

**mHEALTH IN MODIFYING DIET AND PHYSICAL ACTIVITY AMONG
WOMEN GARMENT FACTORY WORKERS IN KOLAR – A
RANDOMIZED CONTROLLED TRIAL**

By

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Dissertation submitted to the
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**DOCTOR OF MEDICINE
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COMMUNITY MEDICINE**

Under the guidance of

Dr. MUNINARAYANA C., M.D.



DEPARTMENT OF COMMUNITY MEDICINE

SRI DEVARAJ URS MEDICAL COLLEGE,

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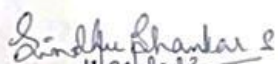


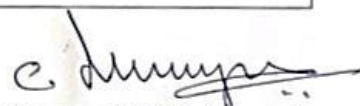
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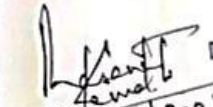
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ABSTRACT

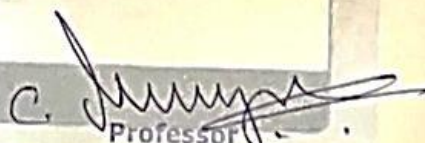
Introduction: India carries the largest global burden of all NCDs. Cardiovascular diseases (CVDs) alone account for 29% of NCD deaths in India. The epidemiological transition and severe shortage of healthcare professionals to tackle these NCDs, particularly in rural areas where 70% of India's population resides, creating a formidable challenge. The major modifiable risk factors for NCDs are unhealthy diet, physical inactivity, alcohol and tobacco consumption. "Medical and public health practices" that are supported by "mobile technologies" including mobile phones, personal monitoring devices, personal digital assistants, and other wireless devices are referred to as "eHealth" or "mobile health". Designing and testing a package of activities and assessing its feasibility in groups such as occupational groups could help in developing low cost interventions in future as envisaged by NPCDCS.

Objective: To assess the effectiveness of monthly mHealth package for six months in modifying diet and physical activity behaviors among women garment factory workers in Kolar.

Materials and methods: A open label parallel design Randomized Controlled Trial conducted for 6 months. A total of 204 female garment factory workers were recruited in per systematic random sampling. They were randomized into two equal parts after giving baseline face-to-face


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LIST OF ABBREVIATIONS

BMI- Body Mass Index

BPL -Below Poverty Line

CI -Confidence Interval

CLD- Chronic Liver Disease

COPD- Chronic Obstructive Pulmonary Disease

CRD- Chronic Respiratory Disease

CTRI -Clinical Trials Registry-India

CVD- Cardio Vascular Disease

DALY- Diasability Adjusted Life Years

FC -Face-to-Face Counselling

GPRS- General Pocket Radio Services

GPS- Global Positioning System

ICMR- Indian Council of Medical Research

IEC -Institutional ethical committee

IIT -Intention-To-Treat analysis

LMIC- Low and Middle Income Countries

METS- Metabolic Equivalents

MI- Myocardial Infarction

NCD- Non Communicable Diseases

NFHS- National Family Health Survey

NPCDCS - National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular diseases and Stroke

NPCDCS - National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular diseases and Stroke.

PEN- Package of Essential Noncommunicable disease interventions.

RCT- Randomized Controlled Trial

SD -Standard deviation

SES- Socio Economic Status

SMS- Short Messaging Services

SPSS -Statistical Package for the Social Sciences

STATA -Software for Statistics and Data Science

WHO -World Health Organization

ABSTRACT

Introduction: India carries the largest global burden of all NCDs. Cardiovascular diseases (CVDs) alone accounts for 29% of NCD deaths in India. The epidemiological transition and severe shortage of healthcare professionals to tackle these NCDs, particularly in rural areas where 70% of India's population resides, resulting in formidable challenges. The major modifiable risk factors for NCD's are unhealthy diet, physical inactivity, alcohol and tobacco consumption. Medical and public health practices that are supported by mobile technologies including mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices are referred to as "mHealth" or "mobile health". Designing and testing a package a mHealth and assessing its feasibility in groups such as occupational groups could help in developing low cost interventions in future as envisaged by NPCDCS

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Materials and methods: A open label parallel design Randomized Controlled Trial conducted for 6 months. A total of 294 female garment factory workers were recruited as per systematic random sampling. They were randomized into

two equal parts after giving baseline face-to-face counseling regarding healthy diet and physical activity. For intervention group monthly telephonic counseling was given for six consecutive months. The outcome (change in diet and physical activity scores) was assessed after six months from the date of recruitment.

Results: Participants in the Control Group and the Intervention Group had similar scores for their diets and levels of physical activity at the start of the trial. The diet scores in the “Intervention Group” and “Control Group” at the end of the trial period had both greatly improved, but they were still classified as "moderately healthy." At baseline, neither the Control Group nor the Intervention Group participants had physical activity scores above 250 METS. More than 250 METS scores in the Intervention Group's post-intervention METS ratings improved.

Conclusion: The current study shows telephonic counseling was effective in changing the diet habits and physical activity and is feasible and acceptable to the tobacco users.

Key words: dietary habits, physical activity, mHealth, Non Communicable Diseases, telephonic counseling.

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INTRODUCTION



1. INTRODUCTION

Globally, chronic non-communicable diseases (NCDs) are the main killers. Every year, NCDs claim the lives of 41 million people, or 74% of all fatalities worldwide. About 17 million individuals each year die prematurely from NCDs before they turn 70 years old, and of those who reach that age, 86% do so in low- and middle-income countries (LMIC). Cardiovascular illnesses are the leading cause of death among NCDs, accounting for around 17.9 million fatalities per year. The likelihood of dying from an NCD is increased by physical inactivity, poor eating habits, problematic alcohol use, and consumption of any kind of tobacco.¹

In India, the four leading NCDs—diabetes, cancer, chronic respiratory diseases (CRDs), and cardio vascular diseases (CVDs)—are all on the rise. The four key modifiable risk factors for a variety of NCDs are unhealthy eating, inactivity, tobacco use, and alcohol consumption. The Indian Council of Medical Research (ICMR) study report "India: Health of the Nation's States" published in 2017 states that the proportion of mortality brought on by NCDs increased from 37.9% in 1990 to 61.8% in 2016.²

According to “NFHS 5” data, about 21.3% of women in India are hypertensive or have elevated blood pressure, as opposed to 24% of men aged 15yrs and above. Similarly 13.5% of women aged above 15years are diabetic or have high blood sugar levels as compared to 15.6% of men.

While the prevalence of risk factors such as tobacco and alcohol consumption is very low among Indian women compared to men, larger proportion of women have high BMI and high risk waist hip ratios compared to men. Leading individual causes of these NCDs among women from 1990 to 2016 are: CVD which was 2.9% in 1990 has been increased to 6.6% in 2016, Chronic respiratory diseases was 2.7% in 1990 which has been increased to 4.4% in 2016, Diabetes which was 0.7% in 1990 has seen raise which is about 2.2% in 2016 and Cancer (Breast) which was about 0.7% in 1990 has been increased to 0.9% in 2016.² Disability Adjusted Life Years (DALYs) means it is the number of years lost due to ill health and DALYs due to NCD for male and female in India at all ages were about , 264 per 1 lac population, 222 per 1lac population and when seen based on locations it was 114 per 1 lac population in urban area and 372 per 1 lac population in rural area.³

In order to help low resource settings address NCDs in an inexpensive and sustainable way through a primary health care strategy, the WHO has recommended PEN strategies for Primary Health Care. ¹

For the prevention of NCD's , the two main strategies followed are: “at risk based” strategies and “population based” strategies. The focus for at risk based strategies will be at individual level for managing the risk factors for NCD's. Since diet is the common risk factor for most of the NCD's , people

should be educated on the nutritive aspect of the food, modifying their physical activity and changing their lifestyle habits like harmful consumption of alcohol and tobacco.⁴

Under the National Health Mission and as a component of Comprehensive Primary Health Care, a population-based approach for the prevention, control, and early detection of the common NCDs, such as diabetes, hypertension, and common malignancies, has been implemented. This programme screens citizens for the common NCDs when they are older than 30.²

The methods and frequency for screening the population followed in India are: for those aged 30years and above will be screened for hypertension and diabetes for once a year using sphygmomanometer for blood pressure and glucometer for random blood sugar. For those aged between 30 and 65years will be screened for Breast cancer, Oral cancer and Cervical cancer and the method for screening followed are Clinical Breast Examination, Oral Visual Inspection and Visual Inspection with Acetic acid respectively and the frequency of screening for all these are about once in 5 years.⁵

Regarding the prevention of NCDs, the Ayushman Bharat Health Wellness Center programme will boost primary healthcare by promoting wellness activities and disseminating information about them to the local population. Other activities include observing National and International

Health Days and using print, electronic, and social media for on-going community awareness of NCDs and the promotion of a healthy lifestyle.²

With changing time and trends, we have also adopted mobile based health education activities to promote good health and practices.

Modifications of behavioral risk factors for NCDs through self-motivations are more rewarding when such efforts are supported adequately to maintain motivation by healthcare professionals. However, a dearth of individualized and coordinated support, inconvenient and expensive awareness cum motivational programs, and meager beneficiary-provider communication make NCD risk factor self-modification practices challenging to adhere to and sustain the same for a long term. User friendly services and methods for self-management are needed to trim health care costs for the individuals as well as for the country for improving the overall quality of life.

“mHealth”, is the practise of medicine and public health that is assisted by portable electronic devices, such as cell phones, patient monitoring devices, PDAs, and other wireless gadgets. mHealth involves the use of simple voice calls and/or SMS as well as more complex functionalities and applications using GPRS, GPS, Blue Tooth technology and other wireless devices.

Although the use of “mHealth” interventions is increasing among urban population, the literature on their development and application among rural

India is relatively scanty and there is limited documented evidence of mHealth intervention on effectiveness among specific occupational groups LMICs like India. Even Cochrane review still calls for more evidence on mHealth intervention.

The field of mHealth has grown rapidly in recent years. Prior studies on the application of mHealth have shown that smart phones can be utilized to implement lifestyle interventions.⁶ Smartphones have been a mainstay of daily life since they were released to the market for almost 10 years ago, and since then they have been used effectively to track health and habits related to it. Since about 448.2 million people are using mobile phones and about 73% have access to mobile internet in India, interventions using smart phones with relevant open source applications (Apps) are likely to bridge the gap between motivational needs of individuals for personalized NCD risk modifications and lack of capacity of regular health care services to support such individuals.⁷

A study done on mHealth intervention showed that two third of people who had mobile phones were willing to accept the voice calls.⁸

The “WHO Global Plan of Action”on Workers Health explicitly stresses that workplaces must promote worker health in addition to protecting it.⁹

Designing and testing a package a mHealth and assessing its feasibility in groups such as occupational groups could help in developing low cost interventions in future as envisaged by NPCDCS.

Through this study there would be an endeavour to generate evidence about mHealth as an intervention.



OBJECTIVES OF STUDY



2. OBJECTIVE

To assess the effectiveness of monthly mHealth package for six months in modifying diet and physical activity behaviors among women garment factory workers in Kolar.



REVIEW OF LITERATURE



3. REVIEW OF LITERATURE

3.1 NON COMMUNICABLE DISEASES (NCD's)

These are a group of conditions that typically require continuous care and treatment and have long-term health implications. Cancer, diabetes, chronic respiratory illnesses, and cardio vascular diseases are the four major NCDs that cause fatalities worldwide each year.¹⁰ More than 75 percent of NCD fatalities in 2016 were reported to have occurred in low- and middle-income countries. Approximately 46% of these fatalities involved people under the age of 70.¹⁰

From 30.9% in 1990 to 55.4% in 2016, India's Disability-Adjusted Life Years (DALYs) have increased. The leading causes of DALY in India are CVDs, Chronic Respiratory Diseases, NCDs, diabetes, and other endocrine disorders.² Dietary hazards, cigarette use, alcohol use, decreased physical activity, elevated blood pressure, elevated fasting plasma glucose, high total cholesterol, and a high body mass index have all increased the chance of developing NCDs.¹¹

3.1.1 Diabetes

Increased blood glucose (or blood sugar) levels are a hallmark of diabetes, a long-term metabolic disease that over time damages the heart, blood vessels, eyes, kidneys, and nerves.¹² Regardless of financial levels, the prevalence of

Type 2 diabetes has increased significantly during the past three decades.¹² The prevalence of diabetes in 2019 was about 9.3% worldwide which translates to 463 million people.¹³ This prevalence is expected to increase about 10.9% (700 million) by 2045 .¹³ India had over 77 million people living with diabetes in 2019, and this will be most likely to increase to 134 million by 2045 .¹³ In 2019, about 1.5 million deaths and 48% of all deaths occurred as a direct cause from diabetes even before the age of 70 years.¹⁰ Between 2000 and 2019, there was a 3% increase in age-standardized mortality rates from diabetes.¹⁰ In LMIC's, the mortality rate due to diabetes increased to about 13%.¹⁰

3.1.2 CARDIOVASCULAR DISEASES

One of the main causes of death in the world is cardiovascular disease (CVD) . According to estimates, 17.9 million deaths worldwide in 2019 were attributed to CVDs, or 32% of all fatalities. Out of these deaths, myocardial infarction and stroke accounted for 85% of the cases. The majority of CVD fatalities occur in LMIC's.¹² In 2019, 17 million premature fatalities (before the age of 70) were attributable to non-communicable diseases, CVDs accounting for around 38% of these deaths..¹²

Heart and blood vessel problems are known as cardio vascular diseases (CVDs). The wide range of cardio vascular diseases includes those affecting

the heart and blood vessels, such as coronary heart disease, which affects the blood vessels supplying the heart muscle, cerebrovascular disease, which affects the blood vessels supplying the brain, rheumatic heart disease, which is caused by a streptococcal bacteria and affects the heart muscle and heart valves, congenital heart disease, in which the defect is present since birth, and deep vein thrombosis.¹²

3.1.3 HYPERTENSION

Hypertension is when the blood pressure is more than the normal range. Worldwide, premature deaths occurs primarily due to uncontrolled hypertension or elevated blood pressure.¹⁴ An estimated 1.28 billion adults aged 30-79 years worldwide have hypertension, most of them (two-thirds) are living in low- and middle-income countries.¹⁴

Rule of Halves: Hypertension follows “Iceberg phenomenon” and it was prominent in the early periods of 1970s.¹⁵ It states that even in developed countries, only half of the general population knew that they had hypertension and among those only half were being treated for hypertension and among those ,only half were adequately treated.¹⁶ It is estimated that about only 46% of people are aware of their hypertension status and adults who are diagnosed and receiving the treatment that is about 42% and about 21% are maintaining their blood pressure under normal range.¹⁴

Joint National Committee (JNC) 8 classifies blood pressure as following¹⁷

Classification	Systolic Blood Pressure	Diastolic Blood Pressure
Normal	<120	<80
Pre Hypertension	120-139	80-89
Stage I Hypertension	140-159	90-99
Stage II Hypertension	≥160	≥100

3.1.4 CANCER

Cancer occurs due to uncontrolled proliferation of the cells and has ability to affect both adjacent and distant organs. Globally in the year 2020, cancer accounted for about 19 million cases and 9 million deaths. The most common cancer responsible for death is breast cancer followed by lung cancer and then prostate cancer.¹⁶ In India, according to National Cancer Registry, ICMR, in the year 2020, there were 646,030 cancer cases among men and 678,383 among women. The most common type of cancers among men prevalent in India were Oral carcinoma, lung carcinoma, stomach cancer, colo-rectal cancer and carcinoma esophagus. Among women, the most common types of cancers prevalent were breast cancer, cervical cancer, cancer of uterus, oral carcinoma and colorectal carcinoma.¹⁶

3.2 RISKFACTORS FOR NON COMMUNICABLE DISEASES

The risk factors for non-communicable diseases can be divided into those that can be changed and those that cannot. The behavioral risk factors, also known as the non-modifiable risk factors, are harmful to one's health.¹¹ The following are the modifiable risk factors.

3.2.1 Tobacco Consumption

Annually about 6.3 million deaths globally and 6.3% of the global burden of disease are due to tobacco smoking, consumption of various forms of tobacco and second hand smoking in countries with low and moderate levels of income.¹⁹ The ill effects of smoking predisposes to long term complications such as cancers, cardiovascular and respiratory diseases.²⁰ Second hand smoking in places such as home and public places where the antenatal mothers, children are exposed will have results in adverse birth outcomes, childhood respiratory diseases.²⁰ Tobacco can be consumed in various forms and two main forms are smokeless tobacco and in the form of smoke. The most common form of tobacco consumption globally is Cigarette smoking. Smokeless forms of tobacco consumption are khaini, ghutka, panmasala which are consumed mostly in India and around the world are dry snuff, moist snuff, plug/twist, loose-leaf chewing tobacco, snuff, etc. Some other various forms of tobacco consumption namely water pipe tobacco, cigars, Cigarillos, pipe tobacco, bidis and kreteks.²¹

A multivariable randomization study was conducted to see the relationship between Alcohol and Tobacco consumption, Cardio vascular disease by Rosoff B Daniel, Smith Davey George, Meheta Neha et al., They used public accessible genome wide association studies which were of European origin. The single variable Mendelian randomization showed that there was genetic predisposition between alcohol and CVD risk factors which included high density lipoprotein cholesterol, tryglicerides, automated systolic blood pressure and automated diastolic blood pressure. In other hand, genetically predicated smoking showed association to Cardio vascular risk factors. Association between smoking and several risk factors was seen and also CVD outcomes which included MI.²²

Auna Dogfim, Sabrina Schlesinger, Teresa Norat, et al. did a thorough review and meta-analysis of research that looked at the relationship between smoking tobacco and the risk of heart failure. There was a rising relationship between smoking and heart failure, although the risk decreased depending on how long a person had been smoking cessation, according to the research, which included a total of 26 studies.²³

3.2.2 Alcohol Consumption

Consumption of alcohol causes numerous diseases and injuries. There is an inverse relation between moderate consumption of alcohol and the

cardiovascular disease and the diabetes, but this benefit is seen to be beneficial with the person having prior cardiovascular risk factors compared with the persons who don't.²⁴ The main cause of almost 2.7 million yearly fatalities and 3.9% of the worldwide disease burden is unhealthy alcohol use behaviours.¹⁹ Cancers, CLD's , unintentional injuries, alcohol-related violence, and neuropsychiatric problems are among the major illnesses included under the burden of disease caused by alcohol.²⁵ The role of alcohol consumption in injuries and violence in youth leading to road traffic accidents and in nonfatal neuropsychiatric conditions makes the disease burden larger than its contribution to mortality, relative to other risk factors for non-communicable diseases.¹⁸

A comprehensive review and meta-analysis on alcohol use and the risk of hypertension in men and women was conducted by Briasoulis Alexander, Vikram Agarwal, and others. When compared to non-drinkers among men, men with moderate consumption of alcohol had more risk of developing hypertension and among women after analysis, it was observed that there was increasing trend of development of hypertension. They concluded in their study that alcohol restriction had to be advised for both men and women to decrease the risk of developing hypertension which is one of the main risk factor for cardio vascular diseases.²³

3.2.3 Excess body weight and Obesity.

Increased total mortality and increased risks of developing or dying from diabetes, ischemic heart disease and ischemic stroke, malignancies, chronic renal disease, and osteoarthritis will be the effects of increased body weight and the accumulation of adipose tissue.²⁶ As BMI rises, the likelihood of developing diabetes and ischemic heart disease also rises. In opposite to this, the incidence of hemorrhagic stroke among Asian countries are increased with increase BMI of above 25.²⁵⁻²⁶ As of now, excess body weight is solely responsible for about 3.4 million annual deaths and 3.8% of the global burden of disease. Between 1980 and 2008, the prevalence of obesity (defined as a BMI 30) doubled globally, reaching 9.8% for men and 13.8% for women. This translates to more than half a billion obese persons worldwide, or around 205 million men and 297 million women.¹⁹

Riaz Haris, Khan Shaheb Muhammed, Siddoqui Jamal Tariq et al., conducted a systematic review and meta-analysis of Mendelian Randomization studies on association between Obesity and Cardio vascular outcomes to provide less biased result on association of obesity and cardiovascular diseases. Their meta-analysis suggested that obesity was associated with type 2 diabetes and Coronary artery disease.²⁷

A study conducted by Minghelli Beatriz, Olivria Raul, Nunes, et al. to determine the relationship between obesity, musculoskeletal problems, and

chronic diseases to ascertain the prevalence of obesity and over-weight in adolescents and explore the relationship with the risk factors for the development of cardiovascular, respiratory, and musculoskeletal disorders. The findings indicated a high prevalence of obesity among young people in Portugal, as well as a statistically significant link between obesity and the development of restrictive diseases, prehypertension, and hypertension.²⁸

3.2.4 Physical Activity

According to WHO physical activity is defined as skeletal muscles involving bodily movements which produce enough energy expenditure.²⁹ Regular exercise aids in the prevention and maintenance of long term illness such diabetes, hypertension, heart disease, and some types of cancer. It helps in preventing over weight , obesity which in turn enhances our mental wellbeing.³⁰ Our immune systems will get benefitted with the regular and consistent physical activity.³¹ About 1.4 billion adults are insufficiently active, and about 1 in 3 women and 1 in 4 men are not physically active when it comes to global scenario, it's been observed that those countries having high income are having citizens who are physically inactive to those were in low income countries mean while the level of physical inactivity has been raise by 5% that is from 31.6% to 36.8% during the period of 2001 and 2016 among high income countries.³² Adults aged more than 18years and less than 64 year have to indulge themselves in the moderate amount of

physical activity of at least 150-300 minutes or vigorous amount of physical activity of about 75-150 minutes in a week, they can also indulge themselves in muscle strengthening exercises of moderate amount of physical activity for about 2 days in a week which will results in extra health benefits.³² People with non-communicable diseases like type 2 diabetes, hypertension have to indulge themselves in at least 150-300 minutes of moderate intense of physical activity in a week.³³

Physical inactivity is one of the leading causes of death when it comes to non-communicable causes. People who are not being physically active in their life are at risk of developing Non Communicable diseases such as obesity, Cardio Vascular Diseases, Type II Diabetes and certain cancers like colon cancers. Physical Inactivity has been recognized as public health problem globally and it accounts for about 13 million DALY and is one of the leading causes for premature morality.³²

Physical Inactivity is the fourth leading cause of death. Individuals who spend lots of time engaged in sedentary behaviors have increased risks of Non-Communicable Diseases (NCDs), such as obesity, Cardio Vascular diseases, Type II Diabetes and certain cancers.³³ Every year 63% of deaths are estimated to result from NCDs worldwide.³²

Around the world, physical inactivity is one of the main causes of poor health. It causes premature mortality and accounts for around 13 million DALY. Around one-third of persons worldwide engage in insufficient physical activity.³⁴ Physical inactivity has been linked to a higher risk of developing non-communicable diseases like hypertension, diabetes, and heart disease, according to epidemiological study. Regular exercise protects by enhancing muscular strength and cardiorespiratory fitness as well as bone mineral density.³⁵

In view of increasing physical inactivity, WHO recommended Global action plan to reduce physical inactivity by 2030. The objectives which included were creating active societies, active environments, making people physically active and active systems.²²In the year 2019, even the Government of India in view of improving physical activity launched a program called “Fit India Movement” which aimed at making fitness an integral and most essential part of people’s daily lives. As a part of this program, people were educated regarding health benefits of physical activity and they were motivated to take up the same.³⁶

By analyzing employee data from the 2007–2008 Australian National Health Survey, Josephine Y et al. conducted a cross-sectional study to explore the relationships between occupational and leisure-time sitting, physical activity,

and obesity in working adults. The majority of the participants' activities outside of work were sitting, standing, walking, or heavy lifting, as well as sitting down for leisure activities and engaging in physical activity. There was a measurement of BMI. Results of their study showed that a large proportions of men (42%) and women (47%) mostly sit at work. Workers with mostly sitting jobs had significantly higher overweight/obesity risk than workers with mostly standing jobs. Workers with leisure-time sitting of less than four hours per day had significantly lower obesity risk than workers with four or more hours per day of leisure time sitting .³⁷

To examine the main and interacting effects of accelerometer-based sedentary time (ST) and moderate-to-vigorous physical activity (MVPA) with BMI and the likelihood of being overweight/obese in older adults in Hong Kong and Ghent (Belgium), Delfien Van Dyck et al. conducted a study on the main and interacting effects of physical activity and sedentary time on older adults' BMI: The moderating roles of socio demographic and environmental Sedentary time was positively correlated with both weight outcomes in the overall sample, but moderate to vigorous physical activity was not. The study found that older adults provided self-reported socio-demographic information and objective MVPA and ST data using Actigraph accelerometers compared to other age groups, and that older adults also reported more weight outcomes..³⁸

4. Diet

Consuming healthy diet helps in preventing all forms of malnutrition and also Non Communicable Diseases. A healthy diet has to include fruits and vegetables of about 400 grams every day,³⁹ less than 50grams of free sugars for a person who consumes on an average of 2000 calories per day,⁴⁰ and Unsaturated fats, such as those in fish, avocados, and nuts, are preferred over saturated fats, such as those found in meat, butter, palm oil, and coconut oil, and trans fats, which are present in fried foods, pizza, and cookies. Less than 5 grams of salt per day should be the maximum daily intake. .⁴¹

4.1Types of Diet

Type of diet consumption mainly depends on individual choice of food and here are 9 popular diets.

4.1.1 Paleo Diet: This diet consists of lean meat, fish, shellfish, fruits, vegetables, roots, eggs, and nuts but excludes grains, dairy products, salt, processed fats, and sugar..⁴⁰ The health benefits of this diet is glucose control, lipid control and also insulin sensitivity. ⁴¹

4.1.2 Vegan Diet: In this diet there is no intake of animal and animal products such as dairy, eggs, gelatin and honey. It helps in lowering the body

weight and body mass index. It also helps in reducing the risk for heart diseases, diabetes, Alzheimer's and cancer.^{42,43,44}

4.1.3 Low Carb Diet: This type of diet have been consumed mainly for weight loss and it involves in limiting carb intake which involves an average consumption of 20-150 grams per day. The way low carb diet works is that it makes the body to use fat as the fuel for energy instead of carbohydrates. In this diet there will be increased consumption of fat and proteins. So when the carbohydrate level is low, the proteins and fats will be metabolized in the liver and will be converted some into fatty acids and some into ketones and they will serve as the main primary source of energy. So they are very beneficial in weight reduction, reducing centripetal obesity and reduction of blood tri-glycerides, cholesterol levels, blood sugar levels, insulin levels and also blood pressure.^{45,46,47}

4.1.4 The Dukan Diet: This diet is strong in protein and low in carbohydrates. It is practised in four phases—two for weight loss and two for maintenance—each of which has a unique nutritional pattern..⁴⁸ The weight loss phase includes consumption of protein and compulsory consumption of oat bran and other phase involves consumption of non-starchy vegetables, low quantity of carbohydrates and fat and in the end there will be less quantity of consumption of protein to maintain the lost weight. This type of

diet helps in increasing the metabolic rate and also it reduces the appetite inducing hormone called ghrelin.⁴⁹

4.1.5 The Ultra-Low Fat Diet: Here, daily fat consumption is limited to just around 10% of the calories needed.⁵⁰ and this type of diet is ineffective for long term weight loss.⁵¹ So this diet is plant based and it comprises of high intake of carbohydrates and low in proteins. Studies suggest that this type of diet is beneficial for heart disease,⁵² reducing in the markers of inflammation and cholesterol levels. It has shown significant improvement in type 2 diabetes mellitus.⁵³

4.1.6 The Atkins Diet: This is the most popular and most widely practiced diet for the weight loss⁴⁸ and this diet includes low carbohydrates and high amounts of protein and fats. The reason behind the low consumption of carbohydrate is to reduce the hunger. This diet contains four phases, the first of which involves consuming 20 grams of carbohydrates per day for 14 days. Once you reach your goal weight loss, the remaining phases involve gradually restoring carbohydrates to your diet, and it primarily works to reduce centripetal obesity.⁴⁷ Many studies have shown that this diet helps in blood levels of cholesterol, triglycerides, sugar and also improves insulin levels.⁴⁷

4.1.7 The HCG Diet: In this diet there is very fast weight loss of up to 1-2 pounds per day. This diet increases metabolism and fat loss and also it does not induce hunger.⁵⁴ Basically HCG is human chorionic gonadotropin hormone excreted in women's during pregnancy.⁵⁴ This diet has three phases where the initial phase is started with the intake of HCG supplements. The next phase consists of calorie intake of 500 calories along with HCG supplements and this phase lasts about 3-6 weeks and the last phase is intake of HCG is slowly weaned off and food consumption will be increased. Numerous studies have demonstrated that decreased calorie consumption causes weight loss rather than the HCG hormone.^{55,56}

4.1.8 The Zone Diet: Is a type of diet where carbs to about 35%-45% of daily calories and fat to about 30% and so basically it is a low glycemic load diet.⁵⁵ This was developed for diet induced inflammation.⁵⁷ Here, each meal consists of one third protein, two thirds fruits and vegetables, and one third fat. The benefit from this diet is it reduces the blood level cholesterol and triglycerides which in turn reduces the risk of developing heart disease.⁵⁸ A study suggests that this type of diet has positive effect in improving blood sugar level, reduction in centripetal obesity and reducing chronic inflammation.⁵⁸

4.1.9 Intermittent Fasting: Here there are consecutive periods of fasting and eating. In this diet there is restriction on when to eat rather than what you eat. The most of popular way of doing intermittent fasting are:

1. 16/8 method: Fasting period of 16hrs of fasting and 8 hours of eating.
2. The eat stop eat method: Fasting of 24 hours in week for two days.
3. 5:2 method: Two non-consecutive days in week one has to consume calories of about just 500-600 .
4. The warrior method: Whole day one has to consume raw fruits and vegetables and at night a meal.

