

Research Article

Nutritional assessment of adult patients suffering from gout visiting tertiary care hospitals, Lahore

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Abstract

The research was aimed to determine the nutritional status and dietary behavior practice among adults suffering from gout. Gout is an arthritic disease which arises when increase amount of uric acid (a normal waste product) deposits in the body, and monosodium urate crystals accumulate in the joints. A cross-sectional study was carried out at the medical and surgical department of Sir Ganga Ram Hospital and University of Lahore Hospital, Lahore during Dec-2017 to March-2018. Total 100 samples of gout were selected through non-probability convenient sampling technique. Patients were assessed through pre-tested questionnaire. SPSS version 21.0 was used for data analysis. Gout was more prevalent among 51 to 60-year-old patients in both males and female. 50% patients were overweight, 74% were lightly active with 56% having low socio-economic status and 33% belonged to rural areas. Signs and symptoms observed were body pain, inflammation, pale skin and eyes. It was concluded that long term medication intake, complication like diabetes, hypertension, kidney disease and heart disease, absence of physical activity, dehydration were risk factors of gout. According to current study, more consumption of meat, legumes, dessert, carbonated beverages and soft drink leads to gout spasm.

Keywords: BMI; Dietary factor; Gout; Joint; Serum; Uric acid

Introduction

Gout is an arthritic disease which arises when increased amount of uric acid (a normal waste product) deposits in the body, and monosodium urate crystals accumulate in the joints [1]. In acute gouty arthritis patient feel pain and joint swelling during gout attacks, when the severity and period of acute attacks

raise for long time that cause chronic gout, which may be related with accumulation of uric acid crystals called as tophi [2]. Major etiological factor of gout is hyperuricemia (elevated high levels of blood uric acid). Some studies also showed that hyperuricemia is associated with CVD and neurological diseases [3]. Some dietary factors raise the

risk of incident gout such as seafood intake and meat intake. Diet which is associated with a lower risk of incident gout and lower rate of gout flares is folate intake and coffee consumption. Alcohol increased the risk of incident gout, especially hard liquor and beer. Higher risks of gout attack were associated with loop diuretics and Thiazide. Diabetes, renal insufficiency, obesity, hypertriglyceridemia, Hypertension and hypercholesterolemia are diseases which are related with increased risk of incident gout [4]. High amounts of fructose containing sugar-sweetened soft drinks remarkably increased serum uric acid levels and the risk of gout [5]. Some researchers have shown that skim milk (non-fat milk) has effective role in prevention of gout and has property to lower 10% serum uric acid in individuals [6]. Gout is usually most common in men [7]. Gout also affects young women but mostly develop in women who are more likely to be over the age of 50, have other diseases and be on diuretics [8]. Some studies show that gout is mostly associated with family history of gout. Mostly 90% of disease is genetic, while other 10% is lifestyle disease. Gout remains untreatable until main genetic factor is not targeted in patients [9]. Gout and hyperuricemia have both non-modifiable and modifiable risk factors. Age and sex are non-modifiable health hazards. Modifiable risk factor for gout includes obesity, the use of certain medications, high purine intake and consumption of purine-rich alcoholic beverages [10]. The global ratio of gout is widespread and appears to be raising over the past 50 years in many parts of the world. Across the globe distribution of gout is unequal, hence Pacific countries being the highest in incidence. Burden of gout tend to have higher in industrialized countries than in developing countries. Some ethnic groups are particularly susceptible to gout, supporting the importance of genetic factor [11]. During earlier year's gout has been

included in global burden of disease. Globally prevalence of gout was increased (0.08%). Gout has been ranked as 173 in terms of overall burden. The globally burden of gout is rising due an increase in ageing population [12]. The prevalence of gout in Pakistan (Karachi) was higher in male than female. Prevalence of gout was high in patients that are above 50 years of age. Gout arthritis is related with several factors that are becoming so much prevalent which are CKD, metabolic syndrome, and cardiovascular disease [13]. Gout can be cured by following two rules first is treatment of the acute gout attack, to decrease pain and debility and treatment of hyperuricemia by lifestyle adjustment and second with usage of urate lowering medications. Ideal serum uric level which should be achieved during management of gout should be less than 6 mg/dl [14]. A study was conducted to evaluate associations of BMI, diet, physical activity on risk of gout attacks in seemingly healthy and strongly active men. Total 28990 men self-reported gout were contrast with BMI, normal and highly physical activity. Result showed that risk of gout raise with BMI (1.19%), alcohol intake (1.19%) meat consumption (1.45%) and decreased with consumption of fruit (0.73%) and in runners (0.55%). Elevated level of BMI increases risk of gout while lower BMI decreases risk of gout, while compared with less active with highly active individual who ran more than 8 kilometers a day had 50 to 65% decreased risk of gout [15]. The cross sectional study was conducted to evaluate the difference in uric acid level among people who eat vegans, meat, vegetarian and fish. Total 1693 peoples were selected in which 670 was men and other 1023 was women. Test of uric acid were assessed. Diet history was evaluated by asking food frequency questionnaire. Their result demonstrates that Participants who eat a vegan diet had the peak level of uric acid related to meat eaters, fish eaters and

