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A comparative study on alcoholic and non-alcoholic person with RDA in our locality (Kapasaria, West Bengal)

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Abstract
Alcoholism is a chronic disease associated with the habitual and excessive intake of alcohol. Alcoholism is marked by physical dependency and can cause disorders in many organs of the body, including the liver (cirrhosis), stomach, intestines, and brain. It is also associated with abnormal heart rhythms, with certain cancers, and, because of loss of appetite, with poor nutrition. The cause of alcoholism is very complicated and most often involves a mixture of physical, psychological, and possibly genetic factors. However, alcoholic liver disease (ALD) not only depends on the total amount of alcohol consumed; drinking patterns and type of alcoholic beverage ingested are also playing important role in the development of ALD. Most patients develop fatty liver, which reverses on withdrawal of alcohol and is unlikely to progress to liver cirrhosis in the liver, the acetaldehyde produced by oxidation of ethanol interacts with lipids and proteins, generating free radicals and impairing protein function. In this century, the poor dietary habits of alcoholics were widely accepted as explaining several obvious connections between heavy drinking and organ damage. Ethanol consumption appeared to induce oxidative stress in the liver and in extra hepatic tissues. The objective of the study includes to find out the physical status of alcoholic person in comparison with non-alcoholic person, as well as to assess the nutritional status of alcoholic and non-alcoholic persons. In the study of weight it is found that the mean weight of alcoholic is low than the non-alcoholic's mean weight. The mean ± SE. of weight of alcoholic is 56.57 ±0.68 is significant (*) different between sample mean and RDA value (p<0.001). The mean ± SE of non-alcoholic is 58.95±1.05 not significant different between sample mean and RDA (p>0.05). In the study of height it is found that the mean height of alcoholic is high than the non-alcoholic's mean height. The mean ± SE of height of alcoholic is 167.23 ±0.80 is significant (*) different between sample mean and RDA value (p<0.001). And the mean ± SE of non-alcoholic is 162.4±1.26 is significant (*) different between sample mean and RDA (p<0.001).The mean BMI of alcoholic is low than the non-alcoholic's mean BMI. The mean ± SE. of BMI of alcoholic is 19.98 ±1.26 is significant (*) different between sample mean and standard value (p<0.001). And the mean ± SE. of non-alcoholic is 23.96±2.15 is significant different between sample mean and RDA (p>0.01). Hb (gm/dl) of alcoholic person is lower than the normal healthy person. The mean ±SE of alcoholic is 12.86±0.26 is significant (*) different between sample mean and normal healthy person (p<0.001). From the dietary analysis of the food that is consumed by the subjects, we found that the alcoholic person consumed inadequate amount of food respect of non-alcoholic and RDA value, because as they drunk heavy amount of alcohol in the stomach and also poor knowledge with ignorance. From the hematological profile comparison it found that- the parameters are effected as low concentration Hb (gm/dl),RBC (cell /cu.mm), lymphocyte (%) and high concentration of eosinophil's (%) and MCV in alcoholic person than non-alcoholic person. From the bio-chemical test it is found that-The result of SGOT and SGPT is higher than the non-alcoholic person and normal range.

Keywords: Comparative study, alcoholic and non-alcoholic person, RDA

1. Introduction
Alcohol has been consumed in India at least since the Vedic period of 2000—800 BC (Isaac, 1998) and was allowed in Hinduism, particularly among the ruling classes. However, Buddhism, Jainism, and Islam did not allow their followers to drink. Although alcohol became more freely available in the Indian subcontinent under British rule, Indians did not generally incorporate drinking alcohol into their social or religious activities (Bennett et al., 1998). When India became independent in 1947, Mahatma Gandhi and the Indian National Congress Party campaigned against liquor production and sales on the grounds that it was injurious to health (Isaac, 1998).

