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Prevalence Of Early Arthritic Changes Among Chronic Alcoholics.

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ABSTRACT

Background: Attention in the medical literature has been primarily focused on the effects of alcohol on the nervous system and liver, In the past few years, isolated reports have appeared in the medical literature concerning the effects of alcohol on the bony skeleton.[1] Chronic alcohol consumption has major harmful effects on bone development and maintenance at all ages.[2] The purpose of this paper is to classify these lesions, discuss their pathophysiology, and briefly review their clinical course.

Methods: The cross-sectional survey that was conducted in Karad City served as the basis for this article. The purpose of this survey is to determine how common early arthritic changes are in long-term alcohol users. Prior to conducting the survey, the ethical committee's approval was obtained. Patients were chosen based on inclusion and exclusion standards. With their permission, 233 chronic drinkers participated in this study, and result was obtained by the statistician.

Result: In this study we found the prevalence of 81.97% of early arthritic changes in chronic alcoholers which includes elevation in the ESR and CRP levels, changes in the X-rays and symptoms like morning stiffness, joint pain, swelling.

Conclusion: This study shows overall prevalence of early arthritic changes in chronic alcoholers is very high (81.97%). Lack of awareness and habit of excessive habit of alcohol consumption can cause these problems.

Keywords: Early arthritic changes, Prevalence, Chronic alcoholics.

INTRODUCTION

Alcoholism, a chronic disease in which an individual experiences intense cravings for alcohol, an inability to limit consumption, and a continuation of consumption despite negative legal, professional, interpersonal, or physical consequences.[3] A joint that is inflamed, causing pain, tenderness, swelling, stiffness, and restricted movement, is referred to as arthritis. Early arthritic changes can be as the indicators of arthritis, such as joint discomfort, stiffness, pain during movement, and joint tenderness. There are several factors that might contribute to different types of arthritis, including poor lifestyle choices, alcohol intake, deterioration, infection, and repeated stress on the joints. Drinking alcohol is associated with certain forms of arthritis in an inverse and dose-related manner.[4]Types of alcohol consumption differ between (a) light, only occasional consumption, (b) heavy chronic alcohol consumption, and (c) binge drinking as seen as a new pattern of alcohol consumption among teenagers and young adults.[5]Chronic alcoholism cannot be defined in terms of duration because it depends upon the quantity and other factors also. Bones are among the many tissues and organs that are affected by excessive alcohol use.[6] Numerous research works have documented the dose-dependent impact of alcohol on human health, whereby individuals who consume alcohol in moderation or less are less likely to develop immune-related illnesses, but heavy users are considerably more vulnerable.[7]Alcohol influences bodily functioning by acting as a depressant once it reaches the bloodstream. The loss of nutrients and water from your body, however, also exacerbates inflammation. It can be directly connected to arthritis of the joints and worsen inflammation in the body. Alcoholism that is severe or persistent disrupts the metabolism of purines, which causes the blood to accumulate uric acid excessively.(3.5 to 7.2 mg/dL is the normal range for uric acid). The distal joints of the affected person get surrounded by crystals that form as a result of the elevated uric acid levels. The formation of crystals brought on by these elevated uric acid levels is deposited in and around the body's distal joints, causing pain and swelling. Extended alcohol intake can disrupt the formation of bones (by inhibiting growth hormone levels) and replace lost bone tissue, leading to a reduction in bone density. Alcohol impairs mainly an osteoblastic activity that results in reduced bone formation and mineralization.[8] Affecting the osteoclasts function, alcohol is also able to induce bone resorption, Despite the direct toxic effect of ethanol on bone tissue, the indirect influence of ethanol on metabolism of hormones participating in bone homeostasis has been revealed.[9] Heavy alcohol consumption may contribute to

development and progression of rheumatoid arthritis by promoting inflammation and damaging bone tissues.When an individual's immune system is weakened by alcohol, they become more vulnerable to autoimmune diseases and infections that can damage their joints. In addition, there is an increased risk of serious joint damage in those who drink alcohol to relieve the discomfort associated with arthritis. Alteration of prostaglandin metabolism secondary to alcoholic consumption might be a contributing factor.[10]The habitual consumption of even moderate quantities of alcohol (1 to 2 drinks/day) is clearly linked with reduced bone mass (osteopenia).[11] Chronic alcohol consumption interferes with collagen synthesis and the quality of bone trabeculae, with consequent bone fragility.[12] This article will examine the link between long-term alcohol use and the development of early arthritic changes in the joints, which will make treatment easier in the future.