vegetarians, and other individuals had the lowest amount of serum uric acid, who don't eat meat but consume vegetarians and fish. The serum amount of uric acid was significantly increased in men than woman [16].

The researcher was aimed to determine the nutritional status and dietary behavior practice among adults suffering from gout. After assessment of nutritional status and dietary behavior, awareness may be created among adults to improve the dietary choices, throughout extensive health education. Mortality and complications due to gout may be reduced. As if left untreated it will affect quality of life among adults and increases economic burden on society.

Materials and methods

A cross-sectional study was carried out at the medical and surgical department of Sir Ganga Ram Hospital and University of Lahore Hospital, Lahore during Dec-2017 to March-2018. Total 100 samples of gout were selected through non-probability convenient sampling technique. Inclusion criteria were indoor and outdoor adult patients of both genders suffering from gout and exclusion criteria were adult patients not suffering from gout and non-cooperative patients. The rules and regulations of ethical committee of University of Lahore were followed while conducting the research. Written informed consent was taken from all the patients. After taking informed written consent, data were collected with the help of pre-tested data collection tool (Questionnaire/Pro-forma). Patients were assessed through pre-tested questionnaire. Statistical Package for the Social Sciences (SPSS) version 21.0 was used for data analysis.

Results

Results showed that 8% patients were of age between 21-30 years, 20% patients were 31-40 years, 19% patients were 41-50 years and the prevalence of gout was high in patients with age of 51-60 years as shown in the (Fig

1). 16% patient's age was 61-70 years. 6% patient's age was 71-80 years. 3% patient's age was 81-90 years. 1% patient's age was 91-100 years.

The results showed that, majority 50% patients were overweight and 33% were obese. 2% were underweight and 15% were of normal weight as shown in the (Fig 2).

36% of patients have hypertension where as 64% of patients not have hypertension as shown in (Fig. 3).

Out of 100 participants, 46% were not consuming red meat at all, 11% patients were consuming red meat 1-2 times per week, 2% patients were consuming red meat 3-2 times per week and 41% were consuming red meat once a week (Table 1).

8% patients never consumed fruits at all but 6% patients were consuming fruits on daily basis, 30% patients were consuming fruits 1-2 times per week, 4% were consuming fruits 3-4 times per week and only 52% patients were consuming fruits once a week (Fig. 4).

Discussion

Current findings showed that 50% patients were overweight, 33% were obese, 15% were of normal weight while 2% were underweight. Choi *et al.* determine the effect of diuretic use, weight change, hypertension, obesity, and risk of gout. A cross-sectional study was conducted during 2005, which included 47150 participants. Data were collected randomly through questionnaire. Among participant 730 were assessed with gout according to ranges of BMI. The risk was 1.95% individuals with 21 to 22.9 and BMI with 25 to 29.9, 2.33 and 30 to 34.9. The risk was 2.97%. Men using diuretic medication and hypertension risk were 2.31%. The burden of gout increased due to obesity, hypertension and weight change [17]. Similar results revealed by study conducted in Washington Country, Maryland to assess the gout association with obesity at younger age [18]. A study was conducted in 2010 to determine the association of body fat

with metabolic syndrome gout. The result of study demonstrated that gout patients mean age were 42 and mean serum uric acid ranges

were 9.0mg/dl. The most likely BMI of patients were 25.4-3.5kg/ m². 44.4% patients were overweight and 25.6% were obese [19].

