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Nutritional status and dietary pattern of gout patients of old age people

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Abstract
The aging population in India affects every aspect of their lives through physical, biological, psychological and social changes or degenerative disease caused by ageing. Naturally, increasing age reduces physical function to a great extent in the elderly. The incidence of gout increases gradually worldwide, especially in developing countries like India, due to poor dietary habits such as fast food, lack of physical exercise, work load, increased incidence of obesity and metabolic syndrome. Present study was conducted in Muzaffarpur district of Bihar. 200 old age people of 65-80 years, who were suffering from gout deficiency, were purposely selected from the Sadar hospital of Muzaffarpur town for the study. Maximum percent (43.67% male & 55.55% female) of old age people with gout were overweight. In total respondents most of them were non-vegetarian. 65.45 percent of the men and 43.33 percent of the women old age preferred only familiar food. The food consumption pattern indicated that most of the respondents consumed rice, wheat, onion and garlic at a very high frequency. In 24 hr recall rice and chapatti are on top of the list. Avoidance of restriction of pulses, red meat, deep fried stuffs due to presence of disease especially in gout is also there.

Keywords: Nutritional assessment, Gout, Old age

1. Introduction
India is the second largest country in the world with 102 million elderly people above 60 years of age in 2011 (Census 2011). Their number was 72 million in 2001, which has now increased to 102 million. It is expected to be 179 million in 2031 and 301 million in 2051. Those 70 years and older, are projected to increase from 27 million in 2001 to 132 million in 2051. Among the elderly aged 80 and older, they are expected to increase from 54 million in 2021 to 32 million in 2051. The growing population and the proportion of the elderly will have a direct impact on demand for health services and social security payments. According to Lebeg *et al.* (2003)

The aging population in India affects every aspect of their lives through physical, biological, psychological and social changes or degenerative disease caused by ageing. Naturally, increasing age reduces physical function to a great extent in the elderly. These physical changes, along with reducing the diet, create many types of obstruction in the digestion of food, due to which blood pressure, diabetes, arthritis, and other types of disorders along with malnutrition arise in the old age people. The problem of gout in the old age has become common at this time, a large population of the elderly is suffering from this problem, gout is caused due to the accumulation of uric acid in the blood. Uric acid is a waste product that builds up in the human body every day and is mainly excreted by the kidneys. It is made when the body breaks down chemicals in cells called purines. If the body produces too much uric acid or too little uric acid is excreted when urinating, it tends to accumulate in the body resulting in the formation of tiny crystals in and around the joints. These hard, needle-shaped crystals form slowly over many years, and the person may not even know it is happening. Globally, the prevalence of gout in the general population is 1–4%. In developed countries, its prevalence is 3-6% in men and 1-2% in women. In some countries, the prevalence of gout has increased to 10%. The prevalence rises to 10% in males and 6% in females over the age of 80. The annual incidence of gout is 2.68 per 1000 persons. It is found more in men and 2-6 times more than in women.

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The incidence of gout increases gradually worldwide, especially in developing countries like India, due to poor dietary habits such as fast food, lack of physical exercise, work load, increased incidence of obesity and metabolic syndrome. (Kuo CF, *et al*. 2015).

Most elderly people are seen to be suffering from physical disabilities, financial insecurity and loneliness as a result of exclusion by family and society. Because of their economic dependence, lack of family care, and behavioral changes towards diet and health care, older people become more vulnerable to malnutrition and poor health. Numerous studies have shown that diet, nutrition, empathy and proper care play an important role in maintaining good health and functional condition of the elderly. But data collected from time to time by the National Nutrition Monitoring Bureau (NNMB) on the total population, including the elderly, found that nutritional deficiency remains a public health problem in India and is even more pronounced among older people. (Brahmam, 2007). Keeping in view the above said, the present study was carried out to assess nutritional status and dietary pattern of gout patients of old age people in Muzaffarpur district.