So intermittent fasting is commonly used for weight loss and it is shown loss of about 3-8% over a period of 1 month to 4 months, increase in metabolic rate by 3.6%-14% in the short term.⁵⁹ This type of diet is also shown to increase the level of human growth hormone and increased insulin sensitivity.⁶⁰

Doanna M. Geneva et al. studied eating patterns and obesity among university students in Alexandria, Egypt. A total of 398 students between the age of 18 and 26 years were recruited, and they were asked to complete a self-reported questionnaire. The findings revealed that 11.8% of people were

obese, 28.9% were overweight, and 55.8% were in the normal weight range. Eating patterns revealed that the bulk of them ate erratically. According to the findings of this study, frequent snacking and irregular and infrequent meals were the participants' most common unhealthy eating behaviors, and obesity and overweight were common among college students.⁶¹

Vadera N. Bhavin and colleagues conducted a cross-sectional analytical study to examine the influence of dietary determinants on Gujarati people's weight status and to determine the prevalence of overweight and obesity in the urban population. According to their study's findings, overweight and obesity were more common in women than in men and showed an upward tendency as people aged (22.04% and 5.20%, respectively). Snacking frequency and total calorie consumption were found to have a favorable relationship with overweight/obesity. Thus, they came to the conclusion that the key dietary determinants determining weight increase were total calorie consumption as well as food composition.⁶²

5. Intervention Methods

Any action which helps in improving the health status of the human beings by reducing or by treating the disease is known as intervention. There are numerous strategies for the new interventions and these include those which are done in community called as public health interventions, and those for

short term and long term conditions are called as clinical care measures, behavior change strategies and better health planning and management methods.⁶³

5.1 TYPES OF INTERVENTIONS

They can be mainly classified under two broad categories and they are preventive and therapeutic interventions. Preventive interventions are those which helps in reducing the incidence of the disease and therapeutic interventions are those which aims at treating the disease.

5.1.1 Preventive interventions:

1. **Vaccines:** Vaccines are given to the individuals before getting exposed to infectious agent in order to protect them from acquiring the disease. On long term administration of the vaccines, may be after 2 or 3 doses, an individual may acquire a lifelong immunity. This type of intervention is very cost effective in the Low Middle Income countries.⁶³
2. **Nutritional interventions:** Populations in low income countries and deprived populations among middle income countries are prone for Severe Acute Malnutrition like Marasmus and Kwashiorkor which is dangerous to the life as it exposes the immune deficient individuals to various infections. Several interventions have been conducted to address the nutritional deficiency like

high calorie diets at Nutritional Rehabilitation Centres, food fortification at the community level and innovations at agricultural level to increase the required nutritive value.⁶³

3. **Maternal and Neonatal Interventions:** Mothers health during antenatal and as well as postnatal period plays an important role on the maternal mortality. Preventive interventions plays a significant role in the maternal health which includes family planning, treatment of sexually transmitted infections and reproductive tract infections, nutrition of the mother and antenatal monitoring. Preventive based trials include preventive interventions to avoid complications during pregnancy and post-delivery and also hospital based trials have good pregnancy outcome. Intervention for neonate include educating expectant mothers regarding good breast feeding practices and delivery of Kangaroo Mother Care to both the parents .⁶³

4. **Education and behavior change:** Some of the interventions preventing diseases is based solely on behavioral change. Most of the health interventions have an associated educational component which may have information on the disease evolvment till the complications of the disease. Some of the examples of the educational component of the disease program are educating mothers on diarrhoea and dehydration, anti-smoking habits, lifestyle modifications, hand washing techniques for the prevention of

diarrhoea , better methods for the disposal of faeces and knowledge on the vaccines for the vaccine preventable diseases.⁶⁰

5.1.2 Therapeutic Interventions:

- 1. Treatment of infectious diseases:** The way the drug can control the disease will influence most of the times in the field trial. Some of the examples are Tuberculosis and Leprosy.⁶⁰
- 2. Surgical and Radiation treatment:** Usually employed in clinical trials. In field trials some of the surgeries undertaken are cataract and inguinal hernia surgeries.⁶⁰
- 3. Diagnostics to guide therapy:** The most efficient way for the accurate diagnostics are by appropriate investigations but most of the times it's done based on signs and symptoms. There is need for development of investigations for infectious and chronic conditions. So for these purposes, field trials have to be done to test the sensitivity of these investigations.⁶⁰
- 4. Control of chronic conditions:** Chronic conditions such as HIV, Tuberculosis will have infectious aetiology and some are having other causes such as Cardio Vascular Diseases and Cancers. NCD's once diagnosed if not cured then can be controlled by behavioral change, education and adhering to the treatment.⁶³

Therapeutic Interventions: Treatment of infectious disease, Surgical and radiation treatment, Diagnostics to guide therapy.⁶³

Other forms of interventions include: Health system interventions and Complex interventions.⁶³

5. mHealth

Using mobile devices to offer healthcare to patients and promote public health is known as mHealth. Even the most basic means of communication, such as recorded voice messages, can be useful. They are highly useful for keeping track of patients' symptoms because they are easily accessible, portable, and promote connectedness throughout the day.⁶⁴

Depending upon the health services and range of the app, the mHealth can be divided into various categories which are explained in detail below.

6.1 Lifestyle oriented apps: These types of app will help the individuals to maintain healthy lifestyle by keeping a track on their activities such as healthy diet and activities regarding their physical activity. Users can use these apps independently without the supervision of the doctor and these apps are especially useful in chronic conditions like obesity, diabetes mellitus and cardio vascular diseases.⁶⁵

6.2 Patient – Oriented apps: This app helps people with medical problems with chronic conditions to have early diagnosis and better compliance with the treatment. For example an app called “iTriage” helps their users to diagnose the conditions on their own and find their own appropriate health care providers but the drawback is here the treating physician will not be diagnosing the individuals, so the app has to be used with care.⁶⁶

6.3 Clinician – Oriented apps: These assist the treating physician by giving them information about the patients and assisting them in selecting the best diagnostic instruments. This is helpful for the clinician as well as the patient. Exercise manuals for rehabilitation, encyclopaedias of medicine, and books on drugs are a few examples of reference or instructive information. Mobile accelerometers, inclinometers, and goniometers are a few examples of tools.

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In order to effectively manage Type 2 Diabetes in Dhaka, Bangladesh, Yasmin Farzana et al. conducted an RCT to determine the impact of mobile phone-based health reminders on patient adherence for medication and healthy lifestyle advice. Intervention group received phone calls and helped them to have compliance with the treatment, healthy diet and better physical activity. The study showed improvement in diet habits, physical activity, tobacco cessation and good glycemic control among the patients in the intervention group.⁶⁷

In order to determine the viability and preliminary effectiveness of incorporating the “Fitbit” tracker and website into a physical activity intervention for postmenopausal women, Lisa, Bertram Cadmus, Marun H. Bess, and colleagues conducted Fitbit-based Physical Activity Intervention for Women at Sandiego. Compared to the comparison group, the web-based tracking group—the intervention group—had higher levels of physical activity.⁶⁸

Fenton Sasha, Burrow L Tracy, Collins E Clave et al., conducted RCT on to find out the efficacy on a multicomponent mHealth Diet, Physical activity and Sleep intervention on Dietary intake in adults with overweight and obesity at Australia. Briefly the multicomponent mHealth was a balance app which consisted of 10 food goals every day, a physical activity component to increase daily step goals and sleep component that had information on quality sleep and its benefits. The intervention group had higher food intake in terms of nutrient rich foods and also reduced total energy and sodium levels and increased food intake at 6 months.⁶⁹

Effectiveness of a mHealth Lifestyle Program with Telephone Support (TXT2BFiT) to Prevent Unhealthy Weight Gain in Young Adults: A Randomized Controlled Trial was carried out to determine the effectiveness of mHealth prevention programmes in preventing excess weight gain and improving dietary and physical activity behaviours in young adults who are

at increased risk of obesity and unhealthy lifestyle choices. The 12-week intervention phase saw the intervention group receive 8 texts per week based on the trans-theoretical model of behaviour change, 1 email per week, 5 calls for individualised coaching, a diet guide, and access to tools and mobile phone apps on a website. Participants in the control group only got four texts, along with printed nutrition and exercise recommendations. At the beginning and after 12 weeks, measurements of body weight and height were taken. The TXT2BFiT low-intensity intervention helped overweight young individuals prevent weight gain, lose a little amount of weight, and improve their lifestyle choices. The 12-week intervention period has potential as evidenced by its short-term success. At nine months, the behaviour change's maintenance will be evaluated.⁷⁰



MATERIALS AND METHODS



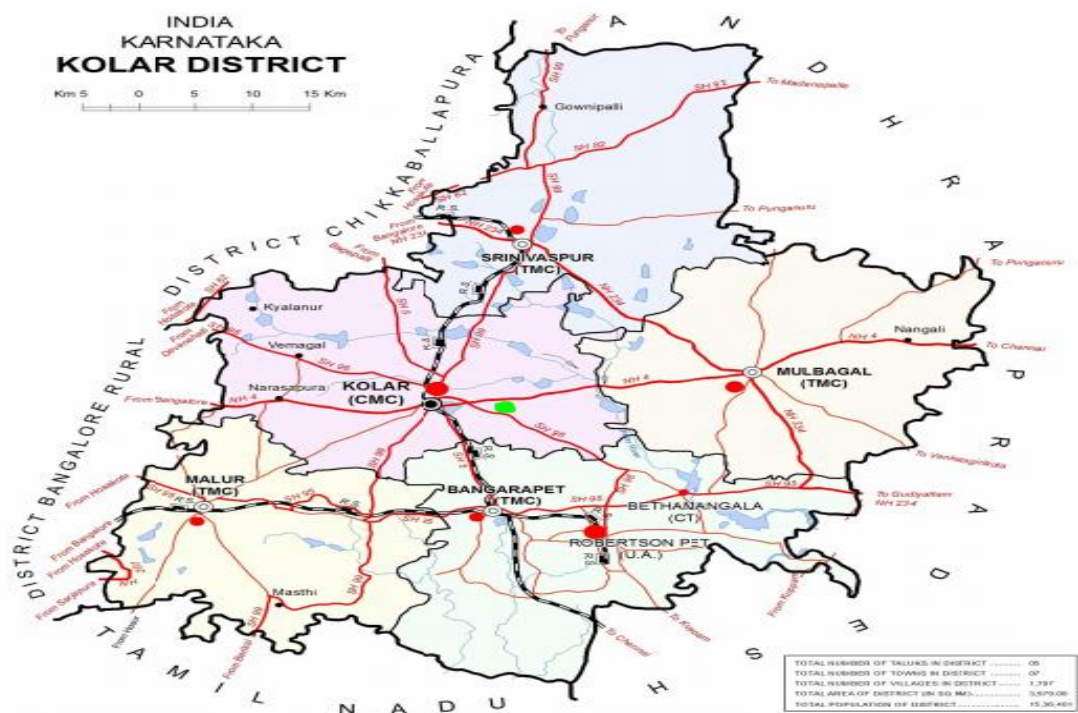
4. Materials And Methods:

4.1 Source of data: Study was conducted on Garment women employees.

4.2. Study design: Open label parallel design 1:1 Randomized Controlled Trial.

4.3 Study population and setting:

Figure .No.1: Map of Kolar district.



All women working in a single Garment Factory, Kolar (Name not mentioned due to ethical obligations). During the time of study, 450 women had been employed in the factory. All employees worked in general shift from 8:30 AM to 5:30 PM with half an hour as lunch break. The employees were engaged in production of garments for market and utilize electrical power for manufacturing them. A medical establishment was available within the premises of the factory where a lady doctor and two nurses were available during the working hours which caters to the medical needs of the employees.

4.4 Inclusion criteria:

1. All women who worked on permanent basis in the garment factory of Kolar.
2. Aged more than 18yrs and who had their own personal mobile phone.

4.5 Exclusion criteria:

1. Pregnant/ Lactating women.
2. Those who were going to leave job/retire in the next six months.
3. Those who were already enrolled in other similar studies.
4. Those who were physically challenged.
5. Self-reported history of Myocardial Infarction/Stroke/Psychiatric disorder.

4.6 Number of groups to be studied, identify groups with definition:

Two groups –

1. Group A (Intervention Group): Group A received pamphlets having detailed information on healthy dietary habits and physical activity practices along with monthly mHealth package regarding healthy food intake and physical activity.
2. Group B (Control Group): Group B received only pamphlets which had detailed information on healthy dietary and physical activity practices.

4.7 Study Tools: A Pre-tested semi-structured questionnaire was used and following data was collected.

1. Socio demographic details including age, income, marital status, locality, co-morbidities, tobacco use and alcohol intake.
2. Dietary habits- Details collected in this domain included information about vegetable and fruits, dietary salt, processed food and their knowledge about lowering salt in their diet. All the above mentioned information was assessed through administration of modified Questionnaire to assess adherence to diet and exercise advices for weight management in lifestyle related diseases.⁷²

3. Details of physical activities: Included the nature of physical activity undertaken during recreational time, which was collected based on the questionnaire by Global Physical Activity by WHO⁷³ and such activities was calculated using Metabolic Equivalents(MET) Chart by Harvard T.H. Chan School of Public Health . MET is a way to measure the body's expenditure of energy. The higher the MET value of particular activity, more energy is consumed.

4.8 Study duration:: February 2021 to August 2022

4.9 Approval for the study:

The study protocol was approved by the Institutional Ethical review Committee (IEC). CTRI registration was done before the starting the study with registration number CTRI/2021/02/031569.

4.10 Sample size:

Assuming an expected change of 15% in the intervention arm compared to the comparator group with 15% good practices to diet as baseline based on previous study reference⁷¹ and confidence interval of 95%, power of 80% and dropout rate of 20%, with a 1:1 allocation ratio between two groups the minimum required sample size was calculated to be 147 in each group and total sample size was 294(calculated using **OpenEpi Version 3.01**).

Formula:

$$n_1 = \frac{[z_{\alpha/2} + z_{1-\beta}]^2 pq(r+1)}{r(p_1 - p_2)^2}$$

and

$$n_2 = n_1$$

where

- n_1 = number exposed
- n_2 = number unexposed
- $z_{\alpha/2}$ = standard normal deviate for 2 tailed test based on alpha level (relates to the confidence interval level)
- z_{β} = standard normal deviate for one tailed test based on beta level (relates to the confidence power level)
- r = ratio of unexposed to exposed
- p_1 = proportion of exposed with disease and $q_1 = 1 - p_1$
- p_2 = proportion of unexposed with disease and $q_2 = 1 - p_2$

$$p = \frac{p_1 + p_2}{r + 1} \text{ and } q = 1 - p$$

4.11 Sampling:

Simple random sampling technique was used to recruit the participants.

4.12 Randomization details:

Help of an expert from the Department of Community Medicine of our own college was consulted for use of the randomization software. Simple randomization technique was used to randomize the study participants into two groups – Group A and Group B (allocation ratio 1:1). Allocation sequence was put in the brown (opaque) closed envelope. After collecting the baseline data from the study participants the guide revealed the allocation to start the intervention process. Blinding couldn't be done beyond this step.

4.13 Baseline assessment/recruitment:

All the participants after obtaining informed written consent was interviewed using the semi-structured semi tested questionnaire after the Pilot Study. Their baseline BMI, Glucometer Random Blood Sugar (GRBS) and Blood Pressure (BP) was recorded using standard techniques. After administering the questionnaire, both intervention and control group was provided with the pamphlets about healthy food habits and physical activities.

4.14 Intervention details:

mHealth package was a type of lifestyle oriented app delivered using telephonic calls where individualised health promotion intervention on diet and physical activity based on baseline data was given in the first month. This intervention was planned by involving experts from the department of Community Medicine, health staff at the factory and also stakeholders (factory workers). During the subsequent five months one voice call every

month of five minutes duration was made to assess the change in practices and individualised intervention was delivered following the Social Behavioural Change Communication model guidelines. Telephonic calls were made at the preferred time of the participant as ascertained during the recruitment process. Any questions posed by the participants regarding the same matter was answered. In the event of call not being answered by a participant while contacting through the mobile call, second call was made after a gap of one hour and the procedure was repeated once again. If the call was not answered even then, the participant was considered to have foregone the intervention for that particular month. Those who failed to receive the intervention calls for two scheduled episodes was considered as 'loss to follow up' and were removed from **per protocol analysis**.

4.15 End assessment:

After six months of recruitment, all the participants (both intervention and control group) were again administered with the same dietary assessment and physical activity assessment questionnaire and their BMI, GRBS and BP was recorded using standard techniques to assess the changes in them.

4.16 Measurement of outcome variable:

The end assessment of the study was healthy dietary habits of the study subjects which included increased consumption of vegetables, fruits and decreased in consumption of fried food items and salt intake. In addition,

improvements in the physical activities were assessed in terms of changes in METs values. Their weight, GRBS and BP was measured again at the end.

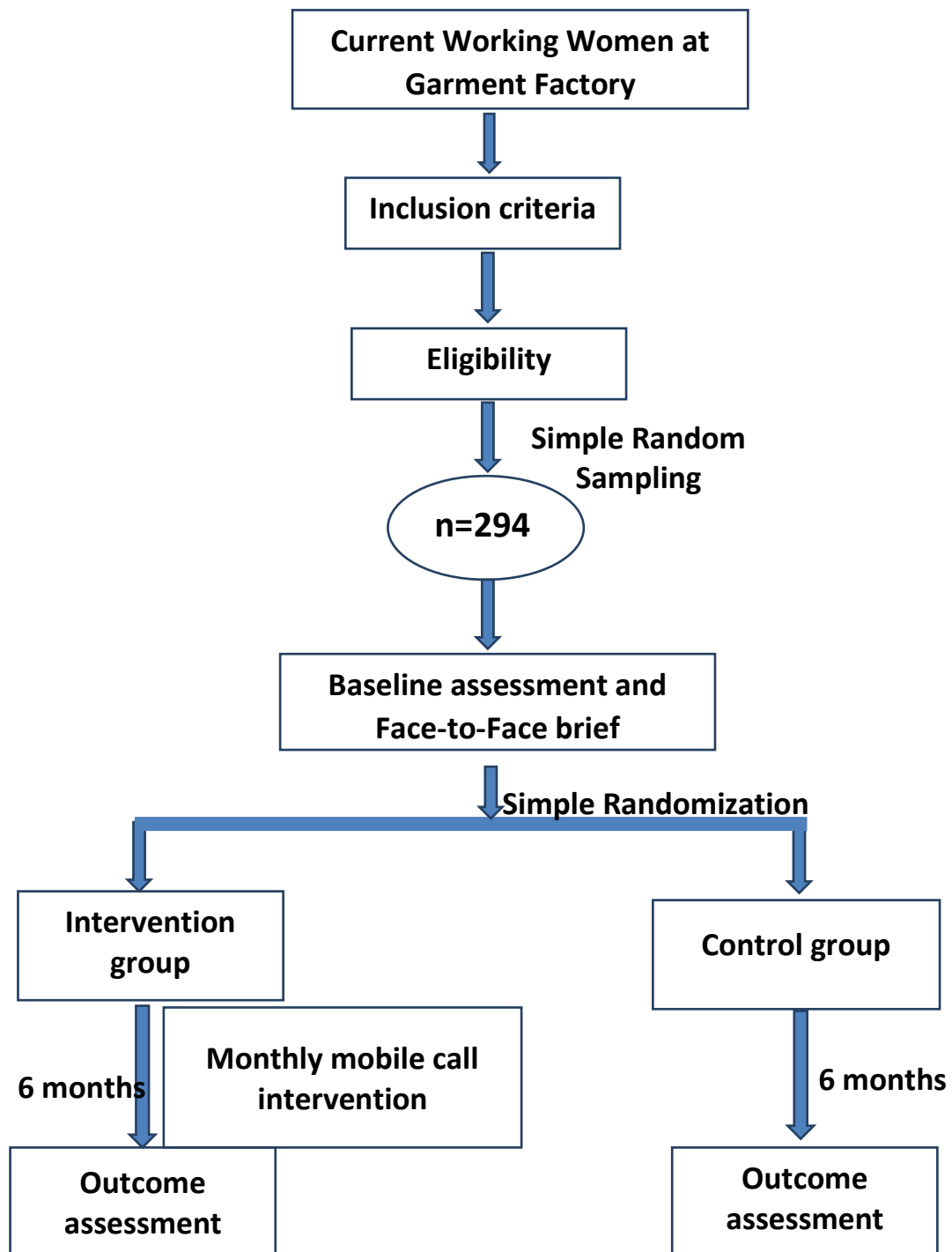
4.17 Statistical Analysis:

Double data entry and validation was done using **EpiData Entry Client v3.1** and analysed using **IBM SPSS Statistics version 20** and **Stata v12**.

Continuous variables like age, physical activity and healthy dietary habits was summarized as Mean and Standard deviation (SD). Categorical variables like socio-economic status, education, occupation, presence of co-morbidity were taken as proportions. Differences in socio-demographics, dietary habits and physical activity behaviour was assessed using the Independent t test.

The Difference-In-Difference (DID) analysis will be used to assess the effectiveness of intervention. The difference in change over the pre-intervention period to post-intervention period in the intervention group was assessed. A $p < 0.05$ will be accepted as statistically significant.

Flowchart depicting the participant's recruitment and study procedure





RESULTS



5. RESULTS

The study consisted of 290 female garment factory workers who were randomized into Control group ($N_1=145$) and Intervention group ($N_2= 145$).

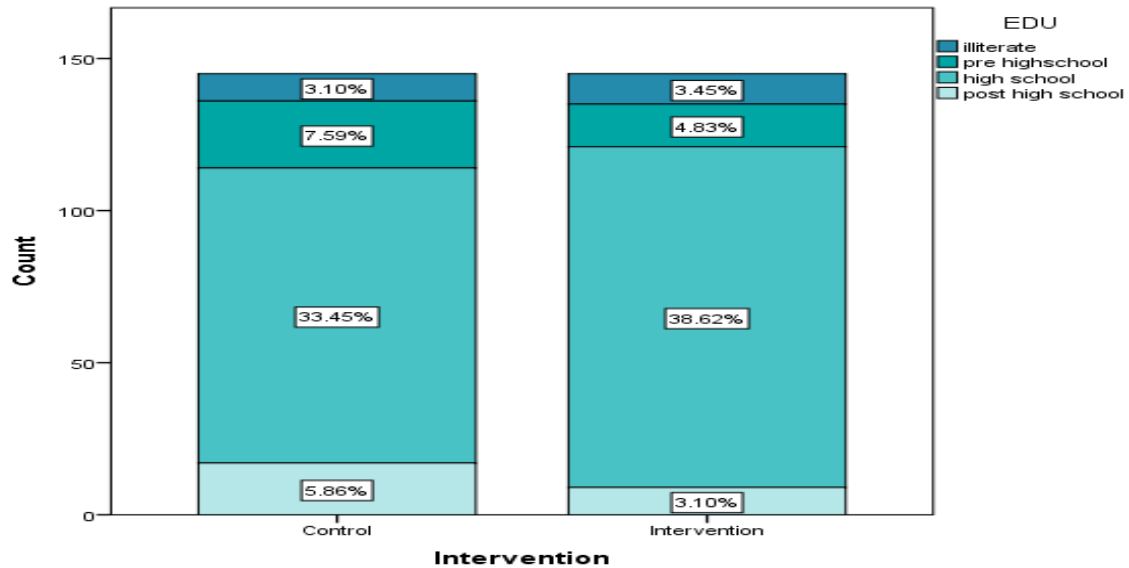
Table 1: The age distribution of the study participants

Age	Frequency	Percentage
Aged 30 and less than 30 years	155	53.4
Aged more than 30 years till 60 years	135	46.6
Total	290	100

(Figures in parentheses are percentages)

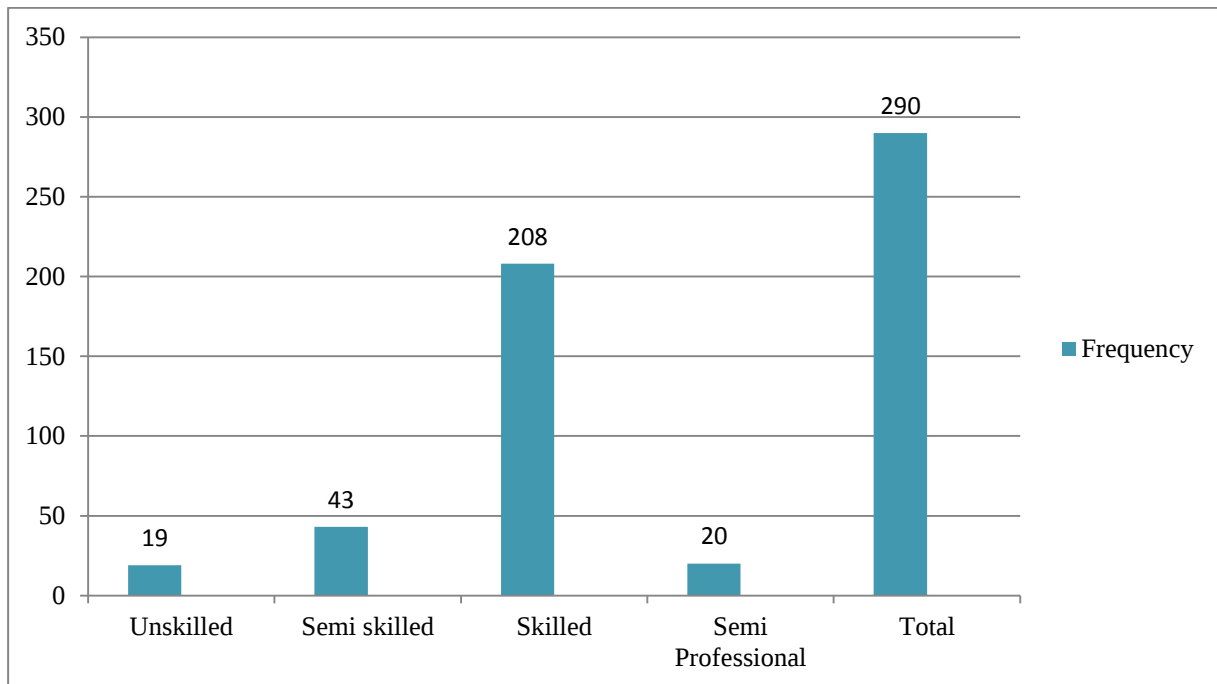
There was no significant difference in the distribution of participants in the two age groups in the Control Group and Intervention Group (χ^2 : 0.410).

FIGURE 3: Education status of the study participants



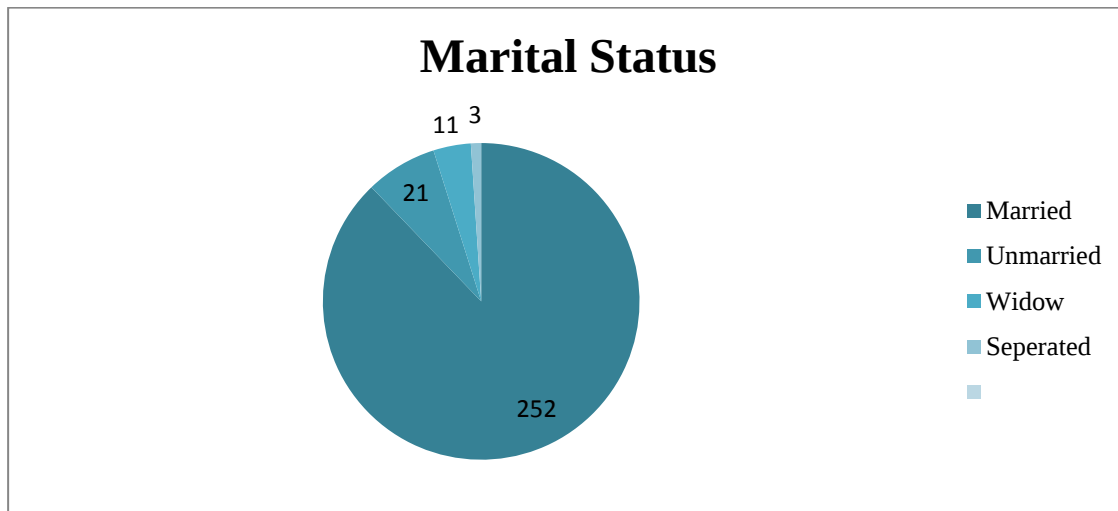
There was no significant difference in the distribution of participants at educational level in the Control Group and Intervention Group (χ^2 : 0.147).

FIGURE 4: Occupational status of the study participants.



There was no significant difference in the distribution of participants at Occupational level in the Control Group and Intervention Group (χ^2 : 0.325).

FIGURE 5: Marital status of the study participants



There was no significant difference in the distribution of participants at marital status level in the Intervention Group and Control Group (χ^2 : 0.152).

Table 2: Socio Economic Status (SES) of the study participants.

Socio economic status	Frequency	Percentage
Class I	18	6.2
Class II	113	39.0
Class III	101	34.8
Class IV	58	20.0
Total	290	100

(Figures in parenthesis are percentages)

Here study participants were classified based on Modified BG Prasad Classification (May 2021).⁷⁴ About 39% of the study participants belonged to Class II and 34.8% belonged to Class III. There was no significant difference in the distribution of participants OF Socio Economic Status in the Control Group and Intervention Group (χ^2 : 0.311).

Analysis of pre intervention dietary scores among Intervention and Control group.

Table 3: Baseline dietary scores of the participants.

Groups	Groups	Mean diet scores(SD)	t (df, p value)
Intervention Group	145	27.46±4.39	-0.124 df: 288; p:0.90
Control Group	145	27.53±5.05	

Here dietary scores of the study participants from both the groups was not statistically significant.

Table 4: Mean Dietary Scores based on Age of the participants.

Age	Groups	No. Participants	Mean Diet Scores(SD)	t (df, p value)
Aged 30 and less	Intervention Group	81	27.12±3.55	-0.856
	Control Group	74	27.77±5.69	(df: 153, p: 0.393)
31-60yrs	Intervention Group	64	27.90±5.27	0.739
	Control Group	71	27.29±4.31	(df: 133, p:0.46)

The mean diet scores in the Intervention Group and Control Group were calculated and stratified based on age of the participants. It was found that the mean Dietary Scores in Intervention Group and Control Group was not statistically different at baseline even when stratified by the age.

Table 5: Mean Dietary Scores based on Education.

Education	Groups	No. Participants	Mean diet scores(SD)	t (df, p value)
Illiterate	Intervention Group	10	26.20±4.21	0.969 (df: 17,p:0.34)
	Control Group	9	24.66±2.29	
Pre high school	Intervention Group	14	26.85±3.70	-0.567 (df: 34,p:0.57)
	Control Group	22	27.54±3.39	
High school	Intervention Group	112	27.13±3.85	0.918 (df: 207, p:0.36)
	Control Group	97	26.64±3.74	
Post high school	Intervention Group	9	34.00±6.74	-0.36 (df: 24, p:0.972)
	Control Group	17	34.11±8.53	

The below table shows that at different education level, based on Modified Kuppuswamy Classification Jan 2021 , ⁷⁵ mean dietary scores were calculated and Intervention Group and Control Group were compared. It was found that there was no significant difference in the mean diet scores in each of the educational category.

Table 6: Baseline Dietary Scores based on Profession.