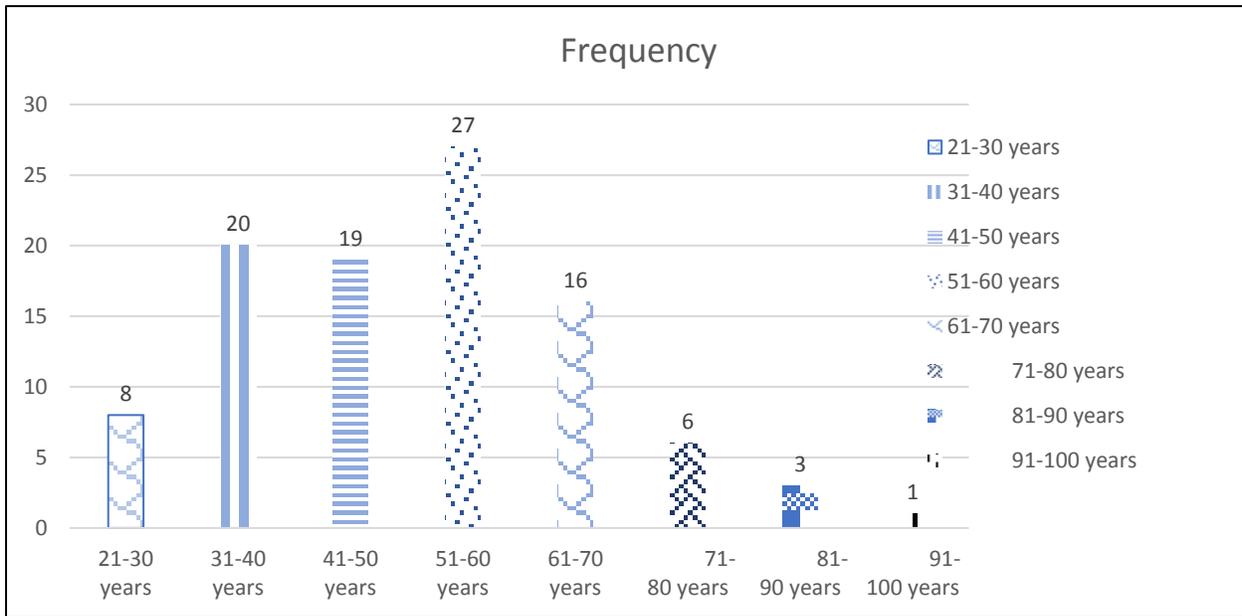


Figure 1. Frequency distribution of patients' age

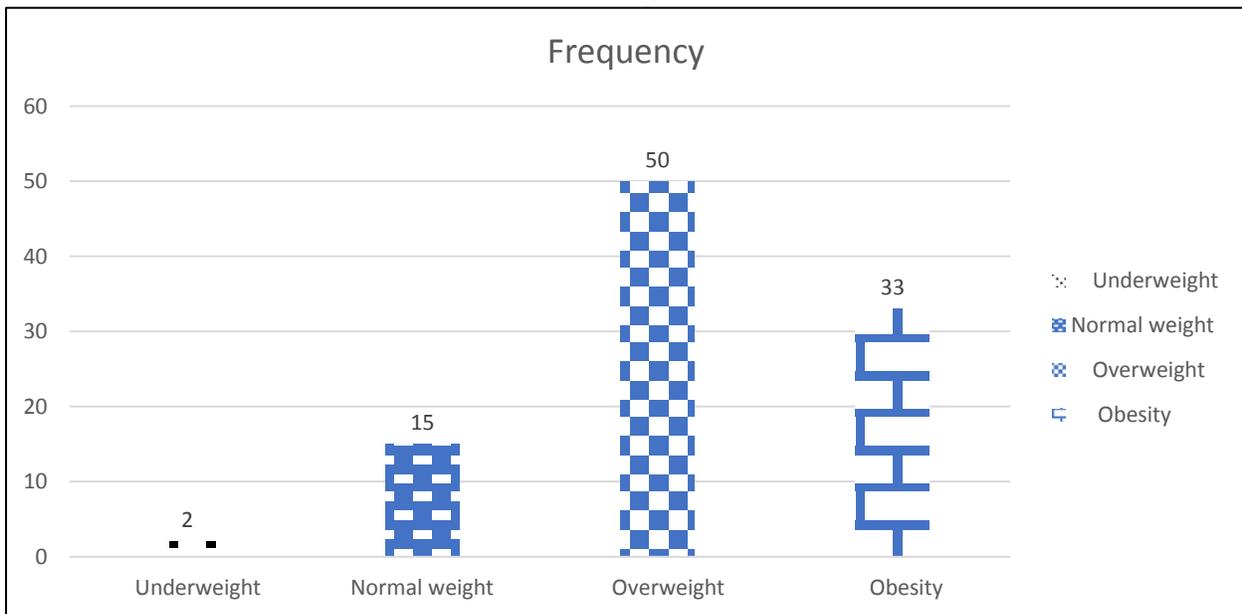


Figure 2. Frequency distribution of body mass index (BMI)

