]

Each component Metabolic syndrome leads to various clinical outcomes by numerous mechanisms. Hypertension can lead to LVH, peripheral arterial disease, microvascular dysfunction which further leads to end organ damage and responsible for development of renal dysfunction ,diabetes and atherosclerosis. [67,68]

Etiopathogenesis of metabolic syndrome

Insulin resistance is responsible for dyslipidemia, which includes high triglyceride levels, reduced HDL. Insulin normally suppresses the hormone sensitive lipase activity, in case of insulin resistance there is increased activity of the hormone sensitive lipase, leads to hydrolysis of the intracellular triglycerides in the fatty tissue, which further leads to increased circulating fatty acid levels in the blood. These fatty acids deleterious effect like stimulation of hepatic triglycerides and VLDL and also inhibition of peripheral glucose uptake, which is responsible for glucose intolerance. [70,71]

Increased insulin levels leads to retention of renal sodium, sympathetic system stimulation, altering cation membrane transport and increasing the smooth muscle proliferation, altogether responsible for increased blood pressure.

The metabolic syndrome may also be characterized by the presence of pro-inflammatory conditions like microalbuminuria and hypercoagubility.[72]

There are genetic factors which play role in the development of metabolic syndrome, this is demonstrated by the twin adoption studies. Genetic markers

associated with multiple pathways like energy expenditure, lipid metabolism, endothelial dysfunction, adrenergic activation, appetite regulation.[70,74]

Presentation

Metabolic syndrome can be diagnosed by carefull history taking ,which includes physical examination and laboratory parameters . History of Patients dietary habits , physical activity hyperglycemia, hypertension, dyslipidemia, menstrual disturbances in females, family history of hypertension , obesity has to be asked. [75]

The physical examination includes anthropometry mainly waist circumference, weight, height, BMI and also look for hirsutism, acanthosis nigricans, peripheral neuropathy and retinopathy and xanthomas.

Treatment

Treatment is mainly involves the lifestyle modification, dietary alteration and physical activity. The current recommendation for physical activity is at least 30 mins/day uninterruptedly at least 5 days/wk.[76] Weight loss and lifestyle modification are important in the management of metabolic syndrome.[78]

Diet

Western diet is commonly associated with development of metabolic syndrome compared to Mediterranean style of diet. [84] Dairy products, sea food, and cereal grains are associated with lower risk of metabolic syndrome .[80] By avoiding high glycemic index food stuffs will improve the metabolic syndrome parameters. [83]

Medication

Angiotensin converting enzyme inhibitors and angiotensin receptor blockers are used in metabolic syndrome patients with high blood pressure. The target fixed for these patients will be 130/80 mm Hg. [84] For HDL level improvement cholesteryl ester transfer protein inhibitors are used[85].

Metformin is the drug used as insulin sensitizing agent along with metformin drugs like fibrates and thiazolidinediones and peroxisome proliferator-activated receptor agonists alter the metabolic parameters of metabolic syndrome. [92]

Statins are mainly used for the reduction of blood LDL levels[93], Niacin and Fibrate group of drugs are used for lowering triglyceride levels and improve HDL levels[80,95],which further reduces the cardiovascular complications .

Surgical

Surgical intervention has a very minimal role in the metabolic syndrome treatment. The role of bariatric surgery in treating obesity is controversial [85], because this procedure associated with postoperative problems. [100]

Association of early life factors and metabolic syndrome

Many studies have been done to see the effect of breastfeeding on metabolic syndrome components. Literature suggests breastmilk contains certain hormones which are responsible for appetite regulation namely leptin and ghrelin.

There are very few studies on association of metabolic syndrome and breast feeding , but very few studies showing protective association between breastfeeding and metabolic syndrome.

The CASPIAN III study by Izadi et.al found that there is no association between duration of breastfeeding and development of cardiovascular risk factors among Iranian children and adolescents'.[105]

A study by Jamoussi et.al found no protection between breastfeeding and metabolic syndrome in Tunisian obese children and adolescents'.[106]

A study by sen et.al found no association between breastfeeding duration and metabolic syndrome. A study by Yakubov et.al was showed that, breastfeeding was not associated with metabolic syndrome, compared with formula feeding, in children who are obese[103].

A cross-sectional study by González-Jiménez et.al had found positive association between metabolic syndrome with breast feeding duration less than 6 months, where as inverse association seen breast feeding duration is more than 6 months[111].

A study by Folic N et.al had found maternal diabetes and lack of breast feeding are the risk factors for development of metabolic syndrome.[110]

A study by Martin et al , Effects of promoting longer term and exclusive breastfeeding on cardiometabolic risk factors at age 11.5 years a retrospective cohort study, found no alteration in the cardiometabolic risk factors. This study also shows there is no difference between intervention and control group, in duration of breastfeeding and exclusive breast feeding.[104]

A studies from chaina by J. Wang et.al and S. Wang et.al and a study by Ekelund et.al had found there is protective association of breastfeeding duration more

than 6 months and development of metabolic syndrome and also found exclusive breastfeeding minimum of 3 months duration protective.

A systematic review by Lauren Wisnieski et.al found that, there was no dose response relationship between breastfeeding duration and metabolic syndrome. Total 11 studies are reviewed out of which 7 studies shows protective association and 4 have found no protection. [112]

Birth weight is an important indicator of development of adolescent metabolic syndrome, which suggests the intrauterine environment experienced by the fetus. High birth weight babies are having consistently high BMI. Low birth weight babies are supposed grow faster and later leading to adolescent obesity.

Weight at birth is also a predictor of BMI later in life. As per the thrifty gene hypothesis, babies who had intrauterine growth retardation are likely to accumulate fat faster and more. Conversely even higher birth weight considered a risk factor for overweight/obesity in 5-7 years old German children in Kiel obesity prevention study (KOPS).

A study by Wang et.al in Guangzhou, China found association between high birth weight and metabolic syndrome[5]. PREMA study demonstrated association of low birth weight and metabolic syndrome.[19]

In contrary studies like, Dos Santos et al., who studied a population of 172 adolescents' in Brazil and found that birth weight was not a risk factor in the development of metabolic syndrome during adolescence, Yuan et al. did find an association between birth weight and disorders such as adolescent obesity and metabolic syndrome.

METHODOLOGY

The study was conducted in the schools of Belgaum city during the period of January 2018 to December 2018.

Study design: Case control study.

Source of data

Adolescents' between the age group of 10 to 15 years studying in 5^{th} to 10^{th} standard in the schools of Belgaum city.

Ethical clearance

The study was approved by the Ethical and Research Committee of J. N. Medical College, Belgaum.

Sample Size

Considering the prevalence of metabolic syndrome as 14.3% as per the IDF criteria.[51] The number of students to be screened size 'n' was derived using the formula.

$$n = \frac{4PQ}{d^2}$$

Where,

P = Prevalence of Metabolic Syndrome in adolescents' [14.3%],

Q = 100 – P [85.7],

d = Absolute error [2%]

Substituting the values "n" was calculated as;

$$n = \frac{4 \times 14.3 \times 85.7}{2 \times 2}$$

n = 1226

The total no children to be screened 1226

Calculation actual sample size

Considering the prevalence of metabolic syndrome as 14.3% as per the IDF criteria.[4] The sample size 'n' was derived using the formula.

Cases =14.3%=P_1

Control=5%=P_2 (assumed by pilot study)

$$n = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 . (PQ)^2}{d^2} = 183 \cong 200$$

$P = \frac{P_1 + P_2}{2}$ $Q = 1 - q$

$Z_{1-\alpha/2}$ = 1.96 at 5% α error

$Z_{1-\beta}$ = 1.037 at 85% Power

d = 0.093

Selection Criteria

Inclusion criteria

Adolescents'

1. Age group 10 to 15 years were studying in the schools of Belgaum city.
2. who consented to participate. (student as well as parental consent)
3. meeting the metabolic syndrome criteria as per IDF definition.

Exclusion criteria

1. Absentees on day of enrollment

2. Adolescents' with no data regarding Birth weight, breast feeding history etc

Method of selection of schools and collection of data

After the approval from the ethical committee of the institution, the study was conducted between January 2018 to December 2018. The list of schools and the permission to conduct the study was obtained from the Deputy Director of Physical Instruction (DDPI) office of the city.

Prior to the conduct of the study, permission and consent was taken from the principals and teachers of the respective schools. Out Of the 106 schools of Belagavi city, 46 schools were excluded because of the language barrier. 60 schools which were eligible, stratified using the chit method to include 15 schools for the study. Of the 15 schools, five were from government, seven government aided private and three government unaided private schools. In each school, all the students from 5^{th} to 10^{th} standard were randomly selected according to their roll number, these student parents were called for interview.

The adolescents' who were having waist circumference ≥90th percentile for that age and gender, using Khadilkar A et.al[116] waist circumference percentile charts for Indian children were taken as cases and remaining were controls (age and gender matched)[116]. These students were subjected to the laboratory investigations to diagnose metabolic syndrome which includes FBS, Triglycerides and High-density lipoproteins. Students who fulfill the International Diabetes Foundation criteria[113] for

metabolic syndrome were diagnosed as "Metabolic syndrome' and the results were informed to the parents. In controls we used cook et.al[21] criteria for diagnosis of metabolic syndrome.

The students from the selected schools were visited during the school hours and briefed about the study and were requested for the informed consent from the parents. Total 2050 students were screened. The students whose parents consented for the study were enrolled. After enrolment, the student parents were requested to fill up a pre-tested and pre-designed questionnaire which include data regarding socio demographic and family characteristics, physical examination, vitals (temperature, Blood pressure, respiratory rate, and pulse rate), dietic history, type and duration of physical activity including number of hours of media exposure, type of media exposure in the past week and early life factors like birth weight (LBW and HBW were defined as birth weight <2500 g and ≥4000g respectively) ,gestational age (preterm < 37wks/ term 37-42wks/post term >42wks), immunization status, total duration of breast feeding, exclusive breast feeding duration, time of initiation of breastfeeding. Following this, students underwent physical examination by the investigator which included general physical examination, vitals (temperature, Blood pressure, respiratory rate, and pulse rate), anthropometry and systemic examination. The anthropometry included weight for age, height for age, waist circumference, hip circumference, waist: hip ratio, BMI. The girls and boys were examined in separate rooms in the presence of the class teacher.

Criteria for diagnosis

"The IDF consensus definition of metabolic syndrome in children and adolescents'[113].

Age group (years 10–<16)

- Obesity
    - Waist circumference

      ≥90th percentile or adult cut-off if lower

      Adult cutoff for South Asians
        - ≥ 90 cm in boys or
        - ≥ 80 cm in girls;

Plus two of the following

- Blood pressure ≥ 130/85 mm Hg (or drug therapy for hypertension)
- Fasting glucose ≥ 100 mg/dL (or drug therapy for hyperglycemia)
- Triglycerides ≥ 150 mg/dL (or drug therapy for hypertriglyceridemia)
- HDL-C < 40 mg/dL in boys and girls (or drug therapy for reduced HDL-C)."

Measurements

1. Anthropometry

The following Anthropometric measurements are taken namely, waist circumference, hip circumference weight, and height, were measured with the subjects wearing light clothing and no shoes. All the anthropometric measurements of girls and boys were taken separately in separate rooms. The measurements were taken in presence of a third party [Male class teacher – boys and female class teacher – girls].

a) Weight

Body weight was measured to the nearest of 0.1 kg on a balanced scale. The adolescents' were weighed with their uniforms but with the shoes, belt and tie off. The weight was recorded on a mechanical weighing scale with an accuracy of ± 50 gm. The scale was frequently checked with standard weights and zero error was adjusted before weighing.

b) Height

A metal column height-meter (200 cm long with 0.1 cm precision) was used for height measurement. The students stood barefooted with their hand beside straight and relaxed. The heels and buttock should be in contact with the column and head should be in Frankfort plane. The measurement done from top to bottom.

c) Waist circumference

WC was measured by non- stretchable tape at the midpoint between the bottom of the rib cage and above the top of the iliac crest during minimal respiration.

d) Hip circumference

The hip circumference was taken at the level of the anterior superior iliac spine. The hip circumference <113cms in males and <104cms in females was considered as normal.[15]

e) Waist: Hip ratio

The waist: hip ratio was calculated as waist circumference/ hip circumference, where the values <0.84 was considered normal for females and <0.9 was considered normal for males.[1]

f) Body mass index[1]

The BMI was calculated as the ratio of weight in kilogram to the square of height in meters and then standardized for sex and age using data from Agarwal et al growth chart for the Indian children and adolescents'.

- Severe undernutrition - < 3rd percentile
- Moderate undernutrition - < 10th percentile
- Normal - 10th to 85th percentile
- Overweight - 85th to 95th percentile
- Obesity - > 95th percentile

II. Vitals

a) Temperature

Axillary temperature was also recorded using a clinical thermometer with readings from 35ºC to 42ºC. 36 to 37.5 degree C was taken as normal.[88]

b) Pulse rate

Pulse rate were counted for one minute. 60 to 100 breaths / minute was taken as normal.[114]

c) Blood pressure

Students in the schools are made to relaxed for 5 minutes in sitting position and after that BP cuff tied between on the right arm midway between the acromion process and olecranon (cuff should cover 40% of the circumference of the arm). BP is being checked first by palpatory method then auscultatory method (first Korotkoff sound taken as SBP and fifth Korotkoff sound as DBP) . Blood pressure >/= 95th percentile [>130mmhg systolic or >85mmhg diastolic] was included in the criteria for diagnosis of metabolic syndrome.[115]

III. Physical examination

a) Pallor:[114] Waxy appearance of skin and mucous membrane

- Mild – conjunctiva, Palms, soles are pale but the creases are hyperpigmented
- Moderate - conjunctiva, Palms, soles and the creases are pale
- Severe – signs of CCF like tachycardia, tachypnea, tender hepatomegaly, basal crepts on auscultation.

IV. Blood sampling

Blood samples were withdrawn from the antecubital vein in sitting position preferably between 10 to 12 p.m. Samples were collected in vacuum container and within half an hour of collection subjected to centrifugation i.e for 10mins, 3000rpm/min to get the serum. The samples were divided into aliquots, separated within half an hour and stored in -80°C till analyzed. This serum will be analyzed for HDL, triglycerides and blood glucose levels. [15]

Outcome measures

Association Early Life Factors with Metabolic Syndrome

Birth weight

- LBW-<2500 g,
- HBW - ≥4000 g and
- AGA (appropriate for gestational age)

Initiation of breast feeding in minutes.: It is the time since birth to first breastfeeding.

Exclusive breastfeeding duration in months.: Exclusive breastfeeding" is defined as no other food or drink, not even water, except breast milk (including milk expressed or from a wet nurse) for 6 months of life, but allows the infant to receive ORS, drops and syrups (vitamins, minerals and medicines).

Total duration of breast feeding in months: It is the total duration, the baby has received the breast milk since birth to complete cessation of breast milk.

Central obesity: Waist circumference: ≥90th percentile for that age and gender, using Khadilkar A et.al waist circumference percentile charts for Indian children[116]

Obesity:[1] BMI: >95th percentile for age and gender as per CDC.

Definitions of demographic variables

Age: Age was recorded to the nearest completed years.

Parents' education

- Illiterate: A person who could not read or write.
- Primary education: Educated from first to seventh standard.
- Secondary education: Educated from eighth to tenth standards.
- Pre- university: Educated from 11^{th} and 12^{th} [I PUC and II PUC] standard.
- Graduate: BA /B.Sc./ B.Com / Bed

Parents' occupation

- Professional: trained professional degree holders like doctors, lawyers, engineers including teachers.
- Business: this includes any self owned establishments like printing press, medical shop, general shop, boutique shop, bakery, tea shop, saree shop, vegetable vendor etc.
- Skilled worker: this includes jobs needing specialized trainings like electric work, mechanical work, carpenter, jewellery maker, computer operator, watch repair, mason etc.
- Unskilled worker: This includes jobs which does not need specialized trainings like hotel worker, stone cutter, farmer, guard, auto driver, peon, cleaner etc.
- Permanent job holders : includes government job holders, bank workers, police, army, post office worker etc.

Socio economic status: In this study for socioeconomic status assessment Modified B.G Prasad Classification has been used.

MODIFIED B.G PRASAD CLASSIFICATION

UPPER CLASS	>5775
UPPER MIDDLE	<2887-5774
MIDDLE	1733-2886
LOWER MIDDLE	866-1732
LOWER	<866

Statistical analysis

The statistical analysis was carried out by using the SPSS 20.0 software.The data were analysed by chi square test of independence for association , the independent t test was applied to compare cases and controls with mean of numerical parameters. The multiple logistic regression was used to assess the association. Bivariate analysis of each variable has been done to know the association. The statistical significance was set at 5% level.($p < 0.05$)

RESULTS

1. GENERAL CHARACTERISTICS

A total of 2050 adolescents' between 10 to 15 yrs , from 15 selected schools (stratified by chit method)of Belgaum city, were screened for metabolic syndrome during the study period (January-2018 to December-2018).48.78% (n=1000) from government school, 26.82%(n=550) from government aided school , 24.39%(n=500) adolescents' from private school.

Out of the total adolescents' screened, 400 (186- cases & controls-214) were enrolled as per the selection criteria. Among the enrolled adolescents'' the prevalence of metabolic syndrome was 11% (n=44), in cases 15.05%(n=28) and in controls 7.48%(n=16).

I1. SOCIO – DEMOGRAPHIC DATA

Table 1: Comparison of Controls and Cases By Demographic Profile

Demographic profile	Controls	%	Cases	%	Total	%	p-value
Age							
10 yrs	10	4.67	4	2.15	14	3.50	0.0030*
11 yrs	16	7.48	37	19.89	53	13.25	
12 yrs	61	28.50	46	24.73	107	26.75	
13 yrs	38	17.76	39	20.97	77	19.25	
14 yrs	36	16.82	29	15.59	65	16.25	
15 yrs	53	24.77	31	16.67	84	21.00	
Gender							
Male	102	47.66	118	63.44	220	55.00	0.0020*
Female	112	52.34	68	36.56	180	45.00	
Religion							
Hindu	200	93.46	182	97.85	382	95.50	0.0350*
Muslim	14	6.54	4	2.15	18	4.50	

1.Age

The above table 1 shows the socio demographic characteristics of the study population. The mean age in Cases and Controls was almost similar (12.78 vs 13.09) (SD 1.47 vs 1.42), (p- 0.0338) which was significant. Majority of the cases and controls belonged to the age group of 12 & 13 yrs (28.50% vs 24.73) (20.97 vs 17.76) and the remaining (2.15% vs 4.67%), (19.89% vs 7.48%) (15.59% vs 16.82%) ,& (16.67% vs 24.77%) were 10,11,14, 15 years respectively. (P -0.0030) which was statistically significant.

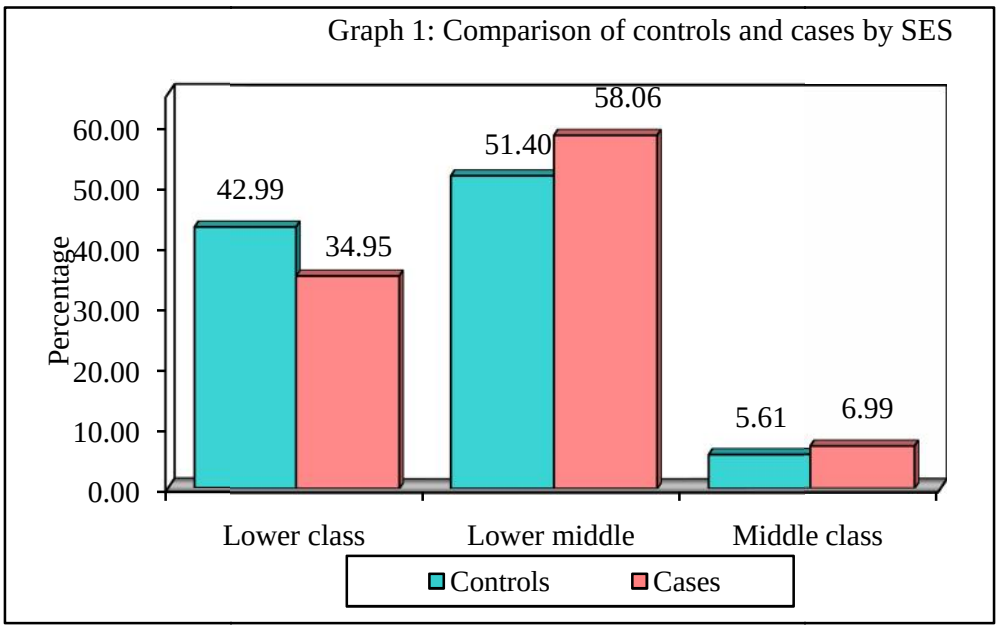
2. **Gender**

\ In the study, Male to female ratio was 1.2:1. Majority of the study population were boys (55% vs 45%), Majority of the Cases were boys compared to controls (97.85 vs 93.46).which was statistically significant. (P-0.0020)

3.Religion

Majority of the Cases & controls belonged to Hindu religion (97.85 vs 93.46) followed by muslims (6.54% vs 2.15%) .The overall religion distribution in the study was also similar ie 95 .50% Hindus Vs4.50% Muslims.

4.Socioeconomic status



P-value -0.2520

The above graph 1 shows that, majority of Cases and Controls were from lower-middle class socioeconomic status.(58.06 vs 51.40) .

Table 2. Type Of School

Type of school	Controls	%	Cases	%	Total	%	p-value
Private	3	1.40	19	10.22	22	5.50	0.0001*
Government	135	63.08	127	68.28	262	65.50	
Aided	76	35.51	40	21.51	116	29.00	

Majority of the adolescents', both cases and controls were from government schools (68.28% vs 63.08%), followed by government-aided schools (35.51% vs 21.51%) and private school (10.22% vs 1.40%). This distribution of the type of school among cases and controls was statistically significant (P-0.0001).