Alcoholism is a chronic disease associated with the excessive and habitual use of alcohol; the disease, if left unattended, worsens and can kill the sufferer. Alcoholism is marked by physical dependency and can cause disorders in many organs of the body, including the liver (cirrhosis), stomach, intestines, and brain. It is also associated with abnormal heart rhythms, with certain cancers, and, because of loss of appetite, with poor nutrition. The cause of alcoholism is very complicated and most often involves a mixture of physical, psychological, and possibly genetic factors [1]. Effects of moderate drinking on the risk for disease respect non-alcoholic. A study showed a significant inverse association of alcohol consumption with non-alcoholic person [2]. These studies, and others, have led to dietary recommendations that include moderate consumption of alcohol, especially in the form of country wine. Unfortunately, many people have consumed alcohol to excess. Alcohol intake was affected by both environmental and inherited biologic mechanisms [3]. Prolonged consumption of excessive amounts of alcohol increased medical risks for liver cirrhosis, several neuromuscular disorders, and several types of cancer [4]. The interaction of ethanol and lipid metabolism was relevant to the effect of alcohol consumption on the pathogenesis of alcoholic fatty liver and hyperlipidemia, and to atherosclerosis [5]. In this century, the poor dietary habits of alcoholics were widely accepted as explaining several obvious connections between heavy drinking and organ damage. Ethanol consumption appeared to induce oxidative stress in the liver and in extra hepatic tissues [6].

It has been reported that medically diagnosed alcoholics can be differentiated reliably from non-alcoholics using clinical laboratory tests. Moreover, distinguishing alcoholic from non-alcoholic liver disease has important implications for treatment and management [7]. The most widely used tests for this purpose are standard liver function tests, g glutamic transferase (gGT), and Mean Cell Volume (MCV) using an electronic cell counter. Although gGT is a sensitive indicator of excessive alcohol intake, it is also raised in a variety of non-alcoholic liver diseases [8]. Addiction is a health, social, cultural and economic issues and problem which has prejudiced the future development of the countries. In addition to physical and mental problems for addicted individuals, it would also endanger the socioeconomic and political status of countries [9]. A number of research articles and studies have examined the relationship between personality and physical & mental health in literature [10].

Recovery from addiction has been described as a process. Stage I recovery is characterized by the priority of learning how to be abstinent [11]. Stage II recovery has different goals which emerge after initial withdrawal from active addiction. Larson states that stage II includes the following goals: improving self-esteem, changing negative thinking, and discovering emotional sobriety. So if dreams do “cut through the pretensions and deceits of waking life, and lay bare the true feelings of the individual “ (p229, Hall & Nor by, 1972), dream content in stage II recovery may explicate where in the recovery process abstinent alcoholics are compared to non-alcoholic controls.

Personality has been studied in a number of different ways. Some psychologists have developed broad theories to explain the origin and make up personality and other have focused only on one or two issues such as the influence of heredity or environment on personality. In this study anthropometrical, nutritional and biochemical are assesses. However, the aim of the present paper is to examine the relationship between alcoholic and non-alcoholic anthropometrical, nutritional and hematological status. A number of researchers studied in the past to evaluate the relationship between these categories.

2. Materials and Methods

A total of 42 subjects were studied: 21 subjects (male) with moderate and heavy drinker and 21 subjects (male) non-alcoholic person without any reported disease. All participants were within same age group (30 -50), similar economic status (Poor & Moderate), non-smokers, and similar dietary habits. Consent was obtained from every subject. This cross-sectional study used a residential sample of adults in local area of Kapasaria, Midnapore. It is living standards survey focuses on only urban and rural community when collecting data, data were collected at the study location via face to face interview with consumers who agreed to participate.

2.1 Anthropometric measurement

Measurement of height: Height is measured for subject of three times and above who are able to stand without support. Height is useful indicator of long team nutritional adequacy. The value of measurement of height in nutritional assessment is well recognized with the help of Steel rod (anthropometric rod).