Profession	Groups	No. Participants	Mean Diet Scores(SD)	t (df, p value)
Un skilled	Intervention Group	11	24.90±1.75	-3.306 (df: 17,p: 0.004)
	Control Group	8	28.25±2.65	
Semiskilled	Intervention Group	26	26.26±2.44	0.301 (df: 41, p: 0.76)
	Control Group	17	26.00±3.42	
Skilled	Intervention Group	100	27.65±4.35	1.704 (df: 206, p:0.09)
	Control Group	108	26.66±3.96	
Semi professional	Intervention Group	8	32.62±7.55	-1.351 (df: 18, p: 0.19)
	Control Group	12	37.08±7.01	

The below table shows at different profession, mean dietary scores were calculated and Intervention Group and Control Group were compared. There was no significant difference in the mean diet scores in each of the category.

Table 7: Mean dietary scores based on SES.

SES	Groups	No. Participants	Mean Diet Scores(SD)	t (df, p value)
Class I	Intervention group	7	30.00±4.08	-1.566 (df: 16, p value: 0.13)
	Control group	11	34.90±7.56	
Class II	Intervention group	61	27.31±5.14	1.078 (df: 111, p value: 0.28)
	Control group	52	26.36±3.98	
Class III	Intervention group	53	27.03±3.46	0.831 (df: 99, p value: 0.40)
	Control group	48	26.5±2.98	
Class IV	Intervention group	24	28.08±4.17	-0.235 (df: 56, p value: 0.13)
	Control group	34	28.41±5.86	

It is seen that the dietary scores even after stratification at different SES showed no significant difference.

Analysis of pre intervention physical activity scores among intervention and control group.

Table 8: Baseline physical activity scores of the participants.

Groups	Groups	Mean Physical Activity scores(SD)	t (df, p value)
Intervention Group	145	227.76±102.99	-1.884 (df: 288,p: 0.061)
Control Group	145	250±98	

Here Physical Activity scores of the study participants was not statistically significant.

Table 9: The mean Physical Activity scores based on age of the participants.

AGE	Groups	No. Participants	Mean PA Scores(SD)	t (df, p value)
Aged 30 and less	Intervention group	81	225.93±101.5	-1.653 (df: 153,p: 0.10)
	Control group	74	252.36±97.23	
31-60yrs	Intervention group	64	230.08±105.6	-0.989 (df: 133,p:0.32)
	Control group	71	247.54±99.47	

The mean Physical Activity Scores in both Intervention Group and Control Group were not statistically different at baseline even when stratified by the age.

Table10: The mean Physical Activity scores based on Education.

Education	Groups	No. Participants	Mean PA scores(SD)	t (df, p value)
Illiterate	Intervention Group	10	147.50±41.58	-6.151 (df: 17,p:0.001 [*])
	Control Group	9	277.78±50.69	
Pre high school	Intervention Group	14	153.57±44.78	-2.914 (df: 34,p:0.006)
	Control Group	22	250.00±118.01	
High school	Intervention Group	112	228.35±84.59	-1.613 (df:207, p:0.10)
	Control Group	97	248.71±97.91	
Post high school	Intervention Group	9	425.00±158.11	3.705 (df:24 , p:0.001 [*])
	Control Group	17	242.65±94.27	

The mean physical activity scores among the study participants were stratified based on their education and those who had done post high school showed significant difference at the baseline.

Table 11: The mean Physical Activity scores based on Occupation.

Occupation	Groups	No. Participants	Mean PA scores(SD)	t (df, p value)
Un skilled	Intervention group	11	186.36±49.19	-8.31 (df: 17,p:0.41)
	Control group	8	209.38±71.88	
Semi-skilled	Intervention group	26	214.42±76.86	-1.811 (df: 41,p:0.07)
	Control group	17	255.88±67.62	
Skilled	Intervention group	100	221.50±87.97	-2.45 (df:206,p:0.01 [*])
	Control group	108	253.94±101.84	
Semi professional	Intervention group	8	406.25±209.48	-2.38 (df: 18,p:0.02 [*])
	Control group	12	233.33±115.47	

*p value: Independent t test

Baseline physical activity scores of the participants from both Intervention and Control group were compared and those who were employed as skilled and semi-professional jobs showed statistical difference.

Table 12: The mean Physical Activity scores based on SES

Socio economic status	Groups	No. Participants	Mean PA scores(SD)	t (df, p value)
Class I	Intervention Group	7	310.71±185.88	1.201 (df: 16,p:0.24)
	Control Group	11	225.00±118.84	
Class II	Intervention Group	61	217.21±87.14	-1.661 (df:111,p:0.09)
	Control Group	52	244.23±84.97	
Class III	Intervention Group	53	220.75±104.09	-1.489 (df: 99,p:0.14)
	Control Group	48	252.08±107.16	
Class IV	Intervention Group	24	245.83±101.26	-0.683 (df: 56,p:0.49)
	Control Group	34	263.97±98.31	

Study participants of both the groups were classified based on Modified B G Prasad Classification (May 2021) and physical activity scores were compared and was seen that it was not statistically significant.

Analysis of post intervention dietary scores among Intervention and Control group

Table 13: Dietary scores after 6 months in Intervention and Control Group

Groups	No. Participants	Mean Dietary Scores(SD)	t (df, p value)
Intervention Group	137	33.80±5.68	8.372 (df: 259,p:0.001*)
Control Group	124	28.49±4.38	

*p Value Independent t test

In this table, it was estimated that post intervention, the mean dietary score in the Intervention Group was significantly higher when compared to Control Group.

Table 14: Post intervention, Mean Diet Scores based on Age groups.

Age	Groups	No. Participants	Mean diet scores(SD)	t (df, p value)
Aged 30 and less	Intervention group	78	33.42±5.57	5.191 (df: 142,p:0.001*)
	Control group	66	28.80±4.99	
31-60yrs	Intervention group	59	34.29±5.84	6.858 (df: 115,p:0.001*)
	Control group	58	28.14±3.56	

*p value: Independent t test

The scores were calculated and stratified based on age of the participants. In participants who are aged 30 and less than 30 years, in those participants the mean diet scores was significantly higher in the Intervention Group and similarly the diet scores were higher in the participants who were aged above 30 years.

Table 15: Post intervention, Mean Diet Scores based on Education.

*p value: Independent t test

Education	Groups	No. Participants	Mean PA scores(SD)	t(df, p value)
Illiterate	Intervention Group	6	25.50±4.32	0.971 (df:9 ,p:0.357)
	Control Group	5	23.40±2.30	
Pre high school	Intervention Group	10	25.60±3.47	-0.271 (df: 23,p: 0.84)
	Control Group	15	25.87±3.09	
High school	Intervention Group	112	34.38±4.58	10.80 (df:197 , p:0.001 [*])
	Control Group	87	28.23±3.04	
Post high school	Intervention Group	9	41.11±5.73	2.830 (df:24 , p:0.005 [*])
	Control Group	17	33.65±6.70	

Post intervention, Mean Diet Scores in the IG and CG were calculated and stratified based on educational level. Participants who had done high school and post high school education showed statistical difference when compared to their pre intervention scores and also when compared to Control group.

Table 16: Post intervention, Mean Diet Scores based on Occupation.

Profession	Groups	No. Participants	Mean diet scores(SD)	t (df, p value)
Unskilled	Intervention Group	11	30.09±4.30	-0.220 (df:12, p:0.83)
	Control Group	3	30.67±2.08	
Semiskilled	Intervention Group	24	32.00±5.46	3.622 (df: 38,p:0.001*)
	Control Group	16	26.31±3.75	
Skilled	Intervention Group	94	34.28±5.46	9.637 (df: 185,p:0.001*)
	Control Group	93	27.88±3.35	
Semi professional	Intervention Group	8	38.63±6.76	1.070 (df: 18,p:0.299)
	Control Group	12	35.58±5.86	

*p value: Independent t test

The mean diet scores among participants of both groups were stratified and compared and it was observed that the participants from the skilled and semi-skilled group had improved post intervention physical activity scores and was statistically significant.

Table 17: Post intervention, Mean Diet Scores based on SES.

SES	Groups	No. Participants	Mean diet scores(SD)	t (df, p value)
Class I	Intervention Group	6	34.50±8.21	-0.69 (df:13 ,p:0.94)
	Control Group	9	34.78±7.32	
Class II	Intervention Group	60	33.82±5.46	6.283 (df:103,p:0.001 [*])
	Control Group	45	27.89±3.68	
Class III	Intervention Group	47	33.60±5.83	5.956 (df: 84,p:0.001 [*])
	Control Group	39	27.44±3.02	
Class IV	Intervention Group	24	33.96±5.63	3.777 (df: 53,p:0.001 [*])
	Control Group	31	28.87±4.35	

*p value: Independent t test

Post intervention, Mean Diet Scores in the Intervention Group and Control Group were compared and stratified based on Socio Economic Status. In all Socio Economic Status, there were statistically significant difference, but it was not appreciated in Class I which can account for low sample in that particular Socio Economic Status.

Analysis of post intervention physical activity scores among Intervention and Control Group

Table 18:Physical Activity scores after 6 months in Intervention and Control Group.

Groups	No. Participants	Mean PA scores(SD)	t (df, p value)
Intervention Group	137	329.56±116.64	4.026 (df: 259,p:0.001*)
Control Group	124	275.60±97.86	

*p value: Independent t test

In this table, post intervention, the mean Physical Activity scores in the Intervention Group was significantly higher when compared to Control Group.

Table 19: Post intervention, Mean Physical Activity Scores based on Age groups.

Age	Groups	No. Participants	Mean diet scores(SD)	t (df, p value)
Age d 30 and less	Intervention group	78	328.53±113.79	2.741 (df: 142, p:0.007)
	Control group	66	279.17±99.96	
31-60yrs	Intervention group	59	330.93±121.26	2.932 (df:115, p:0.004*)
	Control group	58	271.55±96.13	

*p value: Independent t test

Post intervention, Physical Activity Scores in the IG and CG were calculated and stratified based on age of the participants. In participants who are aged between 31 and 60 years had significantly higher scores in the Intervention Group.

Table 20:Post intervention, Mean Physical Activity Scores based on Education.

Education	Groups	No. Participants	Mean PA scores(SD)	t(df, p value)
Illiterate	Intervention Group	6	195.83±24.58	-2.905 (df: 9,p:0.66)
	Control Group	5	245.00±51.23	
Pre high school	Intervention Group	10	270.00±122.36	0.404 (df: 23,p:0.69)
	Control Group	15	253.33±84.44	
High school	Intervention Group	112	331.03±105.86	5.261 (df: 197,p:0.001*)
	Control Group	87	258.91±81.32	
Post high school	Intervention Group	9	466.67±139.75	1.451 (df: 24,p:0.16)
	Control Group	17	389.71±122.81	

*p value: Independent t test

Table 20 shows the physical Activity scores post intervention of the study participants of the different educational and those who had done high school had a statistically difference in their Physical Activity scores compared to Control Group.

Table 21:Post intervention, mean Physical Activity Scores based on Occupation.

Profession	Groups	No.Participants	Mean PA Scores(SD)	t (df, p value)
Un skilled	Intervention Group	11	275.00±87.32	-0.143 (df: 12,p:0.88)
	Control Group	3	283.33±101.03	
Semiskilled	Intervention Group	24	314.58±96.07	-0.915 (df: 38,p:0.36)
	Control Group	16	285.94±98.30	
Skilled	Intervention Group	94	329.79±114.43	4.246 (df: 185,p:0.001*)
	Control Group	93	264.78±93.77	
Semi professional	Intervention Group	8	446.88±167.13	1.667 (df: 18,p:0.11)
	Control Group	12	343.75±110.84	

*p value: Independent t test

Here in this table, we can observe that, the scores of post intervention which was stratified based on the occupational background of the participants. It was observed that the participants of the Intervention group had better scores when compared with the control group but those who were employed as skilled workers had statistical difference in their Physical Activity when compared to their baseline before intervention.

Table 22: Post intervention mean Physical Activity Scores based on SES.

SES	Groups	No.Participants	Mean PA scores (SD)	t (df, p value)
Class I	Intervention Group	6	487.50±165.64	2.447 (df: 13,p:0.029*)
	Control Group	9	308.33±119.24	
Class II	Intervention Group	60	312.50±110.22	2.237 (df:103,p:0.02*)
	Control Group	45	267.22±91.51	
Class III	Intervention Group	47	326.60±111.85	3.236 (df:84,p:0.002*)
	Control Group	39	257.69±78.88	
Class IV	Intervention Group	24	338.54±104.51	1.238 (df:53,p:0.221)
	Control Group	31	300.81±117.52	

*p value: Independent t test.

In this table when compared with control group, intervention group had better Physical Activity scores among all SES classes (but Classes IV) had statistically significant difference in their Physical Activity scores.

Analysis of dietary and physical activity scores among Intervention Group

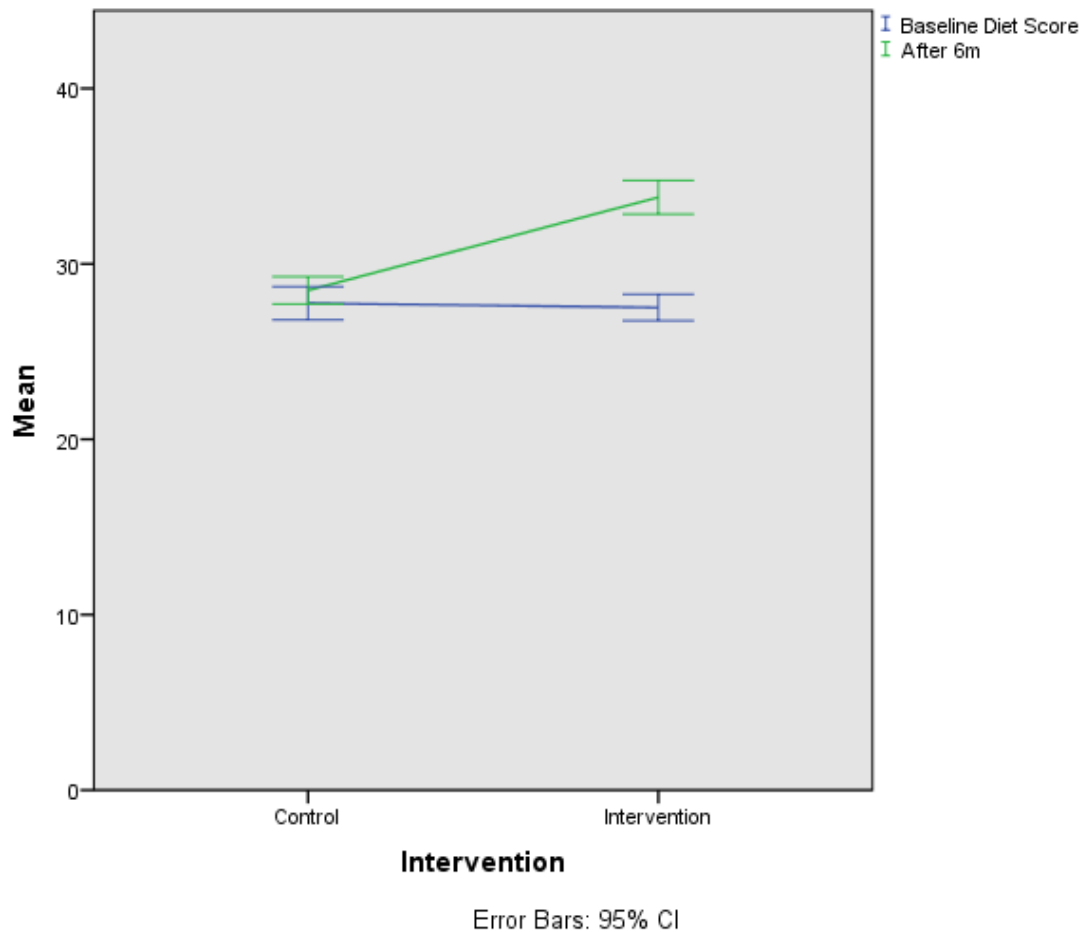
Table 23: Diet and Physical Activity scores in Intervention Group

Variables	Intervention group	No. Participants	Mean scores(sd)	t (df, p value)
Dietary Score	Pre Intervention	124	27.75±5.33	p:0.001*
	Post Intervention	124	28.49±4.38	
Physical activity Score	Pre Intervention	124	248.99±94.58	p:0.001*
	Post Intervention	124	275.60±97.86	

*p value: Independent t test.

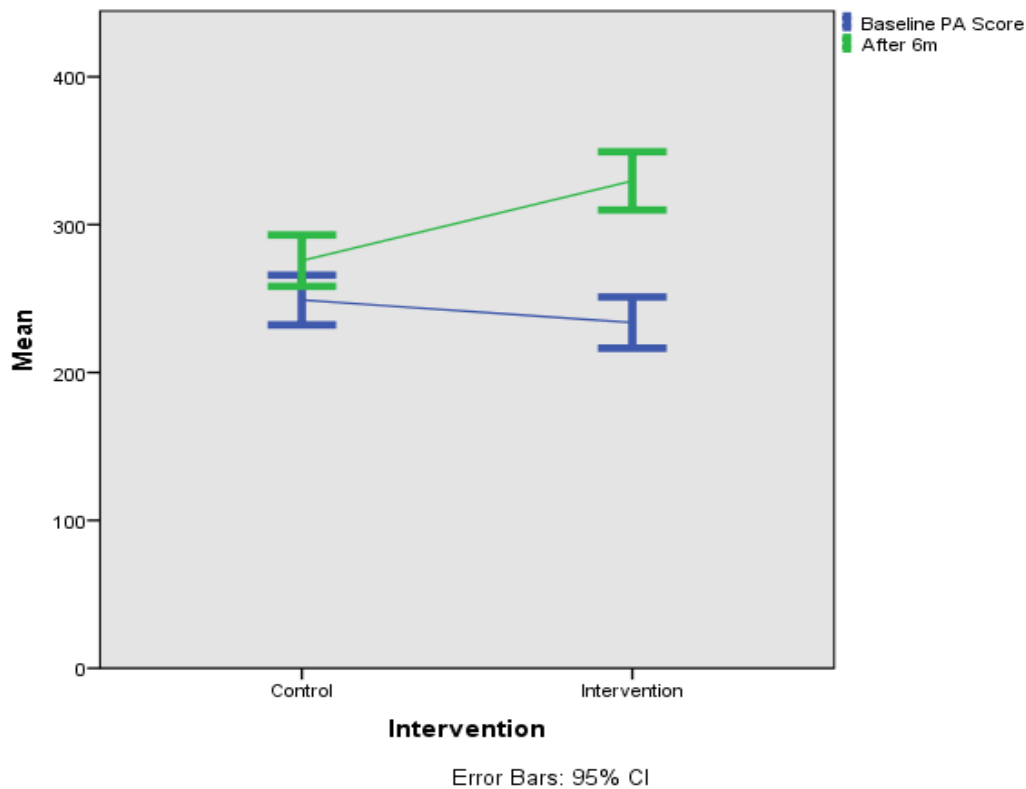
Scores of the participants in the Intervention group where both pre and post intervention of both Dietary Scores and Physical Activity scores are seen. It can be observed that there is an improvement in the scores post intervention which was also statistically significant.

FIGURE 6: Error Bar graph showing the change in diet scores among the groups.



The above mentioned diagram is an error bar graph where you can see the significant improvement in the diet scores of the Intervention Group after 6 months.

FIGURE 7: Error bar graph showing change in Physical Activity scores among the two groups.



The above diagram shows the physical activity of the participants in both control and the intervention group. As you can see, after 6 months there is improvement in both the groups but you can see there is significant improvement in the Intervention Group when compared with the Control Group.



DISCUSSION



6. DISCUSSION

mHealth or mobile health is defined as medical and public health practice supported by mobile devices such as mobile phones, patient monitoring devices, personal digital assistants and other wireless devices. mHealth involves the use of simple voice calls and/or short messaging services (SMS) as well as more complex functionalities and applications using General Packet Radio Services(GPRS), Global Positioning System (GPS), Blue Tooth technology and other wireless devices. This study explored the use of mHealth in modification of dietary scores and physical activity scores. In order to study the effect of mHealth, 290 female garment workers were randomized to Intervention Group and Control group. Both the groups were sensitized regarding Healthy Diet and Physical activity and their role in preventing Non Communicable Diseases. The Intervention Group received monthly telephonic call for a period of 6 months reinforcing the messages. The Physical Activity scores were assessed by using “Questionnaire to assess adherence to diet and exercise advices for weight management in lifestyle related diseases” which had been modified according to Indian staple diet and was pretested on a six garment factory workers belonging to a different garment factory. Both the scores were measured at baseline and 6 months later.

At the beginning of the study, participants of both Intervention Group and the Control Group had comparable diet scores and the physical activity

scores. The dietary scores among participants of Intervention Group and Control Group could be categorized as moderately healthy. Similarly Physical Activity scores among participants of Intervention Group and Control Group were less than 250METS. Mean Diet Scores at the baseline of Intervention Group and Control Group was 27.46 ± 4.39 and 27.53 ± 5.05 respectively where it was identical in both the groups. Post mHealth intervention, the mean diet scores of Intervention and Control group were improved to 33.80 ± 5.68 and 28.49 ± 4.38 respectively. At the end of the study period, the diet score in both Intervention Group and Control Group had increased significantly, however the scores were still categorized as “moderately healthy”. Mean Physical activity scores of the participants of Intervention and Control Group at baseline were 227.76 ± 102.99 and 250 ± 98 respectively meaning METS scores were below 250 in both the groups. After 6 months of mHealth Intervention, the scores of Intervention and Control Group was 329.56 ± 116.64 and 275.60 ± 97.86 respectively. Post intervention, there was improvement in METS scores for more than 250 METS in the Intervention Group.

6.1 Age of the participants and reception mHealth.

The participants in the present study were categorized in to two groups, those who were aged between 18 years to 30 years and those who aged between 31 years to 60 years. At baseline, the mean diet scores of the participants of

both Intervention and Control Group aged 18-30 years and 31 – 60 years were comparable and could be categorized to “moderately healthy scores”. Post mHealth intervention, the mean diet scores of participants from both the age groups showed significant improvement but the scores were still categorized as “moderately healthy scores”.

The physical activity scores of those aged between 18-30 years and 31 – 60 years belonging to Intervention Group and Control Group at baseline was below 250METs of moderate physical activity at recreational time. Post 6 months of mHealth intervention, participants of the Intervention group from both the age categories showed improvement in their recreational moderate physical activity of more than 250METs when compared with the Control Group which was statistically significant.

From the above findings, we can conclude that the reception of mHealth did not differ significantly in participants of different age groups and both mean diet and physical activity scores were improved in both the age groups.

It was anticipated that the age of the participants had an impact on the reception of mHealth. For instance, a meta-analysis was carried out by QiNi et al., on the factors influencing the mobile health service adoption. In this meta-analysis, 35 studies were analyzed in the regarding how mobile health was adopted and how age affected in the adoption of the mobile health. Upon doing moderator analysis, it was revealed that, user friendly mhealth services, perceived vulnerability and perceived severity for mHealth

adoption were important facilitating factors among those middle aged and old aged users to adopt mobile health services.⁷⁶

mHealth has been used to provide education for different disease conditions in different age groups. A single blinded multi-centre randomized controlled trial by Hansen Henrick et al., among COPD patients to compare pulmonary tele-rehabilitation versus pulmonary rehabilitation whose mean age was 68 ± 9 years to improve Forced Expiratory Volume (FEV) by through video conference software system based intervention, where information on appropriate dosage, exercise intensities and educational themes were provided to the intervention group for a period of 10 weeks and followed up after 22 weeks. It was found that age was not a barrier for mHealth intervention.⁷⁷

In a Randomized Controlled Trial conducted by Green June et al., the efficacy of the mindfulness meditation mobile app “Calm” to reduce stress among the college students aged 18 years and above was tested. The Intervention Group was given the “Calm” mobile app, where the person can access instructions on mindfulness meditation practice guidelines. In this study the mHealth service provided through mobile application was acceptable to the college students (mean age – 21 years) and was able to bring down the Perceived Stress Score significantly.⁷⁸

6.2 Occupation of the Participants and utilization of mHealth.

In present study, participants of both the Intervention Group and the Control Group were categorized into Semi-Professional, Skilled, Semi-Skilled and Unskilled workers. There was no significant difference in the mean diet scores of the participants of different occupational background at baseline of both Intervention Group and Control Group. Post mHealth intervention, the mean diet scores of semiskilled and skilled workers was improved and it was statistically significant. The mean diet scores of the semi-professional workers were better at the baseline and it continued to be the same even after intervention. Probable reason for the improvement of the men diet scores among skilled and semi-skilled workers are that those from higher paying jobs (semi-skilled and skilled workers) were able to procure better nutritious food than those with less paying jobs which might have led to better dietary scores at the end of the intervention. Improvement in diet scores was observed among all the participants from the different occupational background but only semi-skilled and skilled worker's diet scores were statistically significant.

Mean physical activity scores at the baseline of the participants from different occupations of both Intervention Group and Control Group were unskilled and semi-skilled worker's were less than 250METS while those who were employed as skilled and professional workers had better physical

activity scores and were statistically significant. Post 6 months of mHealth intervention, the Physical Activity scores of the participants of both Intervention Group and Control Group was skilled had statistically significant improvement in their scores. The improvement was seen even in skilled and semi-professional workers also but it was not statistically significant as they both had significant better scores at the baseline and it continued to remain better post intervention also.

Tele-phonic conversations revealed that, those participants from high paying occupations were less physically tired from their workplace which allowed them to engage in recreational physical activity post factory hours which resulted in improved Physical Activity Scores. Participants who were gardeners and helpers stated that, they were engaged in tedious physical activity throughout the day during working hours and did not feel the necessity of engaging in further Physical Activity for health promotion. It was also observed that the drop outs were from unskilled group of workers indicates that occupational background did play a role in the utilization of mHealth.

A qualitative exploration was conducted Khatu Fatema, Heywood E Anita et al., on community readiness for adopting mHealth in rural Bangladesh which included 37 in depth interviews. Participants from different occupations were involved such as community leaders, school teachers, formal and informal

health care providers. In this study, they conducted study on 4 types of readiness in mind and they are core readiness, technological readiness, human resource readiness and motivational readiness. Post interviews, it was found that community members, community leaders and healthcare providers were enthusiastic in using mHealth compared to other professions such as farmers, lorry drivers and house wives and that occupation did play a role in accepting mHealth.⁷⁹

A cross sectional survey conducted on 633 random Chinese adults by Xie Zhenzhen et al., to find out the prevalence, Socio Demographic Correlates and perceived impacts of mobile health app usage. Out of 633 participants, 612 were using mobile phones. Upon Multivariate logistic regression analysis, it was found that the participants who worked in educational institutions, cultural institutions, academicians and those who were employed in disciplinary forces were in favour for using mobile health apps compared to other occupational sectors. Compared retired professionals, catering services, salespersons and housewives.⁸⁰

6.3 Education of the participants and utilization mHealth.

The educational qualification of the participants in the present study were categorized in to Illiterates, Pre High School, High School and Post High School. Participants in Post high school category included those who had

finished SSLC (10th standard), PUC(12th standard) or any post high school degree/diploma.

The baseline mean diet scores of the participants from different educational qualifications from both Intervention Group and Control Group belonged to moderately healthy diet where the scores was between 22 and 33 except those who had done post high school education had mean diet scores better than others at baseline itself . Post 6 months of mHealth intervention, the diet scores of the participants of both Intervention Group and Control Group among those who had done High school and Post High school was improved indicating that they had better ability to understand the importance of healthy diet and its benefits in preventing Non Communicable Diseases.

Baseline mean physical activity scores among participants of both Intervention Group and Control Group of illiterates, Pre High school, High school were less than 250 METS of moderate physical activity in a week. Before intervention, participants who had done post high school education of the Intervention Group had better physical activity of about 450METS a week indicating they were engaged in moderate physical activity of 20minutes for 3 days in a week. Post intervention, the physical activity scores were improved among those who had done High school education in both Intervention Group and Control Group (331.03 ± 105.86 and 258.91 ± 81.32 respectively) and it was statistically significant.

During 6months of telephonic counseling, it was observed that during conversations, those who had better education qualifications were able to understand the long term benefits of physical activity in preventing non communicable diseases and it was easier for us to encourage them in changing their physical activity behavior.

A randomized controlled trial was conducted by Mussener Ulrike et al., to assess the effectiveness of mHealth in smoking cessation among 535 high school students. Prolonged abstinence of 3months was reported by 23.1% in the Intervention Group (three months of monthly text messaging on smoking cessation) and 19.4% in the Control Group. Since the students were in high school, they were able to understand better about the intervention they received.⁸¹

Another study in contrast with the present study was the study conducted byYasmin Farzana et al., a Randomized Controlled Trial to find out the influence of mobile phone based health reminders on the patient adherence for medications and healthy lifestyle recommendations for effective management of Type 2 Diabetes in Dhaka, Bangladesh. Intervention group received phone calls and helped them to have compliance with the treatment, healthy diet and better physical activity. The study showed improvement in diet habits, physical activity, tobacco cessation and good glycaemic control

among the patients in the intervention group and education status of the participants didn't play significant role in the adherence of telephonic calls.⁶⁷

6.4 Socio Economic Status of the participants and mhealth

Socio Economic Status of the participants of the participants was calculated based on their per capita income and was Classified based on Modified BG Prasad Classification January 2021.⁷⁴

Baseline diet scores of the participants from different Socio Economic Status backgrounds of both Intervention Group and Control Group was comparable. Post 6 months of mHealth intervention, except for Class I, all other participants belonging to Class II, Class III and Class IV had improved diet scores which were statistically significant. Participants belonging to Class I had better diet scores even before commencement of intervention as they were economically sound to afford the healthy food. Post intervention, improvement was seen in Class I participants but it was not statistically significant.

Baseline mean Physical Activity scores of the participants of both Intervention and Control Groups was Class I , Class II, Class III had less than 250 METS of moderate physical activity in a week. Class IV (245.83±101.26 and 263.97±98.31 respectively) had 250 METS indicating participants from low socio economic status had better physical activity compared to other upper Socio Economic Status. At baseline Physical

Activity and Socio economic status shared an inverse relationship. Post 6 months of mHealth intervention, the mean Physical Activity scores of the participants of Intervention and Control Group belonging to Class I , Class II , Class III was improved and there was statistical difference when compared with their baseline mean physical activity scores. The improved physical activity scores at the end of mHealth intervention was statistically significant among Class I, Class II and Class III suggesting that SES played a role in improving the Physical Activity scores. In the current study, participants in Class IV SES were unskilled workers involved in strenuous jobs at work place. It is possible that since they were engaged in manual work as part of their occupation, they did not regard extra physical activity as necessary. Moreover during telephonic conversations participants from higher SES were able to afford facilities for physical activity (like purchasing walking shoes), which encouraged them to adopt it as a part of their lifestyle.