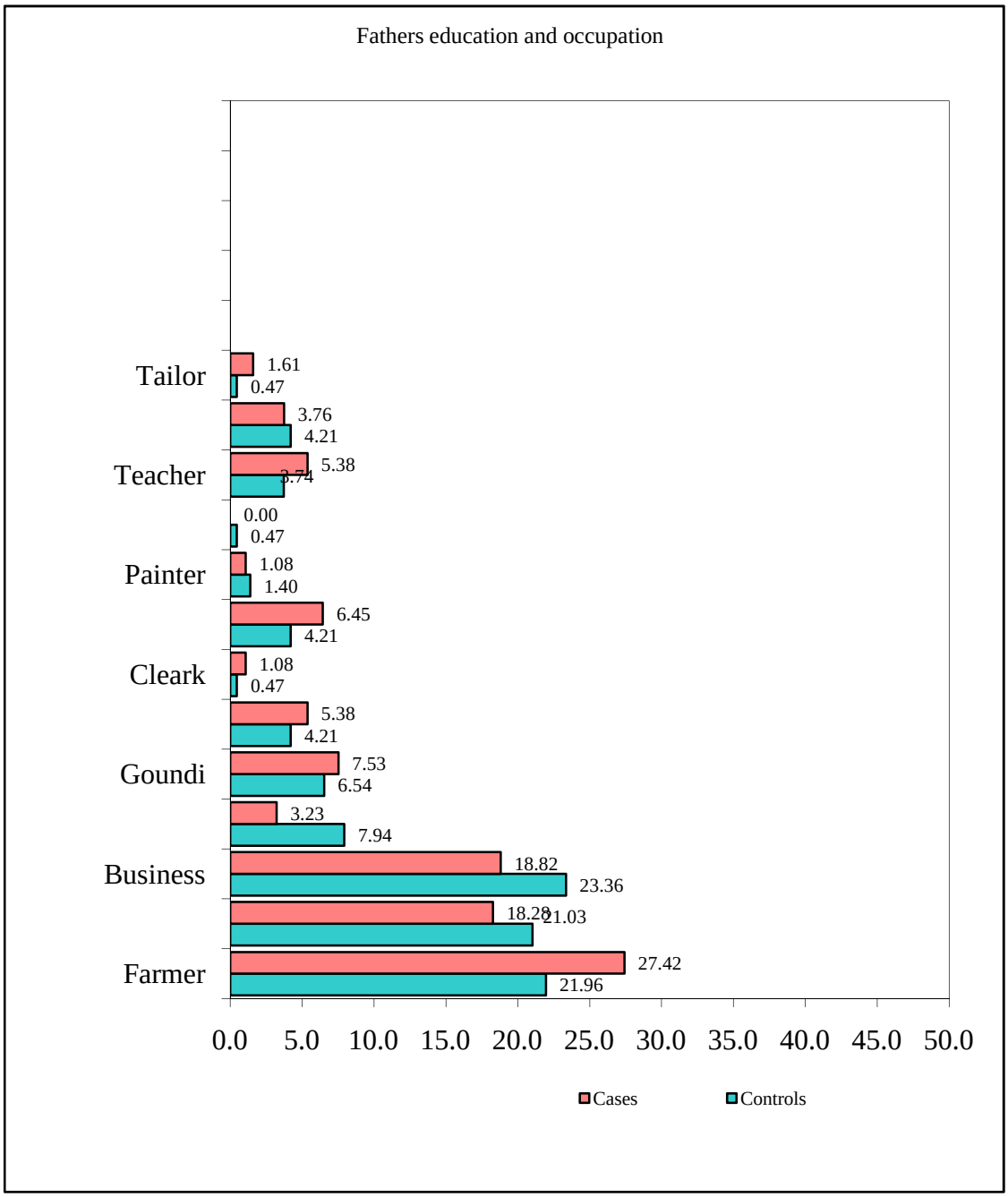
II.FAMILY CHARACTERISTICS

Table 3. Educational Status Of Parents

Fathers education	Controls	%	Cases	%	Total	%	p-value
Illiterate	44	20.56	20	10.75	64	16.00	0.0010*
Primary	102	47.66	79	42.47	181	45.25	
Secondary	62	28.97	70	37.63	132	33.00	
Graduate	6	2.80	17	9.14	23	5.75	
Total	214	100.00	186	100.00	400	100.00	
Mothers Education	Controls	%	Cases	%	Total	%	p-value
Illiterate	71	33.18	37	19.89	108	27.00	0.0010*
Primary	99	46.26	101	54.30	200	50.00	
Secondary	44	20.56	39	20.97	83	20.75	
Graduate	0	0.00	9	4.84	9	2.25	

Table 3 shows the educational status of the parents. Majority of the adolescents'' parents had completed primary education in both cases and controls. (father's- cases 42.47% vs control 47.66% and mother's cases -54.39% vs controls 46.26%).

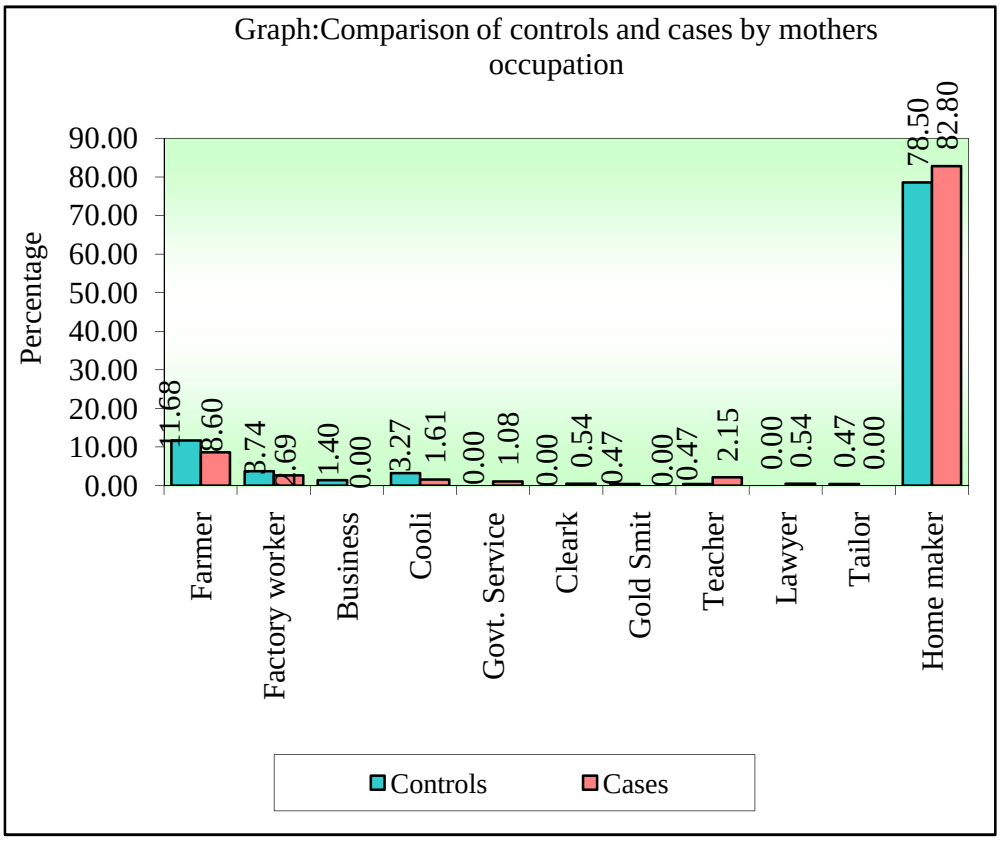
Graph 2. Parent s Occupation (Father)



P value- 0.5130

Graph 2 shows Majority of the father's were farmers by occupation cases 27.42% and controls 21.96 %, (p-value 0.5130) which was not significant.

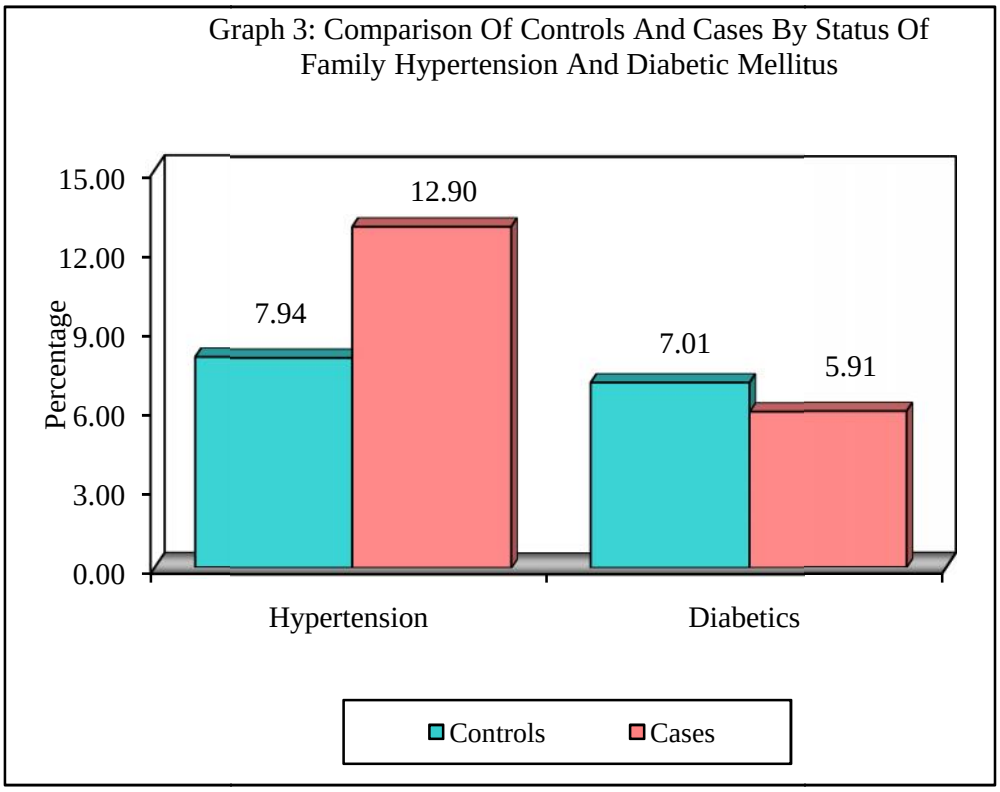
Graph3.Mother'sOccupation



p-value 0.1830

Graph 3 shows majority of the adolescents'' mothers were homemakers, cases 82.80% and controls 78.50% with (p-value 0.1830) which was not significant.

Graph 4: Family H/O Hypertension And Diabetes Mellitus



Graph 4 shows that, family history of hypertension was more in cases compared to controls (12.90% vs 7.94 %), however this was not statistically significant (p-value 0.1030). Family history of diabetes was more in Controls compared to cases (5.91% vs 7.01 %). (p-value 0.1030).

Table 4: Number of Siblings

Siblings	Controls	%	Cases	%	Total	%	p-value
0	3	1.40	19	10.22	22	5.50	0.001*
1	20	9.35	28	15.05	48	12.00	
2	99	46.26	77	41.40	176	44.00	
3	72	33.64	47	25.27	119	29.75	
4	14	6.54	11	5.91	25	6.25	
5	6	2.80	4	2.15	10	2.50	

*$p<0.05$

Majority of the adolescents' had 2 siblings both in cases and controls (41.40 vs 46.26. P - 0.001), which was statistically significant.

Table 5: Comparison of controls and cases by consanguinity with metabolic syndrome

Consanguinity	Controls	%	Cases	%	Total	%	Chi-square	p-value
Non consanguineous marriage	15	93.75	25	89.29	40	90.91	0.606	0.7390
2 degree consanguineous	0	0.00	1	3.57	1	2.27		
3 degree consanguineous	1	6.25	2	7.14	3	6.82		
Total	16	100.00	28	100.00	44	100.00		

Above table 5 shows that, Majority of the cases and controls with metabolic syndrome in Non consanguineous marriage (89.29 vs 93.75) followed by 2 degree consanguineous (3.57 vs 0.00)and 3 degree consanguineous(7.14 vs 6.25) .(P-0.7390)

PRIMARY OUTCOMES

IV. EARLY LIFE FACTORS

Table 6: Comparison of cases and controls with birth weight

Birth weight	cases	controls	p- value
<2.5 kg	**24**	**31**	**0.6466**
>2.5kg	**162**	**183**	

The above table shows that, majority cases and controls birth weight was more than 2.5 kg, which is statistically not significant (P-0.6466)

Table 7 : Comparison of cases and controls with time of initiation of breast feeding

duration	Cases	controls	p- value
<30 mins	**103**	**98**	**0.123**
31-60mins	**10**	**18**	
>60mins	**73**	**98**	

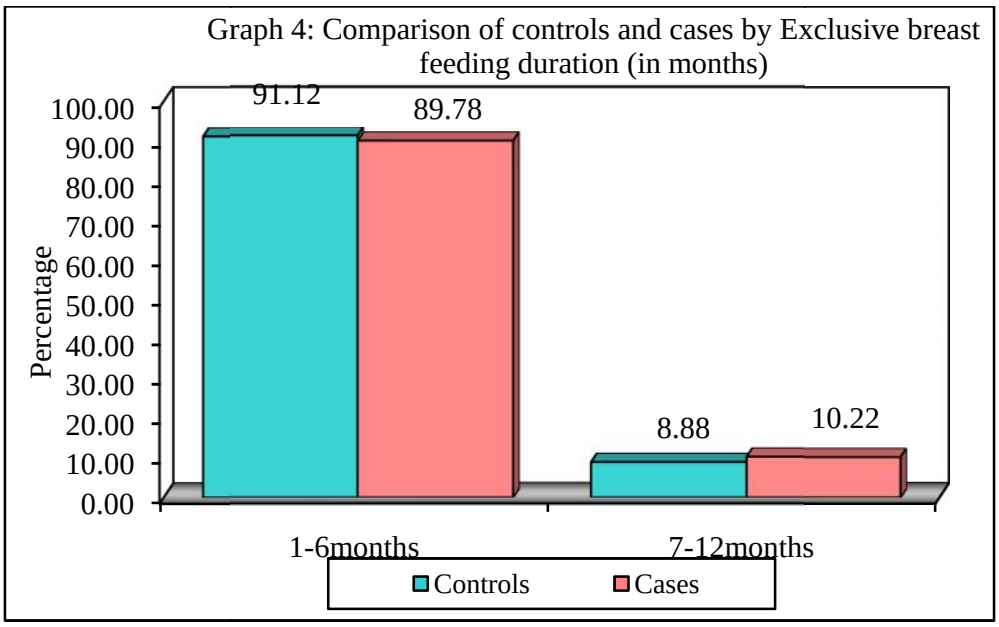
The above table shows that, majority cases and controls initiation of breast feeding was done less than 30 mins, which is statistically not significant (P-0.123)

Table 8: Comparison of controls and cases by Exclusive breast feeding duration (in months)

	cases	controls	p-values
0-3 months	**1**	**2**	**0.900**
3-6months	**144**	**165**	
>6 months	**41**	**47**	

The above table 8 shows that, majority cases and controls Exclusive breast feeding duration was between 3-6 months , which is statistically not significant (P-0.900)

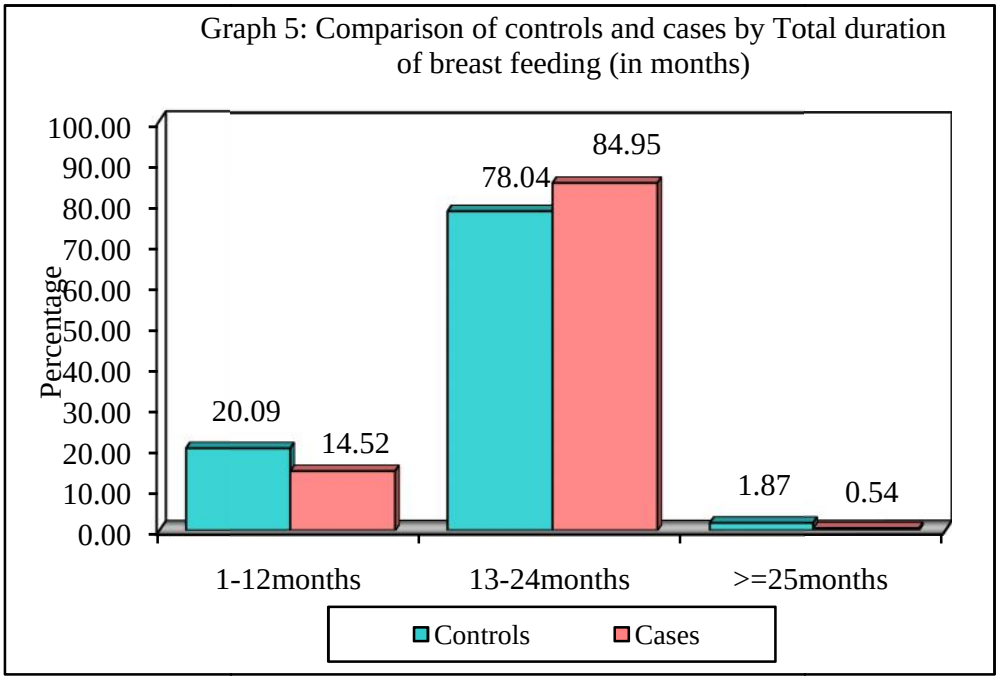
Graph 5: Comparison of controls and cases by Exclusive breast feeding duration (in months)



p value 0.6490.

Graph 5 shows that, Exclusive breastfeeding duration < 6 months was 89.78% in cases vs 91.12% in controls, 7-12 months cases and controls being (10.22 vs 8.88) with P value 0.6490, which was not statistically significant.

Graph 6: Comparison of controls and cases by Total duration of breast feeding (in months)



p value 0.1520.

Graph 6 shows that, majority of the cases and controls were had total duration of breastfeeding between 13-24months, more in cases 84.95 % vs 78.04 with p value 0.1520, which was not statistically significant.

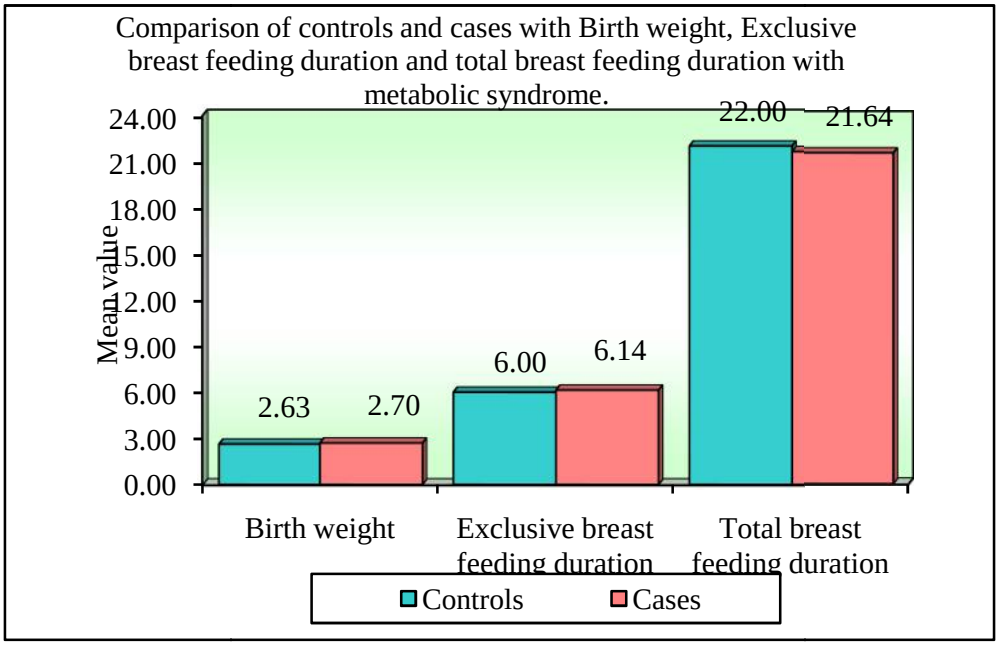
BIVARIATE ANALYSIS

Table 9: Comparison of controls and cases with Birth weight, Exclusive breastfeeding duration and total breastfeeding duration with metabolic syndrome. (bivariate analysis)

Variable	Groups	n	Mean	SD	SE	t-value	P-value
Birth weight	Controls	16	2.63	0.30	0.07	-0.6309	0.5315
	Cases	28	2.70	0.35	0.07		
Exclusive breastfeeding duration	Controls	16	6.00	0.37	0.09	-1.2679	0.2118
	Cases	28	6.14	0.36	0.07		
Total breast feeding duration	Controls	16	22.00	4.56	1.14	0.2548	0.8002
	Cases	28	21.64	4.42	0.84		

Table 9 shows that, the mean Birth weight(in kgs) was (2.70 vs 2.63) (p- 0.5315), mean Exclusive breast feeding duration (in months) (6.14% vs 6.00%) (p-0.2118) and mean total duration of breast feeding (in months) (21.64 vs 22.00) (p -0.8002) between cases and controls was similar, which was not significant.

Graph 7: Comparison of controls and cases with Birth weight, Exclusive breast feeding duration and total breast feeding duration with metabolic syndrome.



Graph 7 shows that, Birth weight, Exclusive breast feeding duration and total breast feeding duration were similar between cases and controls.

Table 10: Association between Metabolic syndrome with early life factors

	Controls with MS	%	Cases with MS	%	Total	%	p-value
Birth weight(in kg)							
<=2.5	8	50.00	14	50.00	22	50.00	1.0000
>=2.6	8	50.0	14	50.0	22	50.0	
Exclusive breast feeding duration (in months)							
1- 6months	1	6.25	4	14.29	5	11.36	0.4190
7-12months	15	93.75	24	85.71	39	88.64	
Total duration of breast feeding(in months)							
1-12months	2	12.50	4	14.29	6	13.64	0.8680
13-24months	14	87.50	24	85.71	38	86.36	
Total	16	100.00	28	100.00	44	100.00	

Table 10 shows that, the association between metabolic syndrome and early life factors, there was equal number of cases and controls with metabolic syndrome with respect to birth weight. Exclusive breast feeding duration (in months) is more between 7-12 months(P-0.410) and Total duration of breast feeding(in months)(P-0.8680) is more between 13-24 months in both cases and controls ,however which was not statistically.

METABOLIC SYNDROME

Table 11. Prevalence of metabolic syndrome

Final diagnosis	Controls	%	Cases	%	Total	%	p-value
Normal	198	92.52	158	84.95	356	89.00	0.0160*
Metabolic syndrome	16	7.48	28	15.05	44	11.00	
Total	214	100.00	186	100.00	400	100.00	

*p<0.05

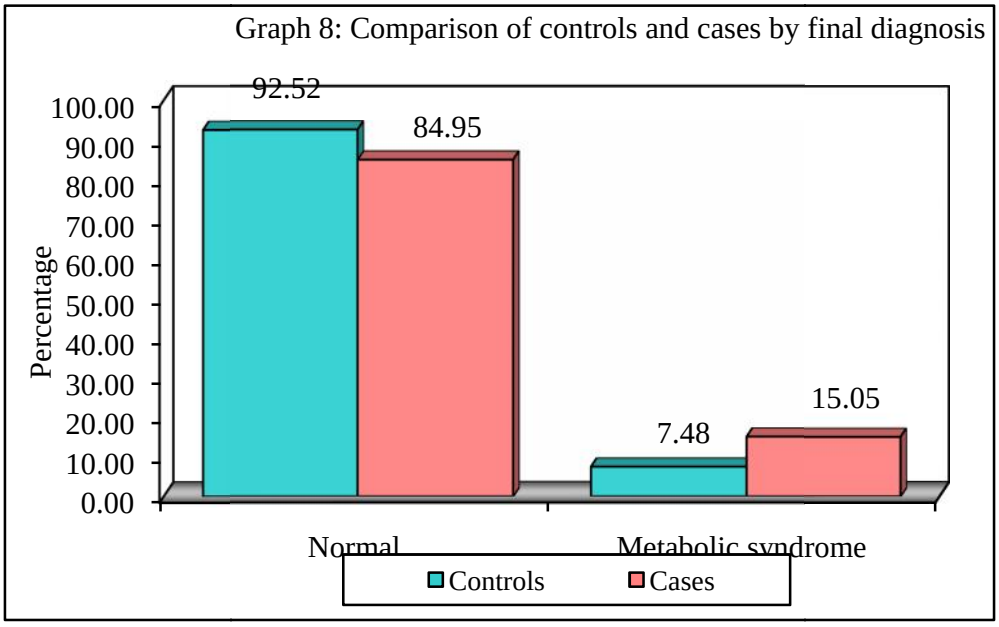


Table 11 shows that, the overall prevalence of metabolic syndrome among the study population as per the IDF criteria was 11% (n=44). The prevalence in cases was 15.05% (n=28) and in controls was 7.48 %(n=16), which was statistically significant (P - 0.0160).

COMPONENTS OF METABOLIC SYNDROME

1.Blood pressure

Table 12: Comparison Of Controls And Cases By Hypertension

	Controls	%	Cases	%	Total	%	p-value
Systolic BP Percentiles							
50th	208	97.20	169	90.86	377	94.25	0.0250*
90^{th}	5	2.34	14	7.53	19	4.75	
95th	1	0.47	3	1.61	4	1.00	
Diastolic BP Percentiles							
50th	205	95.79	175	94.09	380	95.00	0.7280
90th	8	3.74	10	5.38	18	4.50	
95th	1	0.47	1	0.54	2	0.50	
Total	214	100.00	186	100.00	400	100.00	

*$p<0.05$

Majority of the cases were having higher systolic BP compared to controls i.e 90^{th} (7.53% vs 2.34%), 95^{th} percentiles (1.61% vs 0.47%), which is statistically significant (P-0.0250). DBP was almost similar in both cases and controls 50^{th}(94.09 vs 95.79), 90^{th}(5.38 vs 3.74), 95^{th} percentile(0.54 vs 0.47) , which was not significant (P- 0.7280).