Measurement of body weight: Body weight is the most common and the fundamental measurement for assessing growth and nutritional status by using a Weighing machine. Subject was made to stand bare foot with minimum clothing and straight. The zero adjustment of scale should be regularly checked.

Body Mass Index (B.M.I.): It is useful index to assess the nutritional status of the subject. From the data of height and weight of the subject, we can conclude the B.M.I. of the subject by using the following formula.

$$BMI = \frac{\text{Weight in kg}}{\text{Height in (meter)}^2}$$

Mid upper arm circumference (MUAC) (measured by tape): Normal MAUC for adult between 30-40 years of age is greater than 23.5 cm. If the MUAC is 22.5-23.5, the adult has mild to moderate malnutrition and if it is less than 22.5 cm it is indicate of serve malnutrition. This is useful for screening a large number of adult but less useful in long term growth monitoring.

Their mean age, height, and weight were noted. Body mass index (BMI) was measured by the formula: BMI= weight in kg/ (Height in meters) [2].

2.2 Dietary Assessment

To know the food habit and the amount of food consumed by the subject, the dietary history of the subject by using 24 hours recall method was recorded.

2.3 Bio-chemical Test

Their haematological reports are collected and for some report used common laboratory test. Results have been expressed as mean ± SEM (standard error). Statistical significance was determined by Students’ test for unpaired data. The values of significance were evaluated with 'p' values.

3. Result and Discussion

Analysis is done in order to compare between alcoholic and non-alcoholic person. It tried to find the anthropometrical, nutritional and biochemical status of category has been considered. The samples have been collected from locality.

Table 1: Result of Anthropometric Assessment of respondents:

Group	Body Weight (kg)	Height (cm)	BMI (kg/m^2)	MUAC (kg/m^2)
Reference value (ICMR)	60	168.56	21.25	23
Non-alcoholic	58.95±1.05	162.41(±1.26)*	23.96 (±1.26)*	24.41 (±0.37)*
Alcoholic	56.57±0.68*	167.23(±0.80)*	19.98 (±0.38)	22.68 (±0.31)

Value shown: Mean ±SE,
Reference value *vs* alcoholic –p<0.001, reference value (ICMR) *vs* non-alcoholic –p>0.05

In the study of weight it is found that the mean weight of alcoholic is low than the non-alcoholic's mean weight. The mean ± SE. of weight of alcoholic is 56.57 ±0.68 is significant (*) different between sample mean and RDA value (p<0.001). And the mean ± SE. of non-alcoholic is 58.95±1.05 is not significant different between sample mean and RDA (p>0.05).

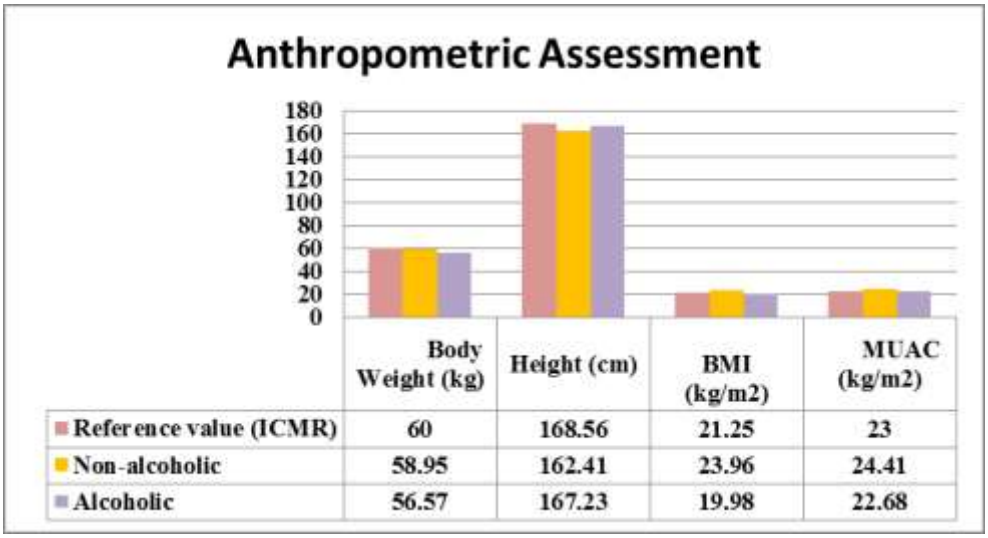

Fig 1: Comparison in Anthropometric Assessment between Alcoholic and Non-alcoholic respondents with respect to reference value