SUMMARY AND CONCLUSION



7. SUMMARY

A Randomized Controlled Trial was done to assess the effectiveness of mHealth on 290 female garment factory workers in Kolar. The primary aim of the study was to assess the improvement in physical activity and dietary scores by delivering monthly mHealth package for six months. Participants were randomized into two groups – Intervention Group and Control Group. At the beginning of the study, the study participant's dietary scores and the physical activity scores of the baseline were comparable. The dietary scores were divided into three categories which were unhealthy diet, moderately healthy diet and healthy diet. At the baseline the participants of both Intervention and Control Group had moderately healthy diet. The physical activity of the participants was taken in the form of questionnaire and it was calculated in terms of METS (Metabolic equivalents) and both the group's physical activity was less than 250 METS in a week. Before starting the intervention, both the groups received face to face counselling on benefits of healthy diet and physical activity in preventing Non Communicable diseases and also they were provided with the pamphlets showing pictorial representation of healthy food items and various forms of moderate physical activity. Telephonic counselling was done for the participants of the intervention group where information regarding healthy diet and moderate physical activity was provided and they were encouraged to change their

behaviours regarding the same. After 6months of telephonic counselling, participants of both the Intervention and Control Group diet scores and physical activity were assessed. Those who had done high school and post high school had significant difference in their diet and physical activity scores, those who were employed semi-skilled and skilled workers had improved diet and physical activity scores and those who belonged Class II, III and IV of Socio Economic Status had significant difference. It can be concluded that monthly mHealth package played a significant role in improving the lifestyle habits of the participants.

8. CONCLUSION

The study concludes that providing mHealth through telephonic counseling played a significant role in improving the dietary habits and physical activity of the participants in the Intervention Group. The mean diet scores of the participants from different age groups showed significant improvement post mHealth intervention and it was statistically significant. Participants belonging to Class I socio economic status had better mean diet scores even before the intervention and post mhealth intervention participants belonging to Class II,III and IV SES showed improvement in their mean diet scores. Those who had done high school and post high school education showed statistically significant improvement in their mean diet scores. Participants who were employed as semi- skilled and skilled showed better diet scores post intervention. Mean Physical activity scores had no age difference as it was statistically was improved in both the age categories. Participants who had done high school education had improved physical activity compared to other educational categories as they were able to understand the benefits of healthy lifestyle. Participants who were employed as skilled workers showed statistical improvement in their mean physical activity scores as they were more enthusiastic in engaging themselves in the recreational physical activity and participants from the Class I, Class II and Class III SES background had

improved mean physical activity scores compared to Class I SES participants.



STRENGTHS AND LIMITATIONS



9. STRENGTHS OF THE STUDY

1. Study design- Randomized Controlled Trial with 290 female participants.
2. Different age groups from 18 years to 60 years, participants belonging to different educational background, occupational background and Socio Economic Status were included.
3. Method of mHealth- Telephonic counselling was delivered via monthly phone calls which did not require smartphones. Those who had basic phones were also able to get mHealth package.
4. As it was telephonic counselling, participants who were not able to read and write were also able to understand the monthly mHealth package.
5. Study was able to retain 90% of people till the completion of the intervention period.
6. An average phone call lasted for about 6 to 7minutes during which participants interacted with the author about queries regarding healthy diet and physical activity and were attended.

10. LIMITATIONS OF THE STUDY

1. Only women from a single garment factory were included in the study.
2. Study participants were not blinded due to nature of the intervention.
3. Assessment was based on behavioral change which was based on questionnaire based interview.
4. Dietary scores could not quantify micro-nutrients and macro-nutrients.
5. We observed certain dropouts as some of them were not interested in continuing with the study due to time constraints to attend phone calls.
6. Hawthorne effect can be expected as the participants could not be blinded and since they were contacted repeatedly for telephonic counseling, they might have responded positively to the questions.



RECOMMENDATION



10. RECOMMENDATIONS

The present study, found that risk factors for NCDs, namely, Physical Activity and Dietary habits were found to be moderately healthy in female garment factory workers, which opens up the avenue for interventions to improve them.

The study also found that periodic delivery of mHealth education can be delivered for the occupational groups in small scale settings. Providing mHealth on Physical Activity and Dietary Scores was useful and feasible for women of different age groups, educational and socioeconomic backgrounds. mHealth can be provided by simple voice messages which doesn't require any smart phone and also it can be employed in the rural settings. Based on these findings, it is recommended that:

1. Setting up mHealth based interventions at primary health care level: These interventions could be based in a primary level health care setting and catering to more than one occupational groups. They can periodically assess and provide health services, primarily to avert NCDs and their risk factors through mHealth.
2. Setting up mHealth service team: Though the study found that there was no technology gap between the service providers and recipients, we recognized the need for consistent and compassionate healthcare delivery. Hence it is recommended that a mHealth service team should be equipped to build the

rapport, provide periodic in person health service and maintain patients/respondents in continuum of care.



REFERENCES



11. REFERENCES

1. Roth GA. Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2017 (GBD 2017) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2018. The Lancet. 2018;392:1736-88.
2. Ministry of Health and Family Welfare, Status of, Non communicable diseases in India. 8th February 2022.
3. Menon GR, Singh L, Sharma P, Yadav P, Sharma S, Kalaskar S, Singh H, Adinarayanan S, Joshua V, Kulothungan V, Yadav J. National burden estimates of healthy life lost in India, 2017: an analysis using direct mortality data and indirect disability data. The Lancet Global Health. 2019 Dec 1;7(12):e1675-84.
4. Budreviciute A, Damiani S, Sabir DK, Onder K, Schuller-Goetzburg P, Plakys G, Katileviciute A, Khoja S, Kodzius R. Management and prevention strategies for non-communicable diseases (NCDs) and their risk factors. Frontiers in public health. 2020:788.
5. Training module for nursing staff, ministry of health and family welfare, national health mission.
6. World Health Organization. mHealth: New horizons for health through mobile technologies: second global survey on eHealth. WHO. Geneva, Switzerland. 2011.

7. Silva BM, Rodrigues JJ, de la Torre Díez I, López-Coronado M, Saleem K. Mobile-health: A review of current state in 2015. *J Biomed Inform* 2015;56:265–72.
8. Basu S, Garg S, Kumar R, Shukla A. The willingness for using mobile phone for health education among women caregivers of under 5 children in an urban resettlement colony in Delhi, India. *Indian Journal of Community Health*. 2017 ;29(4).
9. Bonn SE, Löf M, Östenson C, Lagerros YT. App-technology to improve lifestyle behaviors among working adults - the Health Integrator study, a randomized controlled trial. *BMC Public Health* 2019;19:273.
10. Global Burden of Disease Collaborative Network, Global Burden of Disease Study 2019 (GBD 2019) Results (2020, Institute for Health Metrics and Evaluation – IHME.
11. Thakur JS, Paika R, Singh S. Burden of noncommunicable diseases and implementation challenges of National NCD Programmes in India. *medical journal armed forces india*. 2020 Jul 1;76(3):261-7.
12. World Health Organization. Global action plan for the prevention and control of noncommunicable diseases 2013-2020. World Health Organization; 2013. Saeedi P, Petersohn I, Salpea P, Malanda B, Karuranga S, Unwin N, Colagiuri S, Guariguata L, Motala AA, Ogurtsova K, Shaw JE. Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045: Results from the

- International Diabetes Federation Diabetes Atlas. Diabetes research and clinical practice. 2019 Nov 1;157:107843.
13. Singh A, Tripathi A, Kharya P, Agarwal R. Awareness of diabetic retinopathy among diabetes mellitus patients visiting a hospital of North India. Journal of Family Medicine and Primary Care. 2022 Apr;11(4):1292.
 14. Factsheets on Hypertension, August 2022, WHO.
 15. Miller DL, Farmer RD, editors. Epidemiology of diseases. Blackwell Scientific Publications; 1982.
 16. Park k, Park's textbook of Preventive and Social Medicine, 26th edition, Jabalpur, m/s Banarsidas Bhanot, 2021. Chapter 6, Cancers; p 427-438.
 17. Page MR. The JNC 8 hypertension guidelines: an in-depth guide. The American journal of managed care. 2014 Jan 1;20(1 Spec No.):E8.
 18. Ezzati M, Riboli E. Behavioral and dietary risk factors for noncommunicable diseases. New England Journal of Medicine. 2013 Sep 5;369(10):954-64.
 19. Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, AlMazroa MA, Amann M, Anderson HR, Andrews KG, Aryee M. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a

- systematic analysis for the Global Burden of Disease Study 2010. *The lancet*. 2012 Dec 15;380(9859):2224-60.
- 20.USDHHS U. Department of Health and Human Services. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2006.
- 21.World Health Organization. *Diet, nutrition, and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation*. World Health Organization; 2003 Apr 22.
- 22.Aune D, Schlesinger S, Norat T, Riboli E. Tobacco smoking and the risk of heart failure: A systematic review and meta-analysis of prospective studies. *Eur J Prev Cardiol*. 2019 Feb;26(3):279-288. doi: 10.1177/2047487318806658. Epub 2018 Oct 18. PMID: 30335502.
- 23.Briasoulis A, Agarwal V, Messerli FH. Alcohol consumption and the risk of hypertension in men and women: a systematic review and meta-analysis. *J Clin Hypertens (Greenwich)*. 2012 Nov;14(11):792-8. doi: 10.1111/jch.12008. Epub 2012 Sep 25. PMID: 23126352; PMCID: PMC8108791.
- 24.Roerecke M, Rehm J. The cardioprotective association of average alcohol consumption and ischaemic heart disease: a systematic review and meta-analysis. *Addiction*. 2012 Jul;107(7):1246-60.

25. Rodgers A, Ezzati M, Vander Hoorn S, Lopez AD, Lin RB, Murray CJ, Group Comparative Risk Assessment Collaborating. Distribution of major health risks: findings from the Global Burden of Disease study. *PLoS medicine*. 2004 Oct;1(1):e27.
26. Prospective Studies Collaboration. Body-mass index and cause-specific mortality in 900 000 adults: collaborative analyses of 57 prospective studies. *The Lancet*. 2009 Mar 28;373(9669):1083-96.
27. Riaz H, Khan MS, Siddiqi TJ, Usman MS, Shah N, Goyal A, Khan SS, Mookadam F, Krasuski RA, Ahmed H. Association Between Obesity and Cardiovascular Outcomes: A Systematic Review and Meta-analysis of Mendelian Randomization Studies. *JAMA Netw Open*. 2018 Nov 2;1(7):e183788. doi: 10.1001/jamanetworkopen.2018.3788. PMID: 30646365; PMCID: PMC6324374.
28. Minghelli B, Oliveira R, Nunes C. Association of obesity with chronic disease and musculoskeletal factors. *Rev Assoc Med Bras* (1992). 2015 Aug;61(4):347-54. doi: 10.1590/1806-9282.61.04.347. PMID: 26466217.
29. Caspersen CJ, Powell KE, Christenson GM. Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public health reports*. 1985 Mar;100(2):126.
30. World Health Organization. Global action plan on physical activity 2018-2030: more active people for a healthier world. World Health Organization; 2019 Jan 21.

- 31.Sallis JF, Adlakha D, Oyeyemi A, Salvo D. An international physical activity and public health research agenda to inform coronavirus disease-2019 policies and practices. *Journal of Sport and Health Science*. 2020 Jul;9(4):328.
- 32.World Health Organization T. Global recommendations on physical activity for health. World Health Organization; 2010.
- 33.Huang, X., Yang, H., Wang, H.H., Qiu, Y., Lai, X., Zhou, Z., Li, F., Zhang, L., Wang, J. and Lei, J., 2015. The association between physical activity, mental status, and social and family support with five major non-communicable chronic diseases among elderly people: a cross-sectional study of a rural population in southern China. *International Journal of Environmental Research and Public Health*, 12(10), pp.13209-13223.
- 34.Dumith SC, Hallal PC, Reis RS, Kohl III HW. Worldwide prevalence of physical inactivity and its association with human development index in 76 countries. *Preventive medicine*. 2011 Jul 1;53(1-2):24-8.
- 35.*Physical Activity*. [Last accessed on 2021 Jun 26]. Available from: <https://www.who.int/> [Ref list]
- 36.Mohanty S, Venkatarao E, Yasobant S. Non-communicable disease care and physical activity promotion in India: analysis of recent policies, guidelines and workplans. *Family medicine and community health*. 2020;8(2).

37. Chau JY, van der Ploeg HP, Merom D, Chey T, Bauman AE. Cross-sectional associations between occupational and leisure-time sitting, physical activity and obesity in working adults. *Prev Med*. 2012 Mar-Apr;54(3-4):195-200. doi: 10.1016/j.ypmed.2011.12.020. Epub 2011 Dec 28. PMID: 22227284.
38. Van Dyck D, Barnett A, Van Cauwenberg J, Zhang CJP, Sit CHP, Cerin E. Main and interacting effects of physical activity and sedentary time on older adults' BMI: The moderating roles of socio-demographic and environmental attributes. *PLoS One*. 2020 Jul 9;15(7):e0235833. doi: 10.1371/journal.pone.0235833. PMID: 32645072; PMCID: PMC7347204.
39. World Health Organization. Guideline: sugars intake for adults and children. World Health Organization; 2015 Mar 31.
40. Lindeberg S, Jönsson T, Granfeldt Y, Borgstrand E, Soffman J, Sjöström K, Åhrén B. A Palaeolithic diet improves glucose tolerance more than a Mediterranean-like diet in individuals with ischaemic heart disease. *Diabetologia*. 2007 Sep;50(9):1795-1807. doi: 10.1007/s00125-007-0716-y. Epub 2007 Jun 22. PMID: 17583796.
41. Masharani U, Sherchan P, Schloetter M, Stratford S, Xiao A, Sebastian A, Nolte Kennedy M, Frassetto L. Metabolic and physiologic effects from consuming a hunter-gatherer (Paleolithic)-type diet in type 2 diabetes. *Eur*

- J Clin Nutr. 2015 Aug;69(8):944-8. doi: 10.1038/ejcn.2015.39. Epub 2015 Apr 1. PMID: 25828624.
- 42.Spencer EA, Appleby PN, Davey GK, Key TJ. Diet and body mass index in 38000 EPIC-Oxford meat-eaters, fish-eaters, vegetarians and vegans. Int J Obes Relat Metab Disord. 2003 Jun;27(6):728-34. doi: 10.1038/sj.ijo.0802300. PMID: 12833118.
- 43.Dinu M, Abbate R, Gensini GF, Casini A, Sofi F. Vegetarian, vegan diets and multiple health outcomes: A systematic review with meta-analysis of observational studies. Crit Rev Food Sci Nutr. 2017 Nov 22;57(17):3640-3649. doi: 10.1080/10408398.2016.1138447. PMID: 26853923.
- 44.Grant WB. Trends in diet and Alzheimer's disease during the nutrition transition in Japan and developing countries. J Alzheimers Dis. 2014;38(3):611-20. doi: 10.3233/JAD-130719. PMID: 24037034.
- 45.Volek JS, Phinney SD, Forsythe CE, Quann EE, Wood RJ, Puglisi MJ, Kraemer WJ, Bibus DM, Fernandez ML, Feinman RD. Carbohydrate restriction has a more favorable impact on the metabolic syndrome than a low fat diet. Lipids. 2009 Apr;44(4):297-309. doi: 10.1007/s11745-008-3274-2. Epub 2008 Dec 12. PMID: 19082851.
- 46.Volek J, Sharman M, Gómez A, Judelson D, Rubin M, Watson G, Sokmen B, Silvestre R, French D, Kraemer W. Comparison of energy-restricted very low-carbohydrate and low-fat diets on weight loss and body composition in overweight men and women. Nutr Metab (Lond).

- 2004 Nov 8;1(1):13. doi: 10.1186/1743-7075-1-13. PMID: 15533250; PMCID: PMC538279.
- 47..Brinkworth GD, Noakes M, Buckley JD, Keogh JB, Clifton PM. Long-term effects of a very-low-carbohydrate weight loss diet compared with an isocaloric low-fat diet after 12 mo. *Am J Clin Nutr*. 2009 Jul;90(1):23-32. doi: 10.3945/ajcn.2008.27326. Epub 2009 May 13. PMID: 19439458.
- 48.Hession M, Rolland C, Kulkarni U, Wise A, Broom J. Systematic review of randomized controlled trials of low-carbohydrate vs. low-fat/low-calorie diets in the management of obesity and its comorbidities. *Obes Rev*. 2009 Jan;10(1):36-50. doi: 10.1111/j.1467-789X.2008.00518.x. Epub 2008 Aug 11. PMID: 18700873.
- 49.Veldhorst MA, Westerterp-Plantenga MS, Westerterp KR. Gluconeogenesis and energy expenditure after a high-protein, carbohydrate-free diet. *Am J Clin Nutr*. 2009 Sep;90(3):519-26. doi: 10.3945/ajcn.2009.27834. Epub 2009 Jul 29. PMID: 19640952.
- 50.Ornish D. Low-fat diets. *N Engl J Med*. 1998 Jan 8;338(2):127; author reply 128-9. doi: 10.1056/NEJM199801083380212. PMID: 9424579.
- 51.Kempner W, Newborg BC, Peschel RL, Skyler JS. Treatment of massive obesity with rice/reduction diet program. An analysis of 106 patients with at least a 45-kg weight loss. *Arch Intern Med*. 1975 Dec;135(12):1575-84. PMID: 1200726.

- 52.Esselstyn CB Jr, Gendy G, Doyle J, Golubic M, Roizen MF. A way to reverse CAD? J Fam Pract. 2014 Jul;63(7):356-364b. PMID: 25198208.
- 53.Kiehm TG, Anderson JW, Ward K. Beneficial effects of a high carbohydrate, high fiber diet on hyperglycemic diabetic men. Am J Clin Nutr. 1976 Aug;29(8):895-9. doi: 10.1093/ajcn/29.8.895. PMID: 941870
- 54.Greenway FL, Bray GA. Human chorionic gonadotropin (HCG) in the treatment of obesity: a critical assessment of the Simeons method. West J Med. 1977 Dec;127(6):461-3. PMID: 595585; PMCID: PMC1237915)
- 55.Bosch B, Venter I, Stewart RI, Bertram SR. Human chorionic gonadotrophin and weight loss. A double-blind, placebo-controlled trial. S Afr Med J. 1990 Feb 17;77(4):185-9. PMID: 2405506.
- 56.Stein MR, Julis RE, Peck CC, Hinshaw W, Sawicki JE, Deller JJ Jr. Ineffectiveness of human chorionic gonadotropin in weight reduction: a double-blind study. Am J Clin Nutr. 1976 Sep;29(9):940-8. doi: 10.1093/ajcn/29.9.940. PMID: 786001.
- 57.Sears B, Bell S. The zone diet: an anti-inflammatory, low glycemic-load diet. Metab Syndr Relat Disord. 2004 Spring;2(1):24-38. doi: 10.1089/met.2004.2.24. PMID: 18370674.
- 58.Thomas DE, Elliott EJ, Baur L. Low glycaemic index or low glycaemic load diets for overweight and obesity. Cochrane Database Syst Rev. 2007 Jul 18;2007(3):CD005105. doi: 10.1002/14651858.CD005105.pub2. PMID: 17636786; PMCID: PMC9022192.

- 59.Ho KY, Veldhuis JD, Johnson ML, Furlanetto R, Evans WS, Alberti KG, Thorner MO. Fasting enhances growth hormone secretion and amplifies the complex rhythms of growth hormone secretion in man. *J Clin Invest.* 1988 Apr;81(4):968-75. doi: 10.1172/JCI113450. PMID: 3127426; PMCID: PMC329619.
- 60.Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M; Medical Research Council Guidance. Developing and evaluating complex interventions: the new Medical Research Council guidance. *BMJ.* 2008 Sep 29;337:a1655. doi: 10.1136/bmj.a1655. PMID: 18824488; PMCID: PMC2769032.
- 61.Genena DM, Salama AA. Obesity and eating habits among university students in Alexandria, Egypt: a cross sectional study. *World journal of nutrition and health.* 2017;5(3):62-8.
- 62.Vadera BN, Yadav SB, Yadav BS, Parmar DV, Unadkat SV. Study on obesity and Influence of dietary factors on the weight status of an adult population in Jamnagar city of Gujarat: A cross-sectional analytical study. *Indian Journal of Community Medicine.* 2010 Oct 1;35(4):482-6.
- 63.Smith PG, Morrow RH, Ross DA, editors. *Field Trials of Health Interventions: A Toolbox.* 3rd ed. Oxford (UK): OUP Oxford; 2015 Jun 1. PMID: 26225404.
- 64.Krishna S, Boren SA, Balas EA. Healthcare via cell phones: a systematic review. *Telemedicine and e-Health.* 2009 Apr 1;15(3):231-40.

65. Turner-McGrievy GM, Beets MW, Moore JB, Kaczynski AT, Barr-Anderson DJ, Tate DF. Comparison of traditional versus mobile app self-monitoring of physical activity and dietary intake among overweight adults participating in an mHealth weight loss program. *Journal of the American Medical Informatics Association*. 2013 May 1;20(3):513-8.
66. Dicianno BE, Parmanto B, Fairman AD, Crytzer TM, Yu DX, Pramana G, Coughenour D, Petrazzi AA. Perspectives on the evolution of mobile (mHealth) technologies and application to rehabilitation. *Physical therapy*. 2015 Mar 1;95(3):397-405.
67. Yasmin F, Nahar N, Banu B, Ali L, Sauerborn R, Souares A. The influence of mobile phone-based health reminders on patient adherence to medications and healthy lifestyle recommendations for effective management of diabetes type 2: a randomized control trial in Dhaka, Bangladesh. *BMC Health Services Research*. 2020 Dec;20(1):1-2.
68. Cadmus-Bertram LA, Marcus BH, Patterson RE, Parker BA, Morey BL. Randomized trial of a Fitbit-based physical activity intervention for women. *American journal of preventive medicine*. 2015 Sep 1;49(3):414-8.
69. Fenton S, Burrows TL, Collins CE, Rayward AT, Murawski B, Duncan MJ. Efficacy of a Multi-Component m-Health Diet, Physical Activity, and Sleep Intervention on Dietary Intake in Adults with Overweight and

- Obesity: A Randomised Controlled Trial. *Nutrients*. 2021 Jul 19;13(7):2468
70. Partridge SR, McGeechan K, Hebden L, Balestracci K, Wong AT, Denney-Wilson E, Harris MF, Phongsavan P, Bauman A, Allman-Farinelli M. Effectiveness of a mHealth lifestyle program with telephone support (TXT2BFiT) to prevent unhealthy weight gain in young adults: randomized controlled trial. *JMIR mHealth and uHealth*. 2015 Jun 15;3(2):e4530.
71. Bertram MY, Sweeny K, Lauer JA, Chisholm D, Sheehan P, Rasmussen B et al. Investing in noncommunicable diseases: an estimation of the return on investment for prevention and treatment services. *Lancet*. 2018; 391:20.
72. Dubasi SK, Ranjan P, Arora C, Vikram NK, Dwivedi SN, Singh N, Kaloiya GS. Questionnaire to assess adherence to diet and exercise advices for weight management in lifestyle-related diseases. *Journal of Family Medicine and Primary Care*. 2019 Feb;8(2):689.
73. Cleland CL, Hunter RF, Kee F, Cupples ME, Sallis JF, Tully MA. Validity of the global physical activity questionnaire (GPAQ) in assessing levels and change in moderate-vigorous physical activity and sedentary behaviour. *BMC public health*. 2014 Dec;14(1):1-1.

- 74.Majhi MM, Bhatnagar N. Updated BG Prasad's classification for the year 2021: consideration for new base year 2016. *Journal of Family Medicine and Primary Care*. 2021 Nov 1;10(11):4318-.
75. Saleem SM, Jan SS. Modified Kuppuswamy socioeconomic scale updated for the year 2019. *Indian J Forensic Community Med*. 2019 Jan;6(1):1-3.
- 76.Zhao Y, Ni Q, Zhou R. What factors influence the mobile health service adoption? A meta-analysis and the moderating role of age. *International Journal of Information Management*. 2018 Dec 1;43:342-50.
- 77.Hansen H, Bieler T, Beyer N, Kallemose T, Wilcke JT, Østergaard LM, Andeassen HF, Martinez G, Lavesen M, Frølich A, Godtfredsen NS. Supervised pulmonary tele-rehabilitation versus pulmonary rehabilitation in severe COPD: a randomised multicentre trial. *Thorax*. 2020 May 1;75(5):413-21.
- 78.Huberty J, Green J, Glissmann C, Larkey L, Puzia M, Lee C. Efficacy of the mindfulness meditation mobile app “calm” to reduce stress among college students: Randomized controlled trial. *JMIR mHealth and uHealth*. 2019 Jun 25;7(6):e14273.
- 79.Khatun F, Heywood AE, Ray PK, Bhuiya A, Liaw ST. Community readiness for adopting mHealth in rural Bangladesh: a qualitative exploration. *International journal of medical informatics*. 2016 Sep 1;93:49-56.

80. Xie Z, Nacioglu A, Or C. Prevalence, demographic correlates, and perceived impacts of mobile health app use amongst Chinese adults: cross-sectional survey study. *JMIR mHealth and uHealth*. 2018 Apr 26;6(4):e9002.
81. Müssener U, Linderoth C, Thomas K, Bendtsen M. mHealth smoking cessation intervention among high school students: 3-month primary outcome findings from a randomized controlled trial. *PLoS One*. 2020 Mar 6;15(3):e0229411.



ANNEXURES



QUESTIONNAIRE
(Proforma for data collection)

Section: A

Form No.:

ANNEXURE I

1. Name:

2. Address:

3. Socio-demographic details

Age	
Education	
Occupation	
Marital status	
Presence of chronic disease	

1. GRBS:

2. Weight:

3. Height:

4. History of tobacco consumption: Yes:

No:

5. History of alcohol consumption: Yes:

N0:

Section: B

ANNEXURE II

MODIFIED QUESTIONNAIRE TO ASSESS ADHERENCE TO DIET AND EXERCISE ADVICES FOR WEIGHT MANAGEMENT IN LIFESTYLE RELATED DISEASES.

1. How often do you eat fruit ex: banana, orange, grapes, papaya, watermelon, apple etc

- a) Every time in the main diet:
- b) At least once a day:
- c) 3 to 4 times a week:
- d) 1 time a week:
- e) Less than once a week:

2. How often do you eat sprouted pulses and green vegetables?

- a) Every time in the main diet:
- b) At least once a day:
- c) 3 to 4 times a week:
- d) 1 time a week:
- e) Less than once a week:

3. Over the last week, how many days did you eat dark green vegetables?(Ex: basalesoppu, spinach, palaksoppu , dantin soppu)

- a) Every time in the main diet:
- b) At least once a day:
- c) 3 to 4 times a week:
- d) 1 time a week:
- e) Less than once a week:

4. How often do you drink milk as beverage other than coffee or tea?

- a) Twice daily i.e morning and evening

b) At least once a day:

c) 3 to 4 times a week:

d) 1 time a week:

e) Less than once a week

5. How often did you eat dry fruits?

a) Once daily

b) 3-4 times a week

c) Once a week

d) Less than once a week

e) Only during festivals or functions

6. How often do you add salt to your food right before you eat it or as you are eating it?

a) Rarely :

b) Once a week

c) 2-3 times a week :

d) Atleast once daily :

e) Always:

7. How often do you think you consume saltor pickle or salty snacks(mixture, kurkure) ?

a) Rarely :

b) Only during special occasions:

c) Atleast once a month:

d) Aleast once a week

e) Always in the main diet :

8.How often do you eat sweets such as Laddu, Jalebi, Payasa , Gulabjamoon, etc.?

a) Once a month or less

b) 2 to 3 times a month:

c) 1 to 2 times a week:

d) 3 to 6 times a week

e) Atleast once daily:

9.How often do you eat fried foods such as Puri, Parathas, Vada, Pakodas, Samosas etc.?

a) Once a month or less

b)) 2 to 3 times a month:

c) 1 to 2 times a week:

d) 3 to 6 times a week

e) atleast once daily:

10. How often do you eat saturated food items?(Examples: cheese, butter, ghee, coconut oil)

a) Rarely:

b) Once a month or less:

c) 2 to 3 times a month:

d) twice or more than two times in a week:

e) Atleast once daily:

11. How often do you think you drink soft drinks, juices or aerated juices etc? Examples: Lemon Soda, Coca Cola, Thums Up, Maaza, Frooti.

a) Once a month or less:

b) 2 to 3 times a month:

c) 1 to 2 times a week:

d) 3 to 6 times a week

e) At least once daily:

ANNEXURE III

GLOBAL PHYSICAL ACTIVITY QUESTIONNAIRE BY WHO PHYSICAL ACTIVITY

Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person. In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate. Kindly tick the appropriate option.

RECREATIONAL ACTIVITIES

1. Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like [running or football,] for at least 10 minutes continuously?

Yes:

No:

2. In a typical week, on how many days do you do vigorous intensity sports, fitness or recreational (leisure) activities?

Number of days:

3. How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?

Hours:

Minutes:

4. In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?

Number of days :

ANNEXURE IV

Participation Information Sheet

Title: mHealth in Modifying Diet and Physical Activity among Women Garment Factory Workers in Kolar – A Randomized Controlled Trial

My name is **Dr. Sindhu Shankar S**, Post graduate student in the Department of Community Medicine, Sri Devaraj Urs Medical College, Kolar. I am carrying out a study on mHealth in modifying the diet and physical activity among women working in the garment factory. The study protocol has been reviewed by the Institutional Ethical Committee and has been started only after obtaining their formal approval.

Non communicable diseases (NCDs) or chronic diseases have today surpassed infectious diseases as the major cause of premature mortality, morbidity and disability. Common NCDs include cancer, diabetes, hypertension, cardiovascular disease, stroke, chronic obstructive pulmonary disease, chronic kidney disease etc. These diseases have many risk factors which can be modified to prevent such diseases from occurring. Diet and exercises are two such behavioral risk factors which can be modified. In this regard I will help you to modify dietary habits and physical activities by providing information. We will be assessing your Blood Pressure and GRBS through prick method and both the procedures will be free of cost and will

not going to have adverse reactions. In case if any reactions seen after the prick method like delayed clotting, will be managed immediately and cost will be taken care by the investigator. Some questions will be asked to you and you are at liberty to refuse to answer any questions that is asked and you may end the interview at any time you want to. However, your honest answer to these questions will help us to understand your current health status including some prevailing risk factors of NCDs. We would greatly appreciate your participation in the study by way of responding to the questionnaire. The interview will take about half an hour. After this the participants shall be randomly allocated into two groups. While both groups will be given health related information and pamphlets, one group will receive telephonic counseling for behavioral change, once a month for six months. Later the same questionnaire shall be again administered and measurements of body weight, blood pressure and blood sugar would be taken. This health program will be beneficial to you and to your family for adopting healthy food habits and physical activity which in turn will reduce the chances of developing risk factors for NCDs. In future, you can also educate your family members and neighbors regarding the same and thus reducing the risk factors for NCD for the community on whole.