Table 13: Comparison Of Controls And Cases by Hypertension.

Interpretation	Controls	%	Cases	%	Total	%	p-value
Normal	209	97.66	171	91.94	380	95.00	0.0090*
Hypertension	5	2.34	15	8.06	20	5.00	
Total	214	100.00	186	100.00	400	100.00	

*p<0.05

Table 13 shows that, Majoirity of the cases were hypertensive as compared to controls (8.06% vs 2.34 %), which was statistically significant with (p - 0.0090).

2.TG, HDL and RBS

Table 14: Comparison of controls and cases by status of TG, HDL and blood glucose

	Controls	%	Cases	%	Total	%	p-value
TG (mg/dl)2							
Normal	198	92.52	158	84.95	356	89.00	0.0160*
Hypertriglyceridemia	16	7.48	28	15.05	44	11.00	
HDL (mg/dl)2							
Normal	187	87.38	141	75.81	328	82.00	0.0030*
Abnormal	27	12.62	45	24.19	72	18.00	
Blood glucose (mg/dl)2							
Normal	173	80.84	144	77.42	317	79.25	0.4000
Hyperglycemia	41	19.16	42	22.58	83	20.75	
Total	214	100.00	186	100.00	400	100.00	

*p<0.05

Table 14 shows that, Majority of the cases were having hypertriglyceridemia and low HDL levels, (15.05 vs 7.48) (p -0.0160), (24.19 vs 12.62) (p-0.0030) respectively which was statistically significant. Majority of the cases having Hyperglycemia (22.58% vs 19.16%)(p-0.400), which was statistically not significant .

RISK FACTORS

PHYSICAL ACTIVITIES

Table 15: Comparison of controls and cases by games related activities

Games related activities	Controls	%	Cases	%	Total	%	p-value
Games							
Badminton	66	30.84	47	25.27	113	28.25	0.1420
Cricket	35	16.36	48	25.81	83	20.75	
Skating	54	25.23	32	17.20	86	21.50	
Volley ball	1	0.47	1	0.54	2	0.50	
Swimming	9	4.21	12	6.45	21	5.25	
Jogging	46	21.50	44	23.66	90	22.50	
No games	3	1.40	2	1.08	5	1.25	
Games mins/day							
30 mins/day	99	46.26	98	52.69	197	49.25	0.1310
60 mins/day	105	49.07	75	40.32	180	45.00	
120 mins/day	7	3.27	11	5.91	18	4.50	
Sleep							
7 hrs/day	24	11.21	17	9.14	41	10.25	0.3180
8 hrs/day	153	71.50	127	68.28	280	70.00	
9 hrs/day	36	16.82	38	20.43	74	18.50	
10 hrs/day	1	0.47	4	2.15	5	1.25	
Total	214	100.0	186	100.0	400	100.0	

Table 15 shows that, Majority of controls were playing badminton game (30.84% vs 25.27%) (P- 0.1420), which was statistically not significant. Majority of the cases and controls were playing games for 30mins/day(52.69% vs 46.26%) (p - 0.1310), which was statistically not significant. The sleep duration of majority of the cases and controls being 8hrs/day(71.50% vs 68.28%) (p -0.3180), which was statistically not significant.

Duration of media usage

Table 16: Comparison of controls and cases by time for media usage

media	Controls	%	Cases	%	Total	%	p-value
0.5hrs/day	9	4.21	21	11.29	30	7.50	0.0510
1 hrs/day	187	87.38	154	82.80	341	85.25	
2 hrs/day	13	6.07	8	4.30	21	5.25	
3 hrs/day	5	2.34	3	1.61	8	2.00	
Total	214	100.0	186	100.0	400	100.0	

Table 16 shows that, the duration of media usage in majority of the adolescents' was 1hr /day, there is not much difference between cases and controls 82.80%vs 87.38% (p - 0.0510), which was statistically not significant.

Table 17: Comparison of controls and cases by SES in final outcome as metabolic syndrome

SES	Controls	%	Cases	%	Total	%	p-value
Lower class	8	50.00	8	28.57	16	36.36	0.0700
Lower middle	8	50.00	13	46.43	21	47.73	
Middle class	0	0.00	7	25.00	7	15.91	
Total	16	100.00	28	100.00	44	100.00	

Table 17 shows that, Cases and Controls were with metabolic syndrome in lower class (28.57 vs 50.00), lower middle (46.43 vs 50.0), and middle class (25.0 vs 0.00), with P- value is 0.0070, which was not statistically significant.

Table 18: Comparison of metabolic syndrome with waist and BMI scores in controls

Variable	Final diagnosis	n	Mean	SD	t-value	P-value
Waist	Normal	198	60.11	13.17	-1.9976	0.0470*
	Metabolic syndrome	16	66.80	8.30		
BMI	Normal	198	18.06	2.37	-0.0710	0.9435
	Metabolic syndrome	16	18.10	2.16		

The above table 18 shows, Waist circumfence of controls associated with metabolic syndrome with mean of 66.80, (SD – 8.30) with significant p value 0.0470.

Table 19: Comparison of metabolic syndrome with waist and BMI scores in cases

Variable	Final diagnosis	n	Mean	SD	t-value	P-value
Waist	Normal	158	84.18	6.66	-0.5391	0.5904
	Metabolic syndrome	28	84.93	7.18		
BMI	Normal	158	20.11	2.85	-4.0162	0.0001*
	Metabolic syndrome	28	22.69	4.44		

*$p<0.05$

Table 19 shows that, The BMI in cases was being associated with metabolic syndrome with mean of 22.69 (SD -4.44) which was statistically significant (p - 0.0001).

Table 20: Comparison of controls and cases with mean scores of different variables by independent t test

Variables	Controls		Cases		t-value	p-value
	Mean	Std.Dev.	Mean	Std.Dev.		
Age in yrs	13.09	1.47	12.78	1.42	2.1292	0.0338*
Games mins/day	47.91	19.94	47.61	23.32	0.1406	0.8883
Systolic (mmHg)	105.89	7.42	108.62	11.15	-2.9207	0.0037*
Diastolic (mmHg)	66.56	6.60	68.28	6.02	-2.7069	0.0071*
Height (cm)	146.00	8.74	147.81	7.74	-2.1847	0.0295*
Weight (Kg)	39.26	7.64	46.07	11.20	-7.1764	0.0001*
Waist circumference (cm)	60.61	12.98	84.30	6.73	-22.4125	0.0001*
Hip circumference (cm)	63.81	16.98	84.16	13.94	-12.9773	0.0001*
Waist:Hip ratio	0.88	0.05	0.88	0.05	0.5509	0.5820
BMI (Kg/m2)	18.06	2.35	20.50	3.26	-8.6579	0.0001*
TG (mg/dl)	111.38	26.93	117.91	43.66	-1.8248	0.0688
HDL (mg/dl)	48.49	6.24	46.74	7.18	2.6150	0.0093
Blood glucose (mg/dl)	89.35	11.01	90.25	11.72	-0.7927	0.4284
Birth weight(in kg)	2.61	0.27	2.68	0.31	-2.0828	0.0379*
Inter. between birth to breast milk(mins)	53.27	36.58	42.58	28.70	3.2168	0.0014*
Exclusive breast feeding duration (in months)	6.14	1.09	6.30	1.21	-1.3586	0.1751
Total duration of breast feeding(in months)	20.54	6.35	21.94	5.68	-2.3083	0.0215*

*p<0.05

\ Table 20 shows that, The mean age in cases and controls was almost similar (12.78 vs 13.09) (p- 0.0338) which was statistically significant. The mean duration of games in cases and controls was almost similar (47.61 vs 47.91) which was not significant .The mean SBP (p - 0.8883),DBP (P- 0.0037),Height (p- 0.0295),weight

(p - 0.0001), waist circumference (P-0.0001),Hip circumference(P-0.0001),BMI (P-0.0001),Birth weight (P-0.0379),initiation of breast milk (p-0.0014), ,total duration of breast feeding (P-0.0215) were statistically significant.

The mean Exclusive breast feeding duration (P-0.1751), triglycerides levels(p- 0.0688), HDL levels (P- 0.0093) Blood glucose levels(p- 0.4284) which were not significant .

Table 21: Multiple Logistic Regression Of Different Variables On Dependent Variable I.E. Controls And Cases.

Variables	B	S.E.	OR	95% C.I. for OR		p-value
				Lower	Upper	
Age						
10 yrs		Ref.				
11 yrs	2.60	0.82	13.52	2.71	67.51	0.0020*
12 yrs	1.76	0.75	5.83	1.34	25.45	0.0190*
13 yrs	2.18	0.80	8.84	1.84	42.49	0.0070*
14 yrs	2.49	0.84	12.09	2.32	63.16	0.0030*
15 yrs	2.28	0.86	9.78	1.80	53.19	0.0080*
Gender						
Male		Ref.				
Female	-0.53	0.24	0.59	0.37	0.94	0.0250*
Religion						
Hindu		Ref.				
Muslim	-1.53	0.67	0.22	0.06	0.81	0.0230*
Type of schools						
Private		Ref.				
Government	-0.18	0.64	0.84	0.24	2.95	0.7800
Aided	-1.10	0.74	0.33	0.08	1.43	0.1390

Table 21 shows, multiple logistic regression analysis of different variables, there was positive association of between age groups (11 to 15yrs) with metabolic syndrome, however there was no association found gender, religion, type of schools with metabolic syndrome.

Table 22: Multiple logistic regression analysis of status of metabolic syndrome by other variables.

Independent variables	Odds Ratio	Std. Err.	Z-value	p-value	95% CI for OR	
					Lower	Upper
Exclusive breast feeding duration (in months)	3.66	3.60	1.3200	0.1860	0.53	25.08
Total duration of breast feeding(in months)	2.01	1.62	0.8600	0.3880	0.41	9.77
Inter between birth to breast milk(mins)	1.00	0.01	-0.3400	0.7320	0.97	1.02
Birth weight (in kg)	7.26	8.01	1.9000	0.0500*	0.83	63.16
SBP (Centile)	1.02	0.03	0.7900	0.4270	0.96	1.09
DBP (Centile)	1.12	0.05	2.4500	0.0140*	1.02	1.22
TG (mg/dl)	31.69	25.02	4.3800	0.0001*	6.75	148.90
HDL (mg/dl)	96.08	129.21	3.3900	0.0010*	6.89	1340.67
Blood glucose (mg/dl)	8.12	6.73	2.5200	0.0120*	1.60	41.26
BMI	1.07	0.10	0.7800	0.4380	0.90	1.28
Waist circumference (cm)	1.01	0.03	0.1800	0.8590	0.95	1.07

*$p<0.05$

The above table 22 shows, a significant positive association between the components of metabolic syndrome namely blood pressure, triglyceride levels & FBS and development of metabolic syndrome with the odds ratio of 1, 31.69, 8.12 respectively. This observation shows that the chance of developing metabolic syndrome increases with increase in the values of above components. However there was positive association between for the lower the lower HDL levels were responsible for metabolic syndrome with odds ratio 96.08 which was statistically significant.

The above table also shows a positive association between early life factors like exclusive breast feeding duration, total duration of breast feeding, interval between birth to breast milk, with metabolic syndrome with odds ratio of 3.66, 2.01, 1 respectively, indicating there was no protection with exclusive breastfeeding, breast feeding duration for development of metabolic syndrome .

Birth weight also shows positive association with metabolic syndrome with odds ratio 7.26, which was statistically significant, indicating birth weight is responsible for development of metabolic syndrome.

DISCUSSION

Metabolic syndrome is a major global health issue today with the increase in the prevalence of childhood obesity and metabolic syndrome. Metabolic syndrome is an important risk factor for development of early onset of coronary heart disease (CHD) and type2 diabetes mellitus. There are multiple factors which play role in the development of metabolic syndrome like hypertension, diabetes, hypertriglyceridemia, HDL levels among them obesity is a major risk factor.[12] The association between early life factors like birth weight, feeding situations have been shown to be linked with metabolic syndrome in children and adolescents with conflicting results.[19,20].Therefore we conducted the case control study to know the association between early life factors and metabolic syndrome among the adolescents between the age of 10-15 years of Belagavi city. A total of 400 adolescents were enrolled and studied after screening 2050 children. Among the enrolled adolescents' the prevalence of metabolic syndrome was 11% (n=44), with increased prevalence among cases compared to controls. (15.05% vs 7.48%) (n=28 vs 16).

SOCIO – DEMOGRAPHIC DATA

Age

The mean age in Cases and Controls was similar (12.78 vs 13.09) (SD 1.47 vs 1.42), (p- 0.0338) which was significant. Majority of the cases and controls belonged to the age group of 12 & 13 yrs (28.50% vs 24.73) (20.97 vs 17.76). Cross sectional studies to know the prevalence of metabolic syndrome among adolescents from India

(mean age 13.5 years)[123] and China (mean age of 11.3 years.)[5]also report similar results .

The peak prevalence of metabolic syndrome was seen at 11-13 yrs, this can explained by pubertal fat deposition under the action of sex steroids and androgens. This obesity directing to metabolic syndrome in adolescents'

Gender

Majority of the study population were boys (55% vs 45%) with Male to female ratio of 1.2:1.Majority of the Cases were boys compared to controls (97.85 vs 93.46).which was statistically significant. (P-0.0020) .Similar to our study, cross sectional studies from Kashmir and Shimla have shown higher prevalence of metabolic syndrome in boys.[123,124] Researchers and study in rural warda[8] have reported equal prevalence in both boys and girls, but national multiethnic study shows a higher prevalence in boys compared to girls (6.1%Vs 2.1%). [35]

Religion

Majority of the Cases & controls belonged to Hindu religion (97.85 vs 93.46).The overall religion distribution in the study was also similar i.e 95 .50% Hindus Vs4.50% Muslims.

Socioeconomic status

Majority of Cases and Controls in the study were from lower-middle class socioeconomic status . Recent Indian studies report the prevalence similar in children from private (high and middle income) and government schools (low income)[43]. In developing countries, increased prevalence of metabolic syndrome was seen in lower

socioeconomic status, whereas in developed countries in higher socioeconomic status population.[41,42] A study from Delhi and Shimla schools reported higher prevalence in a higher socioeconomic population.[44,123] Similar to our study, studies from Europe have shown an association between socioeconomic status and the MetS , and the potential mechanisms suggested were poor nutrition, and inadequate physical activity.[97,98]

Type of School

Majority of the adolescents', both cases and controls were from government schools (68.28% vs 63.08%), followed by government-aided schools (35.51% vs 21.51%) and private school (10.22% vs 1.40%). This distribution of the type of school among cases and controls was statistically significant (P-0.0001). In contrary to our study , a study done in Mysore among school going children, shows that prevalence of obesity was similar in private and government schools [49].

Prevalence of metabolic syndrome

Prevalence of metabolic syndrome varies widely because of different definitions used and population of the study. In our study, overall Prevalence of metabolic syndrome in the study population was 11%(n=44), in cases 15.05%(n=28) and in controls 7.48%(n=16).

Our observation of higher prevalence of metabolic syndrome is similar to a study from Kuwait with the prevalence of 14.8% using IDF criteria and 9.1% using NCEP-ATP III diagnostic criteria. Similar observations of higher prevalence of metabolic syndrome was noted by Rodrıguez-Moran et al[120] and Kim HM et.al [136].

A cross sectional study among adolescents of 10-19 years in rural India, using ATP III criteria modified for adolescents reported moderately higher prevalence of metabolic syndrome (9.9%).[8]

Contrary to our observations of higher prevalence of metabolic syndrome among adolescents, many Indian studies have reported a lower prevalence of 1.5%-9.9% .[(4-11)]Different definitions have been used to diagnose the prevalence of metabolic syndrome in these studies. In a cross-sectional study from North India, the prevalence of metabolic syndrome using IDF criteria among urban adolescents was 3% [7] and from Shimla had a prevalence of 3.3%[123]. Other Indian cross sectional studies using ATP III criteria have shown a prevalence of 3.8% to 4.2 % [6,124].

Studies conducted to know the prevalence of metabolic syndrome among obese adolescents have also reported higher prevalence among obese children. The Indian cross-sectional studies among obese adolescents between 10-18 years have reported prevalence of metabolic syndrome between 30%-36% [10,26,137].

A cross sectional study from Turkey has reported 4.9% of obese children had metabolic syndrome using NCEP-ATP III criteria. This study shows that obese children were at 10 times higher risk of developing metabolic syndrome.[122]

Non obese children in the control group in the study had a prevalence of 7.58%. There are no studies among nonobese adolescents to compare our results. A population based observational study, in the rural area of the west Bengal among adult population shows, the prevalence of metabolic syndrome in nonobese adults was 12.8%, indicating that there are significant number of normal/nonobese population with metabolic syndrome in rural area.[130]

A study done in U.S adults to determine the prevalence of metabolic syndrome in normal weight individuals, this study observes that individuals with normal weight and slightly overweight BMI (18-26.9) have a relatively higher risk of developing metabolic syndrome. [139] In our study we observed more number of metabolic syndrome in normal weight individuals might be because of normal and slightly overweight BMI adolescents.

Higher prevalence of MetS in our study when compared to the other Indian studies may be because of the difference in the definition, different study setting, and different population .we also observed increase in the prevalence of metabolic syndrome among nonobese adolescents in the control group. Literature shows evidence of obese individuals need not be always at risk to develop metabolic syndrome and also reports ,40% of the normal adults of normal weight having metabolic abnormalities that are typically associated with obesity[130] . However there is no literature to explain our observation of metabolic syndrome in non obese children .

Early life factors

1.Breast feeding and metabolic syndrome

There is a considerable literature on the association between breastfeeding and the components of metabolic syndrome in children and adolescents' but very few studies have been conducted to show an association between breastfeeding and metabolic syndrome as a whole [(19,20)].

In our study we observed no association between breastfeeding and metabolic syndrome. We also did not observe protective association between the initiation of

breastfeeding, exclusive breastfeeding duration, the total duration of breastfeeding and metabolic syndrome. (odds ratio of 3.66, 2.01, 1 respectively), indicating that, there was no protection with exclusive breastfeeding, breast feeding duration for development of metabolic syndrome.

Majority of the studies conducted to show the association between breast feeding duration and metabolic syndrome have shown results similar to our observations.

Majority of the observational cross-sectional studies conducted in the hospital setting in children and adolescents, among obese adolescents attending pediatric OPD in different settings, in both low and middle income countries have shown no association between breastfeeding duration and metabolic syndrome. [106,103]

However in a larger population based cross sectional study among 5258 Iranian adolescents between the 10-18 years, conducted to study the relationship between breastfeeding and development of cardiovascular risk factors including metabolic syndrome was shown no evidence that longer duration of breastfeeding duration was protective against CVD risk factors disease among adolescents and also found no association between dose response relationship.[105]

In a retrospective analysis of children between the age group of 3-18 years in Israel, showed that, breastfeeding was associated with metabolic syndrome, compared with formula feeding, in children who are obese[101].

In a larger prospective, a cluster-randomized trial of breastfeeding intervention to improve breastfeeding duration and exclusivity among term infants ,17 046 breastfeeding mother-infant pairs were followed up to 11.5 yrs. The results from this

large experimental intervention demonstrated that despite improvement in the duration and exclusivity of breast feeding there was no difference in the reduction of cardiometabolic risk factors between the groups [104].

Contrary to our observations , a cross sectional study from china conducted among school going children between 7-17yrs , to know the association between metabolic syndrome using IDF criteria and early life factors, have shown that breastfeeding longer than 6 months duration was inversely associated with development of metabolic syndrome indicating breastfeeding may reduce the risk of metabolic syndrome [5]. Similar observations were reported by another crosssectional study from china .[102]

Similar protective association of breastfeeding duration and development of metabolic syndrome were observed in cross sectional studies from Europe among adolescents between 10-15 years [111,107].

A case control study similar to our study design was conducted among adolescents between10-16 yrs in Serbia to compare the effect of breastfeeding duration between the children with metabolic syndrome and obesity. This study showed that breast feeding was more prevalent in obese children than children with metabolic syndrome, indicating that lack of breastfeeding is a risk factor for development of metabolic syndrome, however in our case control study we compared obese and nonobese children and observed no protective association[110].

A systematic review was conducted by Lauren Wisnieski et.al to find the evidence for the association between breastfeeding and development of metabolic syndrome. Out of 11 studies reviewed 7 showed a positive association and 4 studies

showed no association between breastfeeding and development of metabolic syndrome. However, none of the studies found being breastfed and development of metabolic syndrome. The review did not show the dose response relationship between duration of breast feeding and development of metabolic syndrome and also found no evidence to demonstrate an added effect of being exclusively breastfed [112].

Majority of the studies with protective association between breastfeeding and metabolic syndrome were cross sectional and retrospective. A case control study showing positive association compared the association between obese children and children with metabolic syndrome . However, our study compared obese vs non obese children ,screened from the schools of the community using IDF criteria, indicating stronger study design. However we observed significant number of metabolic syndrome in non-obese children (> 50%) , which may be the major contributing factor for our results.

2. Birth weight and metabolic syndrome

Birth weight is an indicator of the conditions experienced in utero environment and may serve as a marker between prenatal influences and obesity in later life. Both high and low birth weights are associated with later obesity. A high birth weight is associated with later body mass index (BMI) and consistently associated with increased risk of childhood and adult obesity leading on to risk of development of metabolic syndrome.

In our study, In majority of the adolescents, both cases and controls, the birth weight was more than 2.5 kg. Multiple logistic analysis showed that Birth weight has a significant positive association with metabolic syndrome (odds ratio 7.26),

indicating that babies with birth weight of more than 2.5 kg are are at risk of development of metabolic syndrome.

Similar observation was reported by the Chinese cross-sectional study conducted among school going children to know the association between early life factors and metabolic syndrome using IDF criteria. The study reported that, high birth weight was directly related to the development of abdominal obesity and metabolic syndrome [5]. The cross-sectional studies conducted among school going children between the age group of 7-17yrs, in different settings both low to middle income countries (Argentina[117] and spain[111]), have also reported that the high birth weight was associated with development of metabolic syndrome in children and adolescents.[111,117]

Contrary to our observations, many studies have reported that, birth weight was not associated with development of metabolic syndrome. A prospective cohort study conducted among obese adolescents between 10-16 yrs with BMI > 95percentile for age and gender, in two different hospitals in Canada, observed that, the birth weight was not associated with increased cardiovascular risk but it has a role in insulin resistance and also reported that , increase BMI was positively associated with birth weight [135]. Another observational cohort study involving adolescents who were enrolled as infants and followed up to 5,10 and 16 years , found no association between birth weight and metabolic syndrome.[20] However, a cohort study of 1270 children , enrolled at birth and followed up to 13-15 years of age trying to detect independent predictors of metabolic syndrome using IDF criteria shows an positive association between LBW and metabolic syndrome [19]. A study by Dos Santos et.al,

who studied a population of 172 adolescents' in Brazil and found that birth weight was not a risk factor in the development of metabolic syndrome during adolescence.

In our study we observed association between the birth weight and development of metabolic syndrome as reported by the previous studies showing association between early life factors and metabolic syndrome.

COMPONENTS OF METABOLIC SYNDROME

Waist circumference and BMI

In our study, we observed BMI and waist circumference were associated significantly with development of metabolic syndrome (odds ratio 1.07, 1.01 respectively). The difference in mean waist circumference (p value 0.0001) and the mean BMI (p value 0.0001) between cases and controls was significant, suggesting that, BMI and waist circumference were the most important predictors of metabolic syndrome in our study. Similar to our observations, Indian cross-sectional studies done in Shimla and Srinagar have shown association between waist circumference and development of metabolic syndrome.[123,124]. However, Other Asians cross sectional studies have shown no such association between waist circumference and metabolic syndrome.[5,8]

Some authorities suggest that the best screening tool for adolescent metabolic syndrome was body mass index (BMI) compared to the abdominal circumference[127], however BMI does not account for all cardiometabolic risk factors compared to abdominal obesity[45].