METHODS

A cross-sectional survey conducted in and around Karad city over the previous six months assessed the association between early arthritic changes and chronic alcohol usage. 233 participants gave their consent to participate in the study; 191 of them were men and 42 were women, who reported moderate or heavy alcohol consumption over the previous ten years, depending on how long they had been drinking. The statistician determined the sample size based on a thorough review of the literature.

First of all, the ethics committee gained permission to conduct this survey with ethical concern. Patients presenting to Krishna Hospital in Karad with primary complaints of joint pain, edema, and morning stiffness were asked about their history of alcohol addiction. Of the 400 patients, 233 had been addicted to alcohol for the previous ten to fifteen years. In order to precisely identify the early arthritic changes that develop in chronic alcohol users, inflammatory indicators such X-rays, CRP levels, and ESR are used.

When collecting data, we assess and take a history of the patient when they visit the orthopaedic outpatient department. If the patient has an alcohol addiction, we ask them how long they have been drinking, and if so, for what reason. That's why a more thorough evaluation was conducted. We told the patient about the survey during a follow-up evaluation and got their permission to continue. Subsequently, blood samples were taken from the patient in order to measure the ESR and CRP levels as well as obtain an X-ray of the specific joint that the patient had been complaining of discomfort in. After being entered, the data was examined in Microsoft Excel. The assistance of statisticians was used for data analysis.

Both absolute and relative frequencies were used to express categorical variables. The mean and standard deviation were used to express quantitative variables. Using the instat program, a descriptive prevalence statistic was generated. The mean, standard deviation, and percentage (frequency) were employed as descriptive statistics.

RESULT:

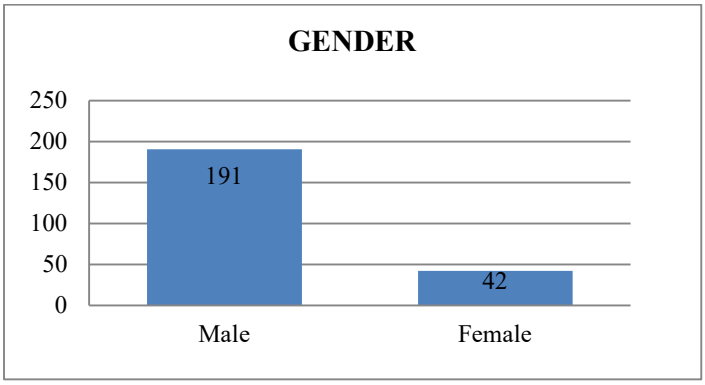
This study included 233 participants who are consuming alcohol from past 10 years or more than 10 years.

1. Gender

	n (%)
Male	191(81.97 %)
Female	42(18.02 %)

Table no.1:Frequency of males and females which were included in the study.

Table no.1 shows description of males and females in percentage forms as there 191 males which is 81.97% males and 42 females which is 18.02% females were involved.

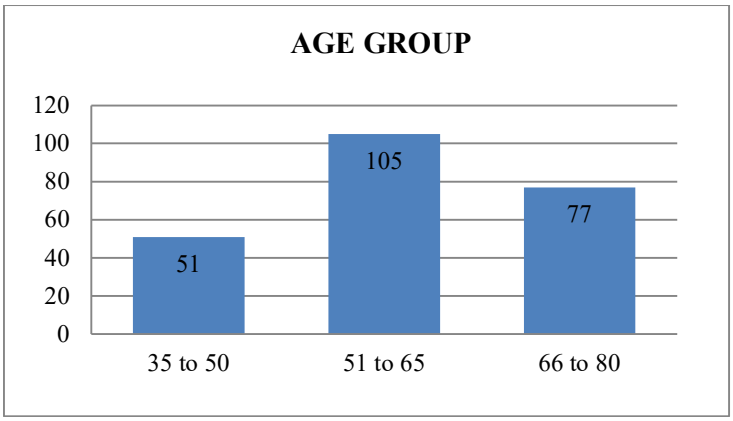


2. Age

Age group	n (%)
35 to 50	51(21.88 %)
51 to 65	105(45.06 %)
66 to 80	77(33.04%)

Table no.2: Frequency of age group of participants.

