



IMPACT OF PHYSICAL ACTIVITY ON DIABETES: A PREVENTIVE STUDY

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ABSTRACT

Globally about 422 million people living with Diabetes Mellitus and prevalence rate also steadily increased. Physical activity and dietary food habit is a key element in the prevention and also management of diabetes. The present study was aimed to explore the root cause for steady rise in type 2 diabetes. In the present study 824 adult populations were voluntarily participated from in and around Pondicherry. A structured questionnaire relevant to daily physical activities and food habits were assessed. Result showed 98% of people using bike for their daily transport. Every studied population (100%) using mixer grinders and 64% of population using washing machine for washing their cloths and 24% of studied population using vacuum cleaner for cleaning the floors. Almost everyone (100%) watching Television for minimum 3hrs per day without any physical activity. In dietary source 100% of the studied population consumed polished rice as a major food source, followed by 94% of people using refined oil for cooking, 67% of population having wheat, 98% of population consumed soft drinks, 44% of people using ready to eat mix, 48% have pizza and 72% of people having fast foods. Overall the present study result explored that less physical activity with switching towards western style of food habits are major cause for steady rise in diabetes incidence was observed. .

Keywords:- Physical activity; dietary food habits; Diabetes Mellitus.

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INTRODUCTION

Diabetes is a non-communicable, chronic disease that occurs either when the pancreas does not produce enough insulin (Type 1 diabetes) or when the body cannot effectively use the insulin to make glucose into the cells (Type 2 diabetes). India is facing a challenge on diabetes, since more than 69 million people (8.7%) is suffering as on 2015 with 36 million people are undiagnosed. It is estimated to be 58% from 50 million

people in 2010 to 87 million people in 2030. Globally it is estimated to escalate 438 million by 2030 from 285 million people. Medical experts feel that timely detection and right management can go a long way in helping patients to lead a normal life. All management on diabetes can only to control and maintain the diabetes to prevent its complications, cannot

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be cured completely. The World Health Organization (WHO) estimated that 80% of diabetes deaths occur in low and middle-income countries and projects that such deaths will be double between 2016 and 2030.¹

Awareness and education is the key role especially in preventing, screening, control and better management for various diseases including diabetes. Various researches also focused on diabetes.^{2&3}. Indian government also had taken various steps in controlling the diabetes by implementing National Diabetes Control Programme, National Programme for Prevention and Control of Diabetes, Cardiovascular Disease and Stroke etc.⁴ Moreover at present more than 80% of adult Indian population well aware about diabetes, but still India is the second largest, next to China in diabetes population and continue to escalate. It was noted that about 99% of the

awareness studies and education based only on management aspect like symptoms, screening, complications etc but none of the studies highlighted the cause for rise in diabetes population and awareness on preventive aspects for which the people should be sensitized is very scanty. As diabetes is a preventable disease. Simple lifestyle measures have been shown to be effective in preventing the diabetes like engaging in regular physical activity and healthy diet will reduce the risk of diabetes which needs awareness and knowledge among the population especially in the high risk subjects. The present study was designed to explore the root cause for escalation of diabetes incidence by a structured questioner on physical activity based on its physical environment and dietary food habit were assessed.

Figure No. 1. Assessment of Physical Activity based on the utilization of Home appliance