2. Methodology

Present study was conducted in Muzaffarpur district of Bihar. 200 old age people of 65-80 years, who were suffering from gout deficiency, were purposely selected from the Sadar hospital of Muzaffarpur town for the study. Interview schedule was constructed to record the data. The basic measurements of elderly people are weight and height for anthropometric assessment. The 24-hr recall method was used to assess dietary intake of the old age people. The interview questions were analyzed using descriptive narrations. For statistical analysis, frequency tables and figures were used to compare basis dietary pattern and other desired characteristics. Comparison of characteristics between two proportions was done through online Socscistatistics software.
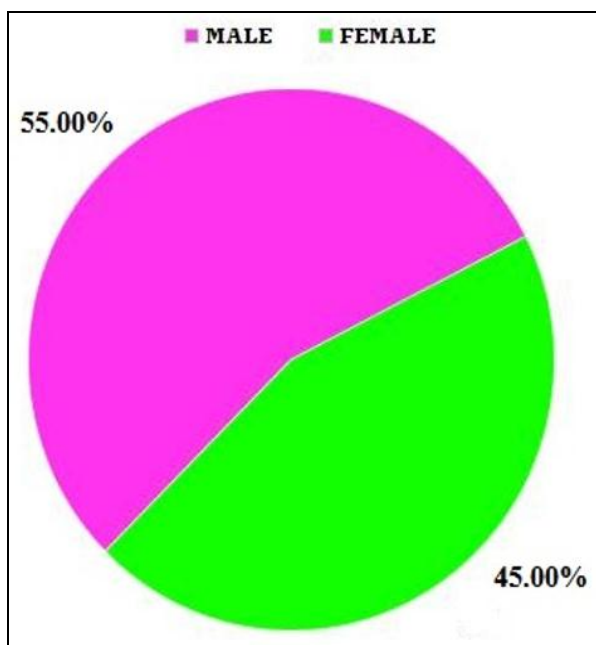
3. Results & Discussion

Fig 1: Frequency distribution of old age people according to gender

It is clear from the figure-1 that the proportions of male and female respondents were 55.00 percent and 45.00 percent respectively.

Table 1: Distribution of old age gout patient according to BMI

Sr. N.	BMI	Old age people				Chi-square value	P-Value
		Male		Female			
		f	%	f	%		
1	Underweight	21	19.09	09	10.00		
2	Normal	29	26.36	21	23.33	4.3461	0.226436
3	Overweight	48	43.67	50	55.55		
4	Obese	12	10.91	10	11.11		

Significance Level = 0.05
*significant at $p < .05$

Table-1 shows that the maximum percent (43.67% male & 55.55% female) of old age people were overweight. 10.00 percent female & 19.09 percent male of old age people were found underweight. Obesity was found in 10.91 percent of male and 11.11 percent of female, near about one fourth of old age people had normal nutritional status. In present study it was statistically not significant (p=0.915218) with gender and BMI. Sedentary lifestyles and excess calorie and protein intake contribute to overweight and obesity and lead to gout, which makes lifestyle changes in older individuals physically incapacitated.

Table 2: Distribution of old age gout patient according to food habits

Sr. N.	Food habits	Old age people				Chi-square value	P-Value
		Male		Female			
		f	%	f	%		
1	Vegetarian	23	20.91	41	45.56	13.8183	.000201*
2	Non-vegetarian	87	79.09	49	54.44		

Significance Level = 0.05
* Significant at $p < .05$

Table- 2 revealed the data of food habits of the old age peoples. According to the table 20.91 percent of the men elders and 45.56 percent of the women elders were vegetarian, while 79.09 percent of the men elders and 54.44 percent of the women elders were non-vegetarian. In total respondents most of them were non-vegetarian. According to the data there is highly significant association (The chi-square statistic is 13.8183 & the p-value is .000201) was observed between gender and food habits of gout patients of old age people. It is also true, that in majority of people, it is very difficult to change some of the already established food habits, carried over from childhood. Food habits get influenced by several factors such as family, education, occupation, economic status, lifestyles and cultural norms. Vegetarian and Non Vegetarian Food habits both have their own advantages and disadvantages. Health factors and personal choices should be considered while opting for a food habit.