Table no.2 shows description of age groups of participant as there were 51 participants involved among the age group of 35 to 50 which is 21.88% of total sample size, 105 participants were involved among the age group of 51 to 65 which is 45.06% of total and 77 participants were involved among 66 to 80 age group which is 33.04% of total sample size.

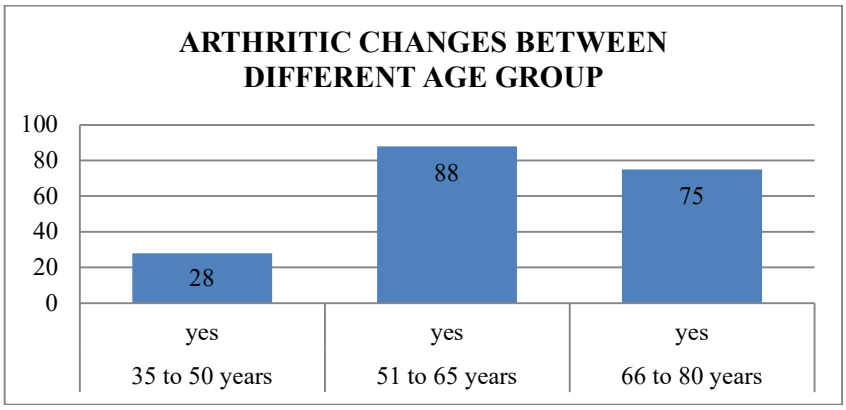


3. Arthritic changes in different age group

Age group	Arthritic changes	n(%)
35 to 50 years	yes	28(12.01%)
51 to 65 years	yes	88(37.76%)
66 to 80 years	yes	75(32.18%)

Table no.3: Frequency and percentage of arthritic changes in different groups.

Table no.3 shows frequency of arthritic changes in different age group such as there are 28 which 12.01% of samples under age group of 35 to 50 years, 88 which is 37.76% under age group 51 to 65 years and 75 which is 32.18% under age group of 66 to 80 years are having arthritic changes due to chronic alcohol consumption.

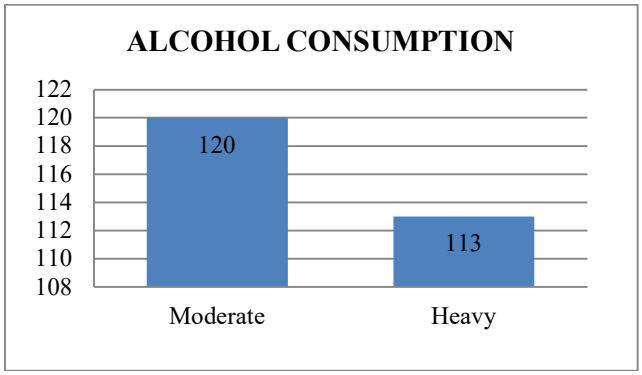


4. Alcohol consumption

	n(%)
Moderate	120(51.50 %)
Heavy	113(48.49 %)

Table no.4: Frequency of alcohol consumption which is classified in two categories i.e. Moderate alcohol consumption (10 years) and Heavy consumption (15 years).

Table no.4 shows frequency of alcohol consumption as there are 120 which is 51.50% alcohol consumers who have been drinking moderate and 113 which is 48.49% who have been drinking heavy.

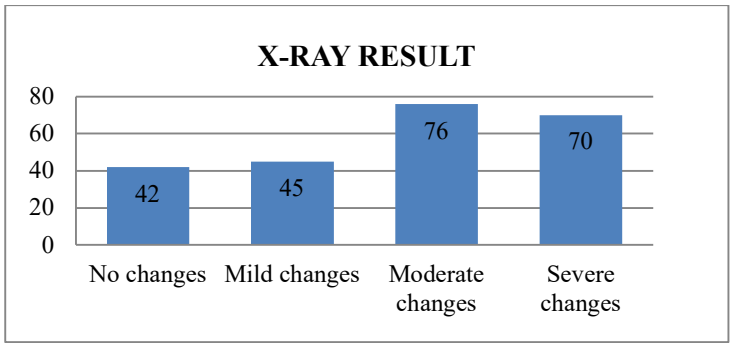


5. X – ray result

	n(%)
No changes	42(18.02%)
Mild changes	45(19.31%)
Moderate changes	76(32.61%)
Severe changes	70(30.04%)

Table no.5: Frequency of X-ray results.