Participation in this study is free of cost for you. This study is not only beneficial to you but also to the community at large. The results gathered

from this study will be useful in estimating the effectiveness of mHealth intervention in modification of NCD risk factors viz. diet and physical activity.

All the information collected from you will be strictly confidential and will not be disclosed to any outsider unless compelled by law. This information collected will be used only for research.

There is no compulsion to participate in this study. You will be no way affected if you don't wish to participate in this study. You are required to sign only if you voluntarily agree to participate in this study. Further, you can withdraw from the study at any time, if you wish to do so. It is up to you to decide whether to participate or not. This document will be stored under safe custody in the Department of Community Medicine, Sri Devaraj Urs Medical College and a copy is being given to you for information.

You are free to contact the Principal Investigator, Dr. Sindhu Shankar S, Department of Community Medicine, Sri Devaraj Urs Medical College, Kolar whose mobile phone number is 797588456.

ANNEXURE V

INFORMED CONSENT

Sl. no:

Title: mHEALTH in Modifying Diet and Physical Activity among Women Garment Factory Workers in Kolar – A Randomized Controlled Trial

I, the undersigned, agree to participate in this study and to undergo awareness session and disclosure of my personal information and as outlined in this consent form.

I have been read out/ explained in my local vernacular language i.e. in _____ and understand the purpose of this study and the confidentiality of the information that will be collected and disclosed during the study. I have had the opportunity to ask questions regarding the various aspects of this study and my questions have been answered to my full satisfaction. I understand that the information collected will be used only for research purposes.

I understand that I remain free to withdraw from this study at any time. Participation in this study is under my sole discretion and does not involve any cost to me.

Subject's name and signature / Left thumb impression

Name and signature of witness

1. Date:

2. Date:

Name and signature of interviewer:

Date:

Name and signature of Principal Investigator: Dr. Sindhu Shankar S

Contact No: 7975884576

Date:

ಪ್ರಶ್ನಾವಳಿ
(ಮಾಹಿತಿ ಸಂಗ್ರಹಣೆಗಾಗಿ ಪ್ರೌಢಾರ್ಥಮಾ)

ವಿಭಾಗ: ಎ

ಪ್ರಕರಣ ಸಂಖ್ಯೆ:

1. ಹೆಸರು:
2. ಸಾಮಾಜಿಕ-ಜನಸಂಖ್ಯಾ ವಿವರಗಳು:

ವಯಸ್ಸು	
ಶಿಕ್ಷಣ	
ಉದ್ಯೋಗ	
ವೈವಾಹಿಕ ಸ್ಥಿತಿ: ವಿವಾಹಿತರು:	
ಅವಿವಾಹಿತ:	
ವಿಧವೆ:	
ಗಂಡನಿಂದ ಬೇರ್ಪಟ್ಟಿದೆ	
ವಿಚ್ಛೇದನೆ	
ಒಟ್ಟು ಕುಟುಂಬದ ಆದಾಯ	
ಕುಟುಂಬದ ಸದಸ್ಯರು(6 ತಿಂಗಳು)	
ದೂರವಾಣಿ ಸಂಖ್ಯೆ	

3. ದೀರ್ಘಕಾಲದ ಕಾಯಿಲೆಗಳ ಇತಿಹಾಸ:

i. ಮಧುಮೇಹ:

ii. ಅಧಿಕ ರಕ್ತದೊತ್ತಡ:

iii. ಅಸ್ತಮಾ/ಉಬ್ಬಸ:

vi. ಗಂಟಲಿನ ಕೆಳಗೆ ಗಡ್ಡೆ (ಫೈರಾಯ್ಡ್):

vii. ಇತರರು:

4. ಜಿಆರ್‌ಐಎಸ್: ಮಿಗ್ರಾಂ / ಡಿಎಲ್

5. ತೂಕ:

6. ಎತ್ತರ:

7. ತಂಬಾಕು ಸೇವನೆಯ ಇತಿಹಾಸ: 1. ಹೌದು:

2. ಇಲ್ಲ:

8. ಆಲ್ಕೊಹಾಲ್ ಸೇವನೆಯ ಇತಿಹಾಸ: 1. ಹೌದು

2. ಇಲ್ಲ

ವಿಭಾಗ: ಬಿ

ತಿನ್ನುವುದು ಮತ್ತು ಆಹಾರ ಪದ್ಧತಿ ಪ್ರಶ್ನೆ

1. ನೀವು ಎಷ್ಟು ಬಾರಿ ಹಣ್ಣುಗಳನ್ನು ತಿನ್ನುತ್ತೀರಿ? (ಉದಾಹರಣೆ: ಬಾಳೆಹಣ್ಣು, ಕಿತ್ತಳೆ, ಪಪಾಯಿ, ಸೇಬು ಇತ್ಯಾದಿ)

ಎ) ಮುಖ್ಯ ಆಹಾರದಲ್ಲಿ ಪ್ರತಿ ಬಾರಿ:

ಬೌ) ದಿನಕ್ಕೆ ಒಮ್ಮೆಯಾದರೂ:

ಸಿ) ವಾರಕ್ಕೆ 3 ರಿಂದ 4 ಬಾರಿ:

d) ವಾರಕ್ಕೆ 1 ಬಾರಿ:

ಇ) ಅಪರೂಪವಾಗಿ ತಿನ್ನುತ್ತೀವಿ:

2. ಮೊಳಕೆಯೊಡೆದ ಧಾನ್ಯಗಳು ಮತ್ತು ಹಸಿರು ತರಕಾರಿಗಳನ್ನು ನೀವು ಎಷ್ಟು ಬಾರಿ ತಿನ್ನುತ್ತೀರಿ? (ಉದಾಹರಣೆ : ಹೆಸರು ಕಾಳು, ಬಟಾಣಿ ಕಾಳು)

ಎ) ಮುಖ್ಯ ಆಹಾರದಲ್ಲಿ ಪ್ರತಿ ಬಾರಿ:

ಬೌ) ದಿನಕ್ಕೆ ಒಮ್ಮೆಯಾದರೂ:

ಸಿ) ವಾರಕ್ಕೆ 3 ರಿಂದ 4 ಬಾರಿ:

d) ವಾರಕ್ಕೆ 1 ಬಾರಿ:

ಇ) ಅಪರೂಪವಾಗಿ ತಿನ್ನುತ್ತೀವಿ:

3. ಕಳೆದ ವಾರದಲ್ಲಿ, ನೀವು ಹಸಿರು ಎಲೆಗಳ ತರಕಾರಿಗಳನ್ನು (ಸೋಪ್ಪು)ಎಷ್ಟು ದಿನ ಸೇವಿಸಿದ್ದೀರಿ?

(ಉದಾ: ಬಸಲೆಸೋಪ್ಪು, ಪಾಲಕ, ಪಾಲಕ್ಸೋಪ್ಪು, ಡಾಂಟನ್ ಸೋಪ್ಪು ಇತ್ಯಾದಿ)

ಎ) ಮುಖ್ಯ ಆಹಾರದಲ್ಲಿ ಪ್ರತಿ ಬಾರಿ:

ಬೌ) ದಿನಕ್ಕೆ ಒಮ್ಮೆಯಾದರೂ:

ಸಿ) ವಾರಕ್ಕೆ 3 ರಿಂದ 4 ಬಾರಿ:

d) ವಾರಕ್ಕೆ 1 ಬಾರಿ:

ಇ) ಅಪರೂಪವಾಗಿ ತಿನ್ನುತ್ತೀವಿ:

4. ಕಾಫಿ ಅಥವಾ ಚಹಾವನ್ನು ಹೊರತುಪಡಿಸಿ ನೀವು ಎಷ್ಟು ಬಾರಿ ಹಾಲು ಕುಡಿಯುತ್ತೀರಿ?

ಎ) ಪ್ರತಿದಿನ ಎರಡು ಬಾರಿ ಅಂದರೆ ಬೆಳಿಗ್ಗೆ ಮತ್ತು ಸಂಜೆ:

ಬೌ) ದಿನಕ್ಕೆ ಒಮ್ಮೆಯಾದರೂ:

ಸಿ) ವಾರಕ್ಕೆ 3 ರಿಂದ 4 ಬಾರಿ:

d) ವಾರಕ್ಕೆ 1 ಬಾರಿ:

ಇ) ಅಪರೂಪವಾಗಿ ತಿನ್ನುತ್ತೀವಿ:

5) ಒಣ ಹಣ್ಣುಗಳು ಮತ್ತು ಬೀಜಗಳನ್ನು ನೀವು ಎಷ್ಟು ಬಾರಿ ಸೇವಿಸಿದ್ದೀರಿ? (ಉದಾ: ಪಿಸ್ತಾ, ಗೋಡಂಬಿ, ಒಣದ್ರಾಕ್ಷೆ, ಬಾದಾಮಿ, ದಿನಾಂಕ, ಸೂರ್ಯಕಾಂತಿ ಬೀಜಗಳು, ಚಿಯಾ ಬೀಜಗಳು, ಕುಂಬಳಕಾಯಿ ಬೀಜಗಳು, ಅಗಸೆ ಬೀಜಗಳು.)

ಎ) ಪ್ರತಿದಿನ ಒಮ್ಮೆ

ಬೌ) ವಾರಕ್ಕೆ 3-4 ಬಾರಿ:

ಸಿ) ವಾರಕ್ಕೊಮ್ಮೆ:

d) ಅಪರೂಪವಾಗಿ ತಿನ್ನುತ್ತೀವಿ:

ಇ) ಸಂಭ್ರಮಗಳು ಅಥವಾ ಹಬ್ಬಗಳ ಸಮಯದಲ್ಲಿ ಮಾತ್ರ:

6. ನೀವು ತಿನ್ನುತ್ತಿರುವಾಗ ನಿಮ್ಮ ಆಹಾರಕ್ಕೆ ಎಷ್ಟು ಬಾರಿ ಉಪ್ಪು ಸೇರಿಸುತ್ತೀರಿ?

ಎ) ಅಪರೂಪವಾಗಿ ತಿನ್ನುತ್ತೀವಿ:

ಬೌ) ವಾರಕ್ಕೊಮ್ಮೆ

ಸಿ) ವಾರಕ್ಕೆ 2-3 ಬಾರಿ:

d) ದಿನಕ್ಕೆ ಒಂದು ಬಾರಿ

ಇ) ಯಾವಾಗಲೂ:

7. ನೀವು ಉಪ್ಪು ಅಥವಾ ಉಪ್ಪಿನಕಾಯಿ ಅಥವಾ ಉಪ್ಪು ತಿಂಡಿಗಳನ್ನು (ಮಿಶ್ರಣ, ಕುರ್ಕುರೆ) ಎಷ್ಟು ಬಾರಿ ಸೇವಿಸುತ್ತೀರಿ ಎಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಿ?

ಎ) ಅಪರೂಪವಾಗಿ ತಿನ್ನುತ್ತೀವಿ:

ಬೌ) ವಿಶೇಷ ಸಂದರ್ಭಗಳಲ್ಲಿ ಮಾತ್ರ:

ಸಿ) ತಿಂಗಳಿಗೊಮ್ಮೆ:

d) ವಾರಕ್ಕೊಮ್ಮೆಯಾದರೂ:

ಇ) ಯಾವಾಗಲೂ ಮುಖ್ಯ ಆಹಾರದಲ್ಲಿ:

8. ಲಡ್ಡು, ಜಲೇಬಿ, ಪಯಾಸಾ, ಗುಲಾಬ್ಜಾಮೂನ್, ಕೇಸರಿಬಾತ್, ಒಬ್ಬಟ್ಟು ಮುಂತಾದ ಸಿಹಿತಿಂಡಿಗಳನ್ನು ನೀವು ಎಷ್ಟು ಬಾರಿ ತಿನ್ನುತ್ತೀರಿ?

ಎ) ತಿಂಗಳಿಗೊಮ್ಮೆ ಅಥವಾ ಅಪರೂಪವಾಗಿ ತಿನ್ನುತ್ತೀವಿ:

ಬೌ) ತಿಂಗಳಿಗೆ 2 ರಿಂದ 3 ಬಾರಿ:

ಸಿ) ವಾರಕ್ಕೆ 1 ರಿಂದ 2 ಬಾರಿ:

d) ವಾರಕ್ಕೆ 3 ರಿಂದ 6 ಬಾರಿ:

ಇ) ಪ್ರತಿದಿನ ಒಮ್ಮೆಯಾದರೂ:

9. ಪೂರಿ, ಬೋಂಡಾ ಮತ್ತು ಬೋಂಡಾ ಸೂಪ್, ವಡಾ, ಪಕೋಡಾ, ಸ್ಯಾಂಡಿಜ್, ಚಿಕನ್ ಕಬಾಬ್, ತರಕಾರಿ ಕಬಾಬ್ ಮುಂತಾದ ಹುರಿದ ಆಹಾರವನ್ನು ನೀವು ಎಷ್ಟು ಬಾರಿ ತಿನ್ನುತ್ತೀರಿ?

ಎ) ತಿಂಗಳಿಗೊಮ್ಮೆ ಅಥವಾ ಅದಕ್ಕಿಂತ ಕಡಿಮೆ:

ಬೌ) ತಿಂಗಳಿಗೆ 2 ರಿಂದ 3 ಬಾರಿ:

ಸಿ) ವಾರಕ್ಕೆ 1 ರಿಂದ 2 ಬಾರಿ:

d) ವಾರಕ್ಕೆ 3 ರಿಂದ 6 ಬಾರಿ:

ಇ) ಪ್ರತಿದಿನ ಒಮ್ಮೆಯಾದರೂ:

10) ನೀವು ಎಷ್ಟು ಬಾರಿ ಪರಿಷ್ಕರಿಸಿದ ಕೊಬ್ಬು ಆಹಾರ ಪದಾರ್ಥಗಳನ್ನು ಸೇವಿಸುತ್ತೀರಿ. ಉದಾಹರಣೆ: ಗಿಣ್ಣು, ಬೆಣ್ಣೆ, ತುಪ್ಪ, ತೆಂಗಿನ ಎಣ್ಣೆ.

ಎ) ಅಪರೂಪವಾಗಿ ತಿನ್ನುತ್ತೀವಿ:

ಬೌ) ತಿಂಗಳಿಗೊಮ್ಮೆ ಅಥವಾ ಅದಕ್ಕಿಂತ ಕಡಿಮೆ:

ಸಿ) ತಿಂಗಳಿಗೆ 2 ರಿಂದ 3 ಬಾರಿ:

d) ವಾರದಲ್ಲಿ 2 ಅಥವಾ ಎರಡು ಬಾರಿ ಹೆಚ್ಚು:

ಇ) ಪ್ರತಿದಿನ ಒಮ್ಮೆಯಾದರೂ:

11) ನೀವು ಎಷ್ಟು ಬಾರಿ ತಂಪು ಪಾನೀಯಗಳು, ಜ್ಯೂಸ್ ಅಥವಾ ಗಾಳಿ ಬೀಸಿದ ಜ್ಯೂಸ್ ಇತ್ಯಾದಿಗಳನ್ನು ಕುಡಿಯುತ್ತೀರಿ? ಉದಾಹರಣೆ: ನಿಂಬೆ ಸೋಡಾ, ಕೋಕಾ ಕೋಲಾ, ಪೆಪ್ಸಿ, ಸ್ಪೈಟ್, ಥಮ್ಸ್ ಅಪ್, ಮಾಜಾ, ಫ್ರೂಟಿ, ಫ್ಲೇನ್ ಸೋಡಾ ಇತ್ಯಾದಿ

ಎ) ತಿಂಗಳಿಗೊಮ್ಮೆ ಅಥವಾ ಅದಕ್ಕಿಂತ ಕಡಿಮೆ:

ಬೌ) ತಿಂಗಳಿಗೆ 2 ರಿಂದ 3 ಬಾರಿ:

ಸಿ) ವಾರಕ್ಕೆ 1 ರಿಂದ 2 ಬಾರಿ:

d) ವಾರಕ್ಕೆ 3 ರಿಂದ 6 ಬಾರಿ:

ಇ) ಪ್ರತಿದಿನ ಒಮ್ಮೆಯಾದರೂ.

ವಿಶ್ವ ಆರೋಗ್ಯ ಸಂಸ್ಥೆ ಯಿಂದ ಜಾಗತಿಕ ದೈಹಿಕ ಚಟುವಟಿಕೆ ಪ್ರಶ್ನೆ

ದೈಹಿಕ ಚಟುವಟಿಕೆ

ಮುಂದೆ ನಾನು ಒಂದು ಸಾಮಾನ್ಯ ವಾರದಲ್ಲಿ ವಿವಿಧ ರೀತಿಯ ದೈಹಿಕ ಚಟುವಟಿಕೆಗಳನ್ನು ಮಾಡಲು ನೀವು ಖರ್ಚು ಮಾಡುವ ಸಮಯದ ಬಗ್ಗೆ ಕೇಳಲಿದ್ದೇನೆ. ನಿಮ್ಮನ್ನು ದೈಹಿಕವಾಗಿ ಸಕ್ರಿಯ ವ್ಯಕ್ತಿ ಎಂದು ಪರಿಗಣಿಸದಿದ್ದರೂ ದಯವಿಟ್ಟು ಈ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ. ನೀವು ಕೆಲಸ ಮಾಡಲು ಖರ್ಚು ಮಾಡುವ ಸಮಯದ ಬಗ್ಗೆ ಮೊದಲು ಯೋಚಿಸಿ. ನೀವು ಪಾವತಿಸಬೇಕಾದ ಅಥವಾ ಪಾವತಿಸದ ಕೆಲಸ, ಅಧ್ಯಯನ / ತರಬೇತಿ, ಮನೆಕೆಲಸಗಳು, ಆಹಾರ / ಬೆಳೆಗಳನ್ನು ಕೊಯ್ಲು ಮಾಡುವುದು, ಉದ್ಯೋಗ ಅರಸುವುದು ಮುಂತಾದ ಕೆಲಸಗಳನ್ನು ಯೋಚಿಸಿ. ಈ ಕೆಳಗಿನ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸುವಾಗ 'ಹುರುಪಿನ-ತೀವ್ರತೆಯ ಚಟುವಟಿಕೆಗಳು' ಕಠಿಣ ದೈಹಿಕ ಶ್ರಮ ಅಗತ್ಯವಿರುವ ಮತ್ತು ಉಸಿರಾಟ ಅಥವಾ ಹೃದಯ ಬಡಿತದಲ್ಲಿ ಹೆಚ್ಚಿನ ಹೆಚ್ಚಳಕ್ಕೆ ಕಾರಣವಾಗುವ ಚಟುವಟಿಕೆಗಳಾಗಿವೆ, 'ಮಧ್ಯಮ-ತೀವ್ರತೆಯ ಚಟುವಟಿಕೆಗಳು' ಮಧ್ಯಮ ದೈಹಿಕ ಪ್ರಯತ್ನದ ಅಗತ್ಯವಿರುವ ಚಟುವಟಿಕೆಗಳು ಮತ್ತು ಉಸಿರಾಟ ಅಥವಾ ಹೃದಯ ಬಡಿತದಲ್ಲಿ ಸಣ್ಣ ಹೆಚ್ಚಳಕ್ಕೆ ಕಾರಣವಾಗುತ್ತವೆ . ಕಿಂಡಲ್ ಸೂಕ್ತವಾದ ಆಯ್ಕೆಯನ್ನು ಟಿಕ್ ಮಾಡಿ.

ಮನರಂಜನಾ ಚಟುವಟಿಕೆಗಳು

1. ಕನಿಷ್ಠ 10 ನಿಮಿಷಗಳ ಕಾಲ ನಿರಂತರವಾಗಿ [ಚಾಲನೆಯಲ್ಲಿರುವ ಅಥವಾ ಫುಟ್‌ಬಾಲ್‌ನಂತಹ] ಉಸಿರಾಟ ಅಥವಾ ಹೃದಯ ಬಡಿತದಲ್ಲಿ ಹೆಚ್ಚಿನ ಹೆಚ್ಚಳಕ್ಕೆ ಕಾರಣವಾಗುವ ಯಾವುದೇ ಹುರುಪಿನ-ತೀವ್ರತೆಯ ಕ್ರೀಡೆಗಳು, ಫಿಟ್‌ನೆಸ್ ಅಥವಾ ಮನರಂಜನಾ (ವಿರಾಮ) ಚಟುವಟಿಕೆಗಳನ್ನು ನೀವು ಮಾಡುತ್ತೀರಾ?

ಹೌದು:

ಇಲ್ಲ:

2. ಒಂದು ಸಾಮಾನ್ಯ ವಾರದಲ್ಲಿ, ನೀವು ಎಷ್ಟು ದಿನಗಳಲ್ಲಿ ತೀವ್ರವಾದ ತೀವ್ರತೆಯ ಕ್ರೀಡೆ, ಫಿಟ್‌ನೆಸ್ ಅಥವಾ ಮನರಂಜನಾ (ವಿರಾಮ) ಚಟುವಟಿಕೆಗಳನ್ನು ಮಾಡುತ್ತೀರಿ?

ದಿನಗಳ ಸಂಖ್ಯೆ:

3. ವಿಶಿಷ್ಟ ದಿನದಲ್ಲಿ ಹುರುಪಿನ-ತೀವ್ರತೆಯ ಕ್ರೀಡೆ, ಫಿಟ್‌ನೆಸ್ ಅಥವಾ ಮನರಂಜನಾ ಚಟುವಟಿಕೆಗಳನ್ನು ಮಾಡಲು ನೀವು ಎಷ್ಟು ಸಮಯವನ್ನು ಕಳೆಯುತ್ತೀರಿ?

ಗಂಟೆಗಳು:

ನಿಮಿಷಗಳು:

4. ಒಂದು ಸಾಮಾನ್ಯ ವಾರದಲ್ಲಿ, ನೀವು ಎಷ್ಟು ದಿನಗಳಲ್ಲಿ ಮಧ್ಯಮ-ತೀವ್ರತೆಯ ಕ್ರೀಡೆ, ಫಿಟ್ನೆಸ್ ಅಥವಾ ಮನರಂಜನಾ (ವಿರಾಮ) ಚಟುವಟಿಕೆಗಳನ್ನು ಮಾಡುತ್ತೀರಿ?

ದಿನಗಳ ಸಂಖ್ಯೆ:

ಭಾಗವಹಿಸುವಿಕೆ ಮಾಹಿತಿ ಹಾಳೆ:

ಶೀರ್ಷಿಕೆ: ಕೋಲಾರ್ನಲ್ಲಿನ ಗಾರ್ಮೆಂಟ್ ಫ್ಯಾಕ್ಟರಿ ಕೆಲಸಗಾರರಲ್ಲಿ ಆಹಾರ ಮತ್ತು ದೈಹಿಕ ಚಟುವಟಿಕೆಯನ್ನು ಮಾರ್ಪಡಿಸುವಲ್ಲಿ ಆರೋಗ್ಯ ಒಂದು ಅನಿಯಂತ್ರಿತ ಪ್ರಯೋಗ.

ನನ್ನ ಹೆಸರು ಡಾ.ಸಿಂಧುಶಂಕರ್, ಕೋಲಾರದ ಶ್ರೀ ದೇವರಾಜ್ ಅರಸ್ ವೈದ್ಯಕೀಯ ಕಾಲೇಜಿನ ಸಮುದಾಯ ಷಢವಿಭಾಗದಲ್ಲಿ ಸ್ನಾತಕೋತ್ತರ ವಿದ್ಯಾರ್ಥಿ. ಉಡುಪುಕಾರ್ಖಾನೆ ಕೆಲಸ ಮಾಡುವ ಮಹಿಳೆಯರಲ್ಲಿ ಆಹಾರ ಮತ್ತು ದೈಹಿಕ ಚಟುವಟಿಕೆಯನ್ನು ಮಾರ್ಪಡಿಸುವಲ್ಲಿ ನಾನು ಕುರಿತು ಅಧ್ಯಯನವನ್ನು ನಡೆಸುತ್ತಿದ್ದೇನೆ. ಅಧ್ಯಯನ ಶಿಷ್ಟಾಚಾರ ಅನ್ನು ಸಾಂಸ್ಥಿಕ ನೈತಿಕ ಸಮಿತಿಯು ಪರಿಶೀಲಿಸಿದೆ ಮತ್ತು ಅವರ ಪಚಾರಿಕಅನುಮೋದನೆ ಪಡೆದ ನಂತರವೇ ಪ್ರಾರಂಭಿಸಲಾಗಿದೆ.

ಅಕಾಲಿಕಮರಣ, ಕಾಯಿಲೆ ಮತ್ತು ಅಂಗವೈಕಲ್ಯಕ್ಕೆ ಪ್ರಮುಖ ಕಾರಣವಾಗಿ ಸಾಂಕ್ರಾಮಿಕ ರೋಗಗಳನ್ನು (ಎನ್ ಸಿಡಿ) ಅಥವಾ ದೀರ್ಘಕಾಲದ ಕಾಯಿಲೆಗಳು ಇಂದು ಮೀರಿವೆ. ಸಾಮಾನ್ಯ ಎನ್.ಸಿ.ಡಿ.ಗಳಲ್ಲಿ ಕ್ಯಾನ್ಸರ್, ಮಧುಮೇಹ, ಅಧಿಕ ರಕ್ತದೊತ್ತಡ, ಹೃದಯ ರಕ್ತನಾಳದ ಕಾಯಿಲೆ, ಪಾರ್ಶ್ವವಾಯು, ದೀರ್ಘ ಕಾಲದ ಪ್ರತಿರೋಧಕ ಶ್ವಾಸಕೋಶದ ಕಾಯಿಲೆ, ದೀರ್ಘಕಾಲದ ಮೂತ್ರಪಿಂಡಕಾಯಿಲೆ ಇತ್ಯಾದಿ ಸೇರಿವೆ. ಈ ಕಾಯಿಲೆಗಳು ಅನೇಕ ಅಪಾಯಕಾರಿ ಅಂಶಗಳನ್ನು ಹೊಂದಿದ್ದು, ಅಂತಹ ಕಾಯಿಲೆಗಳು ಬರದಂತೆ ಮಾರ್ಪಡಿಸಬಹುದು. ಆಹಾರ ಮತ್ತು ವ್ಯಾಯಾಮಗಳು ಅಂತಹ ಎರಡು ವರ್ತನೆಯ ಅಪಾಯಕಾರಿ ಅಂಶಗಳಾಗಿವೆ, ಇದನ್ನು ಮಾರ್ಪಡಿಸಬಹುದು. ಈ ನಿಟ್ಟಿನಲ್ಲಿ ಮಾಹಿತಿಯನ್ನು ನೀಡುವ ಮೂಲಕ ಆಹಾರ ಪದ್ಧತಿ ಮತ್ತು ದೈಹಿಕಚಟುವಟಿಕೆಗಳನ್ನು ಮಾರ್ಪಡಿಸಲು ನಾನು ನಿಮಗೆ ಸಹಾಯ ಮಾಡುತ್ತೇನೆ. ನಿಮ್ಮ ರಕ್ತದೊತ್ತಡ ಮತ್ತು ಜಿ.ಆರ್.ಬಿ.ಎಸ್. ಅನ್ನು ಮುಳ್ಳು ವಿಧಾನದ ಮೂಲಕ ನಾವು ನಿರ್ಣಯಿಸುತ್ತೇವೆ ಮತ್ತು ಎರಡೂಕಾರ್ಯ ವಿಧಾನಗಳುಂಟು ವಿಲ್ಲದೆ ಮತ್ತು ಪ್ರತಿಕೂಲ ಪ್ರತಿಕ್ರಿಯೆಗಳನ್ನು ಉಂಟುಮಾಡುವುದಿಲ್ಲ. ಒಂದು ವೇಳೆ ವಿಳಂಬವಾದ ಹೆಪ್ಪುಗಟ್ಟುವಿಕೆಯಂತಹ ಚುಚ್ಚು ವಿಧಾನದನಂತರ ಕಂಡು ಬರುವ ಯಾವುದೇ ಪ್ರತಿಕ್ರಿಯೆಗಳನ್ನು ತಕ್ಷಣವೇ ನಿರ್ವಹಿಸಲಾಗುತ್ತದೆ ಮತ್ತು ವೆಚ್ಚವನ್ನು ತನಿಖಾಧಿಕಾರಿ ನೋಡಿಕೊಳ್ಳುತ್ತಾರೆ. ಕೆಲವು ಪ್ರಶ್ನೆಗಳನ್ನು ನಿಮಗೆ ಕೇಳಲಾಗುತ್ತದೆ ಮತ್ತು ಕೇಳಲಾದ ಯಾವುದೇ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಲು ನೀವು ನಿರಾಕರಿಸುವ ಸ್ವಾತಂತ್ರ್ಯ ದಲ್ಲಿರುತ್ತೀರಿ ಮತ್ತು ನೀವು ಬಯಸಿದ ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಸಂದರ್ಶನವನ್ನು ಕೊನೆಗೊಳಿಸಬಹುದು. ಆದಾಗ್ಯೂ, ಈ ಪ್ರಶ್ನೆಗಳಿಗೆ ನಿಮ್ಮ ಪ್ರಾಮಾಣಿಕ ಉತ್ತರವು ಎನ್.ಸಿ.ಡಿ.ಗಳ ಚಾಲ್ತಿಯಲ್ಲಿರುವ ಕೆಲವು ಅಪಾಯಕಾರಿ ಅಂಶಗಳನ್ನು ಒಳಗೊಂಡಂತೆ ನಿಮ್ಮ ಪ್ರಸ್ತುತ ಆರೋಗ್ಯ ಸ್ಥಿತಿಯನ್ನು ಅರ್ಥಮಾಡಿಕೊಳ್ಳಲು ನಿಮಗೆ ಸಹಾಯ ಮಾಡುತ್ತದೆ. ಪ್ರಶ್ನೆಗಳಿಗೆ ಪ್ರತಿಕ್ರಿಯಿಸುವ ಮೂಲಕ ಅಧ್ಯಯನದಲ್ಲಿ ನಿಮ್ಮ ಪಾಲ್ಗೊಳ್ಳುವಿಕೆಯನ್ನು ನಾವು ಬಹಳವಾಗಿ ಪ್ರಶಂಸಿಸುತ್ತೇವೆ. ಸಂದರ್ಶನವು ಸುಮಾರು ಅರ್ಧಗಂಟೆ ತೆಗೆದುಕೊಳ್ಳುತ್ತದೆ. ಇದರ ನಂತರ ಭಾಗವಹಿಸುವವರನ್ನು ಅನಿಯಂತ್ರಿತವಾಗಿ ಎರಡು ಗುಂಪುಗಳಾಗಿ ಹಂಚಲಾಗುತ್ತದೆ. ಎರಡೂ ಗುಂಪುಗಳಿಗೆ ಆರೋಗ್ಯ ಸಂಬಂಧಿತ ಮಾಹಿತಿ ಮತ್ತು ಕರಪತ್ರಗಳನ್ನು

ನೀಡಲಾಗಿದ್ದರೆ, ಒಂದು ಗುಂಪು ವರ್ತನೆಯ ಬದಲಾವಣೆಗೆ ದೂರವಾಣಿ ಸಮಾಲೋಚನೆಯನ್ನು ಸ್ವೀಕರಿಸುತ್ತದೆ, ತಿಂಗಳಿಗೊಮ್ಮೆ ಆರು ತಿಂಗಳವರೆಗೆ. ನಂತರ ಅದೇ ಪ್ರಶ್ನಾವಳಿಯನ್ನು ಮತ್ತೆ ನಿರ್ವಹಿಸಲಾಗುವುದು ಮತ್ತು ದೇಹದತೂಕ, ರಕ್ತದೊತ್ತಡ ಮತ್ತು ರಕ್ತದಲ್ಲಿನ ಸಕ್ಕರೆಯ ಅಳತೆಗಳನ್ನು ತೆಗೆದು ಕೊಳ್ಳಲಾಗುತ್ತದೆ. ಆರೋಗ್ಯಕರ ಆಹಾರ ಪದ್ಧತಿ ಮತ್ತು ದೈಹಿಕ ಚಟುವಟಿಕೆಯನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳಲು ಈ ಆರೋಗ್ಯ ಕಾರ್ಯಕ್ರಮವು ನಿಮಗೆ ಮತ್ತು ನಿಮ್ಮ ಕುಟುಂಬಕ್ಕೆ ಪ್ರಯೋಜನ ಕಾರಿಯಾಗಲಿದ್ದು, ಇದು ಎನ್ .ಸಿ.ಡಿ.ಗಳಿಗೆ ಅಪಾಯಕಾರಿ ಅಂಶಗಳನ್ನು ಅಭಿವೃದ್ಧಿ ಪಡಿಸುವ ಸಾಧ್ಯತೆಗಳನ್ನು ಕಡಿಮೆಮಾಡುತ್ತದೆ. ಭವಿಷ್ಯದಲ್ಲಿ, ನಿಮ್ಮ ಕುಟುಂಬ ಸದಸ್ಯರು ಮತ್ತು ನೆರೆಹೊರೆಯವರಿಗೆ ನೀವು ಈ ಬಗ್ಗೆ ಶಿಕ್ಷಣ ನೀಡ ಬಹುದು ಮತ್ತು ಇದರಿಂದಾಗಿ ಸಮುದಾಯಕ್ಕೆ ಎನ್.ಸಿ.ಡಿ.ಗೆ ಅಪಾಯಕಾರಿ ಅಂಶಗಳನ್ನು ಕಡಿಮೆಮಾಡಬಹುದು.