In our study, adolescents' who were having waist circumference ≥90th percentile for that age and gender, using Khadilkar A et.al[116] waist circumference

percentile charts for Indian children were used to categorize them as cases. However, researchers have recommended a cut off at 70th percentile for Indians, to identify children and adolescents' at risk of metabolic syndrome[116].

Blood pressure

A positive association was seen between SBP, DBP and metabolic syndrome (odds ratio 1) with Multiple logistic regression analysis in our study. A significant number of cases had a higher SBP when compared to controls. 90th percentile (7.53% vs 2.34%), and 95th percentiles (1.61% vs 0.47%). Therefore, we had significant number obese adolescents' were hypertensive as compared to normal individuals (8.06% vs 2.34 %), which was statistically significant (p - 0.0090).

Similar observation has been reported by Edmond et al. from Virginia.[106] A study from Saudi Arabia by Doris et al. has reported 44% and 3.5% of the adolescents' with SBP and DBP above 95th percentile for age and height, respectively.[4]

Many studies have shown a positive correlation between hypertension and obesity. A Chinese cross sectional study, in school going children between 7-17years , have shown an association between SBP and metabolic syndrome.[5] A cross sectional study of Elementary School Children in East of Iran have shown SBP, DBP associated with metabolic syndrome[138]. A cross sectional study of school going children between 10-16yrs in Shimla, shows SBP, DBP were associated with metabolic syndrome.[124] This can be explained by that obesity will cause atherosclerotic changes that leads to hypertension.

TG, HDL AND FBS

A significant number of cases compared to controls had hypertriglyceridemia (15.05 vs 7.48) (p -0.0160) and low HDL levels, (24.19 vs 12.62) (P-0.0030). Majority of the cases had a Hyperglycemia (22.58% vs 19.16%).

A significant positive association between the components of metabolic syndrome namely blood pressure, triglyceride levels & FBS and development of metabolic syndrome with the odds ratio of 1, 31.69, 8.12 respectively was observed in our study. This observation shows that the chance of developing metabolic syndrome increases with increase in the values of above components. However, there was a significant positive association between the lower HDL levels and metabolic syndrome with odds ratio of 96.08.

Similar to our observation a cross sectional study from Srinagar, have shown an association between metabolic syndrome and its components.[124]Other cross sectional studies from India and china have shown that , abdominal obesity and HDL levels were the most prevalent components of metabolic syndrome.[123,5]

Several previous studies conducted among adolescents' from US and Tehran have shown similar observations i.e positive association between metabolic syndrome and its components.[27,61,94,92] .In a study from Jordan, the commonest metabolic abnormality reported was low HDL and high TG with a higher prevalence of blood glucose.[26]

Contrary to our observation, a study among the adolescents (10-19 years) of Anji PHC in rural wardha, found no association between metabolic syndrome and it's all components.[8]

Risk Factors

Risk factors namely physical activity, duration of sleep, duration of media usage, history of consanguinity, parental education did not show any difference between the cases and controls. Duration of playing games 30min/day was similar between cases and controls. several Indian studies among adolescent school going children have reported that sedentary lifestyle leads to metabolic syndrome[8,124]. Duration of sleep was 8hrs/day similar in both cases and controls. Some studies conducted among adolescent children observed, both short and long duration of sleep are responsible for development of obesity in children. [1, 126]. Duration of media usage 1hr/day was similar between cases and controls ,several other studies done in adolescent children have shown the duration of television viewing is associated with metabolic syndrome.[124,92] Increased media usage has an increased prevalence of MetS due to decreased physical activity and unhealthy dietary practices and it also corresponds with higher cholesterol levels and leads to higher prevalence of obesity.

Family history of hypertension and diabetes

Family history of hypertension was more in cases compared to controls (12.90% vs 7.94 %). in our study. Family history of diabetes was more in Controls compared to cases (5.91% vs 7.01 %).This observation was similar to other Indian study ,which reported that adolescents with family history of hypertension had higher chances of developing hypertension (OR-3.41).[8] Several studies have reported a higher prevalence of MetS in adolescents' with family history of hypertension and diabetes.[132-134,123] This can be attributed to the effect of genetic factors, but also may indicate similar environmental conditions, dietary habits, socioeconomic status and sedentary life.

The strengths of the study are that, it is the first Indian population based case control study among adolescents to find association between early life factors and metabolic syndrome with adequate sample size, by using a universally accepted age related criterion to define MetS and interpreting the anthropometric measurements using the chart specific to the Indian population. This study also adds to the existing data on prevalence of metabolic syndrome in normal adolescents'.

Limitations of the study are that, Some of the study variables such as physical activity and dietary habits, family history had to be interpreted with caution, since they were self reported by the adolescents'. Another limitation of the study was that data collected from the parents retrospectively, there may be recall bias while collecting the data.

In conclusion, the present study showed no protective association between the initiation of breastfeeding, exclusive breastfeeding duration, the total duration of breastfeeding and metabolic syndrome. However, Birth weight shows positive association with metabolic syndrome. This study shows that, there was increase in the prevalence of metabolic syndrome among the study population. The prevalence of metabolic syndrome is growing in developing countries especially lower socioeconomic population. Our study also adds to the current knowledge obesity per se does not imply presence of metabolic syndrome in the individual. on the other hand, small proportion of lean individuals also harbor the changes suggestive of metabolic syndrome. A larger population based prospective cohort study is recommended to establish the association between early life factors and metabolic syndrome. There is also need for larger population-based study on prevalence of metabolic syndrome in low and middle income SES of nonobese adolescents'.

CONCLUSION

This case control study was conducted among Adolescents' between the age group of 10 to 15 years, during the period of January 2018 to December 2018, in the schools of Belagavi city. The present study showed no protective association between the initiation of breastfeeding, exclusive breastfeeding duration, the total duration of breastfeeding and metabolic syndrome. However, Birth weight shows positive association with metabolic syndrome.

The prevalence of metabolic syndrome in this case control study of south Indian adolescent population was 11% (n=44), with increased prevalence among cases compared to controls using the International Diabetes Federation criteria which is the recent, simple, unified worldwide definition used only in children above 10 years of age. The risk factors for metabolic syndrome were- lower middle SES, family history of hypertension, central obesity and high BMI, high TG, and low HDL were significantly associated with increased risk of metabolic syndrome. A larger population based prospective cohort study is recommended to establish the association between early life factors and metabolic syndrome. There is also need for larger population-based study on prevalence of metabolic syndrome in low and middle income SES of nonobese adolescents'.

SUMMARY

- A total of 2050 adolescents' between 10 to 15 yrs , from 15 selected schools (stratified by chit method of Belgaum city, were screened for metabolic .
- Out of the total adolescents' screened, 400 (186- cases & controls-214) were enrolled as per the selection criteria. Among the enrolled adolescents'' the prevalence of metabolic syndrome was 11% (n=44), in cases 15.05%(n=28) and in controls 7.48%(n=16).
- Majority of the cases and controls belonged to the age group of 12 & 13 yrs (28.50% vs 24.73) (20.97 vs 17.76) which was statistically significant.
- In the study, Male to female ratio was 1.2:1. Majority of the study population were boys (55% vs 45%), Majority of the Cases were boys compared to controls (97.85 vs 93.46),which was statistically significant. (P-0.0020)
- Majority of the Cases & controls belonged to Hindu religion (97.85 vs 93.46) followed by Muslims (6.54% vs 2.15%). The overall religion distribution in the study was also similar ie 95 .50% Hindus Vs4.50% Muslims.
- Majority of Cases and Controls were from lower-middle class socioeconomic status (58.06 vs 51.40).
- Majority of the adolescents', both cases and controls were from government schools (68.28% vs 63.08%), followed by government-aided schools (35.51% vs 21.51%) and private school (10.22% vs 1.40%). This distribution of the type of school among cases and controls was statistically significant (P-0.0001).

- Educational status of the parents. Majority of the adolescents'' parents had completed primary education in both cases and controls. (father's- cases 42.47% vs control 47.66% and mother's cases -54.39% vs controls 46.26%).
- Majority of the father's were farmers by occupation cases 27.42% and controls 21.96 %, (p-value 0.5130) which was not significant.
- Majority of the adolescents' mothers were homemakers, cases 82.80% and controls 78.50% with (p-value 0.1830) which was not significant.
- Family history of hypertension was more in cases compared to controls (12.90% vs 7.94 %), however this was not statistically significant (p-value 0.1030). Family history of diabetes was more in Controls compared to Cases (5.91% vs 7.01 %). (p-value 0.1030).

- Majority of the adolescents' had 2 siblings both in cases and controls (41.40 vs 46.26. P - 0.001),which was statistically significant.

- Majority cases and controls birth weight was more than 2.5 kg, which is statistically not significant (P-0.6466)
- Majority cases and controls initiation of breast feeding was done less than 30 mins, which is statistically not significant (P-0.123)
- Majority cases and controls Exclusive breast feeding duration was between 3-6 months , which is statistically not significant (P- 0.900)

- Exclusive breastfeeding duration < 6 months was 89.78% in cases vs 91.12% in controls, 7-12 months cases and controls being (10.22 vs 8.88) with P value 0.6490, which was not statistically significant.

- Majority of the cases and controls were had total duration of breastfeeding between 13-24months, more in cases 84.95 % vs 78.04 with p value 0.1520, which was not statistically significant.

- The mean Birth weight(in kgs) was (2.70 vs 2.63) (p- 0.5315), mean Exclusive breast feeding duration (in months) (6.14 vs 6.00)(p-0.2118) and mean total duration of breast feeding (in months) (21.64 vs 22.00) (p -0.8002) between cases and controls was similar, which was not significant.

- Waist circumfence of controls associated with metabolic syndrome with mean of 66.80, (SD – 8.30) with significant p value 0.0470. The BMI in cases was being associated with metabolic syndrome with mean of 22.69 (SD -4.44) which was statistically significant (p -0.0001).
- Majority of the cases were having higher systolic BP compared to controls i.e 90^{th} (7.53% vs 2.34%), 95^{th} percentiles (1.61% vs 0.47%), which is statistically significant (P-0.0250). DBP was almost similar in both cases and controls 50^{th} (94.09 vs 95.79), 90^{th}(5.38 vs 3.74), 95^{th} percentile(0.54 vs 0.47) , which was not significant (P- 0.7280).
- Majoirity of the cases were hypertensive as compared to controls (8.06% vs 2.34 %), which was statistically significant with (p - 0.0090).
- Majority of controls were playing badminton game (30.84% vs 25.27%) (P-0.1420), which was statistically not significant. Majority of the cases and controls were playing games for 30mins/day(52.69% vs 46.26%) (p -0.1310), which was statistically not significant. The sleep duration of majority of the cases and controls being 8hrs/day(71.50% vs 68.28%) (p -0.3180), which was statistically not significant.

- The duration of media usage in majority of the adolescents' was 1hr /day, there is not much difference between cases and controls 82.80%vs 87.38% (p - 0.0510), which was statistically not significant.
- Cases and Controls were with metabolic syndrome in lower class (28.57 vs 50.00), lower middle (46.43 vs 50.0), and middle class (25.0 vs 0.00), with P-value is 0.0070, which was not statistically significant.
- Majority of the cases and controls with metabolic syndrome in Non consanguineous marriage (89.29 vs 93.75) followed by 2 degree consanguineous (3.57 vs 0.00)and 3 degree consanguineous(7.14 vs 6.25) .(P-0.7390)

- The mean age in cases and controls was almost similar (12.78 vs 13.09) (p-0.0338) which was statistically significant. The mean duration of games in cases and controls was almost similar (47.61 vs 47.91) which was not significant .The mean SBP (p - 0.8883),DBP (P- 0.0037),Height (p-0.0295),weight (p - 0.0001), waist circumference (P-0.0001),Hip circumference(P-0.0001),BMI (P-0.0001),Birth weight (P-0.0379),initiation of breast milk (p-0.0014), ,total duration of breast feeding (P-0.0215) were statistically significant.

- The mean Exclusive breast feeding duration (P-0.1751), triglycerides levels(p- 0.0688), HDL levels (P- 0.0093) Blood glucose levels(p- 0.4284) which were not significant .

- Significant positive association between the components of metabolic syndrome namely blood pressure, triglyceride levels,& FBS and development of metabolic syndrome with the odds ratio of 1, 31.69, 8.12 respectively. This

observation shows that the chance of developing metabolic syndrome increases with increase in the values of above components. however for there was positive association between for the lower the lower HDL levels were responsible for metabolic syndrome with odds ratio 96.08 which was statistically significant.

- A positive association between early life factors like exclusive breast feeding duration, total duration of breast feeding, interval between birth to breast milk, with metabolic syndrome with odds ratio of 3.66, 2.01, 1 respectively, indicating there was no protection with exclusive breastfeeding, breast feeding duration for development of metabolic syndrome .

- Birth weight also shows positive association with metabolic syndrome with odds ratio 7.26, which was statistically significant, indicating birth weight is responsible for development of metabolic syndrome.

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ANNEXURE I – CONSENT FORM

"ASSOCIATION OF EARLY LIFE FACTORS WITH METABOLIC SYNDROME IN ADOLESCENTS BETWEEN 10-15 YRS OF AGE IN SCHOOLS OF BELAGAVI CITY : A CASE CONTROL STUDY"

Objective and purpose of the study

This research is intended to study the early life factors associated in development of metabolic syndrome in the adolescents of age group 10-15years.

Procedure

If you agree for your child to be part of the research study he/she will be asked the relevant history and will be subjected to relevant clinical examination and investigations. She/he will also have to give blood and urine samples for the necessary investigations. There are some questionnaires needs to be answered by the parents prefferably mother.

Risk and Benefits

The only risk and possible discomfort he/she might get is while taking blood from his/her arm for the investigations. It may cause swelling, pain, redness, bruising or infection (rarely happens) at the site from where the blood is drawn.

Alternatives

Taking part in this study is voluntary. You may choose your child not to take part in this study, or if you decide your child to take part you can later change your mind and withdraw from the study. Your decision will not change the present or

future health care or other services that your child will receive. The study doctor or sponsor may stop his/her participation in this study any time. If you choose your child not to take part in the study he/she will receive the standard treatment for patients with your child's condition.

Privacy and Confidentiality

All information collected about your child during the course of this study will be kept confidential to the extent permitted by law. The code numbers will identify me in this research record. Information from this study may be published but my identity will be confidential in any publication.

Financial incentives for participation

Your child will not be paid / offered any gifts /incentives for participating in the study.

Authorization to publish the results

The results of the study would be forwarded to the KAHER, Belgaum as part of requirement towards the completion of MD degree, review and publishing.

If you have any questions about your child's rights as a participants parent/ guardian you may call Dr.Roopa M Bellad, professor Department of Pediatrics, J.N.M.C Ethical Committee for Human Research phone number 0831-247135.,

Consent Statement

I voluntarily agree to take part in this study by signing below. I may withdraw at any time. I am not giving up any of my legal rights by signing this form. My signature below indicates that I have read, or it has been read to me, this entire consent form, and have had all my questions answered.

Name of the Participant or legally authorized representative:_____

Signature / Thumb print _____

In case of the queries during study or in future you may contact following person.

Principal investigator :

Guide :

Name of the Witness _____

Signature _____

Investigator Name and Signature _____

Date: Place:

ANNEXURE-II - PROFORMA

DEMOGRAPHIC INFORMATION

ID NUMBER:

Name:

Age: Sex: DOB:

Religion: H / M / Sikh / Others

Address:

School name and address:

Government / Private:

Standard in which studying:

Father name: Income: Occupation:

Education: Illiterate / Primary / Secondary / Graduate / Post graduate

Mother name: Income: Occupation:

Education: Illiterate / Primary / Secondary / Graduate / Post graduate

Number of members at home:

Number of siblings:

Birth order of this child:

GENERAL INFORMATION:

Date of enrolment: Date of examination:

Informed consent: Yes/ No given by:

HISTORY:

FAMILY HISTORY:

*Diabetes: Yes / No

*Hypertension: Yes/ No

*Cardiac disorders:

*Others:

BIRTH AND POSTNATAL H/O

1. BIRTH ORDER-
2. GEST .AGE [PRETERM/TERM/POST TERM]-
3. BIRTH WT-
4. IMMUNISATION OF BABY-
5. CRY AFTER BIRTH-
6. INTERVAL BETWEEN BITRTH TO BREAST MILK-
7. PELACTEAL FEEDS-
8. DURATION OF EXCLUSIVE BREAST FEEDING-
9. TOTAL DURATION OF BREAST FEEDING-
10. WEANING STARTED AT -
11. CONSAGUINITY-

EXAMINATION: [To be filled by the examiner]

General condition:

*Pallor

*Icterus

*Lymphadenopathy

*Temperature

*Pulse

*Blood pressure

Anthropometry

Parameters	**Measured**	**Expected**	**Inference**
Height			
Weight			
Waist Circumference			
Hip Circumference			
Waist: hip ratio			
BMI			

LABORATORY INVESTIGATIONS:

Parameters	**Measured**	**Expected**	**Inference**
HDL-C			
Triglycerides			
Random Blood Sugar			

DIAGNOSIS/CONCLUSION:

ANNEXURE-III- ETHICAL CLEARANCE LETTER

K.L.E.UNIVERSITY'S
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
(Accredited 'A' Grade by NAAC)

Website: http//www.jnmc.edu
E-Mail : dome@jnmc.edu

Phone: (+ 91-(0)831 Office : 2471350
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref: MDC/DOME/ 25 **Date: 22/11/2017**

To.

PG student in Paediatrics,
J.N.Medical College,
BELAGAVI.

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"ASSOCIATION OF METABOLIC SYNDROME WITH EARLY LIFE FACTORS IN ADOLESCENTS BETWEEN 10-15 YRS OF AGE IN SCHOOLS OF BELAGAVI CITY: A CASE CONTROL STUDY"**, is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee on Human Subjects Research.

(Dr. Arathi Darshan)
Member Secretary
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

(Dr. Roopa M Bellad)
Chairman,
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

ANNEXURE IV – LETTER TO DDPI

Dr.

Post Graduate,

Department of Paediatrics,

J. N. Medical College,

Nehru Nagar, Belgaum -10.

To,

The DDPI,

Belgaum.

'THROUGH PROPER CHANNEL'

Respected Sir,

Subject: **Requisition to grant permission to visit the schools of Belgaum city and to conduct a study on Adolescent health - Metabolic Syndrome.**

I Dr. _____, Post Graduate in the Department of Paediatrics, J. N. Medical College, Belgaum hereby request you to grant me permission to visit the schools of Belgaum city and conduct a study the early life factors associated in development of metabolic syndrome in the adolescents and to study the prevalence of metabolic syndrome in and adolescents .

Adolescents constitute about 22.8% of the Indian population. Obesity is one of the major growing problems prevalent in adolescents. The prevalence of obesity in adolescent age group is 22%. Obesity is the risk factor for many diseases like- Diabetes, Hypertension, Cardiovascular diseases, Atherosclerosis, Respiratory disorders [Sleep Apnea], Infertility in females, Depression, Anxiety, discrimination in both social and in the workplace and Metabolic syndrome. The prevalence of

Metabolic Syndrome among the adolescents is about 14.3%. The risk factors associated with Metabolic syndrome are Overweight, Central Obesity, Sedentary Lifestyle [Physical inactivity, individuals watching television/playing video games/using computers >4 hrs / day], Diabetes Mellitus, cardiovascular diseases. Several studies have been reported a high prevalence of metabolic syndrome risk factors in adolescents with increased waist circumference. To date, there are no published studies on the prevalence of metabolic syndrome risk factors among the Indian adolescents, especially in the South Indian adolescents. This study is the first to examine the extent of metabolic syndrome in a group of adolescents aged 13 to 16 years of Belgaum city.

The study will be conducted under the guidance of Dr. ROOPA M. BELLAD **M.D.** Professor, Department of Paediatrics J. N. Medical College, Belgaum.

The details of the study and the methodology are enclosed.

Kindly accept the same and oblige.

Thanking you,

Yours faithfully,

Date:

Place: Belgaum

GUIDE:

Dr. _____ **(Dr. _____)**

Professor,

Dept. of Pediatrics,

J. N. Medical College,

Nehru Nagar, Belgaum-10.