Table no.5 shows frequency of changes seen on X-rays of participants. As there are 42 participants with no changes which is 18.02%, 45 participants with mild changes which is 19.31%, 76 participants with moderate changes which is 32.61% and 70 participants with severe changes which is 30.04%.

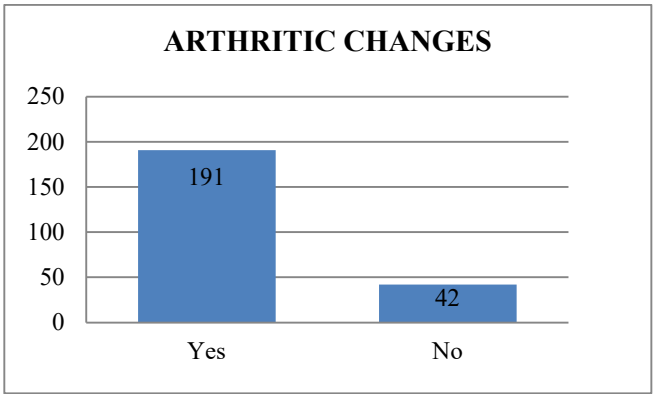


6. Arthritic changes

	n(%)
Yes	191(81.97 %)
No	42(18.02 %)

Table no.6: Frequency of arthritic changes.

Table no.6 shows frequency of arthritic changes as there are 191 participants out of 233 which 81.97% found with arthritic changes and the rest 42 which is 18.02% with no arthritic changes.

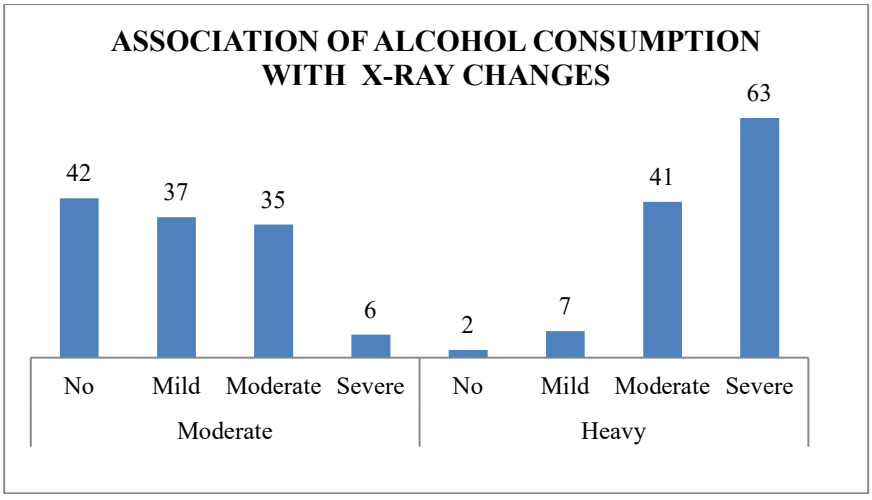


7. Alcohol consumption and x ray changes

Alcohol Consumption	X ray changes	n(%)
Moderate	No	42(35 %)
	Mild	37(30.83 %)
	Moderate	35(29.16 %)
	Severe	6(5%)
Heavy	No	2(1.76 %)
	Mild	7(6.19 %)
	Moderate	41(36.28 %)
	Severe	63(55.75 %)

Table no.7: Frequency of x-ray changes found according to pattern of alcohol consumption.

Table no.7shows frequency of x-ray changes according to alcohol consumption as there are 42 which is 35% participants were found with moderate alcohol consumption but with no changes in the x-rays, 37 which is 30.83% participants with moderate alcohol consumption and mild changes in the x-rays, 35 which is 29.16% participants with moderate alcohol consumption and moderate changes in x-rays, 6 which is 5% of participants with moderate alcohol consumption and severe changes in x-rays. There are 2 which is 1.76% of participants with heavy alcohol consumption have no changes in the x-rays, 7 which is 6.19% of participants with heavy alcohol consumption and mild changes in x-rays, 41 which is 36.28% of participants with heavy alcohol consumption with moderate changes in x-rays results, 63 which is 55.75% of participants with heavy alcohol consumption and severe changes in x-rays.