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವುದು ನಿಮಗೆ ಉಚಿತವಾಗಿದೆ. ಈ ಅಧ್ಯಯನವು ನಿಮಗೆ ಮಾತ್ರವಲ್ಲದೆ ಸಮುದಾಯಕ್ಕೂ ಸಹಪ್ರಯೋಜನ ಕಾರಿಯಾಗಿದೆ. ಈ ಅಧ್ಯಯನದಿಂದ ಸಂಗ್ರಹಿಸಲಾದ ಫಲಿತಾಂಶಗಳು ಎನ್ .ಸಿ.ಡಿ. ಅಪಾಯಕಾರಿ ಅಂಶಗಳ ಮಾರ್ಪಾಡಿನಲ್ಲಿ ದೂರವಾಣಿ ಆರೋಗ್ಯ ಸ್ವಕ್ಷೇಪದ ಪರಿಣಾಮಕಾರಿತ್ವವನ್ನು ಅಂದಾಜು ಮಾಡಲು ಉಪಯುಕ್ತವಾಗುತ್ತವೆ.

ನಿಮ್ಮಿಂದ ಸಂಗ್ರಹಿಸಲಾದ ಎಲ್ಲಾ ಮಾಹಿತಿಯು ಕಟ್ಟು ನಿಟ್ಟಾಗಿ ಗೌಪ್ಯವಾಗಿರುತ್ತದೆ ಮತ್ತು ಕಾನೂನಿನಿಂದ ಒತ್ತಾಯಿಸದ ಹೊರತು ಯಾವುದೇ ಹೊರಗಿನವರಿಗೆ ಬಹಿರಂಗ ಪಡಿಸುವುದಿಲ್ಲ. ಸಂಗ್ರಹಿಸಿದ ಈ ಮಾಹಿತಿಯನ್ನು ಸಂಶೋಧನೆಗೆ ಮಾತ್ರ ಬಳಸಲಾಗುತ್ತದೆ.

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಯಾವುದೇ ಬಲವಂತವಿಲ್ಲ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ನೀವು ಬಯಸದಿದ್ದರೆ ನಿಮಗೆ ಯಾವುದೇ ರೀತಿಯ ಪರಿಣಾಮ ಬೀರುವುದಿಲ್ಲ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ನೀವು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ಒಪ್ಪಿ ಕೊಂಡರೆ ಮಾತ್ರ ನೀವು ಸಹಿ ಮಾಡಬೇಕಾಗುತ್ತದೆ. ಇದಲ್ಲದೆ, ನೀವು ಬಯಸಿದರೆ ನೀವು ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಅಧ್ಯಯನ ದಿಂದ ಹಿಂದೆ ಸರಿಯಬಹುದು. ಭಾಗವಹಿಸ ಬೇಕೆ ಅಥವಾ ಬೇಡವೇ ಎಂಬುದನ್ನು ನಿರ್ಧರಿಸುವ ಜವಾಬ್ದಾರಿ ನಿಮ್ಮದಾಗಿದೆ. ಈ ಪತ್ರಿಕೆಗಳು ಅನ್ನು ಸಮುದಾಯ ಷಢವಿಭಾಗ, ಶ್ರೀ ದೇವರಾಜ್ ಅರಸ್ ವೈದ್ಯಕೀಯ ಕಾಲೇಜಿನಲ್ಲಿ ಸುರಕ್ಷಿತ ಪಾಲನೆಯಲ್ಲಿ ಸಂಗ್ರಹಿಸಲಾಗುವುದು ಮತ್ತು ಮಾಹಿತಿಗಾಗಿ ಪ್ರತಿಯನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುತ್ತಿದೆ.

ಕೋಲಾರದ ಶ್ರೀ ದೇವರಾಜ್ ಅರಸ್ ವೈದ್ಯಕೀಯ ಕಾಲೇಜಿನಲ್ಲಿ ಸಮುದಾಯ ಷಢವಿಭಾಗದ ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿ ಡಾ.ಸಿಂಧುಶಂಕರ್ ಸಂಪರ್ಕಿಸಲು ನೀವು ಮುಕ್ತರಾಗಿದ್ದೀರಿ,

ಸಂಪರ್ಕ ಸಂಖ್ಯೆ -7975884576.

ತಿಳುವಳಿಕೆಯುಳ್ಳ ಒಪ್ಪಿಗೆ

ಕ್ರಮಸಂಖ್ಯೆ:

ಅಧ್ಯಯನದ ಶೀರ್ಷಿಕೆ: ಕೋಲಾರ್ ನಲ್ಲಿನ ಮಹಿಳೆಯರ ಉಡುಪು ಕಾರ್ಖಾನೆ ಕಾರ್ಮಿಕರಲ್ಲಿ ಆಹಾರ ಮತ್ತು ದೈಹಿಕ ಚಟುವಟಿಕೆಯನ್ನು ಮಾರ್ಪಡಿಸುವಲ್ಲಿ ಆರೋಗ್ಯ - ಅನಿಯಂತ್ರಿತ ಪ್ರಯೋಗ.

ನಾನು, ಸಹಿ ಮಾಡದವರು, ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಮತ್ತು ಜಾಗೃತಿ ಅಧಿವೇಶನ ಮತ್ತು ನನ್ನ ವೈಯಕ್ತಿಕ ಮಾಹಿತಿಯನ್ನು ಬಹಿರಂಗ ಪಡಿಸಲು ಮತ್ತು ಈ ಒಪ್ಪಿಗೆಯ ರೂಪದಲ್ಲಿ ವಿವರಿಸಿರುವಂತೆ ಒಪ್ಪುತ್ತೇನೆ.

ನನ್ನ ಸ್ಥಳೀಯ ಭಾಷೆಯಲ್ಲಿ ಅಂದರೆ _____ ನಲ್ಲಿ ನನ್ನನ್ನು ಓದಲಾಗಿದೆ / ವಿವರಿಸಲಾಗಿದೆ ಮತ್ತು ಈ ಅಧ್ಯಯನದ ಉದ್ದೇಶ ಮತ್ತು ಅಧ್ಯಯನದ ಸಮಯದಲ್ಲಿ ಸಂಗ್ರಹಿಸಿ ಬಹಿರಂಗ ಪಡಿಸುವ ಮಾಹಿತಿಯ ಗೌಪ್ಯತೆಯನ್ನು ಅರ್ಥಮಾಡಿಕೊಳ್ಳಿ. ಈ ಅಧ್ಯಯನದ ವಿವಿಧ ಅಂಶಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುವ ಅವಕಾಶ ನನಗೆ ಸಿಕ್ಕಿದೆ ಮತ್ತು ನನ್ನ ಪೂರ್ಣ ತೃಪ್ತಿಗೆ ನನ್ನ ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಲಾಗಿದೆ. ಅವರು ಸಂಗ್ರಹಿಸಿದ ಮಾಹಿತಿಯನ್ನು ಸಂಶೋಧನಾ ಉದ್ದೇಶಗಳಿಗಾಗಿ ಮಾತ್ರ ಬಳಸಲಾಗುತ್ತದೆ ಎಂದು ನಾನು ಅರ್ಥ ಮಾಡಿಕೊಂಡಿದ್ದೇನೆ.

ನಾನು ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಈ ಅಧ್ಯಯನದಿಂದ ಹಿಂದೆ ಸರಿಯಲು ಮುಕ್ತನಾಗಿರುತ್ತೇನೆ ಎಂದು ನಾನು ಅರ್ಥ ಮಾಡಿ ಕೊಂಡಿದ್ದೇನೆ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವಿಕೆಯು ನನ್ನ ಸ್ವಂತ ವಿವೇಚನೆಗೆ ಒಳಪಟ್ಟಿದೆ ಮತ್ತು ನನಗೆ ಯಾವುದೇ ವೆಚ್ಚವನ್ನು ಒಳಗೊಂಡಿರುವುದಿಲ್ಲ.

ಹೆಸರು ಮತ್ತು ಸಹಿ / ಎಡ ಹೆಬ್ಬರಳುಅನಿಸಿಕೆ

ಸಾಕ್ಷಿಯ ಹೆಸರು ಮತ್ತು ಸಹಿ

1. ದಿನಾಂಕ:

2. ದಿನಾಂಕ:

ಸಂದರ್ಶಕರ ಹೆಸರು ಮತ್ತು ಸಹಿ:

ದಿನಾಂಕ:

ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿಗಳ ಹೆಸರು ಮತ್ತು ಸಹಿ: ಡಾ ಸಿಂಧು ಶಂಕರ್

ಸಂಪರ್ಕ ಸಂಖ್ಯೆ: 7975884576 ದಿನಾಂಕ:

DATA ACQUISITION IMAGES

ANNEXURE VI



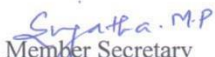
Investigator giving interviewing the study participants.



Post 6months of mHealth intervention, investigator interviewing the participants again

ANNEXURE VII

	SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH SRI DEVARAJ URS MEDICAL COLLEGE Tamaka, Kolar <u>INSTITUTIONAL ETHICS COMMITTEE</u>	
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<u>Members</u> 1. Dr. D.E.Gangadhar Rao, (Chairman) Prof. & HOD of Zoology, Govt. Women's College, Kolar, 2. Dr. Sujatha.M.P, (Member Secretary), Assoc. Prof. of Anesthesia, SDUMC, 3. Mr. Gopinath Paper Reporter, Samyukth Karnataka 4. Mr. G. K. Varada Reddy Advocate, Kolar 5. Mr. Nagesh Sharma Priest, Sanskrit Scholar and School Teacher 6. Dr. Hariprasad, Assoc. Prof Department of Orthopedics, SDUMC 7. Dr. Mahendra.M , Asst. Prof. of Community Medicine, SDUMC 8. Dr. Harish Asst. Prof. of Pharmacology, SDUMC 9. Dr. Vinay Kulkarni Lecturer, Dept. of Anatomy, SDUMC 10. Dr. Ruth Sneha Chandrakumar Asst. Prof. of Psychiatry, SDUMC 11. Dr. Shiva Kumar C S Asst. Prof. Dept. of Clinical Nutrition and Diabetics, SDUMC 12. Dr. Munilakshmi U Asst. Prof. of Biochemistry, SDUMC	No. SDUMC/KLR/IEC/576/2020-21 Date: 24-12-2020 PRIOR PERMISSION TO START OF STUDY The Institutional Ethics Committee of Sri Devaraj Urs Medical College, Tamaka, Kolar has examined and unanimously approved the synopsis entitled “mHealth in modifying diet and Physical activity among women garment factory workers in Kolar - A randomized controlled trial” being investigated by DR. SINDHU SHANKAR S, Dr.Ananta Bhattacharyya in the Department of Community Medicine at Sri Devaraj Urs Medical College, Tamaka, Kolar. Permission is granted by the Ethics Committee to start the study.  Member Secretary Member Secretary Institutional Ethics Committee Sri Devaraj Urs Medical College Tamaka, Kolar.  Chairman CHAIRMAN Institutional Ethics Committee Sri Devaraj Urs Medical College Tamaka, Kolar
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ANNEXURE VIII

STEP	ACTIVITY	TIME PERIOD															
		2020				2021								2022			
		Sep	Oct	Nov	Dec	Jan	Feb to Mar	April	May	June to July	Sep to Nov	Dec	Jan to July	Aug to Oct	November	December	Jan 2023
1	Topic search and selection																
2	Synopsis submission																
3	Approval by IEC																
4	Proforma Preparation and validation																
5	Pilot project																
6	Review of literature																
7	CTRI Registration																
8	Data collection																
9	Follow Up																
10	Data analysis																
11	Dissertation writing																
12	Submission of dissertation																

Si.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poori bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity	POST DIET	POST PA
1	2	3	3	1	2	2	1	1	2	2	3	3	3	1	3	4	5	5	5	5	5	1	1	42	250	45	375
2	2	3	1	2	2	2	2	3	2	2	1	1	2	2	1	2	2	2	4	3	4	1	1	24	225	35	300
3	1	3	3	1	3	2	3	1	2	2	1	1	2	2	1	2	2	4	4	4	4	1	1	27	200	35	300
4	2	3	3	1	2	2	3	4	2	2	2	2	2	2	1	2	2	4	4	5	5	1	1	31	225	33	250
5	2	3	3	1	3	2	1	1	2	2	2	1	2	2	1	2	1	4	2	3	4	1	1	24	150	33	250
6	2	3	1	1	2	2	3	4	2	2	2	1	2	2	1	2	1	4	2	3	5	1	1	25	100	30	300
7	2	3	3	1	3	2	3	3	2	2	1	1	1	1	1	3	1	5	5	5	5	1	1	29	200	38	375
8	1	3	3	1	2	2	2	1	2	2	2	1	2	2	1	2	2	4	4	3	5	1	1	28	250	40	400
9	2	3	3	2	4	2	1	1	2	2	1	1	1	1	1	2	1	5	5	5	5	1	1	28	300	35	450
10	2	3	3	2	2	2	1	3	2	2	1	1	1	1	1	2	1	5	5	5	5	1	1	28	225	32	300
11	1	3	2	1	3	2	1	4	2	2	1	2	2	1	1	2	2	4	3	1	4	1	1	23	150	30	225
12	1	4	3	1	2	2	1	2	2	2	1	2	2	1	1	2	2	5	3	1	5	2	1	25	300	34	450
13	1	3	4	1	1	2	1	1	2	2	2	3	3	2	1	2	2	4	3	1	4	1	1	27	100	33	300
14	1	3	3	1	1	2	1	1	2	2	2	1	2	2	2	2	2	4	4	4	5	1	1	30	300	30	400
15	2	4	3	1	1	2	1	4	2	2	2	1	3	3	4	4	4	4	4	5	4	2	1	38	225	46	375
16	1	3	3	4	1	2	1	3	2	2	2	2	2	2	1	2	1	2	4	4	3	1	1	25	400	30	500
17	1	3	3	1	1	2	1	1	2	2	2	2	2	2	2	1	2	4	4	4	4	1	1	29	450	25	600
18	2	2	3	1	1	2	1	1	2	2	2	1	2	2	1	2	2	5	5	4	5	1	1	31	100	AB	AB
19	1	4	3	1	2	2	1	3	2	2	2	2	2	2	3	3	4	4	4	4	3	2	1	33	300	44	400
20	2	2	3	1	3	2	1	1	2	2	2	1	2	1	2	2	2	4	4	4	4	1	1	28	150	AB	AB
21	2	4	4	1	2	2	1	3	2	2	2	3	2	4	3	5	5	5	5	5	5	2	1	44	250	50	225
22	1	1	2	1	2	2	1	3	2	2	2	1	2	2	1	2	2	4	3	4	4	1	1	27	100	AB	AB
23	1	2	3	1	3	2	3	3	2	2	1	1	1	1	1	2	2	5	3	4	5	1	1	26	100	AB	AB
24	2	3	3	1	3	2	3	4	2	2	2	2	2	2	2	2	2	5	4	4	5	1	1	32	275	35	400
25	2	2	3	1	3	2	2	1	2	2	1	2	2	3	1	2	2	5	3	2	2	1	1	25	200	AB	AB
26	2	3	2	1	3	2	1	1	1	2	1	1	1	1	1	2	2	5	5	5	5	1	1	29	375	41	450
27	2	2	3	1	4	2	1	3	2	2	1	3	3	2	1	3	5	5	5	5	5	1	1	38	225	32	500
28	2	3	3	1	2	2	1	3	1	2	1	1	2	2	1	2	2	4	3	2	2	1	1	22	200	37	300
29	1	3	3	1	4	2	3	4	2	2	1	1	1	1	1	2	2	4	5	5	5	1	1	28	250	36	300
30	1	3	2	1	4	2	2	3	2	2	1	1	1	1	1	1	1	5	5	5	5	1	1	27	225	33	300
31	1	3	3	1	2	2	3	4	2	2	2	1	1	1	1	3	2	3	3	3	4	1	1	24	100	35	250
32	1	3	3	1	2	2	1	1	2	2	2	1	2	2	1	2	2	3	3	3	3	1	1	24	300	38	450
33	1	2	3	1	2	2	1	4	2	2	2	2	2	2	1	2	2	3	3	3	4	1	1	26	100	22	200
34	2	2	2	3	4	2	3	1	2	2	1	1	1	1	1	1	1	4	4	4	4	1	1	23	100	25	200
35	2	1	2	1	3	2	1	4	2	2	1	1	1	1	2	2	2	3	3	3	4	1	1	23	150	AB	AB
36	2	3	3	1	2	2	2	3	2	2	2	2	2	2	1	2	2	3	3	3	3	1	1	25	350	33	500
37	2	3	3	1	3	2	2	3	2	2	2	1	2	2	1	2	2	3	3	3	4	1	1	25	450	32	500
38	1	3	3	1	2	2	3	1	2	2	1	1	1	1	1	2	2	3	3	3	4	1	1	22	225	32	300
39	1	1	3	1	3	2	2	2	2	2	3	2	3	2	3	3	3	2	3	4	4	1	1	32	100	AB	AB
40	1	2	3	2	2	2	3	3	2	2	2	1	2	2	1	2	1	4	4	4	4	1	1	27	150	25	250
41	2	3	3	1	2	2	1	3	2	2	2	1	2	3	1	2	1	4	4	4	4	1	1	28	150	36	375

Si.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poori bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity	POST DIET	POST PA
42	2	3	3	1	4	2	3	1	2	2	1	1	1	1	1	2	2	4	5	4	5	1	1	27	250	38	300
43	2	3	2	1	3	2	3	4	2	2	1	1	1	1	1	2	1	5	5	4	4	1	1	26	225	34	350
44	1	3	2	1	2	2	3	1	2	2	1	1	2	1	1	2	1	4	4	5	5	1	1	27	225	30	250
45	1	3	3	1	3	2	1	4	2	2	1	1	1	1	1	2	1	5	5	4	5	1	1	27	300	30	500
46	1	3	3	1	2	2	1	4	2	2	2	2	2	3	2	2	2	4	3	4	4	1	1	30	225	33	450
47	1	3	3	1	3	2	3	2	2	2	1	1	2	2	1	2	2	3	3	3	5	1	1	25	275	34	300
48	1	3	2	1	3	2	1	2	2	2	2	2	2	1	1	2	1	3	4	4	5	1	1	27	150	28	300
49	2	3	2	1	3	2	1	3	2	2	1	1	2	1	2	2	2	4	3	2	4	1	1	24	250	33	400
50	2	2	3	1	2	2	3	3	2	2	1	1	2	2	1	2	2	4	3	4	4	1	1	26	150	28	225
51	1	3	2	1	4	2	3	3	2	2	2	2	2	2	1	1	1	4	3	2	4	1	1	24	225	33	500
52	2	3	2	1	3	2	3	2	2	2	2	1	1	1	1	5	5	5	3	3	5	1	1	32	300	37	350
53	1	3	2	1	4	2	3	1	2	2	1	1	1	1	1	2	3	5	4	4	5	1	1	28	225	33	225
54	1	3	3	1	4	2	3	1	2	2	1	1	2	1	1	3	2	5	4	5	5	1	1	30	200	35	250
55	1	3	3	1	3	2	1	1	2	2	1	1	2	2	2	2	3	3	3	4	5	1	1	28	150	34	375
56	1	3	3	1	3	2	1	3	2	2	2	1	1	1	1	2	2	5	4	4	5	1	1	28	225	44	300
57	1	3	3	2	3	2	1	1	2	2	1	1	1	1	1	5	5	5	5	5	5	1	1	35	375	43	400
58	2	4	4	1	3	2	1	1	2	2	1	1	1	1	1	2	2	5	5	5	5	2	1	29	600	35	500
59	1	3	3	1	3	2	3	3	2	2	3	3	3	4	1	1	1	5	5	5	5	1	1	36	225	42	400
60	1	3	3	1	4	2	3	1	2	2	3	3	2	3	2	2	3	4	4	3	4	1	1	33	300	44	500
61	2	1	3	1	3	2	1	1	2	2	2	2	1	1	1	2	2	3	3	1	4	1	1	22	100	AB	AB
62	1	1	3	1	2	2	1	1	1	2	1	1	2	1	1	2	2	4	3	1	4	1	1	22	200	20	200
63	1	3	3	1	3	2	1	3	2	2	2	2	2	1	3	1	4	3	3	4	4	1	1	29	375	46	500
64	1	3	3	1	2	2	1	2	2	2	2	2	2	1	1	2	1	3	3	1	4	1	1	22	400	34	500
65	1	3	3	2	2	2	1	2	2	2	2	2	2	4	3	2	1	5	4	1	5	1	1	31	225	35	350
66	1	3	3	2	4	2	2	2	2	2	1	1	2	1	1	2	2	3	3	1	5	1	1	22	200	34	375
67	1	3	3	1	4	2	3	1	2	2	2	2	2	3	2	2	1	4	3	2	4	1	1	27	150	34	225
68	2	3	3	1	4	2	3	3	2	2	1	1	1	1	1	5	5	5	5	5	5	1	1	35	225	44	300
69	2	3	3	1	3	2	2	4	2	2	1	1	2	1	1	1	1	5	3	2	5	1	1	23	200	36	350
70	2	3	3	1	2	2	1	4	2	2	1	1	2	2	2	3	4	4	3	2	3	1	1	27	450	33	600
71	1	3	3	2	2	2	1	1	2	2	2	2	2	1	1	2	2	4	3	1	4	1	1	24	225	30	250
72	1	3	1	1	3	2	2	4	2	2	2	2	2	4	1	2	2	3	3	1	5	1	1	27	225	32	400
73	1	3	1	1	2	2	2	4	2	2	2	1	2	2	1	2	1	5	3	1	4	1	1	24	200	35	375
74	2	3	3	1	3	2	2	3	2	2	2	2	1	2	2	2	1	5	3	1	4	1	1	25	300	33	500
75	1	3	3	1	2	2	1	1	2	2	2	1	2	1	1	2	2	4	3	1	2	1	1	21	150	32	225
76	1	1	1	1	3	2	2	1	2	2	2	2	2	2	2	2	2	5	3	1	5	1	1	28	150	25	150
77	1	3	3	2	2	2	1	1	2	2	2	2	2	1	1	2	2	1	3	1	4	1	1	21	200	37	375
78	1	3	1	1	3	2	2	4	2	2	2	2	2	4	1	2	2	3	3	1	5	1	1	27	150	32	250
79	1	3	1	1	2	2	2	4	2	2	2	1	2	2	1	2	1	5	3	1	4	1	1	24	200	30	250
80	2	3	3	1	3	2	2	3	2	2	2	2	1	2	2	2	1	5	3	1	3	1	1	24	150	39	200
81	2	4	4	1	3	2	1	1	2	2	1	1	1	1	1	2	2	5	5	5	5	3	1	29	500	34	500
82	1	3	3	1	3	2	3	3	1	2	3	3	3	4	1	1	1	5	5	5	5	1	1	36	225	45	300

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poori bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity	POST DIET	POST PA
83	1	3	3	1	4	2	3	1	1	2	3	3	2	3	2	2	3	4	4	3	4	1	1	33	150	41	300
84	2	3	1	1	2	2	3	3	2	2	2	2	2	1	1	2	1	3	3	1	4	1	1	22	250	33	400
85	1	3	3	1	2	2	3	1	2	2	1	1	1	1	3	1	1	3	3	1	5	1	1	21	150	36	225
86	2	1	1	1	3	2	1	1	2	2	2	2	2	2	1	2	1	3	3	1	5	1	1	24	150	22	200
87	2	3	3	1	3	2	3	1	2	2	2	2	2	2	1	1	1	4	3	2	3	1	1	23	375	30	500
88	1	3	4	1	2	2	1	1	1	2	2	2	2	2	1	2	1	5	3	2	2	1	1	24	150	30	300
89	1	4	4	2	4	2	1	3	2	2	3	2	3	3	3	2	2	5	4	3	4	3	1	34	600	40	500
90	1	3	2	1	4	2	3	1	2	2	2	2	2	2	1	1	1	4	3	2	4	1	1	24	300	32	375
91	2	3	3	1	2	2	3	4	2	2	2	2	2	3	1	2	2	4	4	3	2	1	1	27	450	35	600
92	1	3	3	1	3	2	3	2	2	2	1	1	2	2	1	2	2	3	3	3	5	1	1	25	150	24	400
93	1	3	2	1	3	2	1	2	2	2	2	2	2	1	1	2	1	3	4	4	5	1	1	27	200	22	375
94	2	3	2	1	3	2	1	3	2	2	1	1	2	1	2	2	2	4	3	2	4	1	1	24	150	29	200
95	2	2	3	1	2	2	3	3	2	2	1	1	2	2	1	2	2	4	3	4	4	1	1	26	200	25	500
96	2	3	3	1	2	2	1	1	2	2	2	1	2	2	1	2	1	5	4	4	4	1	1	28	150	33	250
97	1	3	3	1	4	2	3	3	2	2	1	2	2	2	1	2	1	4	4	4	5	1	1	28	100	32	225
98	2	3	2	1	2	2	1	3	2	2	2	1	2	1	1	2	1	5	4	4	5	1	1	28	200	35	300
99	1	3	2	1	2	2	3	3	2	2	2	1	2	1	1	2	1	4	4	4	5	1	1	27	225	39	375
100	2	3	3	1	2	2	1	3	2	2	2	1	2	3	1	2	1	4	4	4	4	1	1	28	250	33	400
101	2	2	3	1	3	2	2	1	2	2	1	2	2	2	1	2	2	5	3	2	2	1	1	24	150	29	200
102	2	3	3	1	3	2	3	4	2	2	2	2	2	2	2	2	2	5	4	4	5	1	1	32	300	41	500
103	1	3	2	1	3	2	3	3	2	2	1	1	1	1	1	2	2	5	3	4	5	1	1	26	150	39	225
104	1	1	2	1	2	2	1	3	2	2	2	1	2	2	1	2	2	4	3	4	4	1	1	27	225	30	225
105	2	4	4	1	2	2	1	3	2	2	2	3	2	4	3	5	5	5	5	5	5	3	1	44	450	44	500
106	2	3	2	1	2	2	3	3	1	2	1	1	1	1	3	2	2	5	5	2	5	1	1	28	150	37	250
107	1	3	3	1	2	2	1	1	2	2	1	4	4	3	1	1	5	1	5	5	2	1	1	32	200	40	400
108	1	3	3	1	3	2	2	1	2	2	2	2	2	1	1	1	2	4	3	4	4	1	1	26	150	33	300
109	1	3	2	1	4	2	2	1	2	2	2	2	2	2	2	1	2	5	4	4	4	1	1	30	250	41	375
110	1	3	3	1	2	2	1	1	2	2	1	1	2	1	1	2	2	5	3	4	5	1	1	27	150	32	225
111	2	2	3	1	3	2	1	3	2	2	2	1	2	1	1	2	1	4	4	3	5	1	1	26	225	22	225
112	1	4	4	1	1	2	3	4	2	2	2	2	3	2	2	2	1	4	4	4	4	3	1	30	600	43	750
113	1	3	3	1	2	2	3	1	2	2	2	1	2	1	1	2	1	4	4	3	5	1	1	26	375	34	450
114	2	3	3	3	3	2	3	4	1	2	1	1	1	1	1	1	1	5	4	4	5	1	1	25	150	32	225
115	1	3	2	1	4	2	2	3	2	2	1	1	1	1	1	1	1	5	5	5	5	1	1	27	350	30	500
116	1	3	3	1	2	2	3	1	2	2	1	1	1	1	1	2	2	3	3	3	4	1	1	22	200	30	300
117	2	3	3	1	3	2	2	3	2	2	2	1	2	2	1	2	2	3	3	3	4	1	1	25	225	34	375
118	2	3	3	1	2	2	2	3	2	2	2	2	2	2	1	2	2	3	3	3	3	1	1	25	100	36	200
119	2	1	2	1	3	2	1	3	2	2	1	1	1	1	2	2	2	3	3	3	4	1	1	23	150	25	200
120	2	2	2	3	4	2	3	1	2	2	1	1	1	1	1	1	1	4	4	4	4	1	1	23	150	21	200
121	1	2	3	2	2	2	3	3	2	2	2	1	2	2	1	2	1	4	4	4	4	1	1	27	150	27	200
122	2	3	3	1	2	2	3	3	2	2	1	1	2	2	1	5	2	4	4	5	5	1	1	32	150	40	300
123	1	3	3	1	4	2	3	1	2	2	3	3	3	1	1	3	1	3	1	4	5	1	1	28	300	30	375