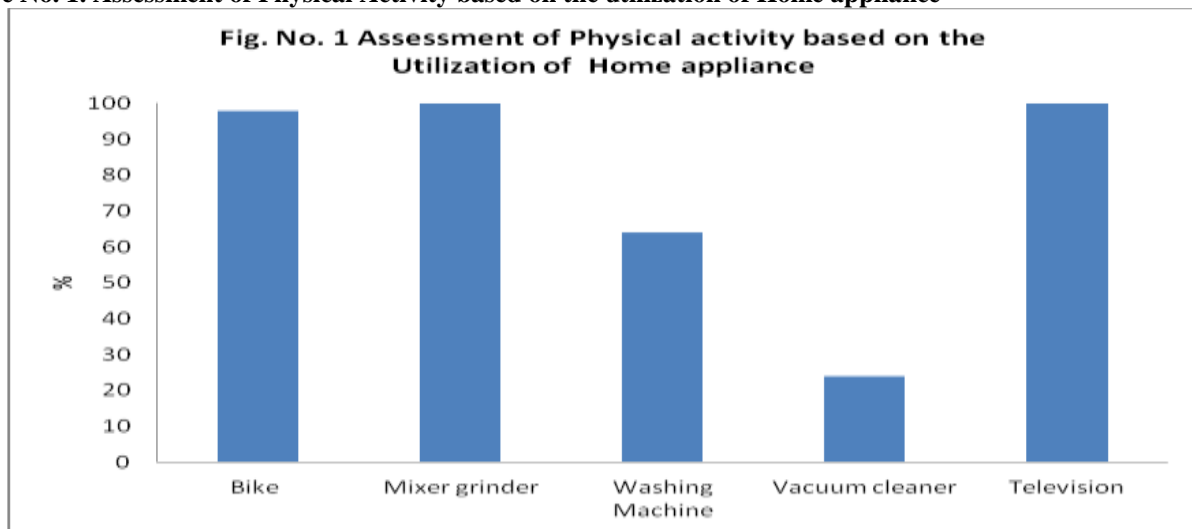
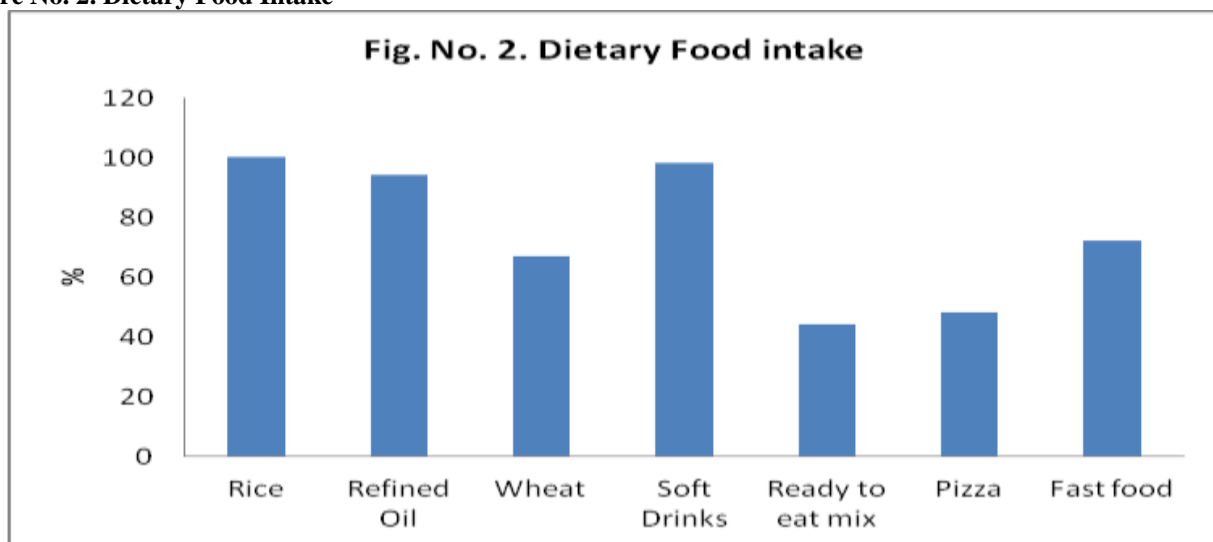


Figure No. 2. Dietary Food Intake



Materials and Methods

The study was carried between January and June 2021 from in and around Pondicherry and study was approved by Institutional Ethics Committee approval. The study was conducted among 824 adult population who voluntarily participated. A briefing was given to the participants about the objective of this study and assured confidentiality in collection of their personal data's. A well structure validated and pretested questionnaire on physical activity and food habits were assessed.