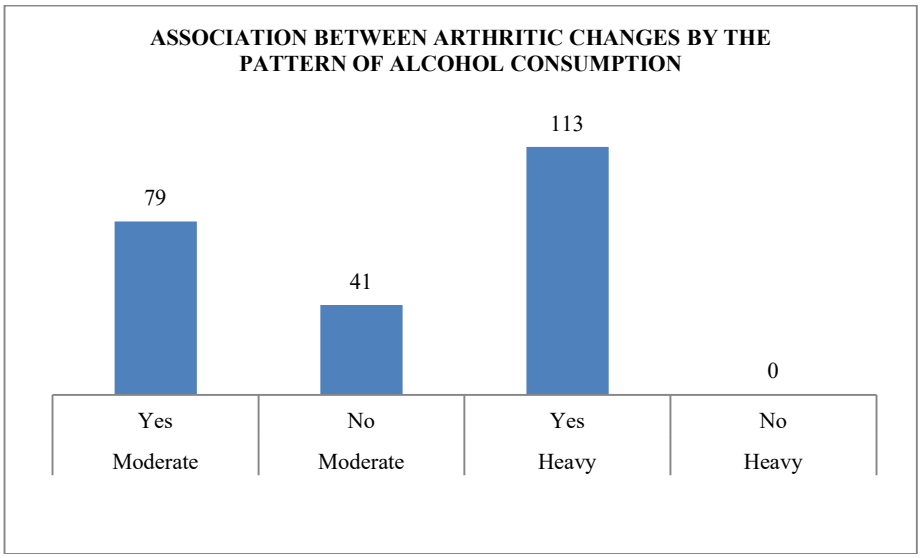


8. Alcohol consumption and arthritic changes

Alcohol consumption	Arthritic changes	n (%)
Moderate	Yes	79(65.83 %)
Moderate	No	41(34.16 %)
Heavy	Yes	113(100 %)
Heavy	No	0

Table no.8: Frequency of alcohol consumption with arthritic changes.

Table no.8 shows frequency of pattern of alcohol consumption with arthritic changes as there are 79 which is 65.83% of participants are found with moderate alcohol consumption and arthritic changes, 41 which is 34.16% of participants with moderate alcohol consumption and no arthritic changes. There are 113 which is 100% of participants with heavy alcohol consumption and arthritic changes.

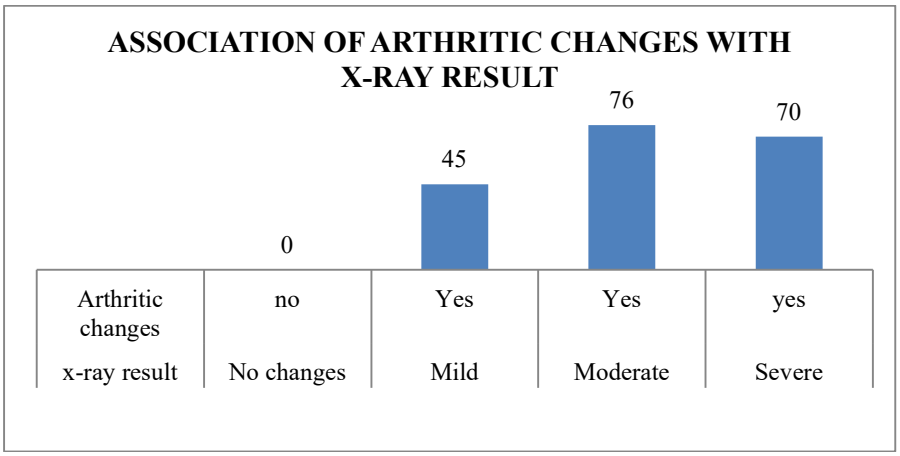


9. X ray result and arthritic changes

x-ray result	Arthritic changes	n(%)
Mild	Yes	45(19.31 %)
Moderate	Yes	76(32.61 %)
Severe	yes	70(30.04 %)

Table no.9: frequency of arthritic changes with X-ray findings

Table no.9 shows frequency distribution between arthritic changes and x-ray result as there are 45 which is 19.31% participants found with mild changes in x-rays and arthritic changes, 76 which is 32.61% participants with moderate changes in x-rays and arthritic changes, 70 which is 30.04% participants with severe changes in x-rays and arthritic changes.