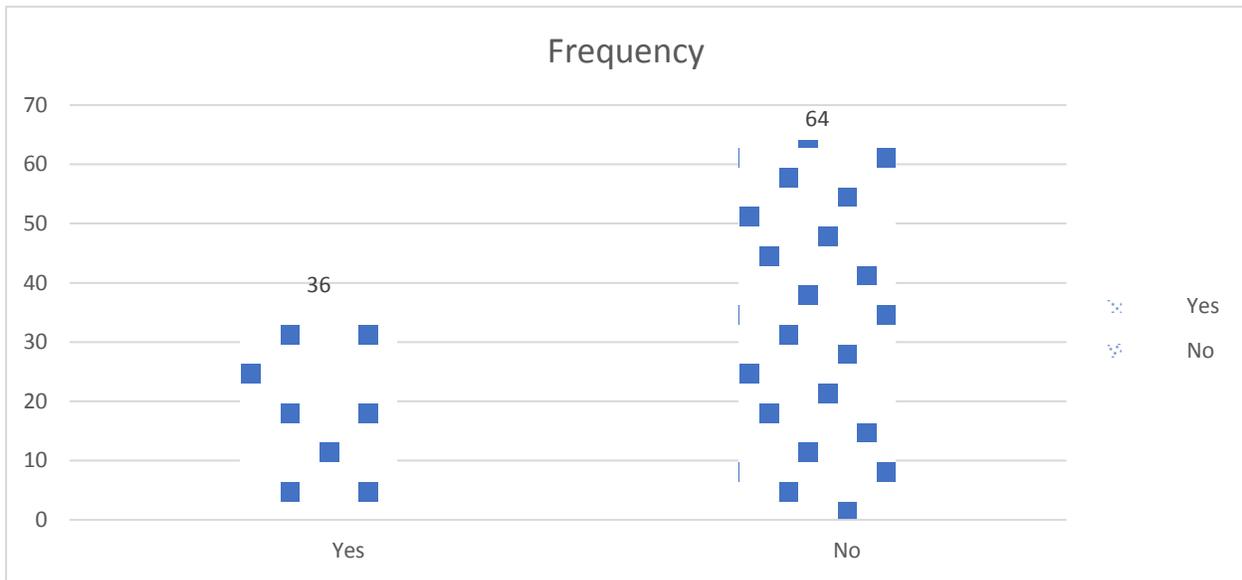


Figure 3. Frequency of hypertension in gout patients

Table 1. Frequency of meat consumption

| Uric acid | 1-2 times/ per week | 3-4 times/per week | Once a week | Never | Total | P – value |
|---------------|---------------------|--------------------|-------------|-----------|------------|--------------|
| 3.5-7.0 mg/dl | 2 | 1 | 28 | 29 | 60 | |
| 7.1-14.0 | 9 | 1 | 13 | 17 | 40 | |
| Total | 11 | 2 | 41 | 46 | 100 | 0.002 |