In height it is found that the mean height of alcoholic is high than the non-alcoholic's mean height. The mean ± SE of height of alcoholic is 167.23 ±0.80 is significant (*) different between sample mean and RDA value (p<0.001). And the mean ± SE of non alcoholic is 162.4±1.26 is significant (*) different between sample mean and RDA (p<0.001). The mean BMI of alcoholic is low than the non-alcoholics. The mean ± SE. of BMI of alcoholic is 19.98 ±1.26 is significant (*) different between sample mean and standard value (p<0.001). And the mean ± SE. of non-alcoholic is 23.96±2.15 is significant different between sample mean and RDA (p>0.01).In discussion of another anthropometric parameter study, mean MUAC is low for alcoholic person than no-alcoholic and RDA. The mean ± SE. of MUAC of alcoholic is 22.68±0.37 is significant (*) different between sample mean and standard value (p<0.001). And the mean ±SE. of non-alcoholic is 23.96±1.26 is significant (*) different between sample mean and standard value (p<0.001).

The nutritional assessment includes the daily intake of nutrients and their absorption for metabolic actions.

Table 2: Result of Nutritional Assessment of respondents:

Group	Carbohydrate (gm)	Protein (gm)	Fat(gm)	Energy (kcal)	Iron (mg/day)
Reference value	406	60	50.33	2320	17
Non-alcoholic	339.08 (±13.73)*	57.58 (±1.06)	37.22 (±1.10)*	1917.18 (±11.82)*	11.79 (±0.18)*
Alcoholic	256.41 (±7.39)*	53.12 (±0.91)*	32.72 (±.79)*	1757.02 (±19.43)*	10.90 (±0.19)*

Value shown: Mean ±SE,
Reference value *vs* alcoholic –p<0.001, reference value (ICMR) *vs* non-alcoholic –p>0.05

Carbohydrate consumption of non-alcoholic and alcoholic person is lower than the standard value. The mean ±SE of fat of non-alcoholic is 339.08±13.73 is significant (*) different between sample mean and standard value (P<0.001). The mean ±SE of carbohydrate of alcoholic is 256.43±7.39 is significant (*) different between sample mean and standard value (p<0.001). Protein consumption of alcoholic person is lower than non-alcoholic and RDA value. The mean ±SE of alcoholic of protein is 53.12±0.91 is significant (*) different between sample mean and standard value (p<0.001). The mean ±SE of non-alcoholic of protein is 57.58±1.06 is not significant different between sample mean and standard value (p>0.05).

Fat consumption of non-alcoholic and alcoholic person is lower than the standard value. The mean ±SE of fat of non-alcoholic is 37.22±1.10 is significant (*) different between sample mean and standard value (p<0.001). The mean ±SE of fat of alcoholic is 32.72±0.79 is significant (*) different

between sample mean and standard value (p<0.001). Energy consumption of non-alcoholic and alcoholic person is low than the stared value. The mean ±SE of energy of non-alcoholic is 1917.18±11.82 is significant (*) different between sample mean and standard value (p<0.001). The mean ±SE of energy of alcoholic is 1757.02±19.43 is significant (*) different between sample mean and standard value (p<0.001).

Iron consumption of non-alcoholic and alcoholic person is lower than standard value. The mean ±SE of iron of non-alcoholic is 11.79±0.18 is significant (*) different between sample mean and standard value (p<0.001). The mean ±SE of iron of alcoholic is 10.90±0.19 is significant (*) different between sample mean and standard value (p<0.001).