ANNEXURE V – PHOTOGRAPHS

PIC 1:COLLECTION OF BLOOD SAMPLE

PIC 2:PARENTAL INTERVIEW

PIC 2:PARENTAL COUNSELLING

PIC 4: **PARENTAL COUNSELLING**

Number	cases and controls	Age	Sex	Religion	School name(Code)	G/P	Standard	Fathers occup	Educatn	Mothers occup	Educatn	Members	Siblings	Birth order	SES	Games	Hrs/dy	Sleep	Television	Height (cm)	Weight (Kg)	Waist circumference (cm)	Hip circumference (cm)	Waist:Hip ratio	BMI (Kg/m2)	TG (mg/dl)	HDL (mg/dl)	Blood glucose (mg/dl)	Gestational age(Te/Pre/PT)	Birth weight(in kg)	Immunisation(com/I/NK)	Inter.between birth to breast milk(hrs)	Prelacteal feeds	Exclusive breast feeding duration (in months)	Total duration of breast feeding(in yrs)	weaning started at(in months)	consaguinity	final diagnosis
1	1	14	M	H	4	P	8	Fa	Sr	HW	Pr	4	2	1	Lm	NA	..	8	1	125	53	84	86	0.82	20	90	38	116	Te	2	com	1/2hr	No	6	2	6	NCM	n
2	2	13	M	H	4	P	8	Fa	Gr	HW	Pr	6	2	1	m	NA	..	9	2	125	58	95	94	0.9	23	126	35	120	Te	3.2	com	1/2hr	No	6	2	6	NCM	MetS
3	2	15	M	H	4	P	10	Fw	Gr	HW	Sr	5	2	2	Lm	Cc	1/2hr	8	2	164	62	86	88	0.75	23.5	110	35	108	Te	3.5	com	1/2hr	No	6	1	6	NCM	MetS
4	2	12	M	H	4	P	7	Fa	Sr	HW	I	4	3	3	Low	Cc	1/2hr	9	1	158	64	85	100	0.85	25.8	83	40	112	Te	2.3	com	1/2hr	No	4	6	4	NCM	N
5	2	15	M	H	4	P	10	Fa	Gr	HW	Pr	4	1	1	Lm	NA	..	8	1	167	49	90	96	0.92	18	87	40	112	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
6	1	12	M	H	11	G	7	Bu	Gr	HW	Pr	4	2	2	Lm	NA	..	8	1	145	31	60	69	60	14.7	135	44	100	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
7	1	13	M	H	3	G	8	Bu	Pr	Bu	I	6	3	3	Lm	Cc	1/2hr	7	1	142	50	75	84	0.82	24.8	120	50	83	Te	2.5	com	1/2hr	No	6	1(1/2)	6	3CM	N
8	1	15	M	H	3	G	10	Fa	PU	HW	Sr	3	2	2	Low	NA	..	7	1	163	53	66	83	0.79	19.9	110	44	93	Te	2.3	com	1/2hr	No	6	1(1/2)	6	3CM	N
9	2	15	M	H	3	G	10	Fa	Pr	HW	Sr	4	2	2	Low	Cc	1/2hr	7	1	177	50	88	70	81	16	80	45	72	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
10	1	14	M	H	3	G	9	Fa	PU	HW	Sr	5	2	1	Low	VB	1/2hr	9	1	142	29	60	64	0.79	14.4	90	48	115	Te	2.3	com	1/2hr	No	6	1(1/2)	6	3CM	N
11	1	14	M	H	3	G	9	Coo	Ilt	Coo	Ilt	5	3	3	Low	Cc	2hr	8	1	137	34	59	69	0.82	18.3	125	43	87	Te	2.5	com	1/2hr	No	6	1(1/2)	6	3CM	N
12	1	15	M	Mu	3	G	9	Coo	Ilt	Hw	Ilt	8	2	2	Low	Cc	2hr	8	1	150	45	82	83	0.9	20	80	45	105	Te	2.5	com	1/2hr	No	6	2	6	3CM	N
13	1	13	F	Mu	3	G	7	Gou	Pr	Hw	Pr	4	2	1	Low	Bd	1hr	8	1	138	27	52	60	0.86	14.2	75	40	100	Te	2.5	com	1/2hr	No	6	2	6	3CM	N
14	1	13	F	H	3	G	8	Fa	Sr	Hw	Ilt	6	2	1	Low	Bd	1hr	8	1	148	40	61	72	0.84	18.3	83	50	93	Te	2.6	com	1/2hr	No	7	2	8	NCM	N
15	1	13	F	H	3	G	7	SE	Pr	Hw	Pr	5	3	3	Low	Bd	1hr	8	1	150	44	64	80	0.8	19.6	114	40	75	Te	2.5	com	1/2hr	No	6	2	6	3CM	N
16	2	12	M	H	3	P	6	Bu	Sr	Hw	Sr	3	..	1	mid	Cc	2hr	8	1	156	58	85	88	0.98	23.8	128	37	100	Te	2.5	com	1/2hr	No	6	2	6	NCM	MetS
17	2	12	M	H	5	P	6	Bu	Sr	Hw	Pr	5	2	1	mid	Cc	2hr	8	1	149	50	83	92	0.9	22.5	130	38	106	Te	3	com	1/2hr	No	6	2	6	NCM	MetS
18	1	10	F	H	5	P	5	BU	Sr	Hw	Pr	5	2	1	mid	Sw	1/2hr	8	1	132	34	65	79	0.82	19.5	90	46	93	Te	3.5	com	..	honey	…	..	..	NCM	N
19	2	14	F	H	3	G	9	Gou	Sr	Hw	Pr	5	1	2	Low	Sw	1/2hr	8	1	148	70	87	97	0.84	32.1	100	64	120	Te	2.5	com	1/2hr	No	1yr	2	1yr	NCM	N
20	2	11	M	H	8	P	5	CLE	Sr	CLE	Pr	3	1	1	mid	Sw	1/2hr	8	1	140	40	76	82	0.79	20.4	560	30	106	Te	2.5	com	1/2hr	No	6	2	6	NCM	MetS
21	2	11	M	H	8	P	5	Govt. S	Sr	Hw	Pr	3	2	1	mid	Sw	1/2hr	8	1	145	48	76	85	0.82	22.8	160	38	106	Te	2.5	com	1/2hr	No	6	2	6	2CM	MetS
22	2	14	F	H	8	P	9	dri	Sr	Hw	Pr	3	2	1	mid	Bd	1hr	8	1	148	50	88	88	0.9	22.8	120	35	93	Te	2.5	com	1/2hr	No	1yr	2	1yr	NCM	N
23	2	11	F	H	8	P	5	Fa	Sr	Hw	Pr	3	1	1	Lm	Bd	1hr	8	1	145	45	75	86	0.75	21.4	60	33	70	Te	3	com	1/2hr	No	6	2	6	NCM	N
24	2	12	F	H	8	P	6	Bu	Sr	Hw	Pr	5	2	2	Low	Bd	1hr	8	1	150	55	83	105	0.85	24.4	70	38	78	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
25	2	12	M	H	3	P	6	Fa	Sr	Hw	TEA	5	2	1	Lm	Bd	1hr	8	1	143	40	78	84	0.93	19.6	90	40	80	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
26	2	13	F	H	6	P	7	Bu	Sr	Hw	Pr	4	1	2	Low	Bd	1hr	8	1	154	97	97	122	0.89	40.9	100	35	78	Te	2.5	com	1/2hr	No	6	2	6	NCM	MetS

27	2	13	F	H	6	P	7	Bu	Sr	Hw	Pr	4	2	2	mid	Bd	1hr	8	1	152	53	85	88	0.82	22.9	105	32	80	Te	3	com	1/2hr	No	6	2	6	NCM	MetS
28	2	12	F	H	6	P	6	coo	Sr	Coo	Pr	10	2	3	Low	Bd	1hr	8	1	160	61	82	93	0.79	23.1	125	37	88	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
29	2	14	M	H	6	P	9	Bu	Sr	Hw	Pr	3	2	2	mid	Cc	2hr	8	1	152	50	86	81	0.81	21.6	145	40	95	Te	2.7	com	1/2hr	No	6	2	6	NCM	N
30	1	13	M	H	6	P	8	Govt. S	Sr	Hw	Pr	6	2	2	Low	Cc	2hr	8	1	157	47	77	86	0.79	19.2	140	35	100	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
31	2	14	M	Mu	6	P	9	coo	Sr	Hw	Pr	7	3	4	low	Cc	2hr	8	1	150	57	85	91	0.82	25.1	150	33	105	Te	2.7	com	1/2hr	No	7	2	7	NCM	MetS
32	2	14	M	H	6	P	9	Fa	Sr	Hw	Pr	5	2	1	Low	Cc	2hr	8	1	158	60	86	94	0.9	24	110	33	100	Te	2.5	com	1/2hr	No	6	2&1/2	6	NCM	N
33	2	14	M	H	6	P	9	Fa	Sr	Hw	Pr	3	2	2	Low	Cc	2hr	8	1	155	52	86	87	0.75	21.6	115	35	90	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
34	2	14	F	H	10	G	8	F	Gr	HW	Sr	4	2	1	Lm	Sk	1/2 hr	8	1	156	46	87	88	0.9	18.9	86	50	100	Te	2.5	com	1/2 hr	No	6	2	6	NCM	N
35	1	15	F	M	10	G	9	D	Sr	HW	Sr	5	3	2	Lm	Sk	1 hr	8	1	146	41	72	80	0.9	19.2	80	40	86	Te	2.5	com	1/2 hr	No	6	1(1/2)	6	NCM	N
36	2	15	F	H	10	G	10	F	Pr	HW	Pr	4	2	1	Lm	Sk	1/2 hr	8 (1/2)	1	150	44	89	90	0.9	19.6	89	37	106	Te	2.8	com	1/2 hr	No	6	2	6	NCM	N
37	1	14	F	H	10	G	9	F	Pr	HW	Pr	5	3	2	Lm	Bd	1hr	8	1	155	49	78	80	0.9	20.4	84	39	114	Te	2.7	com	1 hr	No	6	2	6	3	MetS
38	2	15	F	H	10	G	10	Bu	Gr	HW	Sr	4	2	1	Lm	Sk	1 hr	8	1	156	45	90	91	0.9	18.5	92	36	106	Te	2.6	com	1hr	No	6	2	6	NCM	N
39	1	15	F	H	10	G	9	F	Pr	HW	Ilt	4	2	2	Lm	Bd	1hr	8	1	153	40	67	80	0.83	17.1	92	38	112	Te	2.8	com	1/2hr	No	6	2(1/2)	6	NCM	N
40	1	15	F	M	10	G	10	Coo	Pr	Coo	Ilt	8	2	2	Lm	Sk	1hr	8	1	153	40	69	81	0.85	17.1	125	43	90	Te	2.5	com	1(1/2)hr	No	6	8 mon	6	NCM	N
41	2	15	F	H	10	G	10	D	Pr	HW	Ilt	5	3	2	Lm	Sk	1hr	8	1	155	56	96	98	0.83	23.8	119	38	108	Te	2.6	com	1hr	No	6	1	6	3	MetS
42	1	15	F	H	10	G	9	Bu	Sr	HW	Pr	6	2	2	Lm	Sk	1/2hr	8	1	147	40	70	80	0.87	18.5	110	35	108	Te	2.8	com	1hr	No	7	2	7	NCM	MetS
43	1	14	F	H	10	G	8	F	Ilt	HW	Ilt	5	2	2	Lm	Sk	1/2hr	8	1	143	44	64	82	0.78	21.5	126	38	120	Te	2.6	com	1/2hr	No	6	2 (1/2)	6	NCM	MetS
44	2	14	F	H	10	G	8	D	Pr	HW	Ilt	6	3	2	Lm	Bd	1hr	8	1	150	50	87	89	0.92	22.2	128	36	116	Te	2.4	com	1/2hr	No	7	1 (1/2)	7	3	MetS
45	1	14	F	M	10	G	8	D	Pr	HW	Ilt	7	4	3	Lm	Sk	1/2hr	8	1	159	40	60	77	0.75	15.8	90	40	102	Te	2.4	com	1/2hr	No	6	1	6	2	N
46	1	14	F	H	10	G	8	Bu	Sr	HW	Pr	4	2	1	Lm	Bd	1hr	8	1	153	40	64	76	0.84	17.1	96	40	116	Te	2.6	com	1hr	No	6	1	6	NCM	N
47	2	15	F	H	10	G	9	F	Pr	HW	Ilt	5	3	2	Lm	Bd	1hr	8	1	155	36	88	89	0.75	15	108	38	96	Te	3	com	1/2hr	No	6	2	6	NCM	N
48	1	15	F	H	10	G	9	Bu	Ilt	HW	Ilt	5	2	1	Lm	Sk	1/2hr	8	1	146	30	60	73	0.82	14.1	80	45	105	Te	3.2	com	1/2hr	No	6	2	6	NCM	N
49	2	15	F	H	10	G	9	FW	Pr	HW	Ilt	3	1	1	Lm	Bd	1hr	8	1	149	47	89	90	0.85	21.2	110	38	108	Te	2.9	com	1/2hr	No	6	1	6	NCM	N
50	1	14	F	H	10	G	8	Coo	Ilt	Coo	Ilt	4	2	2	Lm	Sk	1hr	8	1	143	30	56	67	0.9	14.7	98	42	101	Te	3.2	com	1/2hr	No	5	1(1/2)hr	5	2	N
51	1	15	F	S	10	G	10	Bu	Sr	HW	Pr	4	2	1	Lm	Sk	1/2hr	8	1	156	36	68	78	0.87	14.8	108	42	110	Te	3.2	com	1hr	No	5	1(1/2)hr	5	NCM	N
52	1	15	F	H	10	G	9	F	Sr	T	Pr	6	2	1	Lm	Bd	1hr	8	1	156	35	70	79	0.88	14.4	90	37	102	Te	3.2	com	1/2hr	No	6	1	6	NCM	N
53	2	15	F	H	10	G	9	F	P	F	Ilt	5	2	2	Lm	Sk	1/2hr	8	1	145	44	95	96	0.94	20.9	112	45	116	Te	3.5	com	1hr	No	6	1	6	3	N
54	2	15	F	H	10	G	9	F	Ilt	HW	Ilt	4	2	1	Lm	Sk	1hr	8	1	156	45	86	90	0.88	18.5	90	37	116	Te	2.8	com	1(1/2)hr	No	7	1	7	NCM	N
55	2	15	F	H	10	G	9	F	Sr	HW	Pr	5	1	1	Lm	Sk	1/2hr	8	1	150	36	89	88	0.84	16	101	42	110	Te	2.7	com	1/2hr	No	6	2	6	NCM	N
56	1	15	F	H	10	G	9	Tc	Sr	HW	Ilt	4	2	2	Lm	Bd	1hr	8	1	147	37	67	79	0.84	17.1	98	45	112	Te	3	com	1/2hr	No	6	1	6	3	N
57	1	15	F	H	10	G	10	Coo	Pr	HW	Ilt	5	3	3	Low	Bd	1/2hr	7	2	156	45	62	78	0.79	18.7	90	48	83	Te	2.3	com	1/2hr	No	4	5Mon	4	NCM	N
58	1	12	F	H	11	G	6	Bu	Pr	HW	Ilt	4	2	1	Low	Bd	1/2hr	8	1	156	45	62	78	0.79	18.7	87	42	80	Te	2.5	com	1/2hr	No	6	1	6	NCM	N
59	1	12	F	H	11	G	6	Bu	Pr	HW	Ilt	4	2	1	Low	Bd	1/2hr	8	1	156	45	62	78	0.79	18.7	116	42	90	Te	2.5	com	1/2hr	No	6	1	6	NCM	N
60	1	12	F	H	11	G	6	Bu	Pr	HW	Ilt	4	2	1	Lm	Bd	1/2hr	8	1	156	45	62	78	0.79	18.7	100	48	96	Te	2.5	com	1/2hr	No	6	1	6	NCM	N
61	1	12	F	H	11	G	6	Com W	Pr	HW	Ilt	5	3	2	Lm	Run	1hr	8	1	140	36	63	69	0.69	16	105	54	86	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
62	1	12	M	H	11	G	6	F	Sr	HW	Pr	4	2	2	Low	Sk	1hr	8	1	137	30	54	55	0.9	16	90	54	88	Te	2.8	com	2hr	No	6	1	6	NCM	N
63	1	12	F	H	11	G	6	F	Ilt	HW	Ilt	6	3	2	Low	Sk	1hr	8	1	138	31	54	55	0.9	16.3	200	36	96	Te	2.6	com	3hr	No	5	10mon	5	NCM	MetS
64	2	13	F	H	11	G	6	F	Pr	HW	Pr	1	1	1	Low	Run	1/2hr	8	1/2hr	150	52	95	94	0.9	23	120	48	90	Te	2.8	com	2hr	No	6	1	6	NCM	N
65	1	12	F	H	11	G	6	F	Ilt	HW	Pr	7	5	3	Lm	Sk	1hr	8	1	139	42	55	56	0.9	21.7	130	42	88	Te	3	com	1/2hr	No	6	2	2Yr	NCM	N
66	2	13	M	H	11	G	6	F	Pr	HW	Pr	5	3	2	Low	Sk	1hr	8	1	139	42	86	56	0.9	21.7	120	48	90	Te	3	com	1/2hr	No	6	2	2Yr	NCM	N
67	1	13	F	H	11	G	6	F	Ilt	HW	Ilt	1	0	1	Lm	Run	1/2hr	8	1/2hr	156	40	78	80	0.89	17	160	40	106	Te	2.5	com	1/2hr	No	6	2	6	NCM	MetS
68	1	12	M	H	11	G	6	Fac W	Sr	HW	Ilt	5	2	1	Lm	Run	1hr	8	1	142	35	57	58	0.9	17	140	44	83	Te	2.5	com	1/2hr	No	6	1	6	NCM	N
69	1	12	M	H	11	G	6	Coo	Pr	HW	Pr	5	3	3	Low	Sk	1hr	8	1	141	34	56	57	0.9	17	100	54	96	Te	2.6	com	1/2hr	No	6	1	6	NCM	N

70	2	13	M	H	11	G	7	F	Ilt	HW	Ilt	2	0	1	Lm	Sk	1/2hr	8	1/2hr	146	35	94	92	0.9	17	140	44	100	Te	2.2	com	1/2hr	No	6	2	6	NCM	N
71	2	12	F	H	11	G	6	Com W	Ilt	HW	Pr	4	1	1	Lm	Sk	1hr	8	1	143	46	81	82	0.9	23	160	44	93	Te	2.5	com	2hr	No	1Yr	3	1Yr	NCM	N
72	2	12	M	H	11	G	6	KSRTC D	Sr	HW	Sr	4	2	1	Lm	Run	1hr	8	1	144	40	81	62	0.9	19.3	150	44	96	Te	2.6	com	2hr	No	6	2	6	NCM	N
73	2	13	M	H	11	G	7	F	Sr	HW	Sr	2	1	2	Lm	Bd	1/2hr	8	1	131	25	92	90	0.9	15	120	54	100	Te	2.3	com	1/2hr	No	6	5Yr	6	NCM	N
74	2	12	M	H	11	G	6	Sug Fact	Sr	Coo	Ilt	4	2	2	Lm	Run	1hr	8	1	146	42	78	63	0.9	19.7	80	58	76	Te	2.5	com	2hr	No	1Yr	2	1Yr	NCM	N
75	2	12	F	H	11	G	6	Bu	Ilt	HW	Ilt	6	4	4	Low	Run	1hr	8	1	145	41	82	62	0.9	19.2	100	52	88	Te	2.5	com	1/2hr	No	9	1(1/2)hr	9	NCM	N
76	1	12	F	H	11	G	6	Bu	Ilt	HW	Sr	5	1	1	Low	Run	1hr	8	1	138	36	52	56	0.9	18.9	260	36	106	Te	3.5	com	1/2hr	No	6	2	6	NCM	MetS
77	2	13	M	H	11	G	7	Bu	Pr	HW	Ilt	5	3	2	Low	Run	1hr	8	1	146	42	81	82	0.9	19.7	120	50	83	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
78	2	13	M	H	11	G	7	Bu	Pr	HW	Ilt	5	3	2	Low	Bd	1hr	8	1	145	41	86	62	0.9	19.2	110	54	90	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
79	2	13	F	H	11	G	7	Bu	Pr	HW	Ilt	5	3	2	Low	Bd	1hr	8	1	138	36	84	56	0.9	18.9	120	48	83	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
80	2	13	F	H	11	G	7	Bu	Pr	HW	Ilt	5	3	2	Low	Run	1hr	8	1	146	42	81	83	0.9	19.7	100	52	80	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
81	1	12	F	M	11	G	6	D	Pr	HW	Sr	5	3	2	Lm	Run	1hr	8	1	139	33	64	56	0.9	17.3	120	42	88	Te	2.5	com	1hr	No	1	1(1/2)	1Yr	NCM	N
82	1	11	M	H	11	G	6	Bu	Ilt	HW	Ilt	4	1	1	Low	Sk	1/2hr	8	1	129	24	61	63	0.9	17.2	120	54	83	Te	2.5	com	1/2hr	No	3	3	3	NCM	N
83	1	12	F	H	11	G	6	Sec	Ilt	Cas Fac	Pr	5	2	3	Low	Sk	1hr	8	1	140	34	66	68	0.9	17.1	140	42	100	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
84	2	12	F	H	11	G	6	Bu	Pr	HW	Ilt	5	2	3	Low	S	1hr	8	1	146	42	81	63	0.9	19.7	110	48	80	Te	3.5	com	1/2hr	No	6	2	6	NCM	N
85	1	12	F	H	11	G	6	Fac W	Pr	HW	Pr	6	4	2	Low	Sk	1hr	8	1	138	40	63	63	0.9	21	110	50	80	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
86	1	12	F	H	11	G	6	Fac W	Ilt	Fac W	Ilt	5	3	3	Low	Run	1hr	8	1	135	28	56	53	0.9	15.5	100	54	88	Te	3	com	1/2hr	No	6	2	6	NCM	N
87	1	12	F	H	11	G	6	Bu	Pr	HW	Pr	5	3	3	Low	Sk	1hr	8	1	146	42	62	63	0.9	19.7	100	54	88	Te	2.5	com	1/2hr	No	6	1	6	NCM	N
88	1	13	M	H	11	G	7	Bu	Pr	HW	Pr	5	3	3	Low	Run	1hr	8	1	146	42	62	63	0.9	19.7	95	52	93	Te	2.5	com	1/2hr	No	6	1	6	NCM	N
89	2	13	M	H	11	G	8	Fac W	Pr	HW	Pr	4	2	2	Lm	Jog	1/2hr	9	3	143	51	88	100	0.7	24.9	220	36	100	Te	2.3	com	1/2hr	No	6	2	6	NCM	MetS
90	1	12	F	H	11	G	6	Fac W	Ilt	Fac W	Pr	4	2	2	Low	Sk	1hr	8	1	150	42	68	65	0.9	18.6	100	48	93	Te	3.2	com	1/2hr	No	6	2	6	NCM	N
91	2	13	F	H	11	G	6	F	Ilt	HW	Ilt	4	1	1	Low	Jog	1/2hr	8	1	140	50	95	94	0.9	17	140	44	88	Te	2.5	com	1/2hr	No	6	6	6	NCM	N
92	1	12	M	H	11	G	6	F	Ilt	F	Ilt	6	3	1	Low	Run	1hr	8	1	137	27	68	48	0.9	15	230	35	100	Te	2.6	com	1/2hr	No	6	2	6	NCM	MetS
93	2	12	F	H	11	G	6	D	Pr	HW	Pr	4	1	2	Low	Sk	1/2hr	9	1	143	42	82	65	0.9	19	120	42	90	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
94	1	12	M	H	11	G	7	Com	Sr	Com	Pr	3	0	1	Low	Sk	1hr	8	1	139	29	48	49	0.9	15	150	44	86	Te	2.5	com	2hr	No	4	5Mon	4	NCM	N
95	1	12	M	H	11	G	6	Cy	Sr	HW	Pr	4	2	1	Lm	Run	1hr	8	1	140	30	50	51	0.9	15.3	130	52	80	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
96	1	12	M	H	11	G	6	Fac	Gr	HW	Sr	8	6	5	Lm	Run	1hr	8	1	142	36	52	58	0.89	18	100	48	83	Te	2.5	com	2hr	No	6	1	6	NCM	N
97	2	12	F	H	11	G	6	F	Ilt	HW	Ilt	4	2	2	Low	Sk	1hr	8	1	144	29	81	82	0.62	16	140	42	90	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
98	1	12	F	H	11	G	6	F	Ilt	HW	Ilt	4	2	2	Low	Sk	1hr	8	1	143	42	62	65	0.9	19	100	52	80	Te	3.5	com	1/2hr	No	6	2	6	NCM	N
99	1	12	M	H	11	G	6	Com	Sr	HW	Sr	4	2	2	Low	Sk	1hr	8	1	148	40	61	62	0.9	18.2	110	44	90	Te	2.5	com	1/2hr	No	6	3	6	NCM	N
100	2	12	M	H	11	G	6	F	Pr	F	Pr	5	3	4	Low	Run	1hr	8	1	146	35	81	64	0.9	17.8	120	44	96	Te	3	com	1/2hr	No	6	2	6	NCM	N
101	2	12	M	H	11	G	6	F	Ilt	HW	Ilt	4	2	1	Low	Sk	1hr	8	1	148	40	82	83	0.9	18.2	150	44	86	Te	4	com	2hr	No	1Yr	2	1Yr	NCM	N
102	1	12	F	H	11	G	6	Paint	Sr	HW	Pr	4	2	2	Low	Sw	1/2hr	9	1	146	35	62	63	0.9	17.8	130	52	83	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
103	2	12	M	H	11	G	6	Paint	Sr	HW	Pr	7	2	2	Low	Cc	2hr	8	1	149	36	81	90	69	16.2	150	42	96	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
104	1	12	F	H	11	G	6	Dia W	Pr	Coo	Pr	4	2	2	Low	Sk	1hr	8	1	140	35	43	44	0.9	17.8	110	52	80	Te	2.5	com	1/2hr	No	6	3	6	NCM	N
105	1	12	M	H	11	G	6	C Coo	Sr	HW	Sr	4	2	1	Low	Run	1hr	8	1	148	48	44	45	0.9	21.1	120	54	90	Te	2.5	com	1/2hr	No	7	1(1/2)	7	NCM	N
106	1	12	F	H	11	G	6	Au	Sr	HW	Sr	4	2	2	Low	Sk	1hr	8	1	140	35	45	46	0.9	17.8	80	58	83	Te	2.5	com	2hr	No	10	10Mon	10	NCM	N
107	1	12	M	H	11	G	6	Fac W	Sr	HW	Sr	4	2	1	Low	Run	1hr	9	1	146	40	63	92	0.9	18.7	110	48	93	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
108	2	12	M	H	11	G	6	Fac W	Sr	HW	Pr	5	3	1	Low	Run	1/2hr	9	1/2hr	135	36	82	89	0.9	19.7	120	54	86	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
109	1	12	F	H	11	G	6	F	Ilt	F	Pr	5	3	2	Low	Sk	1hr	8	1	140	35	46	48	0.9	17.8	130	52	88	Te	3	com	1/2hr	No	6	2	6	NCM	N
110	1	12	M	H	11	G	6	Fac W	Pr	HW	Pr	5	4	4	Low	Sk	1/2hr	9	1	140	35	60	67	0.8	17.8	120	56	83	Te	2.8	com	1/2hr	No	6	2(1/2)	6	NCM	N
111	2	12	M	H	11	G	6	Pe	Ilt	Pe	Ilt	5	3	3	Low	Sk	1hr	8	1	150	42	81	83	0.9	18.6	140	48	80	Te	3	com	1/2hr	No	6	2	6	NCM	N
112	1	12	M	H	11	G	6	Bu	Pr	HW	Pr	6	4	3	Low	Cc	2	8	1	146	35	61	72	0.7	17.8	120	44	93	Te	3	com	1/2hr	No	1Yr	1(1/2)	1Yr	NCM	N