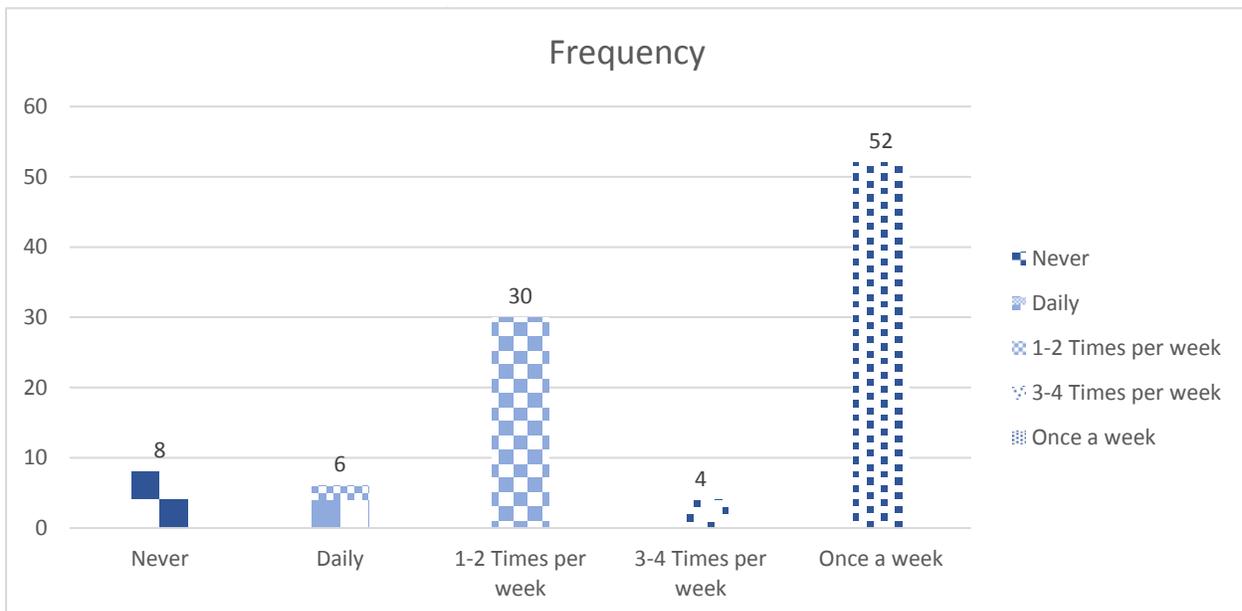


Figure 4. Frequency distribution of Fruits Consumption

Current research found that 36% of patients have hypertension, whereas 64% of patients not have hypertension. Hypertension is linked with gout which is also studied to observe the relationship of DASH diet and serum Uric acid level. The result concluded that DASH diet helps in decreasing the serum uric acid. The data were randomly analyzed in pre HTN and HTN patients. DASH diet was measured 30 to 90 day and results were compared with baseline SUA level. DASH diet decreased SUA 0.8 and 1.0 mg dl [20]. A study was conducted to examine the association of blood pressure and biochemical parameters in both male and female patients with gout. Result showed that diastolic BP was higher in male patients than female [21]. Another study revealed that gout has important relationship with hypertension. Hypertension is more common comorbidities of gout [22].

Findings of current study revealed that 46% were not consuming red meat at all, 11% patients were consuming red meat 1-2 times per week, 2% patients were consuming red meat 3-2 times per week and 41% were consuming red meat once a week. A case control study was conducted in Chinese adult to determine the relation of dietary pattern and recently identified hyperuricemia. Total 14538 individuals were included in study. 1422 participants were generated as cases and 1422 as controls. Dietary consumption was evaluated by using self-made food frequency questionnaire. Three dietary groups were made by factor analysis. First group was sweet pattern, second was animal and 3rd was vegetable. In recently identified hyperuricemia animal dietary pattern was having the highest value 1.50 while other two patterns (plant & vegetable) were not identified in recently developed hyperuricemia. In Chinese population animal dietary pattern (meat products, organ meat and seafood) effectively increased hyperuricemia [23]. Another study revealed

that low purine diet with medication allopurinol is helpful in lowering serum uric acid as compared to purine diet [24, 25].

8% patients never consumed fruits at all but 6% patients were consuming fruits on daily basis, 30% patients were consuming fruits 1-2 times per week, 4% were consuming fruits 3-4 times per week and only 52% patients were consuming fruits once a week. Similar study revealed that Orange juice has healthy effect and have important role in decreasing serum uric acid from body [26]. Similar result were found by survey in 2012, among individuals with gout to observe the association of cherry intake with risk of repeated gouty spasm The result shows that cherry consumption decrease 35% risk of gout distress in participants [27]. Results of current study revealed that 20% participants were not consuming yogurt, only 10% were consuming yogurt on daily basis and only 24% were consuming 1-2 times per week, 21% consuming 3-4 times per week and 25% were consuming yogurt once a week. The results current study were similar to the previous findings revealed that two groups were consuming yogurt for 3 days 1st group was taking 112g while other was taking 498g which were helpful in lowering serum uric acid [28].

Conclusion

Study concluded that the risks factors of gout were more apparent in female patients than in male. Inheritance of gout was more common risk factors in patients. Age group of 51-60 years was at higher risk of developing gout. Illiteracy, low socioeconomic status of patients, overweight, long term medication intake and complication like diabetes, hypertension, kidney disease and heart disease in patients were also the risks factors of gout. Excessive intake of meat, eggs, legumes, dessert, carbonated beverages and soft drinks and low water intake may increase gout attacks. Majority of patients were not

consuming fruits, fruit shakes, milk, yogurt in their daily routine.

Authors' contributions

Conceived and designed the experiments: A Amjad, S Khalid, T Nisar & M Nadeem, Performed the experiments: S Mazhar, Analyzed the data: A Amjad & M Nadeem, Contributed materials/ analysis/ tools: S Mazhar, A Amjad, S Khalid, T Nisar, A Ameer & GM Din, Wrote the paper: S Mazhar, A Amjad & M Nadeem.

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