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poori bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity	POST DIET	POST PA
124	2	3	3	1	3	2	3	4	2	2	1	1	2	2	1	2	2	4	3	4	5	1	1	27	250	33	375
125	1	3	3	1	3	2	1	1	2	2	1	1	2	1	1	2	2	4	3	1	5	1	1	23	150	34	225
126	1	3	3	1	2	2	2	4	2	2	2	2	2	1	1	2	1	4	3	1	5	1	1	24	225	32	300
127	1	3	2	1	2	2	3	1	2	2	1	1	2	2	1	2	2	4	4	5	5	1	1	29	375	31	400
128	1	3	3	1	2	2	1	4	2	2	1	1	1	1	1	2	1	5	5	4	5	1	1	27	100	32	150
129	1	3	3	1	2	2	1	4	2	2	2	2	2	3	2	2	2	4	3	4	4	1	1	30	150	30	200
130	1	1	3	1	3	2	2	2	1	2	3	2	3	4	3	3	3	2	3	4	4	1	1	34	150	31	200
131	2	3	3	1	2	2	1	4	2	2	3	3	3	1	3	4	5	5	5	5	5	1	1	42	200	40	225
132	2	3	1	2	2	2	3	3	2	2	1	1	2	2	1	2	2	2	4	3	4	1	1	24	250	25	200
133	1	3	3	1	3	2	3	1	2	2	1	1	2	2	1	2	2	4	4	4	4	1	1	27	150	33	200
134	2	3	3	1	2	2	3	4	2	2	2	2	2	2	1	2	2	4	4	5	5	1	1	31	225	39	200
135	2	3	3	1	3	2	1	1	2	2	2	1	2	2	1	2	1	4	2	3	4	1	1	24	200	34	150
136	2	3	1	1	2	2	3	4	2	2	2	1	2	2	1	2	1	4	2	3	5	1	1	25	150	32	200
137	2	3	3	1	3	2	3	3	2	2	1	1	1	1	1	3	1	5	5	5	5	1	1	29	100	39	150
138	1	3	3	1	2	2	2	1	2	2	2	1	2	2	1	2	2	4	4	3	5	1	1	28	150	31	225
139	2	3	3	2	4	2	1	1	2	2	1	1	1	1	1	2	1	5	5	5	5	1	1	28	250	36	300
140	2	3	3	2	2	2	1	3	2	2	1	1	1	1	1	2	1	5	5	5	5	1	1	28	150	37	200
141	1	3	3	1	3	2	1	3	2	2	2	2	2	1	3	1	4	3	3	4	4	1	1	29	225	33	300
142	1	3	3	1	2	2	1	2	2	2	2	2	2	1	1	2	1	3	3	1	4	1	1	22	150	31	150
143	1	3	3	2	2	2	1	2	2	2	2	2	2	4	3	2	1	5	4	1	5	1	1	31	300	42	225
144	1	3	3	2	4	2	2	2	2	2	1	1	2	1	1	2	2	3	3	1	5	1	1	22	225	29	250
145	1	3	3	1	4	2	3	1	2	2	2	2	2	3	2	2	1	4	3	2	4	1	1	27	350	27	300
1	1	2	3	1	1	2	1	1	2	2	2	1	3	2	2	2	1	5	4	3	4	1	0	29	150	AB	AB
2	2	2	1	1	3	2	1	1	2	2	1	1	1	1	1	4	4	5	5	3	5	1	0	31	100	AB	AB
3	2	4	1	1	4	2	1	4	2	2	2	2	2	2	1	3	2	5	4	3	4	2	0	30	150	33	225
4	2	2	3	1	2	2	2	1	2	2	1	1	1	1	1	3	2	4	4	2	4	1	0	24	300	AB	AB
5	1	4	4	1	1	2	3	1	2	2	3	2	3	4	3	4	2	5	5	5	5	2	0	41	100	44	250
6	1	3	3	1	3	2	3	1	2	2	2	1	2	1	1	2	1	4	4	3	4	1	0	25	300	30	225
7	2	3	3	1	2	2	1	1	2	2	1	2	2	1	1	2	2	4	3	1	4	1	0	23	225	AB	AB
8	1	4	4	1	4	2	1	2	2	2	3	2	3	2	2	4	4	5	5	5	5	2	0	40	225	33	300
9	2	3	3	1	4	2	1	1	2	2	1	2	3	3	3	4	4	5	5	5	5	1	0	40	300	32	250
10	1	4	4	1	1	2	1	1	2	2	3	3	3	3	4	5	5	5	5	5	5	2	0	46	200	36	375
11	2	2	3	1	2	2	3	1	2	2	1	2	1	1	1	2	1	4	4	3	4	1	0	24	300	30	375
12	2	3	3	1	2	2	2	4	2	2	2	2	2	3	4	5	5	3	2	2	4	1	0	34	100	33	150
13	1	3	3	2	3	2	3	1	2	2	2	2	2	1	1	2	2	4	4	5	4	1	0	29	225	26	250
14	1	1	3	1	3	2	3	1	2	2	1	1	1	1	1	1	4	4	3	4	4	1	0	25	225	25	200
15	1	3	3	1	2	2	1	1	2	2	1	1	2	1	1	2	2	5	3	4	5	1	0	27	100	30	150
16	1	2	2	1	4	2	2	3	2	2	2	2	2	2	2	1	2	5	4	4	4	1	0	30	225	AB	AB
17	1	3	3	1	3	2	2	3	2	2	2	2	2	1	1	1	2	4	3	4	4	1	0	26	100	25	200
18	1	3	3	1	2	2	1	1	2	2	1	4	4	3	1	1	5	1	5	5	2	1	0	32	225	33	300

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poori bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity	POST DIET	POST PA
19	2	2	3	1	2	2	3	3	2	2	1	1	1	1	3	2	2	5	5	2	5	1	0	28	225	AB	AB
20	2	3	3	3	3	2	3	4	2	2	1	1	1	1	1	1	1	5	4	4	5	1	0	25	100	33	100
21	1	3	3	1	2	2	3	1	2	2	2	1	2	1	1	2	1	4	4	3	5	1	0	26	225	34	200
22	1	4	4	1	1	2	3	4	2	2	2	2	3	2	2	2	1	4	4	4	4	2	0	30	225	35	250
23	2	2	3	1	3	2	1	3	2	2	2	1	2	1	1	2	1	4	4	3	5	1	0	26	300	AB	AB
24	2	3	3	1	3	2	3	1	2	2	2	1	2	1	1	1	1	4	4	5	5	1	0	27	100	AB	AB
25	2	2	2	1	3	2	3	1	2	2	2	1	2	1	1	2	1	4	3	4	5	1	0	26	225	24	250
26	2	2	3	3	3	2	3	4	2	2	1	1	1	1	1	4	4	5	4	3	5	1	0	30	100	31	150
27	1	3	3	1	2	2	3	4	2	2	2	1	4	1	1	2	2	4	4	3	5	1	0	29	100	30	150
28	1	3	3	1	2	2	1	1	2	2	2	1	2	1	1	2	2	3	3	3	4	1	0	24	225	25	200
29	1	2	3	3	4	3	2	1	4	2	2	1	2	2	1	1	2	3	3	3	4	1	0	24	225	25	200
30	2	2	3	3	4	2	3	1	2	2	1	1	1	1	1	1	2	5	5	4	5	1	0	27	100	22	200
31	1	3	3	1	2	2	3	1	2	2	2	1	2	1	1	2	1	5	4	4	5	1	0	28	100	23	150
32	2	3	2	1	3	2	3	4	2	2	2	1	2	1	1	2	2	4	4	3	5	1	0	27	225	25	250
33	2	3	2	1	3	2	3	4	2	2	2	1	2	1	1	2	2	4	4	3	5	1	0	27	200	23	225
34	2	3	3	1	4	2	1	1	2	2	1	1	2	1	1	2	1	4	4	3	5	1	0	25	225	28	225
35	2	3	3	1	3	2	1	1	2	2	2	1	2	2	1	1	2	5	4	3	5	1	0	28	300	30	250
36	2	3	3	1	2	2	1	1	2	2	2	1	2	2	1	2	1	5	4	4	4	1	0	28	225	26	250
37	1	3	3	1	4	2	3	1	2	2	1	2	2	2	1	2	1	4	4	4	5	1	0	28	225	AB	AB
38	2	3	2	1	2	2	1	3	2	2	2	1	2	1	1	2	1	5	4	4	5	1	0	28	375	28	300
39	1	3	2	1	2	2	3	3	2	2	2	1	2	1	1	2	1	4	4	4	5	1	0	27	225	30	250
40	2	3	3	1	4	2	1	3	2	2	1	1	2	2	1	2	2	4	3	4	4	1	0	26	200	25	225
41	2	3	3	1	2	2	3	4	2	2	1	1	2	2	2	2	2	5	3	5	5	1	0	30	225	33	250
42	2	3	3	1	2	2	3	2	2	2	2	2	2	2	2	2	2	4	3	4	4	1	0	29	150	30	200
43	1	3	3	1	3	2	1	3	2	2	2	2	2	2	2	2	2	4	3	5	5	1	0	31	225	30	300
44	2	1	1	1	2	2	3	4	2	2	1	1	1	1	1	2	1	5	3	5	5	1	0	26	225	AB	AB
45	2	3	3	1	2	2	3	4	2	2	2	2	2	3	1	2	2	4	4	3	2	1	0	27	100	25	150
46	1	3	3	1	4	2	1	1	2	2	1	1	1	1	1	1	1	5	3	3	4	1	0	22	225	AB	AB
47	2	3	3	1	3	2	3	2	2	2	2	3	2	2	1	1	1	4	3	2	3	1	0	24	200	28	200
48	1	3	4	1	2	2	1	1	2	2	2	2	2	2	1	2	1	5	3	2	2	1	0	24	225	26	225
49	1	4	4	1	4	2	1	3	1	2	3	2	3	3	3	2	2	5	4	3	4	2	0	34	375	40	500
50	2	3	3	1	2	2	3	4	2	2	2	2	2	1	1	2	1	3	3	1	4	1	0	22	300	24	225
51	1	3	3	1	2	2	3	1	2	2	1	1	1	1	3	1	1	3	3	1	5	1	0	21	225	21	250
52	2	1	1	1	3	2	1	3	2	2	2	2	2	2	1	2	1	3	3	1	5	1	0	24	225	AB	AB
53	2	3	3	1	4	2	1	3	2	2	1	1	2	1	1	2	1	4	3	1	5	1	0	22	100	28	150
54	1	3	2	1	2	2	1	1	2	2	2	2	2	1	1	2	1	4	3	1	5	1	0	24	300	30	300
55	1	3	3	2	3	2	1	1	2	2	2	1	2	1	1	1	1	4	3	1	4	1	0	21	375	22	375
56	2	4	2	1	4	2	3	3	2	2	1	1	1	1	1	1	1	3	3	1	5	2	0	19	300	20	500
57	2	3	3	1	4	2	1	4	2	2	1	1	1	1	1	1	1	5	3	5	5	1	0	25	300	30	300
58	1	3	3	1	2	2	1	1	2	2	1	1	2	2	1	2	2	3	3	1	4	1	0	22	400	25	250
59	1	3	3	1	2	2	1	1	2	2	1	1	2	2	1	2	2	3	3	1	4	1	0	22	300	24	225

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poori bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity	POST DIET	POST PA
60	2	3	3	1	3	2	3	2	2	2	1	1	2	1	1	2	2	3	3	2	5	1	0	23	225	30	300
61	2	3	3	3	1	2	1	4	2	2	1	2	2	1	1	2	2	5	3	4	4	1	0	27	300	31	250
62	1	3	3	1	4	2	1	3	2	2	1	1	1	1	1	2	2	5	5	3	4	1	0	26	200	32	225
63	1	3	3	3	3	2	1	4	2	2	1	1	2	2	1	2	2	5	3	3	5	1	0	27	300	30	300
64	1	4	4	1	2	2	1	3	2	2	2	3	3	2	1	4	4	5	5	4	5	2	0	38	250	33	450
65	1	3	3	1	2	2	2	4	2	2	2	2	2	1	1	2	1	4	3	1	5	1	0	24	150	28	200
66	1	3	3	1	3	2	1	1	2	2	1	1	2	1	1	2	2	4	3	1	5	1	0	23	300	26	300
67	2	3	3	1	3	2	1	4	2	2	1	1	2	2	1	2	2	4	3	4	5	1	0	27	100	AB	AB
68	1	3	3	1	4	2	3	1	2	2	3	3	3	1	1	3	1	3	1	4	5	1	0	28	300	32	250
69	2	3	3	1	2	2	3	3	2	2	1	1	2	2	1	5	2	4	4	5	5	1	0	32	200	33	250
70	1	3	3	1	2	2	1	1	2	2	2	1	2	1	1	2	2	4	3	1	2	1	0	21	300	28	300
71	1	1	1	1	3	2	1	2	2	2	2	2	2	2	2	2	2	5	3	1	5	1	0	28	300	AB	AB
72	2	3	3	1	4	2	1	1	2	2	1	1	2	1	1	2	1	4	3	1	5	1	0	22	100	29	150
73	1	3	2	1	2	2	1	2	2	2	2	2	2	1	1	2	1	4	3	1	5	1	0	24	225	25	200
74	1	3	3	2	3	2	1	2	2	2	2	1	2	1	1	1	1	4	3	1	4	1	0	21	300	22	225
75	2	4	2	1	4	2	3	3	2	2	1	1	1	1	1	1	1	3	3	1	5	2	0	19	300	20	500
76	2	3	3	1	4	2	1	4	2	2	1	1	1	1	1	1	1	5	3	5	5	1	0	25	450	29	500
77	1	3	3	1	2	2	1	1	2	2	1	1	2	2	1	2	2	3	3	1	4	1	0	22	300	29	300
78	2	1	3	1	3	2	1	2	2	2	2	2	1	1	1	2	2	3	3	1	4	1	0	22	250	25	200
79	1	3	3	2	3	2	1	1	2	2	1	1	1	1	1	5	5	5	5	5	5	1	0	35	150	31	200
80	2	3	2	1	3	2	3	1	2	2	2	1	1	1	1	5	5	5	3	3	5	1	0	32	300	32	300
81	1	3	2	1	4	2	3	1	2	2	1	1	1	1	1	2	3	5	4	4	5	1	0	28	300	25	300
82	1	3	3	1	4	2	3	1	2	2	1	1	2	1	1	3	2	5	4	5	5	1	0	30	375	30	250
83	1	3	3	1	3	2	1	1	2	2	1	1	2	2	2	2	3	3	3	4	5	1	0	28	300	30	375
84	1	3	3	1	3	2	1	3	2	2	2	1	1	1	1	2	2	5	4	4	5	1	0	28	250	29	300
85	2	3	3	1	4	2	1	3	2	2	1	1	2	2	1	2	2	4	3	4	4	1	0	26	300	29	300
86	2	3	3	1	2	2	3	4	1	2	1	1	2	2	2	2	2	5	3	5	5	1	0	30	225	30	250
87	2	3	3	1	2	2	3	2	2	2	2	2	2	2	2	2	2	4	3	4	4	1	0	29	300	29	300
88	1	3	3	1	3	2	1	3	2	2	2	2	2	2	2	2	2	2	3	5	5	1	0	29	150	30	200
89	2	1	1	1	2	2	3	4	2	2	1	1	1	1	1	2	1	5	3	5	5	1	0	26	300	AB	AB
90	2	3	3	1	4	2	3	1	2	2	1	1	1	1	1	2	2	4	5	4	5	1	0	27	150	31	200
91	2	3	2	1	3	2	3	4	2	2	1	1	1	1	1	2	1	5	5	4	4	1	0	26	300	31	300
92	1	1	3	1	2	2	1	2	2	2	1	1	2	1	1	2	2	4	3	1	4	1	0	22	300	20	225
93	1	3	3	2	2	2	1	2	2	2	2	2	2	2	4	3	2	1	4	1	5	1	0	28	150	30	200
94	1	3	3	1	2	2	1	1	2	2	2	2	2	1	1	2	1	3	3	1	4	1	0	22	300	23	300
95	1	3	3	1	3	2	1	3	2	2	2	2	2	2	1	3	1	4	3	3	4	1	0	27	200	25	150
96	1	3	3	1	4	2	3	4	2	2	1	1	1	1	1	2	2	4	5	5	5	1	0	28	300	25	300
97	2	3	3	1	2	2	1	3	1	2	1	1	2	2	1	2	2	4	3	2	2	1	0	22	225	AB	AB
98	2	2	3	1	4	2	1	3	2	2	1	3	3	2	1	3	5	5	5	5	5	1	0	38	300	30	150
99	2	3	2	1	4	2	1	1	1	2	1	1	1	1	1	2	2	5	5	5	5	1	0	29	100	27	150
100	1	1	3	1	3	2	3	1	1	2	1	1	1	1	1	1	1	4	4	3	4	1	0	22	375	25	300

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poori bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity	POST DIET	POST PA
101	1	3	3	2	3	2	3	1	2	2	2	2	2	1	1	2	2	4	4	5	4	1	0	29	150	26	150
102	2	3	3	1	2	2	2	4	2	2	2	2	2	3	4	5	5	3	2	2	4	1	0	34	300	31	300
103	2	2	3	1	2	2	3	1	2	2	1	2	1	1	1	2	1	4	4	3	4	1	0	24	300	25	300
104	1	4	4	1	1	2	1	1	2	2	3	3	3	3	4	5	5	5	5	5	5	2	0	46	100	44	225
105	2	2	3	1	3	2	1	1	2	2	2	1	2	1	2	2	2	4	4	4	4	1	0	28	600	AB	AB
106	1	3	3	1	2	2	3	4	2	2	2	1	4	1	1	2	2	4	4	3	5	1	0	29	100	27	200
107	2	2	3	3	3	2	3	4	2	2	1	1	1	1	1	4	4	5	4	3	5	1	0	30	300	23	300
108	2	2	2	1	3	2	3	1	2	2	2	1	2	1	1	2	1	4	3	5	4	1	0	26	150	25	150
109	2	3	3	1	3	2	3	1	2	2	2	1	2	1	1	1	1	4	4	5	5	1	0	27	150	29	225
110	1	2	3	1	2	2	1	4	2	2	2	2	2	2	1	2	2	3	3	3	4	1	0	26	300	22	225
111	1	3	3	1	2	2	1	1	2	2	2	1	2	2	1	2	2	3	3	3	3	1	0	24	150	29	250
112	1	3	3	1	2	2	3	4	2	2	2	1	1	1	1	3	2	3	3	3	4	1	0	24	300	AB	AB
113	1	2	3	4	3	2	1	4	2	2	2	1	2	2	1	1	2	3	3	3	4	1	0	24	250	29	300
114	1	3	3	1	2	2	1	1	2	2	2	1	2	1	1	2	2	3	3	3	4	1	0	24	150	28	200
115	2	3	3	1	3	2	1	1	2	2	2	1	2	2	1	1	2	5	4	3	5	1	0	28	300	31	225
116	2	3	3	1	4	2	1	1	2	2	1	1	2	1	1	2	1	4	4	3	5	1	0	25	225	26	225
117	2	3	2	1	3	2	3	4	2	2	2	1	2	1	1	2	2	4	4	3	5	1	0	27	300	25	300
118	1	3	3	1	2	2	3	1	2	2	2	1	2	1	1	2	1	5	4	4	5	1	0	28	200	26	250
119	2	2	3	3	4	2	3	1	2	2	1	1	1	1	1	1	2	5	5	4	5	1	0	27	300	25	375
120	1	4	4	1	2	2	1	1	2	2	2	3	3	2	1	4	4	5	5	4	5	2	0	38	150	35	375
121	1	3	3	3	3	2	1	4	2	2	1	1	2	2	1	2	2	5	3	3	5	1	0	27	500	27	500
122	1	3	3	1	4	2	1	3	2	2	1	1	1	1	1	2	2	5	5	3	4	1	0	26	450	25	500
123	2	3	3	1	3	2	1	4	2	2	1	2	2	1	1	2	2	5	3	4	4	1	0	27	300	27	375
124	2	3	3	1	3	2	3	3	2	2	1	1	2	1	1	2	2	3	3	2	5	1	0	23	375	25	375
125	2	3	3	1	2	2	1	3	2	2	1	1	2	2	2	3	4	4	3	2	3	1	0	27	300	29	300
126	2	3	3	1	3	2	2	4	2	2	1	1	2	1	1	1	1	5	3	2	5	1	0	23	225	AB	AB
127	2	3	3	1	4	2	3	1	2	2	1	1	1	1	1	5	5	5	5	5	5	1	0	35	300	31	225
128	1	3	3	1	4	2	3	1	2	2	2	2	2	3	2	2	1	4	3	2	4	1	0	27	250	29	250
129	1	3	3	2	4	2	1	1	2	2	1	1	2	1	1	2	2	3	3	1	5	1	0	22	300	29	300
130	2	1	3	2	2	2	1	3	2	2	2	1	2	1	1	2	1	4	4	4	5	1	0	27	300	22	300
131	1	2	3	1	1	2	1	1	2	2	2	1	3	2	2	2	1	5	4	3	4	1	0	29	150	23	200
132	2	2	1	1	3	2	1	1	2	2	1	1	1	1	1	4	4	5	5	3	5	1	0	31	150	29	225
133	2	4	1	1	4	2	1	4	2	2	2	2	2	2	1	3	2	5	4	3	4	2	0	30	225	30	400
134	2	2	3	1	2	2	2	1	2	2	1	1	1	1	1	3	2	4	4	2	4	1	0	24	450	25	400
135	1	4	4	1	1	2	3	1	2	2	3	2	3	4	3	4	2	5	5	5	5	3	0	41	150	40	225
136	1	3	3	1	3	2	3	1	2	2	2	1	2	1	1	2	1	4	4	3	4	1	0	25	500	AB	AB
137	2	3	3	1	2	2	1	1	2	2	1	2	2	1	1	2	2	4	3	1	4	1	0	23	300	28	300
138	1	4	4	1	4	2	1	2	2	2	3	2	3	2	2	4	4	5	5	5	5	3	0	40	300	35	450
139	2	3	3	1	4	2	1	1	2	2	1	2	3	3	3	4	4	5	5	5	5	1	0	40	500	35	450
140	1	3	2	1	3	2	1	4	2	2	1	2	2	1	1	2	2	4	3	1	4	1	0	23	300	31	300
141	1	4	3	1	2	2	1	2	2	2	1	2	2	1	1	2	2	5	3	1	5	3	0	25	375	30	500

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poori bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity	POST DIET	POST PA
142	1	3	4	1	1	2	1	1	2	2	2	3	3	2	1	2	2	4	3	1	4	1	0	27	500	26	500
143	1	3	3	1	1	2	1	1	2	2	2	1	2	2	2	2	2	4	4	4	5	1	0	30	300	AB	AB
144	2	4	3	1	1	2	1	4	2	2	2	1	3	3	4	4	4	4	4	5	4	3	0	38	300	34	500
145	1	4	3	1	2	2	1	2	2	2	1	2	2	1	1	2	2	5	3	1	5	3	0	25	400	30	600

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poor'i bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity
1	2	3	3	1	2	2	1	1	2	2	3	3	3	1	3	4	5	5	5	5	5	1	1	42	225
2	2	3	1	2	2	2	2	3	2	2	1	1	2	2	1	2	2	2	4	3	4	1	1	24	225
3	1	3	3	1	3	2	3	1	2	2	1	1	2	2	1	2	2	4	4	4	4	1	1	27	225
4	2	3	3	1	2	2	3	4	2	2	2	2	2	2	1	2	2	4	4	5	5	1	1	31	225
5	2	3	3	1	3	2	1	1	2	2	2	1	2	2	1	2	1	4	2	3	4	1	1	24	225
6	2	3	1	1	2	2	3	4	2	2	2	1	2	2	1	2	1	4	2	3	5	1	1	25	225
7	2	3	3	1	3	2	3	3	2	2	1	1	1	1	1	3	1	5	5	5	5	1	1	29	225
8	1	3	3	1	2	2	2	1	2	2	2	1	2	2	1	2	2	4	4	3	5	1	1	28	225
9	2	3	3	2	4	2	1	1	2	2	1	1	1	1	1	2	1	5	5	5	5	1	1	28	225
10	2	3	3	2	2	2	1	3	2	2	1	1	1	1	1	2	1	5	5	5	5	1	1	28	225
11	1	3	2	1	3	2	1	4	2	2	1	2	2	1	1	2	2	4	3	1	4	1	1	23	225
12	1	4	3	1	2	2	1	2	2	2	1	2	2	1	1	2	2	5	3	1	5	2	1	25	300
13	1	3	4	1	1	2	1	1	2	2	2	3	3	2	1	2	2	4	3	1	4	1	1	27	225
14	1	3	3	1	1	2	1	1	2	2	2	1	2	2	2	2	2	4	4	4	5	1	1	30	225
15	2	4	3	1	1	2	1	4	2	2	2	1	3	3	4	4	4	4	4	5	4	2	1	38	300
16	1	3	3	4	1	2	1	3	2	2	2	2	2	2	1	2	1	2	4	4	3	1	1	25	225
17	1	3	3	1	1	2	1	1	2	2	2	2	2	2	2	1	2	4	4	4	4	1	1	29	225
18	2	2	3	1	1	2	1	1	2	2	2	1	2	2	1	2	2	5	5	4	5	1	1	31	100
19	1	4	3	1	2	2	1	3	2	2	2	2	2	2	3	3	4	4	4	4	3	2	1	33	300
20	2	2	3	1	3	2	1	1	2	2	2	1	2	1	2	2	2	4	4	4	4	1	1	28	100
21	2	4	4	1	2	2	1	3	2	2	2	3	2	4	3	5	5	5	5	5	5	2	1	44	300
22	1	1	2	1	2	2	1	3	2	2	2	1	2	2	1	2	2	4	3	4	4	1	1	27	100
23	1	2	3	1	3	2	3	3	2	2	1	1	1	1	1	2	2	5	3	4	5	1	1	26	100
24	2	3	3	1	3	2	3	4	2	2	2	2	2	2	2	2	2	5	4	4	5	1	1	32	225
25	2	2	3	1	3	2	2	1	2	2	1	2	2	3	1	2	2	5	3	2	2	1	1	25	100
26	2	3	2	1	3	2	1	1	1	2	1	1	1	1	1	2	2	5	5	5	5	1	1	29	225
27	2	2	3	1	4	2	1	3	2	2	1	3	3	2	1	3	5	5	5	5	5	1	1	38	100
28	2	3	3	1	2	2	1	3	1	2	1	1	2	2	1	2	2	4	3	2	2	1	1	22	225
29	1	3	3	1	4	2	3	4	2	2	1	1	1	1	1	2	2	4	5	5	5	1	1	28	225
30	1	3	2	1	4	2	2	3	2	2	1	1	1	1	1	1	1	5	5	5	5	1	1	27	225
31	1	3	3	1	2	2	3	4	2	2	2	1	1	1	1	3	2	3	3	3	4	1	1	24	225
32	1	3	3	1	2	2	1	1	2	2	2	1	2	2	1	2	2	3	3	3	3	1	1	24	225
33	1	2	3	1	2	2	1	4	2	2	2	2	2	2	1	2	2	3	3	3	4	1	1	26	100
34	2	2	2	3	4	2	3	1	2	2	1	1	1	1	1	1	1	4	4	4	4	1	1	23	100
35	2	1	2	1	3	2	1	4	2	2	1	1	1	1	2	2	2	3	3	3	4	1	1	23	100
36	2	3	3	1	2	2	2	3	2	2	2	2	2	2	1	2	2	3	3	3	3	1	1	25	225
37	2	3	3	1	3	2	2	3	2	2	2	1	2	2	1	2	2	3	3	3	4	1	1	25	225