113	2	12	M	H	11	G	6	Fac W	Sr	Fac W	Pr	6	4	4	Low	Run	1hr	8	1	148	48	82	84	0.9	21.9	150	42	88	Te	3.6	com	1/2hr	No	6	2	6	NCM	MetS
114	1	12	M	H	11	G	6	Fac	Sr	Hot W	Pr	3	1	1	Low	Sw	1hr	8	1	148	41	63	64	0.9	18.7	100	54	90	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
115	2	12	M	H	11	G	6	Fac W	Pr	Fac W	Pr	3	1	1	Lm	Run	1hr	8	1	152	40	81	83	0.9	17.3	150	52	96	Te	2.6	com	1/2hr	No	6	2	6	NCM	MetS
116	2	12	M	H	11	G	6	Fac	Gr	HW	Sr	4	2	2	Low	Sk	1hr	8	1	147	40	81	84	0.9	18.5	130	58	83	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
117	1	12	M	H	11	G	6	Com	Sr	HW	Pr	4	2	2	Low	Sk	1hr	8	1	147	40	53	54	0.9	18.5	100	54	90	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
118	2	12	M	H	11	G	6	Gou	Sr	HW	Pr	5	4	2	Low	Bd	1/2hr	9	1	146	35	83	92	0.9	17.8	120	52	83	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
119	1	12	M	H	11	G	6	Fac W	Pr	HW	Pr	5	2	2	Low	Run	1hr	9	1	148	40	62	69	0.69	18.2	100	54	88	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
120	2	12	F	H	11	G	6	Bu	Ilt	HW	Pr	4	2	1	Low	Sk	1hr	8	1	152	40	82	83	0.9	17.3	140	50	93	Te	3	com	1/2hr	No	6	2	6	NCM	N
121	1	11	F	H	11	G	5	Hot W	Pr	HW	Pr	5	2	2	Low	Sw	1/2hr	8	1	142	40	64	66	0.89	17.3	220	38	100	Te	2.4	com	1/2hr	No	6	2	6	NCM	MetS
122	1	12	M	H	11	G	7	Coo	Ilt	Coo	Sr	4	2	2	Low	Sk	1hr	8	1/2hr	146	41	63	61	0.9	19.2	130	52	90	Te	2.5	com	1/2hr	No	1Yr	2	1Yr	NCM	N
123	2	13	M	H	11	G	7	Veg S	Pr	HW	Pr		3	2	Low	Run	1/2hr	8	1/2hr	149	52	95	94	0.9	23	220	36	100	Te	2.6	com	1/2hr	No	6	2	6	NCM	MetS
124	1	12	F	H	11	G	6	Bu	Ilt	Fac W	Pr	3	2	2	Low	Sk	1hr	8	1	140	40	62	63	0.9	17	115	52	80	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
125	1	12	M	M	11	G	7	F	Ilt	HW	Ilt	3	1	1	Low	Run	1hr	8	1	143	40	64	64	0.9	19.6	125	54	83	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
126	2	13	M	H	11	G	8	Fac W	Pr	HW	Pr	4	2	2	Lm	Sk	1/2hr	8	1/2hr	143	40	95	94	0.9	19.6	145	50	93	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
127	2	12	M	H	11	G	7	D	Sr	HW	Pr	5	2	1	Low	Run	1hr	8	1	145	45	82	86	0.9	21.8	180	38	96	Te	3.2	com	1/2hr	No	6	2	6	NCM	MetS
128	1	12	M	H	11	G	6	Fac W	Pr	HW	Pr	6	3	2	Low	Cc	2hr	8	1	150	41	62.8	71	0.87	16.8	150	46	90	Te	2.8	com	1/2hr	No	6	1	6	NCM	MetS
129	2	13	M	M	11	G	7	Coo	Pr	HW	Pr	7	4	3	Low	cc	1hr	8	1	155	44	95	94	0.9	18.3	160	44	88	Te	2.2	com	1/2hr	No	6	2	6	NCM	N
130	1	12	M	H	11	G	7	Coo	Ilt	Coo	Sr	4	1	1	Low	Run	1hr	8	1	141	35	41	41	0.9	17.6	140	48	83	Te	2.7	com	1/2hr	No	6	2	6	NCM	N
131	1	12	M	H	11	G	7	Fac W	Gr	Fac W	Sr	3	1	1	Low	Run	1hr	8	1	140	33	55	56	0.9	17.3	130	52	90	Te	3	com	1/2hr	No	6	2	6	NCM	N
132	2	13	M	H	11	G	7	Bu	Pr	HW	Pr	5	4	2	Low	Cc	1/2hr	8	1/2hr	149	52	87	94	0.9	23	145	40	96	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
133	2	13	M	H	11	G	7	Fac W	Pr	Fac W	Pr	5	3	3	Lm	Sw	1/2hr	8	1/2hr	149	50	88	94	0.9	22.7	135	56	80	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
134	2	13	M	H	11	G	7	T	Pr	HW	Pr	6	2	2	Lm	Sk	1/2hr	8	1/2hr	150	52	84	94	0.9	23	120	52	86	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
135	2	13	F	H	11	G	7	Fac W	Sr	HW	Sr	7	4	3	Lm	Sw	1/2hr	8	1/2hr	143	44	85	94	0.9	21.5	130	52	90	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
136	1	12	M	H	11	G	6	Bu	Pr	HW	Pr	5	2	2	Low	Cc	2hr	8	1	120	36	63.8	68	0.9	16.5	135	50	90	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
137	2	12	F	H	11	G	6	Bu	Sr	HW	Sr	3	1	1	M	Run	1hr	8	1	146	36	82	92	0.9	17.1	200	38	106	Te	2.6	com	2hr	No	6	2	6	NCM	MetS
138	1	12	F	H	11	G	7	Fac W	Gr	Coo	Sr	4	2	2	Low	Run	1hr	8	1	150	40	62	63	0.9	17.7	90	58	83	Te	3	com	1/2hr	No	6	2	6	NCM	MetS
139	2	12	F	H	11	G	6	Bu	Sr	HW	Sr	5	3	3	Lm	Run	1hr	7	1/2hr	145	40	81	84	0.82	19	200	36	100	Te	2.5	com	2hr	No	6	2	6	NCM	N
140	1	12	F	H	11	G	7	Bu	Pr	Com	Sr	2	1	1	Low	Sk	1hr	8	1	144	38	62	63	0.9	18.3	100	52	80	Te	3.2	com	1/2hr	No	6	2	6	NCM	N
141	1	12	F	H	11	G	6	F	Pr	HW	Pr	5	2	2	Lm	Sk	1/2hr	9	1/2hr	145	40	62	65	0.95	19	95	58	90	Te	2.2	com	1/2hr	No	6	2	6	NCM	N
142	1	12	F	H	11	G	7	Com	Gr	HW	Sr	5	3	1	Low	Sk	1hr	8	1	130	35	58	60	0.9	17.8	115	56	83	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
143	1	12	F	H	11	G	6	Com	Pr	HW	Pr	5	3	2	M	Sk	1hr	8	1/2hr	148	38	63	67	0.9	17.3	95	58	86	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
144	2	12	F	H	11	G	7	D	Sr	HW	Gr	6	4	1	Lm	Sk	1hr	8	1	130	35	81	53	0.9	17.8	140	44	90	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
145	2	12	M	H	11	G	6	D	Pr	HW	Pr	4	2	2	Low	Cc	2hr	8	1/2hr	148	38	81	67	0.9	17.3	130	54	90	Te	2.7	com	1/2hr	No	6	2	6	NCM	N
146	1	12	M	H	11	G	7	Gold S	Sr	Gold S	Sr	5	3	2	Low	Sk	1hr	8	1	136	29	53	54	0.9	15.7	100	48	83	Te	3.2	com	1/2hr	No	6	2	6	NCM	N
147	1	11	M	H	11	G	5	Fac W	Pr	HW	Pr	5	2	2	Low	Run	1/2hr	8	1/2hr	140	30	61	72	0.84	15.3	120	50	93	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
148	1	12	M	H	11	G	6	Fac W	Pr	HW	Pr	4	2	1	Low	Cc	2hr	8	1	148	32	63	68	0.9	16.2	115	50	80	Te	2.7	com	1/2hr	No	6	2	6	NCM	N
149	2	13	M	H	11	G	7	F	Sr	F	Sr	4	2	1	Lm	Sk	1/2hr	8	1/2hr	155	44	95	94	0.9	18.3	100	54	90	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
150	1	12	F	H	11	G	7	Fac W	Sr	Fac W	Ilt	4	2	1	Low	Sk	1/2hr	8	1	145	38	63	65	0.9	17.6	125	56	80	Te	2.5	com	1/2hr	No	6	1(1/2)	6	NCM	N
151	2	13	F	H	11	G	7	Hot W	Pr	Fac W	Pr	5	3	2	Lm	Sk	1/2hr	8	1/2hr	155	44	87	94	0.9	18.3	150	48	80	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
152	1	12	F	H	11	G	7	Fac W	Pr	Fac W	Sr	5	2	1	Low	Sk	1/2hr	9	1/2hr	147	38	82	83	0.9	17.5	140	46	88	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
153	1	12	F	H	11	G	7	Paint	Sr	HW	Sr	5	3	3	Low	Sk	1hr	8	1	145	38	63	64	0.9	17.6	100	54	90	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
154	2	12	M	H	11	G	7	Fac W	Sr	Fac W	Pr	4	3	3	Low	Sw	1hr	8	1	147	32	81	84	0.9	15.8	110	50	86	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
155	2	12	F	H	11	G	7	Fac W	Pr	Sc At	Pr	5	3	3	Low	Sk	1/2hr	9	1/2hr	145	38	82	72	0.86	17.6	100	52	90	Te	2.3	com	1/2hr	No	6	1(1/2)	6	NCM	N
156	2	13	M	H	11	G	7	F	Pr	HW	Pr	5	2	2	Lm	Bd	1/2hr	8	1/2hr	155	44	92	92	0.89	18.3	120	48	88	Te	2.5	com	1/2hr	No	6	2	6	NCM	N

157	2	11	F	H	11	G	5	F	Pr	HW	Pr	5	2	3	Lm	Sk	1/2hr	8	1	140	30	75	73	0.84	15.3	100	48	86	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
158	2	11	M	H	11	G	5	F	Pr	HW	Pr	5	2	1	Lm	Run	1/2hr	8	1/2hr	141	40	77	68	0.9	20.8	165	38	90	Te	2.3	com	1/2hr	No	6	2	6	NCM	MetS
159	1	11	M	H	11	G	5	Bu	Pr	HW	Pr	5	3	2	Lm	Bd	1/2hr	8	1/2hr	140	30	61	72	0.89	15.3	120	44	93	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
160	2	12	M	H	11	G	6	Bu	Pr	HW	Pr	1	1	1	Low	Cc	2hr	8	1	140	25	82	72	0.9	20.8	165	40	80	Te	2.5	com	1/2hr	No	6	2	6	NCM	MetS
161	2	11	M	H	2	G	5	F	Pr	HW	Pr	2	1	1	Lm	Sk	1/2hr	8	1	141	35	75	77	0.9	16	95	48	75	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
162	2	11	M	H	11	G	5	F	Pr	HW	Pr	5	2	2	Low	Sk	1/2hr	8	1/2hr	140	35	80	75	0.82	20.8	170	38	90	Te	2.3	com	1/2hr	No	6	2	6	NCM	MetS
163	2	11	F	H	11	G	5	F	Pr	HW	Pr	4	1	2	Low	Sk	1/2hr	8	1	142	35	75	77	0.9	16	105	44	100	Te	2.3	com	1/2hr	No	6	3	6	NCM	N
164	1	11	F	H	11	G	5	Fac W	Pr	HW	Pr	5	2	3	Low	Sk	1/2hr	8	1	140	32	56	58	0.9	15	190	38	93	Te	2.5	com	1/2hr	No	6	2	6	NCM	MetS
165	2	11	F	H	11	G	5	F	Pr	HW	Pr	5	3	2	Lm	Run	1/2hr	8	1	140	30	75	67	0.9	15	100	48	80	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
166	1	11	M	H	2	G	5	Bu	Pr	HW	Pr	3	1	1	Low	Sw	1/2hr	8	1	143	35	62	69	0.9	17	100	48	100	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
167	1	11	M	H	11	G	5	Fac W	Pr	HW	Pr	4	2	1	Lm	Bd	1/2hr	8	2	143	38	76	70	0.88	17.3	175	38	88	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
168	2	11	M	H	2	G	5	Fac W	Pr	HW	Pr	3	2	2	Low	Run	1/2hr	8	1/2hr	142	35	75	70	0.88	15	85	48	75	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
169	2	11	M	H	2	G	5	Shop	Pr	HW	Pr	5	2	2	Low	Run	1/2hr	8	1/2hr	142	32	75	70	0.8	15	160	38	90	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
170	2	13	M	H	11	G	7	Au	Sr	HW	Pr	6	3	3	Lm	Cc	1hr	8	2	155	44	96	94	0.9	18.3	100	52	80	Te	2.4	com	1/2hr	No	7	2	7	NCM	N
171	1	13	F	H	11	G	8	F	Pr	HW	Pr	3	2	2	Lm	Run	1/2hr	8	2	156	43	76	78	0.9	18.3	195	35	100	Te	2.3	com	1/2hr	No	6	2	6	NCM	MetS
172	1	13	M	M	11	G	8	Bu	Pr	HW	Pr	7	5	5	Lm	Jog	1/2hr	8	3	155	44	64	67	0.9	18.3	110	44	83	Te	2.7	com	1/2hr	No	6	2	6	NCM	N
173	1	13	F	H	11	G	8	Shop	Pr	HW	Pr	5	3	3	Lm	Jog	1/2hr	8	2	156	43	76	77	0.9	18.3	180	38	100	Te	2.3	com	1/2hr	No	6	2	6	NCM	MetS
174	1	13	F	H	11	G	8	Fac W	Pr	HW	Pr	3	2	2	Lm	Jog	1/2hr	8	2	155	44	65	67	0.9	18.3	155	44	95	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
175	2	13	F	H	11	G	8	F	Pr	HW	Pr	6	5	3	Lm	Run	1/2hr	8	2	155	44	87	83	0.9	18.3	150	48	90	Te	2.3	com	1/2hr	No	6	1	6	NCM	N
176	1	13	F	M	11	G	8	Shop	Ilt	HW	Ilt	5	3	3	Lm	Bd	1/2hr	8	3	153	44	62	66	0.9	18.3	100	54	80	Te	2.7	com	1/2hr	No	6	2	6	NCM	N
177	1	13	F	H	11	G	8	Fac W	Pr	HW	Pr	5	3	3	Lm	Jog	1/2hr	9	1	155	45	64	67	0.9	18.7	100	52	90	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
178	1	13	F	H	11	G	8	Fac W	Pr	HW	Pr	5	3	3	Lm	Sw	1/2hr	8	2	154	44	63	67	0.9	18.5	115	48	80	Te	2.7	com	2hr	No	6	3	6	NCM	N
179	2	11	F	H	11	G	5	Fac W	Pr	HW	Pr	4	2	1	Lm	Bd	1/2hr	8	1	143	43	76	69	0.9	21.8	190	35	100	Te	2.8	com	1/2hr	No	6	2	6	NCM	MetS
180	2	11	M	H	11	G	5	Au	Sr	HW	Sr	4	2	2	Lm	Bd	1/2hr	8	1/2hr	144	37	75	72	0.86	17.3	100	52	83	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
181	2	11	F	H	11	G	5	Fac W	Pr	HW	Pr	6	3	2	Lm	Bd	1hr	9	2	143	38	75	73	0.8	17.3	120	44	88	Te	2.8	com	2hr	No	7	2	7	NCM	N
182	1	11	M	H	11	G	5	Fac W	Sr	HW	Sr	4	2	1	Low	Bd	1/2hr	8	2	144	37	62	68	0.6	17.3	135	48	90	Te	2.5	com	1/2hr	No	6	1(1/2)	6	NCM	N
183	2	11	M	H	11	G	5	Fac W	Sr	HW	Pr	4	2	1	Lm	Cc	1hr	8	2	143	38	76	68	0.9	17.3	185	37	95	Te	2.8	com	1/2hr	No	6	2(1/2	6	NCM	MetS
184	2	11	M	H	11	G	5	Au	Ilt	HW	Ilt	4	2	1	Lm	Bd	1/2hr	9	2	143	38	75	65	0.9	17.3	175	38	90	Te	2.5	com	1/2hr	No	6	2	6	NCM	MetS
185	1	11	M	M	11	G	5	Au	Sr	HW	Sr	4	2	2	Lm	Bd	1/2hr	10	2	144	37	62	69	0.9	17.3	115	44	83	Te	2.5	com	1/2hr	No	7	2	7	NCM	N
186	1	11	F	H	11	G	5	Fac W	Sr	HW	Sr	4	2	1	Lm	Bd	1/2hr	9	2	144	37	62	69	0.9	17.3	90	50	83	Te	2.3	com	1hr	No	7	2(1/2)	7	NCM	N
187	1	11	M	H	11	G	5	Bu	Sr	HW	Pr	4	2	1	Lm	Bd	1/2hr	9	1	143	38	62	69	0.9	17.3	105	52	78	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
188	1	11	F	H	11	G	5	Fac W	Sr	HW	Pr	6	3	1	Lm	Bd	1hr	8	2	143	38	32	73	0.84	17.3	108	48	80	Te	2.4	com	1/2hr	No	7	2	7	NCM	N
189	2	13	M	H	11	G	8	Fac W	Sr	HW	Sr	4	2	2	M	Sw	1hr	8	1	143	38	90	100	0.87	21.8	100	54	93	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
190	1	13	M	M	11	G	8	P	Pr	HW	Pr	7	3	3	Lm	Run	1hr	8	2	144	37	80	102	0.8	17.3	120	44	95	Te	2.6	com	1/2hr	No	6	3	6	NCM	N
191	2	13	M	M	11	G	8	Sh K	Pr	HW	Pr	5	3	3	Lm	Sw	1/2hr	8	3	144	37	82	100	0.87	17.3	125	46	98	Te	2.7	com	1/2hr	No	6	2	6	NCM	N
192	1	13	M	M	11	G	8	Sh K	Pr	HW	Pr	5	3	3	Lm	Sk	1/2hr	8	3	144	37	69	98	0.86	17.3	100	52	90	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
193	2	13	M	H	11	G	8	Bu	Sr	HW	Pr	4	2	2	Lm	Run	1/2hr	9	3	143	38	84	102	0.86	17.3	95	54	83	Te	2.4	com	1/2hr	No	6	2	6	NCM	N
194	1	13	M	H	11	G	8	F	Pr	HW	Pr	4	1	1	Lm	Jog	1/2hr	8	3	144	36	72	102	0.89	17.3	120	48	90	Te	2.5	com	1/2hr	No	6	3	6	NCM	N
195	1	13	M	H	11	G	8	F	Pr	HW	Pr	3	1	1	Low	Run	1/2hr	8	2	144	37	76	108	0.87	17.8	100	54	88	Te	2.7	com	1/2hr	No	6	2(1/2)	6	NCM	N
196	1	13	M	H	11	G	8	F	Pr	HW	Pr	4	2	2	Lm	Jog	1/2hr	9	3	144	37	71	102	0.83	17.8	105	52	90	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
197	1	13	F	H	11	G	8	Bu	Pr	HW	Pr	4	2	2	Lm	Sk	1/2hr	8	1	153	44	62	66	0.9	18.3	100	48	75	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
198	1	14	M	H	11	G	8	Bu	Pr	HW	Pr	4	2	2	Lm	Run	1/2hr	8	1	155	45	64	67	0.9	18.7	105	52	90	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
199	2	14	F	H	11	G	9	Bu	Pr	HW	Pr	4	2	2	Lm	Bd	1/2hr	8	1	154	44	87	84	0.9	18.5	110	50	95	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
200	1	13	F	H	11	G	8	Bu	Pr	HW	Pr	4	2	2	Lm	Bd	1/2hr	8	1	143	38	62	69	0.9	17.3	110	54	100	Te	2.5	com	1/2hr	No	6	2	6	NCM	N

