Risk Factors Linked To Noncommunicable Diseases: A Community Based Case Control Study.

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ABSTRACT

Background: Physical activity and exercise are important part for better physical and mental health including the older adults. TV viewing which is a common type of sedentary behaviour in developed and developing countries is being paid less attention. Excess sleep or lack of sleep is a predisposing factor for NCDs such as DM. Objectives: 1. To assesses the physical activity and TV viewing patterns among adults in the age group of 20 to 60 years, among cases and controls in the urban field practice area of a medical college. 2. To assess the sleep patterns among cases and controls in same study population. Methods: It is a community based case control study. The data was collected from individuals in the age group of 20 to 60 years among cases and controls. Cases were those diagnosed with Hypertension and DM. Those who were found negative were taken as controls. Purposive sampling was done with a sample size of 108. Semi structured questionnaire was used. Descriptive statistics and odds ratio was calculated. Results: Cases were found to have physical inactivity when compared to the controls. TV viewing was highest among cases when compared to the controls. Excess sleep or lack of sleep is found to have a positive risk factor for development of NCDs. Conclusion: Physical inactivity was more among the cases when compared to the controls. TV viewing of more than 4 hours were highest among the cases when compared to the controls. Sleep of less than 6 hours was more among the cases.

Keywords: Physical Inactivity, TV viewing, hours sleep.

INTRODUCTION

Today the leading driver of mortality across the globe are chronic, non-communicable diseases (NCDs). Data sourced from various studies show that cardiovascular diseases, either ischaemic heart disease or cerebrovascular disease, are now the leading killers. Nearly 80% of all heart attacks around the globe occur in low and middle income countries and this disease alone claims more than twice as many lives as HIV/AIDS, tuberculosis and malaria combined. Moreover, age-standardized mortality shows that NCDs are killing people at increasingly younger ages in resource-poor settings. There is strong evidence that deaths from NCDs in resource-poor settings often occur in the backdrop of communicable diseases like including HIV and tuberculosis and this results in the ‘double’ burden of disease. Recent data demonstrates that for the first time in India’s history, the burden of non-communicable disease has eclipsed that of communicable diseases.

Past decade has witnessed substantial developments in diagnostics and therapeutics. While continued improvement in these areas is desirable, modification of risk factor modification is a necessity. Levels of physical inactivity are rising in many countries with major implications for the general health of people worldwide and for the prevalence of NCDs such as cardiovascular disease, diabetes and their risk factors such as raised blood pressure, raised blood sugar and overweight. Physical inactivity is estimated as being the principal cause for approximately 27% of diabetes and approximately 30% of ischemic heart disease burden. TV viewing which is a form sedentary type of behaviour is a risk factor for Diabetes mellitus as well as cardiovascular diseases. Similarly, many authors have proposed that sleep duration of 6 hours or less or 9 hours or more is associated with increased prevalence of DM. With this background, this study aims to understand and identify risk factors which are associated with NCDs in a community using a case control study design.
We also asked about the pattern of television viewing. Inquiry was made to how many hours of television was viewed each day. Patterns of sleep was asked to each respondents and classified as less than 6 hours, 7 to 8 hours and more than 9 hours of sleep. Comparisons were made between cases and controls with respect to different risk factor variables. We tabulated the data and calculated the frequencies and percentages for different variables and performed descriptive analysis.

**RESULTS**

We included 54 cases and same number of controls in this study. Among the 54 cases 41% of the cases had both diabetes and hypertension whereas 30% of the cases had diabetes and 29% of the cases had hypertension. Among the 54 cases 68% of the cases were in the age group of 51 to 60 years, 29% of the cases were in the age group of 41 to 50 years and rest 3% of the cases were in the age group of 31 to 40 years [Table 1]. Majority of the cases had a sedentary physical activity (46%) and majority in controls had active physical activity (56%). 76% of the controls had TV viewing each day of less than 4 hours, while in cases majority had more than 4 hours. 43% of the controls slept 7 to 8 hours a day, while 48% of the cases slept for less than 6 hours.

Further we found that physical inactivity had 5.71 higher odds [95% confidence interval (CI) of 2.48 to 13.11, p value less than 0.0001] of developing either DM, hypertension, obesity or all [Table 2].

**DISCUSSION**

The present study showed positive association between physical inactivity and NCDs as 73% of the cases were physically inactive. The magnitude...
of association of TV viewing and NCDs were consistent with other studies. It has been said that TV viewing may be predictor for sedentarism or inactivity. Lower energy expenditure, weight gain, and increased risk of type 2 diabetes are associated with sedentary lifestyle. Studies have shown that among sedentary behaviours of which prolonged television watching is an important component these days, is consistently associated with the development of obesity and diabetes. Even without weight gain, physical inactivity appears to increase the risk of type 2 diabetes. In a cohort study in Sweden low aerobic capacity and muscle strength at 18 years of age, both of which are linked to lower physical activity, was associated with an increased risk of type 2 diabetes two and half decades later, even among men with normal BMI. Obesity, another variable studied in our research, is associated with physical inactivity. In a review of data from the National Health and Nutrition Examination Survey (NHANES), obesity was strongly and inversely related to moderately vigorous physical activity, and this association was stronger than either television (TV) time or total sedentary. Quantity and quality of sleep may also predict the risk of development of type 2 diabetes mellitus, as illustrated by the findings of this study and the findings of a previously published meta-analysis of 10 studies. Similar to findings of our study, a report from the European Prospective Investigation into Cancer and Nutrition (EPIC) study of more than 23,000 participants across Europe, short sleep duration (<6 hours/day) was associated with an increased risk of chronic disease, including type 2 diabetes (6.7 cases versus 4.2 cases per 1000 person-years, HR 1.44, 95% CI 1.10-1.89). However, it is not clearly understood if there is a unique relationship between sleep patterns and diabetes risk. Further research is required to understand whether sleep disruption associated with obesity has some pernicious effects on diabetes risk, or whether other mechanisms may play a role in diabetes development. Through its effect on melatonin secretion short sleep duration may increase the risk of diabetes. As it has been shown that sleep disruption is associated with decreased melatonin secretion, as it has been reported in an observational study that lower melatonin secretion was independently associated with a higher risk of developing type 2 diabetes. Another lifestyle change that may have negative metabolic consequences is sleep extension. This was described in a study in which the subjects underwent two nights of sleep restriction (four hours per night) and two nights of sleep extension (10 hours per night) in a randomized order, spaced six weeks apart with controlled conditions of dietary intake and physical activity.

Our study has some limitations. The results of this study might not be generalizable to other geographic areas, because of variability in cultural, social and demographic determinants. Moreover, there is a potential of selection bias while enrolling the cases and controls.

CONCLUSION

Our study showed that physical inactivity was more among cases (73%) when compared to the controls and TV viewing of more than 4 hours were highest in cases as compared to the controls. Future research should focus on understanding the mechanisms by which these risk factors play a role in causing non communicable diseases.

REFERENCES


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