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poori bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity
38	1	3	3	1	2	2	3	1	2	2	1	1	1	1	1	2	2	3	3	3	4	1	1	22	225
39	1	1	3	1	3	2	2	2	2	2	3	2	3	2	3	3	3	2	3	4	4	1	1	32	100
40	1	2	3	2	2	2	3	3	2	2	2	1	2	2	1	2	1	4	4	4	4	1	1	27	150
41	2	3	3	1	2	2	1	3	2	2	2	1	2	3	1	2	1	4	4	4	4	1	1	28	225
42	2	3	3	1	4	2	3	1	2	2	1	1	1	1	1	2	2	4	5	4	5	1	1	27	225
43	2	3	2	1	3	2	3	4	2	2	1	1	1	1	1	2	1	5	5	4	4	1	1	26	225
44	1	3	2	1	2	2	3	1	2	2	1	1	2	1	1	2	1	4	4	5	5	1	1	27	225
45	1	3	3	1	3	2	1	4	2	2	1	1	1	1	1	2	1	5	5	4	5	1	1	27	225
46	1	3	3	1	2	2	1	4	2	2	2	2	2	3	2	2	2	4	3	4	4	1	1	30	225
47	1	3	3	1	3	2	3	2	2	2	1	1	2	2	1	2	2	3	3	3	5	1	1	25	225
48	1	3	2	1	3	2	1	2	2	2	2	2	2	1	1	2	1	3	4	4	5	1	1	27	225
49	2	3	2	1	3	2	1	3	2	2	1	1	2	1	2	2	2	4	3	2	4	1	1	24	225
50	2	2	3	1	2	2	3	3	2	2	1	1	2	2	1	2	2	4	3	4	4	1	1	26	150
51	1	3	2	1	4	2	3	3	2	2	2	2	2	2	1	1	1	4	3	2	4	1	1	24	225
52	2	3	2	1	3	2	3	2	2	2	2	1	1	1	1	5	5	5	3	3	5	1	1	32	225
53	1	3	2	1	4	2	3	1	2	2	1	1	1	1	1	2	3	5	4	4	5	1	1	28	225
54	1	3	3	1	4	2	3	1	2	2	1	1	2	1	1	3	2	5	4	5	5	1	1	30	225
55	1	3	3	1	3	2	1	1	2	2	1	1	2	2	2	2	3	3	3	4	5	1	1	28	225
56	1	3	3	1	3	2	1	3	2	2	2	1	1	1	1	2	2	5	4	4	5	1	1	28	225
57	1	3	3	2	3	2	1	1	2	2	1	1	1	1	1	5	5	5	5	5	5	1	1	35	225
58	2	4	4	1	3	2	1	1	2	2	1	1	1	1	1	2	2	5	5	5	5	2	1	29	600
59	1	3	3	1	3	2	3	3	2	2	3	3	3	4	1	1	1	5	5	5	5	1	1	36	225
60	1	3	3	1	4	2	3	1	2	2	3	3	2	3	2	2	3	4	4	3	4	1	1	33	225
61	2	1	3	1	3	2	1	1	2	2	2	2	1	1	1	2	2	3	3	1	4	1	1	22	100
62	1	1	3	1	2	2	1	1	1	2	1	1	2	1	1	2	2	4	3	1	4	1	1	22	100
63	1	3	3	1	3	2	1	3	2	2	2	2	2	1	3	1	4	3	3	4	4	1	1	29	225
64	1	3	3	1	2	2	1	2	2	2	2	2	2	1	1	2	1	3	3	1	4	1	1	22	225
65	1	3	3	2	2	2	1	2	2	2	2	2	2	4	3	2	1	5	4	1	5	1	1	31	225
66	1	3	3	2	4	2	2	2	2	2	1	1	2	1	1	2	2	3	3	1	5	1	1	22	225
67	1	3	3	1	4	2	3	1	2	2	2	2	2	3	2	2	1	4	3	2	4	1	1	27	225
68	2	3	3	1	4	2	3	3	2	2	1	1	1	1	1	5	5	5	5	5	5	1	1	35	225
69	2	3	3	1	3	2	2	4	2	2	1	1	2	1	1	1	1	5	3	2	5	1	1	23	225
70	2	3	3	1	2	2	1	4	2	2	1	1	2	2	2	3	4	4	3	2	3	1	1	27	225
71	1	3	3	2	2	2	1	1	2	2	2	2	2	1	1	2	2	4	3	1	4	1	1	24	225
72	1	3	1	1	3	2	2	4	2	2	2	2	2	4	1	2	2	3	3	1	5	1	1	27	225
73	1	3	1	1	2	2	2	4	2	2	2	1	2	2	1	2	1	5	3	1	4	1	1	24	225
74	2	3	3	1	3	2	2	3	2	2	2	2	1	2	2	2	1	5	3	1	4	1	1	25	225

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poor'i bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity
75	1	3	3	1	2	2	1	1	2	2	2	1	2	1	1	2	2	4	3	1	2	1	1	21	150
76	1	1	1	1	3	2	2	1	2	2	2	2	2	2	2	2	2	5	3	1	5	1	1	28	150
77	1	3	3	2	2	2	1	1	2	2	2	2	2	1	1	2	2	1	3	1	4	1	1	21	150
78	1	3	1	1	3	2	2	4	2	2	2	2	2	4	1	2	2	3	3	1	5	1	1	27	150
79	1	3	1	1	2	2	2	4	2	2	2	1	2	2	1	2	1	5	3	1	4	1	1	24	150
80	2	3	3	1	3	2	2	3	2	2	2	2	1	2	2	2	1	5	3	1	3	1	1	24	150
81	2	4	4	1	3	2	1	1	2	2	1	1	1	1	1	2	2	5	5	5	5	3	1	29	600
82	1	3	3	1	3	2	3	3	1	2	3	3	3	4	1	1	1	5	5	5	5	1	1	36	150
83	1	3	3	1	4	2	3	1	1	2	3	3	2	3	2	2	3	4	4	3	4	1	1	33	150
84	2	3	1	1	2	2	3	3	2	2	2	2	2	1	1	2	1	3	3	1	4	1	1	22	150
85	1	3	3	1	2	2	3	1	2	2	1	1	1	1	3	1	1	3	3	1	5	1	1	21	150
86	2	1	1	1	3	2	1	1	2	2	2	2	2	2	1	2	1	3	3	1	5	1	1	24	150
87	2	3	3	1	3	2	3	1	2	2	2	2	2	2	1	1	1	4	3	2	3	1	1	23	150
88	1	3	4	1	2	2	1	1	1	2	2	2	2	2	1	2	1	5	3	2	2	1	1	24	150
89	1	4	4	2	4	2	1	3	2	2	3	2	3	3	3	2	2	5	4	3	4	3	1	34	600
90	1	3	2	1	4	2	3	1	2	2	2	2	2	2	1	1	1	4	3	2	4	1	1	24	150
91	2	3	3	1	2	2	3	4	2	2	2	2	2	3	1	2	2	4	4	3	2	1	1	27	150
92	1	3	3	1	3	2	3	2	2	2	1	1	2	2	1	2	2	3	3	3	5	1	1	25	150
93	1	3	2	1	3	2	1	2	2	2	2	2	2	1	1	2	1	3	4	4	5	1	1	27	150
94	2	3	2	1	3	2	1	3	2	2	1	1	2	1	2	2	2	4	3	2	4	1	1	24	150
95	2	2	3	1	2	2	3	3	2	2	1	1	2	2	1	2	2	4	3	4	4	1	1	26	150
96	2	3	3	1	2	2	1	1	2	2	2	1	2	2	1	2	1	5	4	4	4	1	1	28	150
97	1	3	3	1	4	2	3	3	2	2	1	2	2	2	1	2	1	4	4	4	5	1	1	28	150
98	2	3	2	1	2	2	1	3	2	2	2	1	2	1	1	2	1	5	4	4	5	1	1	28	150
99	1	3	2	1	2	2	3	3	2	2	2	1	2	1	1	2	1	4	4	4	4	1	1	27	150
100	2	3	3	1	2	2	1	3	2	2	2	1	2	3	1	2	1	4	4	4	4	1	1	28	150
101	2	2	3	1	3	2	2	1	2	2	1	2	2	2	1	2	2	5	3	2	2	1	1	24	150
102	2	3	3	1	3	2	3	4	2	2	2	2	2	2	2	2	2	5	4	4	5	1	1	32	150
103	1	3	2	1	3	2	3	3	2	2	1	1	1	1	1	2	2	5	3	4	5	1	1	26	150
104	1	1	2	1	2	2	1	3	2	2	2	1	2	2	1	2	2	4	3	4	4	1	1	27	150
105	2	4	4	1	2	2	1	3	2	2	2	3	2	4	3	5	5	5	5	5	5	3	1	44	600
106	2	3	2	1	2	2	3	3	1	2	1	1	1	1	3	2	2	5	5	2	5	1	1	28	150
107	1	3	3	1	2	2	1	1	2	2	1	4	4	3	1	1	5	1	5	5	2	1	1	32	150
108	1	3	3	1	3	2	2	1	2	2	2	2	2	1	1	1	2	4	3	4	4	1	1	26	150
109	1	3	2	1	4	2	2	1	2	2	2	2	2	2	2	1	2	5	4	4	4	1	1	30	150
110	1	3	3	1	2	2	1	1	2	2	1	1	2	1	1	2	2	5	3	4	5	1	1	27	150
111	2	2	3	1	3	2	1	3	2	2	2	1	2	1	1	2	1	4	4	3	5	1	1	26	150

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poor'i bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity
112	1	4	4	1	1	2	3	4	2	2	2	2	3	2	2	2	1	4	4	4	4	3	1	30	600
113	1	3	3	1	2	2	3	1	2	2	2	1	2	1	1	2	1	4	4	3	5	1	1	26	150
114	2	3	3	3	3	2	3	4	1	2	1	1	1	1	1	1	1	5	4	4	5	1	1	25	150
115	1	3	2	1	4	2	2	3	2	2	1	1	1	1	1	1	1	5	5	5	5	1	1	27	150
116	1	3	3	1	2	2	3	1	2	2	1	1	1	1	1	2	2	3	3	3	4	1	1	22	150
117	2	3	3	1	3	2	2	3	2	2	2	1	2	2	1	2	2	3	3	3	4	1	1	25	150
118	2	3	3	1	2	2	2	3	2	2	2	2	2	2	1	2	2	3	3	3	3	1	1	25	150
119	2	1	2	1	3	2	1	3	2	2	1	1	1	1	2	2	2	3	3	3	4	1	1	23	150
120	2	2	2	3	4	2	3	1	2	2	1	1	1	1	1	1	1	4	4	4	4	1	1	23	150
121	1	2	3	2	2	2	3	3	2	2	2	1	2	2	1	2	1	4	4	4	4	1	1	27	150
122	2	3	3	1	2	2	3	3	2	2	1	1	2	2	1	5	2	4	4	5	5	1	1	32	150
123	1	3	3	1	4	2	3	1	2	2	3	3	3	1	1	3	1	3	1	4	5	1	1	28	150
124	2	3	3	1	3	2	3	4	2	2	1	1	2	2	1	2	2	4	3	4	5	1	1	27	150
125	1	3	3	1	3	2	1	1	2	2	1	1	2	1	1	2	2	4	3	1	5	1	1	23	150
126	1	3	3	1	2	2	2	4	2	2	2	2	2	1	1	2	1	4	3	1	5	1	1	24	150
127	1	3	2	1	2	2	3	1	2	2	1	1	2	2	1	2	2	4	4	5	5	1	1	29	150
128	1	3	3	1	2	2	1	4	2	2	1	1	1	1	1	2	1	5	5	4	5	1	1	27	150
129	1	3	3	1	2	2	1	4	2	2	2	2	2	3	2	2	2	4	3	4	4	1	1	30	150
130	1	1	3	1	3	2	2	2	1	2	3	2	3	4	3	3	3	2	3	4	4	1	1	34	150
131	2	3	3	1	2	2	1	4	2	2	3	3	3	1	3	4	5	5	5	5	5	1	1	42	150
132	2	3	1	2	2	2	3	3	2	2	1	1	2	2	1	2	2	2	4	3	4	1	1	24	150
133	1	3	3	1	3	2	3	1	2	2	1	1	2	2	1	2	2	4	4	4	4	1	1	27	150
134	2	3	3	1	2	2	3	4	2	2	2	2	2	2	1	2	2	4	4	5	5	1	1	31	150
135	2	3	3	1	3	2	1	1	2	2	2	1	2	2	1	2	1	4	2	3	4	1	1	24	150
136	2	3	1	1	2	2	3	4	2	2	2	1	2	2	1	2	1	4	2	3	5	1	1	25	150
137	2	3	3	1	3	2	3	3	2	2	1	1	1	1	1	3	1	5	5	5	5	1	1	29	150
138	1	3	3	1	2	2	2	1	2	2	2	1	2	2	1	2	2	4	4	3	5	1	1	28	150
139	2	3	3	2	4	2	1	1	2	2	1	1	1	1	1	2	1	5	5	5	5	1	1	28	150
140	2	3	3	2	2	2	1	3	2	2	1	1	1	1	1	2	1	5	5	5	5	1	1	28	150
141	1	3	3	1	3	2	1	3	2	2	2	2	2	1	3	1	4	3	3	4	4	1	1	29	150
142	1	3	3	1	2	2	1	2	2	2	2	2	2	1	1	2	1	3	3	1	4	1	1	22	150
143	1	3	3	2	2	2	1	2	2	2	2	2	2	4	3	2	1	5	4	1	5	1	1	31	150
144	1	3	3	2	4	2	2	2	2	2	1	1	2	1	1	2	2	3	3	1	5	1	1	22	150
145	1	3	3	1	4	2	3	1	2	2	2	2	2	3	2	2	1	4	3	2	4	1	1	27	150
1	1	2	3	1	1	2	1	1	2	2	2	1	3	2	2	2	1	5	4	3	4	1	0	29	100
2	2	2	1	1	3	2	1	1	2	2	1	1	1	1	1	4	4	5	5	3	5	1	0	31	100

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poor'i bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity
3	2	4	1	1	4	2	1	4	2	2	2	2	2	2	1	3	2	5	4	3	4	2	0	30	100
4	2	2	3	1	2	2	2	1	2	2	1	1	1	1	1	3	2	4	4	2	4	1	0	24	300
5	1	4	4	1	1	2	3	1	2	2	3	2	3	4	3	4	2	5	5	5	5	2	0	41	100
6	1	3	3	1	3	2	3	1	2	2	2	1	2	1	1	2	1	4	4	3	4	1	0	25	300
7	2	3	3	1	2	2	1	1	2	2	1	2	2	1	1	2	2	4	3	1	4	1	0	23	225
8	1	4	4	1	4	2	1	2	2	2	3	2	3	2	2	4	4	5	5	5	5	2	0	40	225
9	2	3	3	1	4	2	1	1	2	2	1	2	3	3	3	4	4	5	5	5	5	1	0	40	300
10	1	4	4	1	1	2	1	1	2	2	3	3	3	3	4	5	5	5	5	5	5	2	0	46	225
11	2	2	3	1	2	2	3	1	2	2	1	2	1	1	1	2	1	4	4	3	4	1	0	24	300
12	2	3	3	1	2	2	2	4	2	2	2	2	2	3	4	5	5	3	2	2	4	1	0	34	100
13	1	3	3	2	3	2	3	1	2	2	2	2	2	1	1	2	2	4	4	5	4	1	0	29	225
14	1	1	3	1	3	2	3	1	2	2	1	1	1	1	1	1	4	4	3	4	4	1	0	25	225
15	1	3	3	1	2	2	1	1	2	2	1	1	2	1	1	2	2	5	3	4	5	1	0	27	100
16	1	2	2	1	4	2	2	3	2	2	2	2	2	2	2	1	2	5	4	4	4	1	0	30	225
17	1	3	3	1	3	2	2	3	2	2	2	2	2	1	1	1	2	4	3	4	4	1	0	26	100
18	1	3	3	1	2	2	1	1	2	2	1	4	4	3	1	1	5	1	5	5	2	1	0	32	225
19	2	2	3	1	2	2	3	3	2	2	1	1	1	1	3	2	2	5	5	2	5	1	0	28	225
20	2	3	3	3	3	2	3	4	2	2	1	1	1	1	1	1	1	5	4	4	5	1	0	25	100
21	1	3	3	1	2	2	3	1	2	2	2	1	2	1	1	2	1	4	4	3	5	1	0	26	225
22	1	4	4	1	1	2	3	4	2	2	2	2	3	2	2	2	1	4	4	4	4	2	0	30	225
23	2	2	3	1	3	2	1	3	2	2	2	1	2	1	1	2	1	4	4	3	5	1	0	26	300
24	2	3	3	1	3	2	3	1	2	2	2	1	2	1	1	1	1	4	4	5	5	1	0	27	100
25	2	2	2	1	3	2	3	1	2	2	2	1	2	1	1	2	1	4	3	4	5	1	0	26	225
26	2	2	3	3	3	2	3	4	2	2	1	1	1	1	1	4	4	5	4	3	5	1	0	30	100
27	1	3	3	1	2	2	3	4	2	2	2	1	4	1	1	2	2	4	4	3	5	1	0	29	100
28	1	3	3	1	2	2	1	1	2	2	2	1	2	1	1	2	2	3	3	3	4	1	0	24	225
29	1	2	3	4	3	2	1	4	2	2	2	1	2	2	1	1	2	3	3	3	4	1	0	24	225
30	2	2	3	3	4	2	3	1	2	2	1	1	1	1	1	1	2	5	5	4	5	1	0	27	100
31	1	3	3	1	2	2	3	1	2	2	2	1	2	1	1	2	1	5	4	4	5	1	0	28	100
32	2	3	2	1	3	2	3	4	2	2	2	1	2	1	1	2	2	4	4	3	5	1	0	27	225
33	2	3	2	1	3	2	3	4	2	2	2	1	2	1	1	2	2	4	4	3	5	1	0	27	225
34	2	3	3	1	4	2	1	1	2	2	1	1	2	1	1	2	1	4	4	3	5	1	0	25	225
35	2	3	3	1	3	2	1	1	2	2	2	1	2	2	1	1	2	5	4	3	5	1	0	28	225
36	2	3	3	1	2	2	1	1	2	2	2	1	2	2	1	2	1	5	4	4	4	1	0	28	225
37	1	3	3	1	4	2	3	1	2	2	1	2	2	2	1	2	1	4	4	4	5	1	0	28	225
38	2	3	2	1	2	2	1	3	2	2	2	1	2	1	1	2	1	5	4	4	5	1	0	28	225
39	1	3	2	1	2	2	3	3	2	2	2	1	2	1	1	2	1	4	4	4	5	1	0	27	225

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poor'i bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity
40	2	3	3	1	4	2	1	3	2	2	1	1	2	2	1	2	2	4	3	4	4	1	0	26	225
41	2	3	3	1	2	2	3	4	2	2	1	1	2	2	2	2	2	5	3	5	5	1	0	30	225
42	2	3	3	1	2	2	3	2	2	2	2	2	2	2	2	2	2	4	3	4	4	1	0	29	225
43	1	3	3	1	3	2	1	3	2	2	2	2	2	2	2	2	2	4	3	5	5	1	0	31	225
44	2	1	1	1	2	2	3	4	2	2	1	1	1	1	1	2	1	5	3	5	5	1	0	26	225
45	2	3	3	1	2	2	3	4	2	2	2	2	2	3	1	2	2	4	4	3	2	1	0	27	100
46	1	3	3	1	4	2	1	1	2	2	1	1	1	1	1	1	1	5	3	3	4	1	0	22	225
47	2	3	3	1	3	2	3	2	2	2	2	3	2	2	1	1	1	4	3	2	3	1	0	24	225
48	1	3	4	1	2	2	1	1	2	2	2	2	2	2	1	2	1	5	3	2	2	1	0	24	225
49	1	4	4	1	4	2	1	3	1	2	3	2	3	3	3	2	2	5	4	3	4	2	0	34	225
50	2	3	3	1	2	2	3	4	2	2	2	2	2	1	1	2	1	3	3	1	4	1	0	22	300
51	1	3	3	1	2	2	3	1	2	2	1	1	1	1	3	1	1	3	3	1	5	1	0	21	225
52	2	1	1	1	3	2	1	3	2	2	2	2	2	2	1	2	1	3	3	1	5	1	0	24	225
53	2	3	3	1	4	2	1	3	2	2	1	1	2	1	1	2	1	4	3	1	5	1	0	22	100
54	1	3	2	1	2	2	1	1	2	2	2	2	2	1	1	2	1	4	3	1	5	1	0	24	300
55	1	3	3	2	3	2	1	1	2	2	2	1	2	1	1	1	1	4	3	1	4	1	0	21	300
56	2	4	2	1	4	2	3	3	2	2	1	1	1	1	1	1	1	3	3	1	5	2	0	19	300
57	2	3	3	1	4	2	1	4	2	2	1	1	1	1	1	1	1	5	3	5	5	1	0	25	300
58	1	3	3	1	2	2	1	1	2	2	1	1	2	2	1	2	2	3	3	1	4	1	0	22	300
59	1	3	3	1	2	2	1	1	2	2	1	1	2	2	1	2	2	3	3	1	4	1	0	22	300
60	2	3	3	1	3	2	3	2	2	2	1	1	2	1	1	2	2	3	3	2	5	1	0	23	300
61	2	3	3	3	1	2	1	4	2	2	1	2	2	1	1	2	2	5	3	4	4	1	0	27	300
62	1	3	3	1	4	2	1	3	2	2	1	1	1	1	1	2	2	5	5	3	4	1	0	26	300
63	1	3	3	3	3	2	1	4	2	2	1	1	2	2	1	2	2	5	3	3	5	1	0	27	300
64	1	4	4	1	2	2	1	3	2	2	2	3	3	2	1	4	4	5	5	4	5	2	0	38	300
65	1	3	3	1	2	2	2	4	2	2	2	2	2	1	1	2	1	4	3	1	5	1	0	24	300
66	1	3	3	1	3	2	1	1	2	2	1	1	2	1	1	2	2	4	3	1	5	1	0	23	300
67	2	3	3	1	3	2	1	4	2	2	1	1	2	2	1	2	2	4	3	4	5	1	0	27	300
68	1	3	3	1	4	2	3	1	2	2	3	3	3	1	1	3	1	3	1	4	5	1	0	28	300
69	2	3	3	1	2	2	3	3	2	2	1	1	2	2	1	5	2	4	4	5	5	1	0	32	300
70	1	3	3	1	2	2	1	1	2	2	2	1	2	1	1	2	2	4	3	1	2	1	0	21	300
71	1	1	1	1	3	2	1	2	2	2	2	2	2	2	2	2	2	5	3	1	5	1	0	28	300
72	2	3	3	1	4	2	1	1	2	2	1	1	2	1	1	2	1	4	3	1	5	1	0	22	100
73	1	3	2	1	2	2	1	2	2	2	2	2	2	1	1	2	1	4	3	1	5	1	0	24	300
74	1	3	3	2	3	2	1	2	2	2	2	1	2	1	1	1	1	4	3	1	4	1	0	21	300
75	2	4	2	1	4	2	3	3	2	2	1	1	1	1	1	1	1	3	3	1	5	2	0	19	300
76	2	3	3	1	4	2	1	4	2	2	1	1	1	1	1	1	1	5	3	5	5	1	0	25	600

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poor'i bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity
77	1	3	3	1	2	2	1	1	2	2	1	1	2	2	1	2	2	3	3	1	4	1	0	22	300
78	2	1	3	1	3	2	1	2	2	2	2	2	1	1	1	2	2	3	3	1	4	1	0	22	300
79	1	3	3	2	3	2	1	1	2	2	1	1	1	1	1	5	5	5	5	5	5	1	0	35	150
80	2	3	2	1	3	2	3	1	2	2	2	1	1	1	1	5	5	5	3	3	5	1	0	32	300
81	1	3	2	1	4	2	3	1	2	2	1	1	1	1	1	2	3	5	4	4	5	1	0	28	300
82	1	3	3	1	4	2	3	1	2	2	1	1	2	1	1	3	2	5	4	5	5	1	0	30	300
83	1	3	3	1	3	2	1	1	2	2	1	1	2	2	2	2	3	3	3	4	5	1	0	28	300
84	1	3	3	1	3	2	1	3	2	2	2	1	1	1	1	2	2	5	4	4	5	1	0	28	300
85	2	3	3	1	4	2	1	3	2	2	1	1	2	2	1	2	2	4	3	4	4	1	0	26	300
86	2	3	3	1	2	2	3	4	1	2	1	1	2	2	2	2	2	5	3	5	5	1	0	30	300
87	2	3	3	1	2	2	3	2	2	2	2	2	2	2	2	2	2	4	3	4	4	1	0	29	300
88	1	3	3	1	3	2	1	3	2	2	2	2	2	2	2	2	2	2	3	5	5	1	0	29	300
89	2	1	1	1	2	2	3	4	2	2	1	1	1	1	1	2	1	5	3	5	5	1	0	26	300
90	2	3	3	1	4	2	3	1	2	2	1	1	1	1	1	2	2	4	5	4	5	1	0	27	150
91	2	3	2	1	3	2	3	4	2	2	1	1	1	1	1	2	1	5	5	4	4	1	0	26	300
92	1	1	3	1	2	2	1	2	2	2	1	1	2	1	1	2	2	4	3	1	4	1	0	22	300
93	1	3	3	2	2	2	1	2	2	2	2	2	2	2	4	3	2	1	4	1	5	1	0	28	150
94	1	3	3	1	2	2	1	1	2	2	2	2	2	1	1	2	1	3	3	1	4	1	0	22	300
95	1	3	3	1	3	2	1	3	2	2	2	2	2	2	1	3	1	4	3	3	4	1	0	27	300
96	1	3	3	1	4	2	3	4	2	2	1	1	1	1	1	2	2	4	5	5	5	1	0	28	300
97	2	3	3	1	2	2	1	3	1	2	1	1	2	2	1	2	2	4	3	2	2	1	0	22	300
98	2	2	3	1	4	2	1	3	2	2	1	3	3	2	1	3	5	5	5	5	5	1	0	38	300
99	2	3	2	1	4	2	1	1	1	2	1	1	1	1	1	2	2	5	5	5	5	1	0	29	100
100	1	1	3	1	3	2	3	1	1	2	1	1	1	1	1	1	1	4	4	3	4	1	0	22	300
101	1	3	3	2	3	2	3	1	2	2	2	2	2	1	1	2	2	4	4	5	4	1	0	29	150
102	2	3	3	1	2	2	2	4	2	2	2	2	2	3	4	5	5	3	2	2	4	1	0	34	300
103	2	2	3	1	2	2	3	1	2	2	1	2	1	1	1	2	1	4	4	3	4	1	0	24	300
104	1	4	4	1	1	2	1	1	2	2	3	3	3	3	4	5	5	5	5	5	5	2	0	46	100
105	2	2	3	1	3	2	1	1	2	2	2	1	2	1	2	2	2	4	4	4	4	1	0	28	600
106	1	3	3	1	2	2	3	4	2	2	2	1	4	1	1	2	2	4	4	3	5	1	0	29	100
107	2	2	3	3	3	2	3	4	2	2	1	1	1	1	1	4	4	5	4	3	5	1	0	30	300
108	2	2	2	1	3	2	3	1	2	2	2	1	2	1	1	2	1	4	3	5	4	1	0	26	150
109	2	3	3	1	3	2	3	1	2	2	2	1	2	1	1	1	1	4	4	5	5	1	0	27	150
110	1	2	3	1	2	2	1	4	2	2	2	2	2	2	1	2	2	3	3	3	4	1	0	26	300
111	1	3	3	1	2	2	1	1	2	2	2	1	2	2	1	2	2	3	3	3	3	1	0	24	150
112	1	3	3	1	2	2	3	4	2	2	2	1	1	1	1	3	2	3	3	3	4	1	0	24	300
113	1	2	3	4	3	2	1	4	2	2	2	1	2	2	1	1	2	3	3	3	4	1	0	24	300

Sl.No	AGE	EDU	OCCU	M.STATUS	PCI	NCD	GRBS	BMI	TOBACCO	ALCOHOL	How often do you eat fruits	vegetables	green leafy vegetables	milk	dry fruits	salt intake	salty food	sweets	poor'i bonda	saturated food	soft drinks	Physical Activity(BA)	Intervention	Dietary score(BA)	Physical Activity
114	1	3	3	1	2	2	1	1	2	2	2	1	2	1	1	2	2	3	3	3	4	1	0	24	150
115	2	3	3	1	3	2	1	1	2	2	2	1	2	2	1	1	2	5	4	3	5	1	0	28	300
116	2	3	3	1	4	2	1	1	2	2	1	1	2	1	1	2	1	4	4	3	5	1	0	25	300
117	2	3	2	1	3	2	3	4	2	2	2	1	2	1	1	2	2	4	4	3	5	1	0	27	300
118	1	3	3	1	2	2	3	1	2	2	2	1	2	1	1	2	1	5	4	4	5	1	0	28	300
119	2	2	3	3	4	2	3	1	2	2	1	1	1	1	1	1	2	5	5	4	5	1	0	27	300
120	1	4	4	1	2	2	1	1	2	2	2	3	3	2	1	4	4	5	5	4	5	2	0	38	150
121	1	3	3	3	3	2	1	4	2	2	1	1	2	2	1	2	2	5	3	3	5	1	0	27	600
122	1	3	3	1	4	2	1	3	2	2	1	1	1	1	1	2	2	5	5	3	4	1	0	26	300
123	2	3	3	1	3	2	1	4	2	2	1	2	2	1	1	2	2	5	3	4	4	1	0	27	300
124	2	3	3	1	3	2	3	3	2	2	1	1	2	1	1	2	2	3	3	2	5	1	0	23	300
125	2	3	3	1	2	2	1	3	2	2	1	1	2	2	2	3	4	4	3	2	3	1	0	27	300
126	2	3	3	1	3	2	2	4	2	2	1	1	2	1	1	1	1	5	3	2	5	1	0	23	300
127	2	3	3	1	4	2	3	1	2	2	1	1	1	1	1	5	5	5	5	5	5	1	0	35	300
128	1	3	3	1	4	2	3	1	2	2	2	2	2	3	2	2	1	4	3	2	4	1	0	27	300
129	1	3	3	2	4	2	1	1	2	2	1	1	2	1	1	2	2	3	3	1	5	1	0	22	300
130	2	1	3	2	2	2	1	3	2	2	2	1	2	1	1	2	1	4	4	4	5	1	0	27	300
131	1	2	3	1	1	2	1	1	2	2	2	1	3	2	2	2	1	5	4	3	4	1	0	29	150
132	2	2	1	1	3	2	1	1	2	2	1	1	1	1	1	4	4	5	5	3	5	1	0	31	150
133	2	4	1	1	4	2	1	4	2	2	2	2	2	2	1	3	2	5	4	3	4	2	0	30	150
134	2	2	3	1	2	2	2	1	2	2	1	1	1	1	1	3	2	4	4	2	4	1	0	24	600
135	1	4	4	1	1	2	3	1	2	2	3	2	3	4	3	4	2	5	5	5	5	3	0	41	150
136	1	3	3	1	3	2	3	1	2	2	2	1	2	1	1	2	1	4	4	3	4	1	0	25	600
137	2	3	3	1	2	2	1	1	2	2	1	2	2	1	1	2	2	4	3	1	4	1	0	23	300
138	1	4	4	1	4	2	1	2	2	2	3	2	3	2	2	4	4	5	5	5	5	3	0	40	300
139	2	3	3	1	4	2	1	1	2	2	1	2	3	3	3	4	4	5	5	5	5	1	0	40	600
140	1	3	2	1	3	2	1	4	2	2	1	2	2	1	1	2	2	4	3	1	4	1	0	23	300
141	1	4	3	1	2	2	1	2	2	2	1	2	2	1	1	2	2	5	3	1	5	3	0	25	300
142	1	3	4	1	1	2	1	1	2	2	2	3	3	2	1	2	2	4	3	1	4	1	0	27	600
143	1	3	3	1	1	2	1	1	2	2	2	1	2	2	2	2	2	4	4	4	5	1	0	30	300
144	2	4	3	1	1	2	1	4	2	2	2	1	3	3	4	4	4	4	4	5	4	3	0	38	300
145	1	4	3	1	2	2	1	2	2	2	1	2	2	1	1	2	2	5	3	1	5	3	0	25	300