201	2	11	M	H	11	G	5	Bu	Pr	HW	Pr	4	2	2	Lm	Run	1/2hr	8	1	144	37	78	72	0.86	17.3	128	50	90	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
202	1	14	M	H	12	G	9	Bu	Sr	HW	Pr	5	1	1	M	Cc	1hr	9	1	147	35	32	34	0.9	16.2	100	64	120	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
203	1	13	F	H	12	G	9	Bu	Pr	HW	Ilt	4	2	1	Low	Bd	1hr	9	1(1/2)	155	37	64	66	0.88	15.4	100	64	120	Te	2.5	com	2hr	No	6	2	6	NCM	N
204	1	14	F	H	12	G	9	W	Pr	HW	Pr	5	3	1	Low	Cc	2hr	7	1	152	40	30	34	0.8	17.3	110	52	93	Te	2.5	com	2hr	No	6	2	6	NCM	N
205	2	14	F	H	11	G	9	W	Pr	HW	Pr	5	3	1	Lm	Bd	1/2hr	8	1	144	37	87	89	0.9	17.8	105	52	80	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
206	1	14	F	H	12	G	8	Bu	Sr	HW	Pr	6	4	2	UM	Sk	1/2hr	8	1	152	42	30	42	0.7	18.2	100	64	120	Te	3	com	1hr	No	6	1	6	NCM	N
207	2	15	F	H	12	G	9	F	Sr	HW	Pr	4	2	2	Lm	Sw	1hr	7	1	153	50	96	98	0.9	21.4	85	50	95	Te	2	com	2hr	No	6	1	6	NCM	N
208	1	14	F	H	12	G	9	F	Sr	HW	Pr	5	2	2	M	Sk	1hr	9	1	155	45	32	45	0.7	20	120	48	95	Te	2.6	com	2hr	No	6	2	6	NCM	N
209	2	14	F	H	12	G	9	Hepler	Sr	HW	Ilt	5	2	1	M	Sw	1hr	8	1/2hr	145	35	88	90	0.87	16.6	100	64	120	Te	2.5	com	2hr	No	6	2	6	2	N
210	1	15	F	H	12	G	9	Bu	Sr	HW	Pr	4	2	2	Lm	Bd	1hr	7	1	155	40	70	65	0.9	16.6	95	52	85	Te	2.5	com	2hr	No	6	1	6	NCM	N
211	2	14	F	H	12	G	9	F	Pr	HW	Pr	7	5	1	Lm	Bd	1hr	8	1	149	35	87	89	0.9	15.8	100	64	120	Te	3	com	2hr	No	6	1(1/2)	6	NCM	N
212	2	15	M	H	12	G	8	Cy	Sr	HW	Sr	6	3	2	Lm	Cc	1 hr	8	1	165	55	98	99	0.9	20.2	75	56	85	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
213	2	15	M	H	12	G	9	F	Sr	HW	Sr	4	2	1	Lm	Bd	1hr	9	1	150	45	86	89	0.88	20	100	64	120	Te	3	com	1/2hr	No	6	1	6	NCM	N
214	1	15	M	H	12	G	10	Fac W	Pr	HW	Pr	6	2	1	M	Cc	1hr	8	1	160	45	70	72	0.9	17.6	95	54	80	Te	3	com	1/2hr	No	6	1	6	NCM	N
215	2	14	M	H	12	G	8	F	Pr	HW	Pr	4	2	1	Lm	Cc	1hr	8	1	145	48	87	88	0.88	22.8	100	64	120	Te	3	com	1/2hr	No	6	1	6	NCM	N
216	1	14	M	H	12	G	8	F	Pr	HW	Ilt	6	3	3	Lm	Cc	1hr	9	1/2hr	150	43	32	34	0.9	19.1	100	64	120	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
217	1	14	F	H	12	G	8	Wel	Pr	HW	Sr	5	3	2	Lm	Sk	1/2hr	8	1	142	40	30	34	0.88	19.8	115	56	80	Te	2.5	com	1/2hr	No	6	6	6	NCM	N
218	1	15	M	H	12	G	10	F	Pr	HW	Sr	4	3	1	Lm	Sk	1hr	8	1	150	45	72	74	0.9	20	110	52	83	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
219	1	14	F	H	12	G	8	Bu	Sr	HW	Pr	4	2	1	Lm	Bd	1/2hr	9	1	157	45	47	48	0.9	18.3	100	64	120	Te	2.1	com	2hr	No	6	1	6	NCM	N
220	1	15	F	H	12	G	9	Bu	Sr	HW	Pr	5	3	1	Lm	Bd	1hr	7	1	161	45	70	71	0.9	17.4	110	54	90	Te	2.5	com	2hr	No	6	1	6	NCM	N
221	1	14	F	H	12	G	9	Com	Sr	F	Pr	4	2	2	Lm	Bd	1/2hr	9	1	141	30	65	67	0.9	15	120	48	95	Te	3	com	2hr	No	6	2	6	NCM	N
222	1	15	F	H	12	G	9	Car D	Sr	HW	Pr	7	3	3	Lm	Run	1hr	7	1	147	30	70	65	0.9	13.9	85	56	75	Te	3	com	2hr	No	6	2	6	NCM	N
223	1	14	M	H	12	G	9	F	Pr	F	Pr	5	2	2	Lm	Bd	1/2hr	8	1	140	35	30	32	0.9	17.9	100	64	120	Te	3	com	2hr	No	6	2	6	NCM	N
224	1	15	M	H	12	G	10	F	Pr	HW	Pr	5	2	1	M	Cc	1hr	8	1	154	45	70	72	0.9	19	100	52	80	Te	3	com	2hr	No	6	2	6	NCM	N
225	1	15	F	H	12	G	9	Self E	Pr	HW	Ilt	5	3	1	Low	Sw	1hr	7	1	161	48	70	67	0.9	18.5	95	48	83	Te	2.5	com	2hr	No	6	1(1/2)	6	NCM	N
226	1	15	M	H	4	P	10	C	Sr	HW	Sr	5	3	3	Lm	Cc	1hr	8	1	162	42	68	70	0.9	16	125	48	90	Te	2.5	com	2hr	No	6	2	6	NCM	N
227	1	15	M	H	4	P	10	F	Pr	HW	Pr	6	3	1	Lm	Cc	1hr	8	1	147	38	70	72	0.9	17.6	100	52	83	Te	2.5	com	2hr	No	6	1(1/2)	6	NCM	N
228	1	13	M	H	12	G	8	F	Pr	F	Pr	6	2	2	Lm	Cc	1hr	9	1	140	30	65	67	0.9	15.3	75	40	100	Te	2.5	com	2hr	No	6	6Mon	6	NCM	N
229	1	13	M	H	12	G	8	F	Pr	HW	Pr	5	2	2	Lm	Bd	1/2hr	9	1	135	42	65	66	0.9	23	150	36	105	Te	2.5	com	2hr	No	6	2	6	NCM	MetS
230	1	13	F	H	12	G	8	F	Sr	F	Pr	7	3	2	Lm	Cc	1hr	9	1/2hr	146	65	66	30	0.9	12.6	130	44	100	Te	2.5	com	2hr	No	6	2	6	NCM	N
231	2	14	F	H	12	G	8	Gou	Pr	HW	Ilt	4	2	2	M	Bd	1/2hr	9	1	140	45	87	88	0.9	23	120	44	105	Te	2	com	1/2hr	No	6	2	6	NCM	N
232	2	14	M	H	12	G	8	C	Gr	HW	Gr	4	2	1	Lm	Bd	1/2hr	8	1	142	42	89	90	0.8	20.8	95	54	78	Te	2.4	com	1/2hr	No	6	2	6	NCM	N
233	1	13	F	H	12	G	8	Gou	Ilt	HW	Ilt	5	2	3	M	Sw	1/2hr	9	1	132	63	65	34	0.9	20.1	105	48	80	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
234	1	15	M	H	12	G	9	W	Pr	HW	Sr	4	2	2	Lm	Run	1hr	8	1	158	47	72	74	0.9	18.8	100	48	95	Te	2.2	com	1/2hr	No	7	1(1/2)	7	NCM	N
235	1	15	M	H	12	G	9	Gou	Sr	HW	Sr	4	2	1	Lm	Cc	1hr	7	1	148	56	70	72	0.9	25.6	128	46	100	Te	2	com	1/2hr	No	6	2	6	NCM	N
236	1	15	M	H	12	G	10	Gou	Pr	HW	Sr	5	2	2	Lm	Cc	1hr	8	1	155	56	70	72	0.9	23.3	105	50	78	Te	2.2	com	1/2hr	No	5	1(1/2)	5	NCM	N
237	2	14	F	H	12	G	8	Gou	Pr	HW	Ilt	5	3	2	Lm	Bd	1/2hr	9	1	138	39	87	88	0.9	20.5	80	56	83	Te	2	com	1/2hr	No	5	1(1/2)	5	NCM	N
238	1	14	M	H	12	G	8	Gou	Pr	HW	Ilt	5	1	2	Lm	Bd	1/2hr	8	1	140	39	66	68	0.9	19.9	98	48	80	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
239	1	15	M	H	12	G	10	F	Pr	F	Pr	6	3	1	Lm	Cc	1hr	7	1	158	40	70	72	0.9	16	135	42	95	Te	2.3	com	1hr	No	7	2	7	NCM	N
240	1	15	M	H	12	G	9	F	Pr	HW	Pr	6	3	3	Lm	Cc	1hr	8	1	155	45	72	76	0.9	18.7	166	37	105	Te	2.5	com	2hr	No	6	2	6	NCM	MetS
241	1	14	M	H	12	G	10	Bu	Pr	W	Pr	5	2	2	Lm	Cc	1hr	8	1	139	38	65	69	0.9	20	85	52	70	Te	2.7	com	1/2hr	No	1Yr	1	1Yr	NCM	N
242	1	14	M	H	12	G	8	L	Sr	F	Pr	5	3	3	Lm	Cc	1hr	8	1	135	38	64	67	0.9	20.9	90	48	75	Te	2.5	com	1/2hr	No	4	1	4	NCM	N
243	1	15	F	H	12	G	9	F	Pr	HW	Pr	6	4	3	Lm	Bd	1hr	7	1	146	40	68	66	0.9	18.8	93	45	80	Te	2.5	com	2hr	No	6	1	6	NCM	N
244	2	14	M	H	12	G	8	F	Sr	F	Pr	4	2	1	Lm	Cc	1hr	8	1	138	40	88	98	0.86	21	120	44	95	Te	2.5	com	2hr	No	6	1(1/2)	6	NCM	N

245	2	14	F	H	12	G	8	F	Pr	F	Ilt	5	3	3	Lm	Bd	1hr	9	1	140	35	88	89	0.9	17.9	100	52	75	Te	2.5	com	2hr	No	6	2	6	NCM	N
246	1	13	F	H	13	G	7	Fac W	Pr	F	Ilt	7	5	2	Low	Run	1/2hr	9	1	148	40	28	30	0.9	16	85	60	70	Te	2.5	com	2hr	No	6	2	6	NCM	N
247	1	13	F	H	13	G	7	Bu	Pr	HW	Ilt	7	4	2	Low	Cc	1hr	9	1	152	39	71	72	0.9	16.9	144	40	100	Te	2.5	com	2hr	No	6	2	6	NCM	MetS
248	1	14	M	H	12	G	9	Gou	Pr	HW	Ilt	5	3	2	Lm	Run	1hr	8	1	135	38	62	69	0.89	20.9	90	54	95	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
249	1	15	F	H	12	G	10	Coo	Ilt	HW	Ilt	6	4	3	Low	Bd	1hr	7	1	143	28	62	68	0.9	13.7	128	44	93	Te	2.5	com	1/2hr	No	6	3	6	NCM	N
250	1	15	M	H	12	G	10	F	Gr	HW	Sr	5	3	1	Lm	Cc	1hr	7	1	156	56	64	74	0.9	23	83	54	75	Te	2.4	com	1/2hr	No	6	2	6	NCM	N
251	2	14	M	H	12	G	9	F	Pr	F	Pr	3	0	1	Lm	Bd	1/2hr	8	1	148	35	87	97	0.78	16	105	45	87	Te	2.5	com	2hr	No	6	1	6	NCM	N
252	2	15	F	H	12	G	10	Job	Sr	HW	Sr	6	2	2	Lm	Bd	1hr	7	1	142	25	98	99	0.9	24	145	38	105	Te	2.5	com	2hr	No	6	2	6	NCM	MetS
253	1	14	F	H	12	G	8	Bu	Sr	HW	Pr	4	2	1	Lm	Bd	1/2hr	9	1	162	45	66	67	0.9	17.1	95	52	85	Te	3.5	com	2hr	No	6	2	6	NCM	N
254	2	15	M	H	12	G	10	W	Pr	HW	Ilt	4	2	2	Lm	Cc	1hr	7	1	161	45	97	98	0.9	23.7	75	58	80	Te	3.5	com	1/2hr	No	6	2	6	NCM	N
255	1	15	M	H	12	G	10	W	Pr	HW	Pr	6	4	4	Lm	Cc	1hr	8	1	162	40	28	72	0.9	17.5	90	54	78	Te	2.5	com	1hr	No	6	1	6	NCM	N
256	1	15	M	H	12	G	10	Bu	Pr	HW	Sr	4	2	2	Lm	Cc	1hr	8	1	155	50	70	72	0.9	20.8	130	44	85	Te	2.5	com	1hr	No	11	1	11	NCM	N
257	2	14	M	H	12	G	8	F	Sr	F	Pr	6	2	1	Low	Bd	1/2hr	9	1	140	40	87	98	0.9	20.4	145	40	100	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
258	1	15	M	H	12	G	10	La	Ilt	HW	Ilt	4	3	2	Lm	Run	1hr	8	1	140	50	70	72	0.9	25.5	98	45	80	Te	2.5	com	1/2hr	No	6	6Mon	6	NCM	N
259	2	15	M	M	4	P	10	W	Ilt	HW	Ilt	5	3	3	Lm	Run	1hr	8	1	160	43	90	90	0.9	16.8	85	48	70	Te	2.5	com	1hr	No	6	2	6	NCM	N
260	1	15	M	M	4	P	10	W	Ilt	HW	Ilt	5	3	2	Low	Run	1hr	8	1	150	49	70	72	0.9	21.8	100	52	78	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
261	1	15	F	H	12	G	10	Mec	Sr	HW	Sr	5	3	1	M	Sk	1hr	7	1	145	48	82	84	0.9	22.8	130	44	95	Te	2.3	com	1/2hr	No	6	6Mon	6	NCM	N
262	2	15	M	H	12	G	10	Gou	Sr	HW	Pr	4	2	1	Lm	Cc	1hr	8	1	168	80	96	98	0.9	28.3	168	36	110	Te	2.5	com	1/2hr	No	7	1(1/2)	7	NCM	MetS
263	1	15	F	H	12	G	10	Gou	Pr	HW	Pr	6	4	3	Lm	Sk	1hr	7	1	143	35	65	66	0.9	17.1	95	48	80	Te	2.4	com	1/2hr	No	6	2	6	NCM	N
264	1	15	M	H	12	G	10	F	Sr	F	Sr	4	1	1	Lm	Sk	1/2hr	7	1	148	50	70	72	0.9	22.8	100	52	85	Te	2.3	com	1hr	No	6	2	6	NCM	N
265	1	15	F	H	12	G	10	Gou	Sr	HW	Sr	5	2	1	Lm	Bd	1hr	7	1	158	58	74	76	0.9	23.2	100	54	75	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
266	1	12	F	H	12	G	8	Bu	Pr	F	Ilt	4	2	1	Low	Bd	1/2hr	9	1	150	30	65	32	0.9	17.8	130	42	83	Te	2.5	com	2hr	No	6	2	6	NCM	N
267	1	13	F	H	12	G	8	W	Pr	F	Ilt	5	3	2	Low	Bd	1hr	9	1	146	40	65	68	0.9	18.8	78	50	80	Te	2.5	com	2hr	No	6	2	6	NCM	N
268	1	14	F	H	12	G	8	W	Pr	F	Ilt	5	3	3	Low	Bd	1/2hr	9	1	138	38	28	30	0.9	18	105	56	95	Te	2.5	com	2hr	No	6	2	6	NCM	N
269	1	13	F	H	12	G	8	W	Sr	F	Ilt	5	3	2	Low	Bd	1/2hr	9	1	140	26	64	67	0.9	13.3	115	50	78	Te	2.5	com	2hr	No	6	2	6	NCM	N
270	2	14	F	H	12	G	8	W	Pr	F	Pr	4	2	2	Low	Bd	1/2hr	9	1	130	45	98	99	0.9	20.7	120	46	95	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
271	1	14	F	H	12	G	8	W	Pr	F	Ilt	4	3	3	Low	Bd	1/2hr	8	1	141	37	65	32	0.9	18.6	95	56	80	Te	2.5	com	2hr	No	6	2	6	NCM	N
272	1	14	F	H	12	G	9	F	Pr	HW	Ilt	4	2	2	Lm	Bd	1/2hr	9	1	148	28	66	30	0.9	12.8	118	46	88	Te	2.5	com	2hr	No	6	2	6	NCM	N
273	1	15	M	H	4	P	10	W	Pr	HW	Pr	4	2	2	Lm	Cc	1hr	8	1	157	40	65	72	0.9	16.2	88	46	70	Te	2.5	com	2hr	No	6	2	6	NCM	N
274	1	15	M	H	12	G	9	Bu	Ilt	HW	Ilt	5	2	1	Lm	Cc	1hr	8	1	155	45	70	72	0.9	18.7	128	46	90	Te	2.5	com	2hr	No	6	2	6	NCM	N
275	1	15	M	H	12	G	9	Bu	Pr	HW	Pr	6	4	4	Lm	Run	1hr	8	1	148	30	72	74	0.9	13.7	128	47	88	Te	2.5	com	2hr	No	6	1	6	NCM	N
276	2	14	M	H	12	G	9	F	Gr	G	Gr	5	3	2	Lm	Cc	1hr	9	1	162	47	89	90	0.9	17.1	122	47	87	Te	2.5	com	2hr	No	6	1	6	NCM	N
277	1	15	F	H	12	G	9	F	Ilt	HW	Ilt	6	2	2	Lm	Sk	1hr	8	1	140	30	65	68	0.9	15.3	125	50	98	Te	2.5	com	1hr	No	6	1	6	NCM	N
278	1	15	M	H	12	G	10	W	Pr	HW	Pr	4	2	2	Lm	Bd	1hr	8	1	162	45	70	72	0.9	17.1	105	48	80	Te	2.5	com	1hr	No	6	2	6	NCM	N
279	2	15	M	H	12	G	10	L	Ilt	HW	Sr	6	3	3	Low	Cc	1hr	7	1	162	56	88	91	0.9	21.3	118	44	78	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
280	2	15	M	H	4	P	10	T	Ilt	HW	Ilt	4	2	1	Lm	Cc	1hr	8	1	160	56	87	94	0.9	21.8	95	45	83	Te	3	com	1hr	No	6	1	6	NCM	N
281	1	15	F	H	12	G	10	L	Ilt	HW	Ilt	5	3	1	Lm	Bd	1hr	8	1	145	50	85	93	0.9	23.8	122	47	98	Te	2.5	com	1hr	No	6	1(1/2)	6	NCM	N
282	2	15	F	H	12	G	10	L	Sr	HW	Sr	4	2	2	Lm	Bd	1hr	7	1	150	50	86	91	0.9	22.2	115	44	93	Te	2.5	com	1(1/2)hr	No	9	2	9	NCM	N
283	2	15	M	H	12	G	10	L	Sr	HW	Sr	6	4	2	Low	Cc	1hr	7	1	152	50	86	90	0.9	21.6	95	50	70	Te	3.5	com	1hr	No	6	9Mon	6	NCM	N
284	1	14	M	H	12	G	8	F	Pr	F	Pr	5	3	2	Low	Bd	1hr	9	1	143	28	56	65	0.9	13.7	115	56	100	Te	3	com	1/2hr	No	6	2	6	NCM	N
285	2	15	F	H	12	G	10	F	Sr	HW	Sr	5	3	1	Low	Bd	1hr	7	1	160	48	91	92	0.9	18.7	100	54	88	Te	3	com	1/2hr	No	6	2	6	NCM	N
286	1	15	F	H	12	G	10	Gou	Sr	HW	Sr	4	1	1	Lm	Bd	1/2hr	8	1	154	45	70	9	0.9	19	90	60	78	Te	2.4	com	1/2hr	No	6	2	6	3	N
287	2	15	M	H	12	G	9	Gou	Sr	HW	Sr	6	1	2	Lm	Cc	1hr	7	1	158	68	87	90	0.9	27.2	120	48	83	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
288	2	15	M	H	12	G	10	Gou	Ilt	HW	Ilt	6	4	3	Lm	Cc	1hr	7	1	168	68	86	88	0.9	24.1	95	45	83	Te	2.5	com	1/2hr	No	6	1(1/2)	6	NCM	N

289	1	15	M	H	12	G	10	Coo	Pr	HW	Sr	6	4	3	Lm	Cc	1hr	7	1	164	48	70	72	0.9	18.4	118	47	93	Te	2.5	com	1/2hr	No	7	2	7	NCM	N
290	1	13	F	H	12	G	8	F	Pr	F	Ilt	5	3	2	Low	Bd	1/2hr	9	1	149	39	63	66	0.9	17.6	122	52	100	Te	2.5	com	2hr	No	6	1(1/2)	6	NCM	N
291	1	15	M	H	12	G	10	L	Pr	HW	Pr	6	4	3	Lm	Run	1hr	7	1	144	38	70	72	0.9	18.3	115	50	95	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
292	2	15	F	H	12	G	10	L	Sr	HW	Pr	5	3	1	Lm	Sk	1/2hr	8	1	162	55	89	90	0.9	21	98	48	80	Te	2.5	com	2hr	No	6	2	6	NCM	N
293	1	14	M	H	12	G	8	L	Pr	HW	Ilt	4	2	1	Lm	Bd	1/2hr	9	1	157	38	58	68	0.9	15.8	105	52	90	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
294	1	14	M	H	12	G	8	F	Pr	F	Pr	5	2	1	Low	Bd	1/2hr	9	1	138	30	65	75	0.9	15.8	100	54	93	Te	3	com	1/2hr	No	6	2	6	NCM	N
295	1	14	M	H	12	G	8	F	Sr	HW	Ilt	4	2	1	Low	Bd	1/2hr	9	1	145	43	56	76	0.9	20.5	105	48	75	Te	2.8	com	1/2hr	No	6	2	6	NCM	N
296	2	14	M	H	12	G	8	F	Pr	F	Ilt	5	2	1	Low	Bd	1/2hr	9	1	138	39	88	90	0.9	18.5	98	52	85	Te	3	com	1/2hr	No	1Yr	2	1Yr	NCM	N
297	2	14	M	H	12	G	8	W	Sr	HW	Pr	4	1	1	Lm	Cc	1hr	9	1	139	40	87	89	0.9	20.7	110	48	90	Te	2.8	com	1/2hr	No	1Yr	2	1Yr	NCM	N
298	1	15	M	H	12	G	10	Paint	Sr	HW	Sr	5	3	1	M	Sw	1hr	8	1	160	50	68	75	0.9	19.5	100	56	78	Te	2.5	com	1hr	No	8	1	8	NCM	N
299	2	14	M	H	12	G	8	L	Sr	HW	Pr	4	2	1	Low	Bd	1/2hr	9	1	140	38	87	89	0.9	19.4	150	42	100	Te	3	com	1/2hr	No	6	1	6	NCM	mets
300	1	14	F	H	12	G	8	F	Pr	F	Pr	4	2	1	Lm	Bd	1/2hr	8	1	138	40	56	78	0.9	21	105	44	93	Te	2.5	com	1/2hr	No	1Yr	2	1Yr	NCM	N
301	1	15	M	H	12	G	10	L	Sr	HW	Pr	4	2	1	Low	Run	1hr	8	1	149	55	68	72	0.9	24.8	100	48	93	Te	2	com	2hr	No	6	1	6	NCM	N
302	1	15	M	H	12	G	10	Sup	Sr	HW	Sr	5	3	2	Lm	Run	1hr	7	1	155	48	70	72	0.9	20	70	54	75	Te	2.5	com	2hr	No	6	2	6	NCM	N
303	2	14	M	H	12	G	8	F	Gr	HW	Pr	5	3	3	Low	Bd	1/2hr	8	1	158	86	98	68	0.9	18.5	115	48	83	Te	3	com	1hr	No	6	1	6	NCM	N
304	2	15	M	H	12	G	9	Fac W	Sr	HW	Sr	5	3	1	Low	Run	1hr	7	1	148	55	87	95	0.9	25.1	105	50	80	Te	2.6	com	1hr	No	7	1	7	NCM	N
305	2	15	M	H	12	G	10	W	Sr	HW	Sr	4	2	2	Low	Cc	1hr	7	1	143	50	88	90	0.9	24.5	135	42	85	Te	2.5	com	2hr	No	6	2	6	NCM	N
306	1	15	M	H	12	G	9	L	Pr	HW	Sr	5	3	3	Lm	Cc	1hr	7	1	158	55	56	78	0.9	22	105	48	80	Te	2.6	com	1hr	No	7	1	7	NCM	N
307	1	15	M	H	3	G	10	W	Sr	HW	Sr	3	1	1	Lm	Cc	1hr	7	1	168	76	68	78	0.9	26.9	118	46	93	Te	2.8	com	1hr	No	6	2	6	NCM	N
308	1	15	M	H	3	G	10	F	Sr	HW	Sr	5	2	2	M	Cc	1hr	7	1	168	48	73	74	0.9	17	120	54	90	Te	2.8	com	1hr	No	8	1(1/2)	8	NCM	N
309	2	15	M	H	3	G	10	W	Sr	W	Sr	4	2	1	Lm	Cc	1hr	7	1	165	58	86	88	0.9	21.3	122	44	100	Te	2.8	com	1hr	No	8	1(1/2)	8	NCM	N
310	1	15	M	H	12	G	10	F	Sr	HW	Sr	7	3	1	Low	Cc	1hr	7	1	164	37	74	76	0.9	13.8	90	48	97	Te	3	com	2hr	No	6	1	6	NCM	N
311	2	15	M	H	3	G	10	W	Sr	F	Sr	3	2	1	Low	Cc	1hr	7	1	170	48	86	91	0.9	16.6	100	44	70	Te	3	com	1hr	No	6	1(1/2)	6	NCM	N
312	1	15	M	H	4	G	10	Fac W	Sr	HW	Sr	4	1	1	Lm	Cc	1hr	8	1	169	56	74	75	0.9	20.8	85	48	78	Te	3.5	com	1hr	No	8	1(1/2)	8	NCM	N
313	2	15	M	H	4	G	9	W	Sr	HW	Sr	7	3	3	M	Cc	1hr	8	1	164	62	87	91	0.75	23.5	75	47	80	Te	3	com	1/2hr	No	6	2	6	NCM	N
314	2	14	M	H	12	G	9	L	Sr	F	Pr	4	3	3	Lm	Cc	1/2hr	8	1	150	85	88	32	0.9	21.3	90	52	88	Te	2.5	com	1/2hr	No	7	3	7	NCM	N
315	1	14	F	H	12	G	8	W	Pr	F	Ilt	5	3	3	Low	Bd	1/2hr	8	1	138	38	28	30	0.9	18	110	46	87	Te	2.5	com	2hr	No	6	2	6	NCM	N
316	2	14	F	H	12	G	8	W	Pr	F	Ilt	5	3	3	Low	Bd	1/2hr	8	1	137	90	97	32	0.9	22	118	50	85	Te	2.5	com	2hr	No	6	2	6	NCM	N
317	2	14	M	H	12	G	8	W	Pr	F	Ilt	5	3	3	Low	Bd	1/2hr	8	1	140	87	89	30	0.9	21	118	48	90	Te	2.5	com	2hr	No	6	2	6	NCM	N
318	1	14	M	H	12	G	8	W	Pr	F	Ilt	5	3	3	Low	Bd	1/2hr	8	1	142	39	29	30	0.9	19.5	100	56	75	Te	2.5	com	2hr	No	6	2	6	NCM	N
319	1	14	F	H	12	G	8	W	Pr	F	Ilt	5	3	3	Low	Bd	1/2hr	8	1	140	42	28	30	0.9	21	115	44	85	Te	2.5	com	2hr	No	6	2	6	NCM	N
320	1	14	M	H	12	G	8	W	Pr	F	Ilt	5	3	3	Low	Bd	1/2hr	8	1	140	38	30	32	0.9	19.3	110	44	88	Te	2.5	com	2hr	No	6	2	6	NCM	N
321	1	10	F	H	13	G	6	W	Ilt	HW	Ilt	7	4	4	M	Bd	1/2hr	8	1	132	30	28	30	0.9	17.6	150	42	83	Te	2.3	com	1/2hr	No	6	2	6	NCM	N
322	1	13	M	H	13	G	6	W	Ilt	HW	Ilt	2	1	1	Low	Bd	1/2hr	8	1	130	28	64	65	0.9	17.5	135	46	88	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
323	1	12	M	H	13	G	5	Coo	Ilt	HW	Ilt	4	1	1	Low	Bd	1/2hr	8	1	132	30	65	24	0.9	17	120	54	88	Te	2.3	com	1hr	No	6	2	6	NCM	N
324	1	10	F	H	13	G	2	Coo	Ilt	HW	Ilt	5	3	3	Lm	Sk	1/2hr	8	1	129	30	23	24	0.9	18.7	80	56	86	Te	2.5	com	1hr	No	6	2	6	NCM	N
325	2	11	M	H	13	G	5	F	Ilt	HW	Ilt	12	10	10	Low	Run	1/2hr	8	1	130	28	76	25	0.9	17.5	70	56	78	Te	2.5	com	1hr	No	6	2	6	NCM	N
326	1	12	M	H	13	G	6	Coo	Ilt	HW	Ilt	5	3	3	Low	Run	1/2hr	8	1	132	30	66	24	0.9	17.6	95	44	90	Te	2.5	com	1hr	No	6	6Mon	6	NCM	N
327	1	12	F	H	13	G	6	Tiles	Ilt	HW	Ilt	8	6	3	Lm	Bd	1/2hr	8	1	128	30	77	22	0.9	18.7	100	52	83	Te	2.7	com	1hr	No	6	6Mon	6	NCM	N
328	1	14	M	H	13	G	7	F	Ilt	HW	Ilt	12	10	1	Low	Run	1/2hr	8	1	150	48	30	32	0.9	21.3	95	52	75	Te	2.7	com	1hr	No	6	2	6	NCM	N
329	1	10	F	H	13	G	5	Coo	Ilt	HW	Ilt	5	3	1	Low	Bd	1/2hr	8	1	130	28	24	25	0.9	17.5	75	48	80	Te	2.5	com	1hr	No	6	2	6	NCM	N
330	1	13	M	H	13	G	7	F	Ilt	Fac W	Ilt	4	2	1	Lm	Run	1/2hr	8	1	132	30	63	66	0.9	17	80	52	88	Te	2.6	com	1hr	No	6	2	6	NCM	N
331	1	10	M	H	13	G	5	Coo	Ilt	HW	Ilt	5	3	2	Low	Run	1/2hr	8	1	130	28	24	27	0.9	17.5	146	40	90	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
332	2	12	F	H	13	G	6	Coo	Ilt	HW	Ilt	5	3	1	Lm	Bd	1/2hr	8	1	146	40	81	92	0.9	18.7	105	48	78	Te	2.8	com	1hr	No	6	2	6	NCM	N