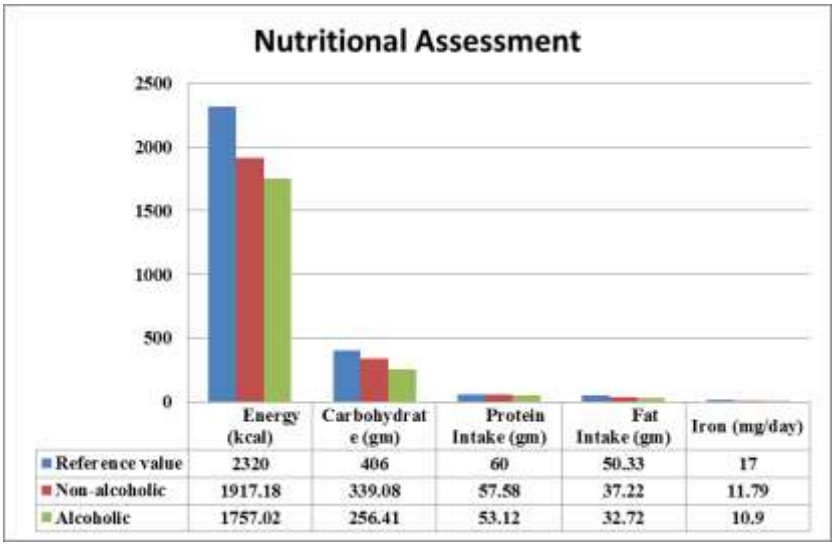

Fig 2: Comparison in Nutritional Assessment between Alcoholic and Non-alcoholic respondents with respect to reference value

In case of haematological analysis it was found that, Hb (gm/dl) of alcoholic person is lower than the normal healthy person. The mean ±SE of alcoholic is 12.86±0.26 is significant (*) different between sample mean and normal healthy person (p<0.001). RBC (cells/cu.mm) of alcoholic person is lower than the normal healthy person. The mean ±SE of alcoholic is 4.49±0.04 is significant (*) different between sample mean and normal healthy person (p<0.001). It is show table- 3.

Table 3: Result of Hematological Assessment of respondents:

	Normal value	Non-alcoholic person	Alcoholic person
Hb (gm%)	14-17	14.75 ±0.12	12.86 ±0.26*
RBC (cell/cu.mm.)	4.6-6.0	5.02 ±0.04	4.49 ±0.03*
Lymphocyte (%)	30-40	35.89 ±0.51	34.85 ±0.54*
Eosinophil (%)	0-5	2.89 ±0.23	3.26 ±0.19*
MCV(fl)	80-96	84.36 ±0.70	101 ±0.6*

Value shown: Mean ±SE,
Reference value *vs* alcoholic –p<0.001, reference value (ICMR) *vs* non-alcoholic –p>0.05

The Lymphocyte (%) of alcoholic person is lower than the normal healthy person. The mean ±SE of alcoholic is 34.85±0.54 is not significant different between sample mean and normal healthy person (p>0.05). Eosinophil (%) of alcoholic person is higher than the normal healthy person. The mean ±SE of alcoholic is 3.26±0.19 is not significant different between sample mean and normal healthy person (p>0.05). MCV of alcoholic person is higher than the normal healthy person. The mean ±SE of alcoholic is 101±0.6 is significant (*) different between sample mean and normal healthy person (p<0.001).