Table 3: Prefer on familiar food by old age gout patient

Sr. N.	Preference	Old age people				Chi-square value	P-Value
		Male		Female			
		f	%	f	%		
1	Yes	72	65.45	39	43.33	9.8078	.001738*
2	No	38	34.55	51	56.67		

Significance Level = 0.05
* significant at $p < .05$

Table- 3 revealed the data on prefers only familiar food of old age peoples. According to the table 65.45 percent of the men and 43.33 percent of the women old age were prefer only familiar food. However, the study reveals that there is a general tendency towards unfamiliar foods in older men, a

strong significant association (The chi-square statistic is 9.8078 & the p-value is .001738) was observed between gender and preferences of familiar food in gout patient of old age people.
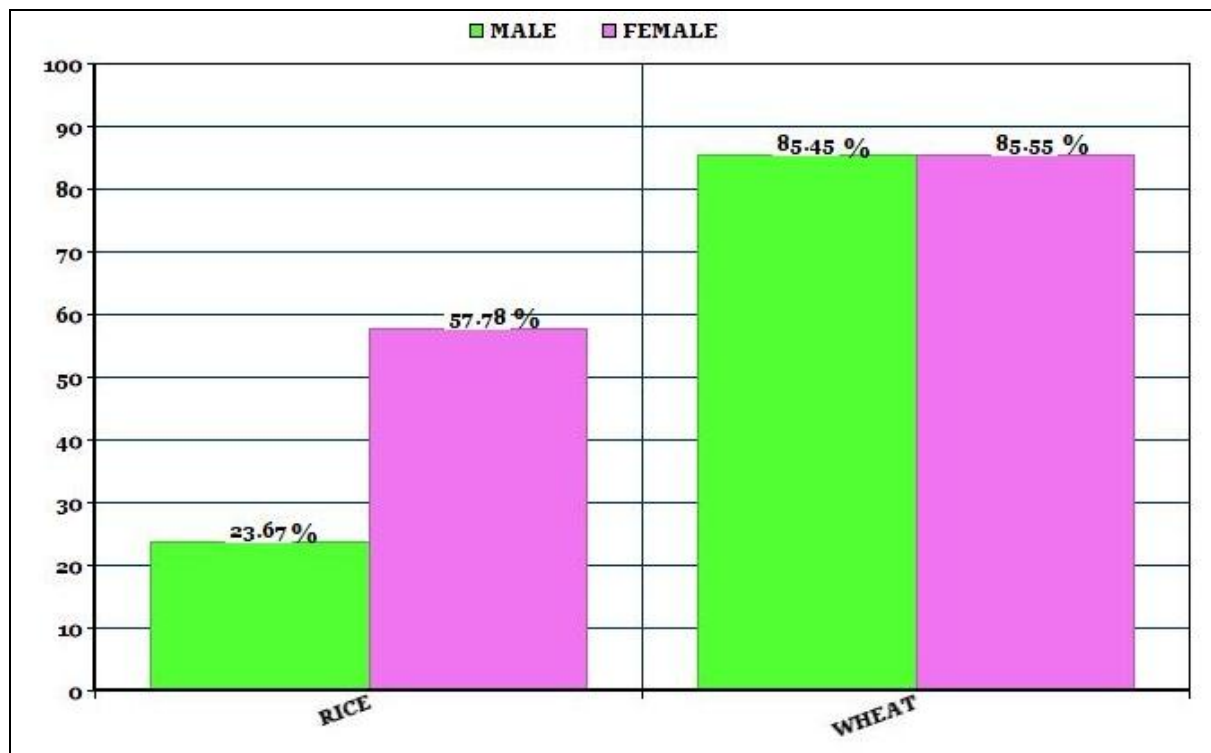

