



ROLE OF ALCOHOL CONSUMPTION IN THE DEVELOPMENT OF DIABETES AMONG THE RURAL POPULATIONS OF KONASEEMA INSTITUTE OF MEDICAL SCIENCES, AMALAPURAM

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ABSTRACT

Background: Heavy alcohol consumption can disrupt liver and pancreas out of many other organs and causes impaired glucose tolerance in the body. This research paper analyses the association between alcohol consumption and development of diabetes. **Patients :** A total of 109 male subjects who consume alcohol with out other co morbidities other than T2DM are considered for the study **Result :** Our results showed that there is a positive association between heavy alcohol consumption and T2DM and mild to moderate consumption is not much significant in development of T2DM **Conclusion :** The study shows that heavy alcohol consumption can also cause diabetes among many other disorders. The implications of this study can be useful in understanding the adverse effects of excessive alcohol consumption and abuse.

KEYWORDS :

INTRODUCTION :

Alcoholism is no more considered an addiction, but an indirect societal burden all over the world because of the endless list of co morbidities it leads to, like fatty liver, diabetes, hypertension etc. . Heavy alcohol consumption is linked to multiple functional disorders due to disruption of various physiological processes. Heavy alcohol consumption is defined as 5 or more drinks per day or 15 or more drinks per week for men and , more than 4 drinks per day or 8 or more drinks per week in women according to National Institute on Alcohol Abuse and Alcoholism (NIAAA).Heavy alcohol consumption can disrupt liver and pancreas out of many other organs and causes impaired glucose tolerance in the body. The Indian Council of Medical Research (ICMR) reported that prevalence of diabetes in India was 10.1 crores as of 2023. A study by National Family Health Survey (NFHS) found that 16.1% of adults aged 15 and older had diabetes. Diabetes which was once thought as the disease of middle-aged adults is now also emerging as a disease of young adults due to changing lifestyles and substance abuse which is rapidly increasing among teenagers.

A prospective cohort study in china says that late AAI and a short drinking duration were associated with a lower risk of type 2 diabetes, but early AAI and long drinking duration were not[1]. The NAGALA cohort study conducted by Okamura et al. Says that heavy alcohol consumption significantly elevates the risk of T2DM in Japanese men especially evident among those with Elevated fasting plasma glucose levels.[2] Moderate and sensible alcohol use reduces the risk of T2DM as said by another Meta analytic prospective study conducted by Koppes LL et al.[3]

However due to limitations of accurate clinical data on quantification of alcohol intake and multifactorial interdependence , the exact effect of alcohol consumption in development of diabetes is inconsistent in literature.

In this article, we try to establish relation between alcohol consumption and development of T2DM by limiting the multifactorial interdependence by eliminating subjects with age > 60yrs and presence of any other co morbidities and by including only those subjects who fall under normal BMI.

Aim And Objectives:

Aim :

To assess and understand the relationship between alcohol intake and development of diabetes among the adult populations

Objectives :

- To explore the various opinions and expert reviews regarding alcohol consumption, deranged glucose regulatory mechanisms and development of diabetes
- To compare similar articles regarding the same issue and cross evaluate the outcomes
- To know more about the alcohol related diabetes prevalence among our Indian rural population by carrying out a study

MATERIALS AND METHODS :

Patients :

Male patients between the age group of 25 to 60 who consume alcohol as a part of their life style are considered for the study

Study Design :

This was a cross sectional survey based study done using a questionnaire which is framed according to standard guidelines in the surrounding villages of Amalapuram

Study Setting :

This study is based on the responses collected from the out patients coming to various PHC s and CHC s in and around amalapuram

Inclusion Criteria :

Male patients who fall under age group between 25 to 60 , who belong to either normal BMI or over weight category , which is calculated based on standard Metric system for BMI and who do not have any other co morbidities other than diabetes.

Exclusion Criteria:

Patients who are not willing to give consent for the survey , patients who are not able to provide accurate data due to other factors , and subjects who are non – alcoholics or having other co morbidities and are obese .

Data Collection Procedure:

After getting informed consent from the patients regarding survey , the data was collected in face to face interview sessions using a pre designed , semi structured questionnaire which is prepared by following the standard guidelines.

Confidentiality:

Particulars and details of all patients were kept confidential throughout the study and only the summary of details was used to declare the result of the study.

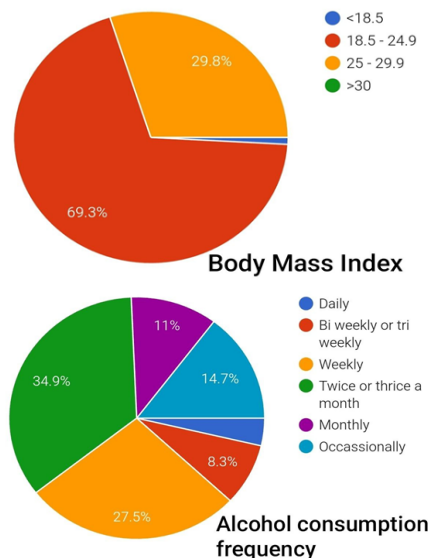
Ethical Consideration :

Institutional ethics committee approval was taken and informed consent was obtained.

Data Analysis And Interpretation :

Data was entered using Microsoft excel spreadsheet. Analysis was done using IBM SPSS software version20.