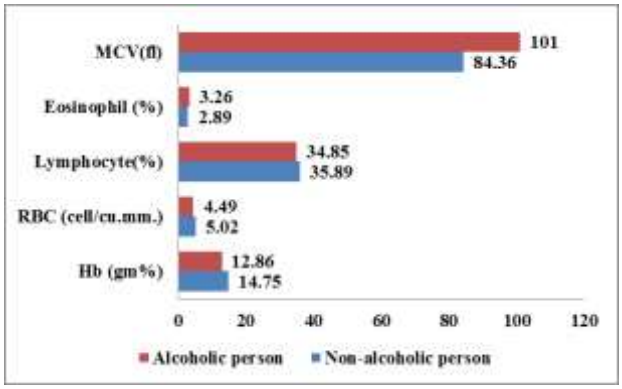

Fig 3: Comparison in hematological assessment between alcoholic and non-alcoholic respondents

In the Bio-chemical test like, SGOT of alcoholic person is higher than the normal healthy non-alcoholic person. The mean ±SE of alcoholic is 48.16 ±1.70 is not significant different between sample mean and normal health person (p<0.001). And the mean ± SE. of non-alcoholic is 25.03±0.55 is significant (*) different between sample mean and RDA (p>0.05).

Table 4: Result of Bio-chemical Assessment of respondents

Group	SGOT(U/L)	SGPT(U/L)
Normal Range	25	24
Non-alcoholic	25.03(±3.03)*	24.01(±0.30)*
Alcoholic	48.16(±1.70)	52.78(±0.81)

Value shown: Mean ±SE,
Reference value *vs* alcoholic –p<0.001, reference value (ICMR) *vs* non-alcoholic –p>0.05

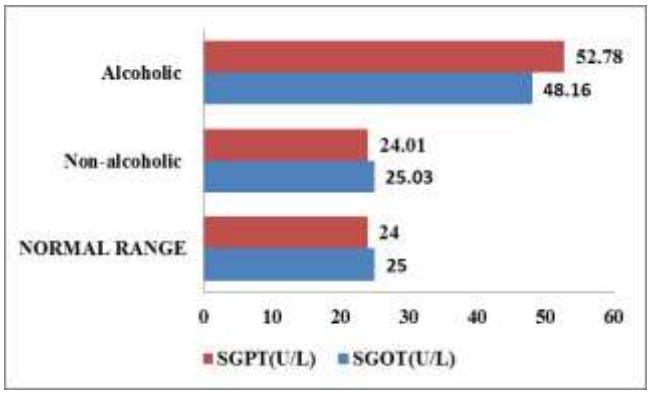

Fig 4: Comparison in Biochemical Assessment between Alcoholic and Non-alcoholic respondents with respect to reference normal range

SGPT of alcoholic person is higher than the normal healthy non-alcoholic person. The mean ±SE of alcoholic is 52.78 ±0.81 is not significant different between sample mean and normal health person (p<0.001). And the mean ± SE. of non-alcoholic is 24.81±0.30 is significant (*) different between sample mean and RDA (p>0.05).

4. Conclusion

From this observation it may be concluded that alcohol consumption is associated with a number of change in health status, nutritional status, bio-chemical status, social behavior and mind. From the above study it is found that-The weight, MUAC, BMI are significantly low in alcoholic person comparison with non-alcoholic person and reference value. And from their dietary analysis it was found that, they consume less amount of CHO, protein, fat, energy and iron than the non-alcoholic person and RDA value. The most probable cause of low consumption of nutrient and low healthy status of alcoholic person is due to high consumption of ethanol, poor knowledge, ignorance, illiterate etc. Some non-alcoholic person found who have deficiency of nutrient by their poor economic status and knowledge. Because as they drunk heavy amount of alcohol in the stomach and also poor knowledge with ignorance. From the hematological profile comparison it found that- the parameters are effected as low concentration Hb (gm/dl),RBC (cell /cu.mm), lymphocyte (%) and high concentration of eosinophil's (%) and MCV (fl) in alcoholic person than non-alcoholic person. From the bio-chemical test it is found that-The result of SGOT and SGPT is higher than the non-alcoholic person and normal range. By the current study it is suggested that the alcoholic subjects are suffer from various deficiency and disorder. They also belong to risk condition comparison with non-alcoholic subjects. And also suffer from various type of liver disease. That is caused by excess amount of alcohol.

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