Fig 2: Pattern of consumption of easily available cereals & grains (Daily basis)

Bihar is situated in the river plains of the Ganges river basin. Here especially fertile alluvial soil is found, which is good for crops. This makes Bihar's agriculture prosperous, but during the rainy season, due to flooding a lot of crop damage occur. Rice, wheat and maize are the main crops here. In Bihar, pulses like tuar, urad, moong, gram, peas, pulses and khesare are cultivated in abundance. Bihar is the largest producer of vegetables, including potato, onion, brinjal and cauliflower dominate. According to figure-2, 23.67 percent of men and 57.78 percent of the women elders consumed rice on daily basis, while 85.45 percent of the men and 85.55 percent of the women consume wheat on daily basis. Rice was consumption was found more in women elders. Rice and wheat (roti) are traditional food of Bihar so it was found that the consumption of such type of cereal are in large scale.
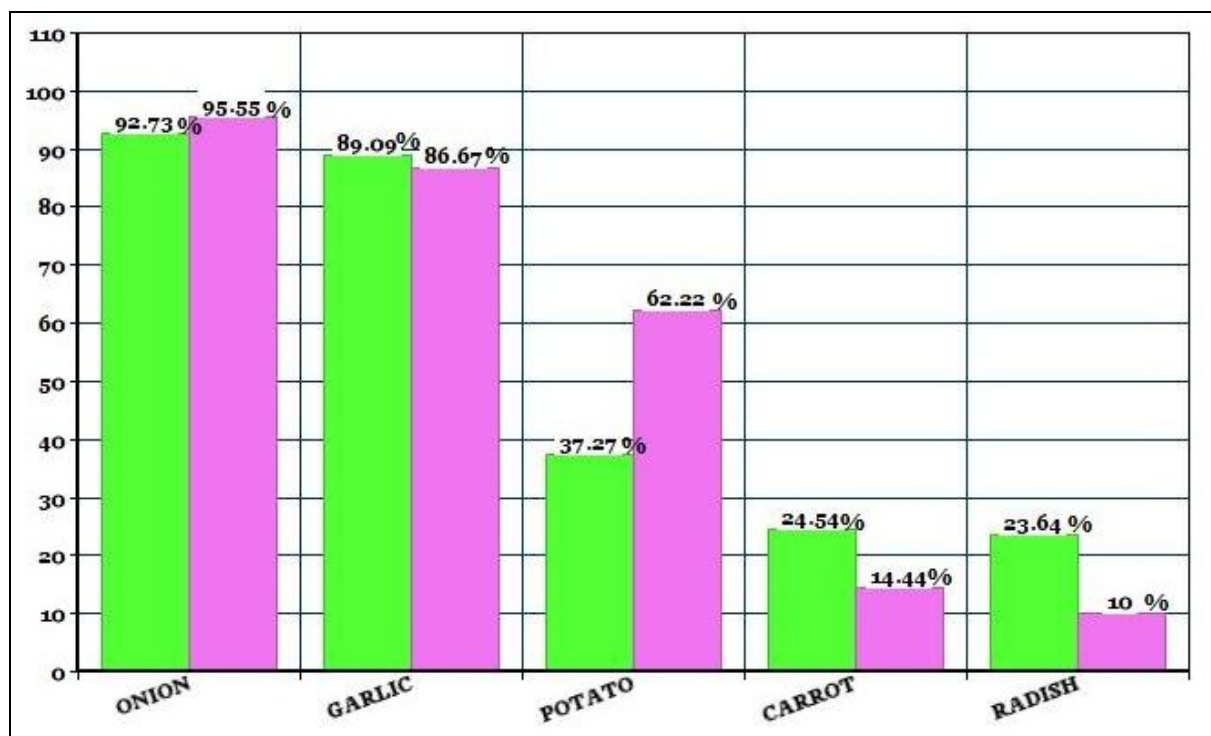

Fig 3: Pattern of consumption of easily available roots and tubers (Daily basis)