333	1	11	F	H	13	G	6	D	Sr	HW	Ilt	4	2	1	Lm	Bd	1/2hr	8	1	133	35	60	65	0.9	15.2	85	52	78	Te	2.6	com	1hr	No	6	1(1/2)	6	NCM	N
334	1	12	F	H	13	G	6	Tiles	Ilt	HW	Ilt	4	2	1	Low	Bd	1/2hr	8	1	142	30	67	48	0.9	15	90	54	73	Te	2.5	com	1hr	No	6	2	6	NCM	N
335	1	10	M	H	13	G	7	F	Ilt	HW	Ilt	5	2	1	Lm	Run	1/2hr	8	1	136	25	60	67	0.8	15.2	115	48	88	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
336	1	10	F	H	13	G	5	W	Ilt	HW	Ilt	4	2	2	Lm	Bd	1/2hr	8	1	152	40	64	65	0.9	17.3	128	44	90	Te	2.6	com	1hr	No	6	2	6	NCM	N
337	2	12	M	H	13	G	5	W	Pr	HW	Pr	4	2	1	Low	Run	1/2hr	9	1	149	50	83	92	0.9	22.5	105	54	90	Te	3	com	1/2hr	No	6	2	6	NCM	N
338	2	12	M	H	13	G	6	W	Sr	HW	Sr	4	2	1	Low	Run	1/2hr	9	1	149	50	83	92	0.9	22.5	100	52	93	Te	3	com	1/2hr	No	6	2	6	NCM	N
339	2	12	M	H	13	G	6	F	Pr	HW	Pr	4	2	1	Low	Run	1/2hr	9	1	149	50	83	92	0.9	22.5	128	44	80	Te	3	com	1/2hr	No	6	2	6	NCM	N
340	2	12	M	H	13	G	6	W	Sr	HW	Sr	5	2	1	Lm	Run	1hr	9	1	148	48	83	92	0.9	19.2	95	56	83	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
341	1	12	F	H	13	G	7	Coo	Ilt	HW	Ilt	5	2	2	Lm	Bd	1/2hr	8	1	152	40	63	64	0.9	17.3	80	56	78	Te	3	com	1/2hr	No	6	2	6	NCM	N
342	1	11	F	H	13	G	7	W	Pr	HW	Ilt	5	3	2	Low	Bd	1/2hr	8	1	140	35	53	54	0.9	17.8	105	54	80	Te	2.4	com	1/2hr	No	6	2	6	NCM	N
343	2	10	F	H	13	G	5	Fac W	Ilt	HW	Ilt	5	3	3	Low	Run	1/2hr	8	1	140	30	54	56	0.9	15.3	105	44	86	Te	2.4	com	1/2hr	No	6	2	6	NCM	N
344	2	13	F	H	13	G	7	D	Ilt	HW	Ilt	6	3	1	Lm	Sk	1/2hr	8	1	144	56	90	88	0.9	22.8	166	35	100	Te	2.5	com	1/2hr	No	6	2	6	NCM	mets
345	1	10	F	H	13	G	5	D	Ilt	HW	Ilt	5	3	2	Low	Sk	1/2hr	8	1	152	40	64	65	0.9	17.3	150	40	95	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
346	2	10	M	H	13	G	5	W	Ilt	HW	Ilt	5	3	3	Lm	Bd	1/2hr	8	1	149	50	76	78	0.9	22.5	105	54	80	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
347	2	13	F	H	13	G	7	Coo	Pr	HW	Pr	5	3	2	Lm	Bd	1/2hr	8	1	149	50	83	92	0.9	22.5	140	42	100	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
348	2	10	F	H	13	G	5	F	Pr	HW	Pr	4	2	2	Lm	Bd	1/2hr	8	1	149	50	76	78	0.9	22.5	70	56	73	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
349	2	12	M	H	13	G	5	Gou	Pr	HW	Pr	4	2	2	Lm	Run	1/2hr	8	1	148	48	83	92	0.9	19.2	90	56	78	Te	2.6	com	1/2hr	No	6	1	6	NCM	N
350	2	13	M	H	13	G	7	Gou	Pr	HW	Pr	4	2	1	Lm	Run	1/2hr	8	1	152	40	88	86	0.9	17.3	115	48	80	Te	2.5	com	1/2hr	No	6	1	6	NCM	N
351	1	10	M	H	13	G	5	Gou	Pr	HW	Pr	4	2	1	Lm	Run	1/2hr	8	1	140	35	53	54	0.9	17.8	80	56	73	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
352	2	10	F	H	13	G	5	P	Sr	HW	Pr	4	2	1	Lm	Bd	1/2hr	8	1	140	30	65	67	0.9	15.3	85	54	80	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
353	2	11	M	H	13	G	5	Gou	Pr	HW	Pr	5	3	1	Lm	Run	1/2hr	8	1	144	36	78	69	0.9	20.8	160	38	105	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
354	2	11	F	H	13	G	5	Gou	Pr	Ang W	Pr	5	3	3	Low	Bd	1/2hr	8	1	140	38	78	80	0.9	19.4	125	48	93	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
355	1	10	F	H	13	G	5	Gou	Pr	HW	Pr	5	3	2	Lm	Bd	1/2hr	8	1	138	40	30	32	0.9	21	90	56	73	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
356	2	11	M	H	13	G	5	Gou	Pr	HW	Pr	5	3	2	Lm	Bd	1/2hr	8	1	149	55	78	72	0.9	24.8	75	60	73	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
357	2	12	F	H	13	G	6	F	Pr	HW	Pr	7	3	1	Lm	Bd	1/2hr	8	1	155	48	78	79	0.9	20	110	44	90	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
358	1	13	F	H	13	G	7	Gou	Pr	HW	Pr	7	3	2	Lm	Bd	1/2hr	8	1	150	45	64	66	0.9	20	130	42	69	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
359	2	11	M	H	13	G	5	Gou	Pr	HW	Pr	11	2	1	Lm	Run	1/2hr	8	1	148	55	80	72	0.9	25.1	140	40	125	Te	2.5	com	1/2hr	No	7	1(1/2)	7	NCM	MetS
360	2	12	M	H	13	G	5	Coo	Pr	HW	Pr	5	4	1	Lm	Sk	1/2hr	8	1	143	50	78	79	0.9	24.5	118	48	93	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
361	1	13	F	H	13	G	7	L M	Pr	F	Pr	4	2	1	Lm	Bd	1/2hr	8	1	150	44	70	72	0.9	19.6	78	48	76	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
362	2	12	F	H	13	G	5	Gou	Ilt	HW	Ilt	6	4	3	Low	Bd	1/2hr	8	1	150	43	82	84	0.9	19.1	75	56	73	Te	2.6	com	1/2hr	No	6	2	6	NCM	N
363	1	13	F	H	13	G	7	Car P	Ilt	HW	Ilt	7	3	3	Lm	Bd	1/2hr	8	1	145	35	73	74	0.9	16.6	125	42	100	Te	2.5	com	1/2hr	No	6	1(1/2)	6	NCM	N
364	2	11	M	H	13	G	5	Com	Pr	HW	Pr	5	2	1	Lm	Cc	1hr	8	1	140	35	75	72	0.9	17.8	80	56	78	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
365	2	11	F	H	13	G	5	Govt. S	Sr	HW	Pr	4	2	1	Lm	Sk	1/2hr	9	1	145	45	76	86	0.8	21.4	100	48	75	Te	3	com	1/2hr	No	6	2	6	NCM	N
366	1	11	F	H	13	G	5	Bu	Pr	HW	Pr	4	1	1	Low	Sk	1hr	8	1	136	30	46	47	0.9	16.6	80	52	78	Te	3	com	1/2hr	No	6	2	6	NCM	N
367	1	11	F	H	13	G	5	Bu	Pr	HW	Pr	4	1	1	Low	Sk	1/2hr	9	2	136	30	46	47	0.9	16.6	80	46	83	Te	3	com	1/2hr	No	6	2	6	NCM	N
368	2	11	F	H	13	G	5	Bu	Pr	HW	Pr	4	1	1	Lm	Sk	1hr	8	1	146	43	78	47	0.9	20.1	95	48	90	Te	3	com	1/2hr	No	6	2	6	NCM	N
369	2	11	F	H	13	G	5	Bu	Pr	HW	Pr	4	1	1	Lm	Sw	1/2hr	9	1	145	45	76	86	0.9	21.3	75	50	78	Te	3	com	1/2hr	No	6	2	6	NCM	N
370	2	11	F	H	13	G	5	PWD	Gr	Dr	Gr	3	0	1	Lw	Sw	1/2hr	9	1	145	45	78	86	0.9	21.4	100	54	90	Te	3	com	1/2hr	No	6	2	6	NCM	N
371	2	11	M	H	13	G	5	Tea	Sr	Tea	Sr	4	1	1	Lm	Run	1/2hr	9	1	145	48	76	85	0.8	22.8	100	48	83	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
372	2	11	M	H	13	G	5	Pr	Gr	Dr	Gr	4	0	1	Lm	Cc	1/2hr	10	1	145	48	76	85	0.8	22.8	80	48	90	Te	3	com	1/2hr	No	6	2	6	NCM	N
373	2	11	M	H	13	G	5	Bu	Pr	HW	Pr	4	0	1	Low	Cc	1hr	9	1	145	48	77	85	0.8	22.8	85	48	70	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
374	2	11	M	H	13	G	5	Bu	Pr	Tea	Sr	4	1	1	Lm	Cc	1/2hr	8	1	145	48	76	85	0.8	22.8	75	45	90	Te	3	com	1/2hr	No	6	2	6	NCM	N
375	2	11	M	H	13	G	5	Law	PG	Law	PG	4	0	1	Lm	Cc	1/2hr	10	1	144	47	75	84	0.8	22	90	52	83	Te	3	com	1/2hr	No	6	2	6	NCM	N
376	2	11	M	H	13	G	5	Lec	PG	HW	Sr	4	1	1	Lm	Cc	1hr	10	1	144	47	76	85	0.9	22	100	54	93	Te	3	com	1/2hr	No	6	2	6	NCM	N

377	2	11	M	H	13	G	5	Govt. S	Gr	Govt. S	Gr	4	1	1	Lm	Cc	2hr	9	1	146	46	76	85	0.8	21.9	85	52	80	Te	3	com	1/2hr	No	6	2	6	NCM	N
378	2	11	M	H	13	G	5	Tea	Sr	HW	Pr	4	1	1	Lm	Cc	2hr	9	1	145	48	76	85	0.8	22.8	105	54	83	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
379	2	11	M	H	13	G	5	Eng	PG	HW	Sr	4	1	1	Lm	Cc	1hr	8	1	145	48	78	85	0.8	22.8	90	56	93	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
380	2	11	M	H	13	G	5	Art	Gr	HW	Sr	4	1	1	Lm	Cc	1/2hr	10	1	145	48	78	85	0.8	22.8	90	54	78	Te	3	com	1/2hr	No	6	2	6	NCM	N
381	2	12	F	H	13	G	6	F	Pr	HW	Pr	4	0	1	Lm	Sk	1hr	8	1	136	33	82	47	0.9	18.3	105	50	80	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
382	1	12	F	H	13	G	6	Wea	Pr	HW	Pr	4	2	1	Lm	Sk	1/2hr	9	1	136	33	46	47	0.9	18.3	80	48	78	Te	3	com	1/2hr	No	6	2	6	NCM	N
383	1	12	F	H	13	G	6	Tea	Sr	HW	Pr	5	3	1	Lm	Sk	1/2hr	8	1	138	35	77	47	0.9	18.4	110	48	90	Te	3	com	1/2hr	No	6	2	6	NCM	N
384	1	12	F	H	13	G	6	Tea	Sr	HW	Pr	5	3	1	Lm	Sk	1/2hr	8	1	138	35	46	47	0.9	18.4	80	44	73	Te	3	com	1/2hr	No	6	2	6	NCM	N
385	1	12	F	H	13	G	6	Law	PG	HW	Sr	4	2	1	Low	Sk	1/2hr	8	1	138	35	48	49	0.9	18.4	110	44	90	Te	3	com	1/2hr	No	6	2	6	NCM	N
386	2	12	M	H	13	G	6	F	Pr	HW	Pr	4	0	1	Lm	Cc	1/2hr	7	1	149	50	83	92	0.9	22.5	100	54	78	Te	3	com	1/2hr	No	6	2	6	NCM	N
387	2	12	M	H	13	G	6	Tea	Sr	HW	Pr	4	0	1	Low	Cc	1/2hr	7	2	149	50	83	92	0.9	22.5	75	50	73	Te	3	com	1/2hr	No	6	2	6	NCM	N
388	2	12	M	H	13	G	6	Bu	Pr	Govt. S	Sr	4	2	1	Lm	Cc	1/2hr	8	1	147	49	83	92	0.9	22.6	105	48	83	Te	3	com	1/2hr	No	6	2	6	NCM	N
389	2	12	M	H	13	G	6	F	Pr	HW	Pr	4	0	1	Lm	Cc	1hr	8	1	147	49	83	92	0.9	22.6	90	52	88	Te	3	com	1/2hr	No	6	2	6	NCM	N
390	2	12	M	H	13	G	6	Tea	Sr	HW	Pr	4	0	1	Low	Cc	1/2hr	9	1	147	49	83	92	0.9	22.6	100	48	80	Te	3	com	1/2hr	No	6	2	6	NCM	N
391	1	13	M	H	13	G	7	Bu	Pr	HW	Pr	4	2	1	Lm	Run	1/2hr	8	1	150	40	62	90	0.89	17	85	50	78	Te	3	com	1/2hr	No	6	2	6	NCM	N
392	1	13	M	H	13	G	7	Tea	Sr	Tea	Sr	4	0	1	Lm	Run	1/2hr	8	1	150	40	62	90	0.89	17	110	48	88	Te	2.5	com	1/2hr	No	6	2	6	NCM	N
393	2	13	M	H	13	G	7	Bu	Pr	HW	Pr	4	0	1	Lm	Run	1/2hr	9	1	150	40	82	90	0.89	17	115	48	93	Te	3	com	1/2hr	No	6	2	6	NCM	N
394	2	13	M	H	13	G	7	Tea	Sr	HW	Sr	4	0	1	Lm	Run	1/2hr	9	1	147	49	88	90	0.9	22.6	100	52	90	Te	3	com	1/2hr	No	6	2	6	NCM	N
395	2	13	M	H	13	G	7	Bu	Pr	HW	Pr	4	0	1	Lm	Run	1/2hr	9	1	149	50	83	92	0.89	22.5	105	52	83	Te	3	com	1/2hr	No	6	2	6	NCM	N
396	2	13	M	H	13	G	7	F	Pr	HW	Pr	4	0	1	Lm	Run	1/2hr	9	1	150	42	83	90	0.89	18.6	110	50	90	Te	3	com	1/2hr	No	6	2	6	NCM	N
397	2	13	M	H	13	G	7	Govt. S	Gr	HW	Sr	4	0	1	Lm	Run	1/2hr	8	1	150	52	95	94	0.9	23	100	48	90	Te	3	com	1/2hr	No	6	2	6	NCM	N
398	2	13	M	H	13	G	7	Tea	Gr	HW	Sr	4	0	1	Lm	Run	1/2hr	8	1	150	52	95	94	0.9	23	110	52	83	Te	2.8	com	1/2hr	No	6	1	6	NCM	N
399	2	13	M	H	13	G	7	Govt. S	Gr	HW	Sr	4	0	1	Lm	Run	1/2hr	8	1	150	52	95	94	0.9	23	115	48	93	Te	3	com	1/2hr	No	6	1	6	NCM	N
400	2	13	M	H	13	G	7	Tea	Gr	HW	Sr	4	0	1	Lm	Run	1/2hr	9	1	150	52	95	94	0.9	23	115	48	88	Te	3	com	1/2hr	No	6	1	6	NCM	N

ANNEXURE VII – KEY TO MASTER CHART

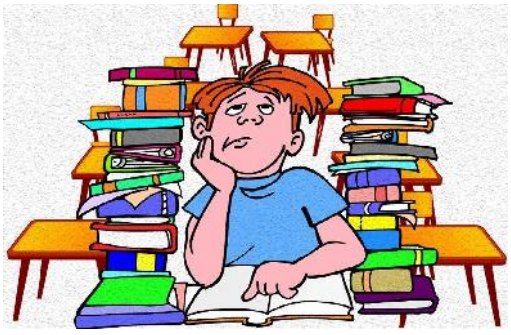
AR	Auto Rickshaw
Au	Auto-Driver
Ba	Bank
BB	Basketball
Bd	Badminton
Bu	Business
C	Christian
Cc	Cricket
Cl	Clerk
Cy	Cycling
Dr	Doctor
Er	Engineer
F	Farmer
F	Female
Fa	Farmer
FB	Football
G	Government
GE	Government Employee
Gr	Graduate
H	Hindu
HW	Housewife
Lr	Lawyer
M	Male
Ma	Maid
Mets	Metabolic Syndrome
Mg	Mobile Game
Mu	Muslim
N	Normal
NA	No Activity
Nr	Nurse
P	Private
Pr	Primary Education
PU	Pre-University
Rl	Railways
Sr	Secondary Education
T	Tailor
TB	Throwball
Tr	Teacher
V	Vehicle

VB	Volleyball
Vg	Video Game
Wa	Walking
Cw	Construction Worker
Fw	Factory Worker
Coo	Cooli
UC	Upper Class
UM	Upper Middle
M	Middle
Lm	Lower Middle
Low	Lower
Com	Complete
Nk	Not Known
I	Incomplete
Te	Term
Pre	Preterm
PT	Post Term
Ilt	Illiterate
1	Controls
2	Cases
NCM	Non Consanguineous Marriage
1CM	1st Degree Consanguineous Marriage
2CM	2nd Degree Consanguineous Marriage
3CM	3rd Degree Consaguinous Marriage

Introduction

Objectives

Review of Literature



Methodology

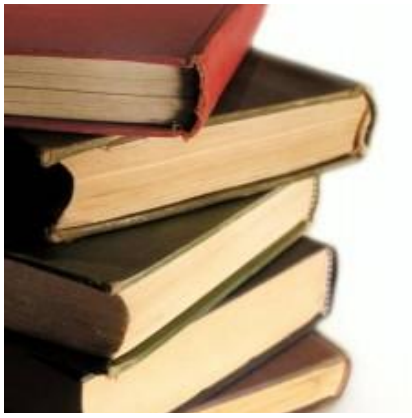
Results

Discussion

Conclusion

Summary

Bibliography



Annexure-I

Consent Form

Annexure-II

Proforma

Annexure-III

Ethical Clearance Letter

Annexure-IV

Letter to DDPI

Annexure-V

Photographs

Annexure-V

Master Chart