Statistical Analysis

Data's were expressed in percentage.

Results & Discussion

The present study was designed to explore the root cause for steady increase in the diabetes incident in the country by assessing the daily physical activity and dietary food habits. Physical activity is a key element in the prevention and also management of diabetes. Physical activity is nothing but any form of movement that result in burn calories, which includes simple walking, cleaning, gardening, playing etc in our day to day life, apart voluntary exercise, swimming, jacking, gym etc also burns much calories. Mechanism behind the physical activity in relevant to diabetes is that upon physical activity utilize stored glycogen found in muscle are utilized by which excess glucose in the blood can be stored again as glycogen in the muscle by which maintained glucose level in the blood. As muscle cell lacks glucose-6-phosphatase that stored glycogen cannot be converted into glucose to release in the blood stream as like liver. Hence stored glycogen should be utilized by the muscle cell only upon physical activity.⁵

Due to technology and modern living have removed many regular forms of physical activity for our daily actives like, walking / bicycling replaced with bike and cars, stairs replaced with elevators, washing machines replaced our cleaning cloths by hands, dishwasher replaced dishes washed by hand, cleaning floor with bloom stick replaced with vaccum cleaner, lifting water from the well replaced with pump-motors, grinding flour and grains by hand mill replaced with electric Mixer Grinders, even children and adolescent were left their physical games like cricket, football, kabadi etc to online internet games in computers, tablet and smart phones, screened based recreation. On the other hand through online bookings of train ticket, bus ticket, recreation ticket, even paying bill and recharges also carried by online wallet can be made easier from our living place without visiting those place in-persons to stand in que for booking, even government also encourage digital India of paper less economy which result in sedentary life style. In the present study result showed 98% were switched their daily mode of transport of walking and bicycling were replaced with bikes. In

home appliance every one (100%) using mixer grinders and 64% using washing machine for washing their cloths and 24% of studied population using vacuum cleaner for cleaning the floors. Almost everyone 100% watching Television for minimum 3-4 hrs per day (Figure No. 1) and using internet on daily basis for online games for their bookings and payments by online method result in less physical activity leads to sedentary life style result in high risk towards diabetes.

Our body synthesis most of the fats for the build-up of cell membrane except the two fatty acids omega-3 and omega-6 fatty acid declared as essential fatty acids as it is not synthesized by our body and should be avail only through external dietary source. Initially ratio of omega 6: omega 3 fatty acids are 1:1 but at present greater than 20:1 due to unviaible from our dietary source. Apart those fatty acids should be cis form which occur naturally was replaced with artificial 'trans' form of fatty acids results in more rigid to the cell membrane result in resist to uptake of glucose even in the presence of insulin leads to type 2 diabetes.⁶ This is due to the unavailable of the essential fatty acids in our daily dietary source by consuming refined oils, less cholesterol food and polished food substances rich in Omega-6 fatty acids of trans form rich in western style food substances of high glycemic index. In the present study almost every one (100%) consumed polished rice as a major food source, followed by using refined oil for their cooking (94%), 67% of population having wheat, 98% of population consumed soft drinks, 44% of people using ready to eat mix, 48% have pizza and 72% of people having fast foods (Figure No. 2).

The study recommends that the levels of sugar, saturated fats, trans form of unsaturated fatty acids in manufactured food products should be limited and warrants awareness on consuming omega 3 essential fatty acids rich food and importance of low glycemic index food. The importance of physical activity also warrants awareness among the studied population to maintain blood glucose level and utilization of glycogen by the muscle cell. Academic institution should also make effort to aware the importance of physical activity and food habits by the children. Steps should also be taken on preventive aspect of awareness, apart from screening, management and treatment of diabetes.

Overall the present study result explored that less physical activity with switching towards western style of food habits are major cause for steady rise in diabetes incidence observed. As the study limits with in Pondicherry, India, still similarly study warrants across the Nation to control the incidence of diabetes among the health population

Conflict Of Interest

We declare no conflict of interest.

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