Data :



Frequency Tables :

1. Age of 1st alcohol intake:

Age of 1 st alcohol intake (years)	Frequency
10 – 15	3
16 – 20	32
21 – 25	27
26 – 30	36
31 – 35	6
More than 35	5
Diabetic or not	
Yes	78.9%
No	21.1%
Binge alcohol consumption history	
Yes	44.1%
May be	28.8%
No	27%
Age group	
25-35 years	41.4%
36- 45 years	36.2%
46- 60 years	22.4%
Body Mass Index (calculated)	
18.5 – 24.9	68.1%
25 – 29.9	31.9%

2. Duration of alcohol consumption:

Duration of alcohol consumption (years)	Frequency
1 – 5	7
6 – 10	36
11 – 15	22
16 – 20	15
21 – 30	10
More than 30 yrs	5

3. Type of liquor consumed most of the times :

Type of liquor consumed	Frequency
Whiskey	48
Vodka	28
Rum	11
Beer	8
Tequila	2

Brandy	12
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RESULT :

- In the current survey of 115 subjects , after reviewing the responses and filtering them out based on the inclusion and exclusion criteria , 109 subjects were considered for the study.
- Out of 109 subjects, who consume alcohol as a part of their life style, 21.7% developed Diabetes in their course of life and only 16.1% are using medication for the diabetes
- Among the subjects who are at risk of these Non communicable diseases like diabetes, around 72.4% have binge alcohol consumption history and are chronic alcoholics (>20 years). Majority of these subjects most frequently consumed Whiskey which contains relatively higher percentage of alcohol(about 50 – 60 %).

DISCUSSION :

In our study, a total of 109 male subjects, were considered who consume alcohol and who fall under normal to over weight category, who do not have other co morbidities and are not obese , 21.7% developed Diabetes, which is diagnosed but in our survey we found that many are at risk of these Non communicable diseases like diabetes and also hypertension based on their previous records of impaired glucose tolerance values and 24 hr BP monitoring values.

Review Of Literature :

Whereas , In a study published in **American Journal of Epidemiology** says that.. Drinking durations of <10.1 years, 10.1–20.0 years, and 20.1–30.0 years were associated with a lower risk of type 2 diabetes, compared with abstaining. Among current (weekly) drinkers, AAI <18.1 years and drinking duration >30.0 years were associated with 18% (95% CI: 4, 33) and 20% (95% CI: 3, 40) higher hazards of type 2 diabetes, compared with AAI 18.1–29.0 years and drinking duration <10.1 years, respectively. In conclusion, late AAI and a short drinking duration were associated with a lower risk of type 2 diabetes in this large prospective cohort study of Chinese adults, but early AAI and long drinking duration were not.[1]

The NAGALA Retrospective cohort study conducted by Okamura et al. Says that During a median follow-up time of 5.39 years, 373 new-onset T2DM events were observed. The cumulative risk of T2DM incidence was higher in the heavy alcohol consumption group vs. The other three groups: none/minimal, light, and moderate consumption (log-rank test, P = 0.0002). heavy alcohol consumption significantly elevates the risk of T2DM in Japanese men especially evident among those with Elevated fasting plasma glucose levels. [2]

In another study , which is a **Meta analytic prospective study conducted by koppes et al.** Says that a U-shaped relationship was found. Compared with non consumers, the relative risk (RR) for type 2 diabetes in those who consumed <=6 g/day alcohol was 0.87 (95% CI 0.79-0.95). The risk of type 2 diabetes in heavy drinkers (>=48 g/day) was equal to that in non consumers (1.04 [0.84-1.29]). In general, non significant trends for larger RR reduction associated with moderate alcohol consumption were observed for women compared with men, for crude compared with multivariate-adjusted analyses, and for studies that used self-reports instead of testing for type 2 diabetes definition. No differences in RR reductions were found between individuals with low or high BMI. Moderate and sensible alcohol use reduces the risk of T2DM. [3]

In another cohort study on dose response relationship between alcohol and risk of T2DM by **American Diabetic Association** , The search revealed 20 cohort studies that met our inclusion criteria. A U-shaped relationship was found for both sexes. Compared with lifetime abstainers, the relative risk (RR) for type 2 diabetes among men was most protective

when consuming 22 g/day alcohol (RR 0.87 [95% CI 0.76–1.00]) and became deleterious at just over 60 g/day alcohol (1.01 [0.71–1.44]). Among women, consumption of 24 g/day alcohol was most protective (0.60 [0.52–0.69]) and became deleterious at about 50 g/day alcohol (1.02 [0.83–1.26]).[4]

CONCLUSION:

In conclusion the study says that there is a silent wave of progression of these Non communicable diseases among the population and it is well known fact that , these new re emerging diseases are mainly due to change in life style, there are many risk factors for development of diabetes like genetics , obesity, age, physical inactivity , ethnicity, poor dietary habits , smoking, alcohol and other co morbidities like hypertension and hypertriglyceridemia. But working on the modifiable risk factors plays very significant role in preventing these disorders. We tried to remove all other things like obesity, hypertension, age group above 60, which act like confounding factors in this study to establish a true and transparent association between alcohol and development of T2DM. In our study we observed that people who consume heavy alcohol in forms of Binge alcohol consumption (72.4%) , and frequent consumption of beverages with higher alcohol percentage like Whiskey (44.03%) and vodka (25.6%) and who are chronic alcoholics (>20 years) are at higher risk of T2DM. And those who are occasional consumers and consume mild to moderate amounts of alcohol have insignificant risk of T2DM in comparasion to general population.

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