10. ESR levels

ESR levels	Mean	Standard Deviation	P value
	41.9055	11.688	< 0.0001

Table no.10: Mean, standard deviation and P value of ESR levels.

Table no.10Shows mean value of ESR levels of 233 samples which is 41.9055, Standard deviation of ESR levels of 233 samples which is 11.688 and P value of ESR levels is < 0.0001.

11. CRP levels

CRP levels	Mean	Standard Deviation	P value
	46.6824	14.769	< 0.0001

Table no.11: Mean, standard deviation and P value of CRP levels.

Table no.11 shows mean value of CRP levels of 233 samples which is 46.6824, standard deviation of CRP levels 14.769 and P value of CRP levels is < 0.0001.

Figure no.1: Reduction in the joint space of 52 year old male with history of alcohol consumption.

Figure no.2: Erosion of articular margins and reduced joint space in a 60 year old male with history of alcohol consumption.

DISCUSSION:

A cross sectional study was carried out to find the prevalence of early arthritic changes among chronic alcoholers. Previously there is attention in the medical literature has been primarily focused on the effects of alcohol on the nervous system and liver. This study is focused on effect of alcohol consumption on bony skeleton.

This study was done in Karad city, Satara district from past 6 months. In this study we found the prevalence of 81.97% of early arthritic changes in chronic alcoholers which includes elevation in the ESR and CRP levels, changes in the X-rays and symptoms like morning stiffness, joint pain, swelling. In which we found 81.97% of males and 18.02% females with past history of alcohol consumption, in which there are 51.50% are moderate drinkers which drinking for 10 years and 48.49% are heavy drinkers which more than 10 years of alcohol consumption. As alcohol decreases

osteoblastic activity, leading to decreased bone formation and defective mineralization.[8] Ethanol impairs mainly an osteoblastic activity that results in reduced bone formation and mineralisation. Affecting the osteoclast function, alcohol is also able to induce bone resorption, despite the direct toxic effect of ethanol on bone tissue, the indirect influence of ethanol on metabolism of hormones participating in bone homeostasis has been revealed.[9] Arthritic changes in different age group such as there are 28 which 12.01% of samples under age group of 35 to 50 years, 88 which is 37.76% under age group 51 to 65 years and 75 which is 32.18% under age group of 66 to 80 years are having arthritic changes due to chronic alcohol consumption. Pattern of alcohol consumption with arthritic changes as there are 79 which is 65.83% of participants are found with moderate alcohol consumption and arthritic changes, 41 which is 34.16% of participants with moderate alcohol consumption and no arthritic changes. There are 113 which is 100% of participants with heavy alcohol consumption and arthritic changes. Association between arthritic changes and x-ray results as there are 45 which is 19.31% participants found with mild changes in x-rays and arthritic changes, 76 which is 32.61% participants with moderate changes in x-rays and arthritic changes, 70 which is 30.04% participants with severe changes in x-rays and arthritic changes. Mean value of ESR levels of 233 samples which is 41.9055, Standard deviation of ESR levels of 233 samples which is 11.688 and P value of ESR levels is < 0.0001.Mean value of CRP levels of 233 samples which is 46.6824, standard deviation of CRP levels 14.769 and P value of CRP levels is < 0.0001.

Our study got consistent finding with previous article which has got association between alcohol consumption and bony changes.[2] Weak association were found with early age group, female gender.

CONCLUSION:

This study shows overall prevalence of early arthritic changes in chronic alcoholics is very high (81.97%). Lack of awareness and habit of excessive habit of alcohol consumption can cause these problems. These complications get worsened by avoiding the symptoms and continuing the alcohol consumption. These complications can be prevented by early detection and admission to rehabilitation to help with stopping of alcohol consumption. Knowledge and awareness can help to prevent these complications.

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