Figure-3 gives the consumption pattern of roots & tuber. From the table, it is obvious that on daily basis, onion (92.73%), garlic (89%) & potato (37.27%) were the most consumes by the male elders. Similarly in women respondents' onion, garlic and potato were the most consumed roots and tubers.
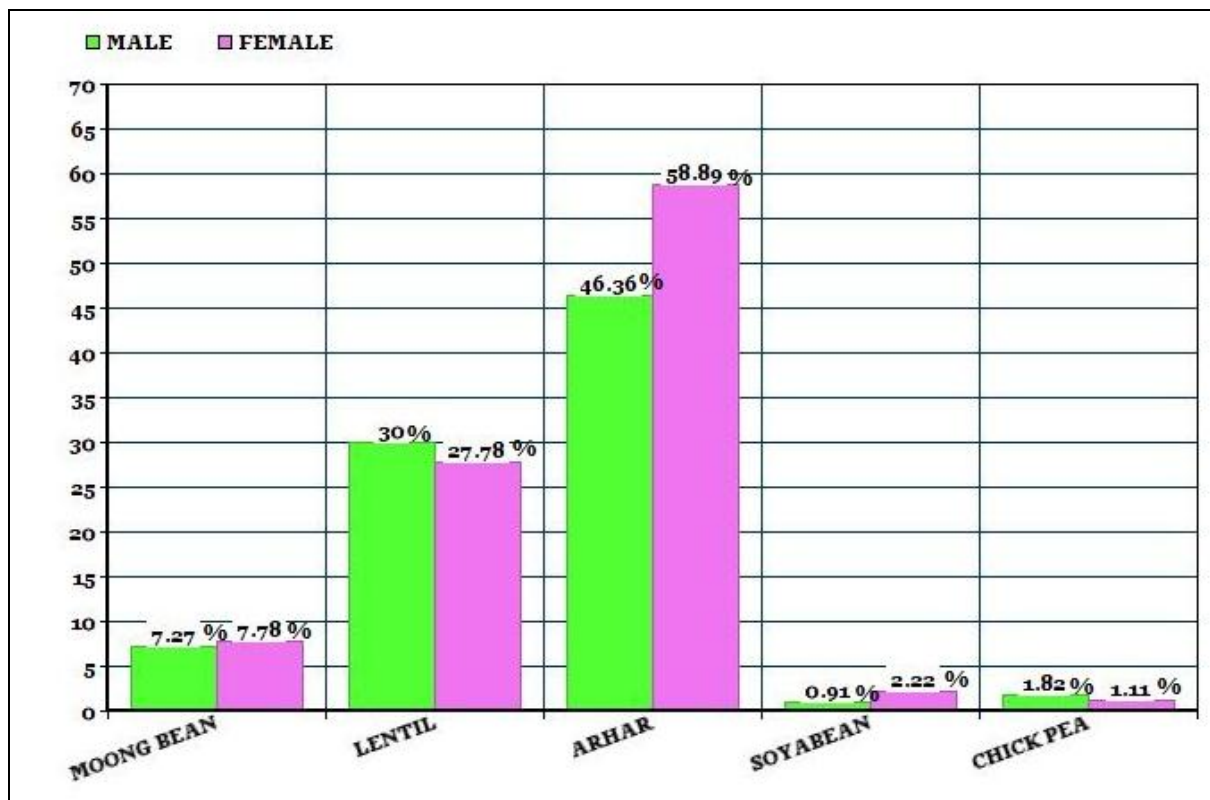

Fig 4: Pattern of consumption of easily available legumes and pulses and oil seed (Daily basis)

As shown in figure-4 mostly men elders consumed lentil & arhar, 30% and 46.36% respectively on daily basis. Majority of men elders (40.92%) reported that they consumed soyabean on monthly basis. Most of the women elders consumed moong bean, lentil (masoor) & arhar on daily basis. Near about half (46.36% men and 58.89% women) old age people reported that they consumed arhar on his/her daily diet.
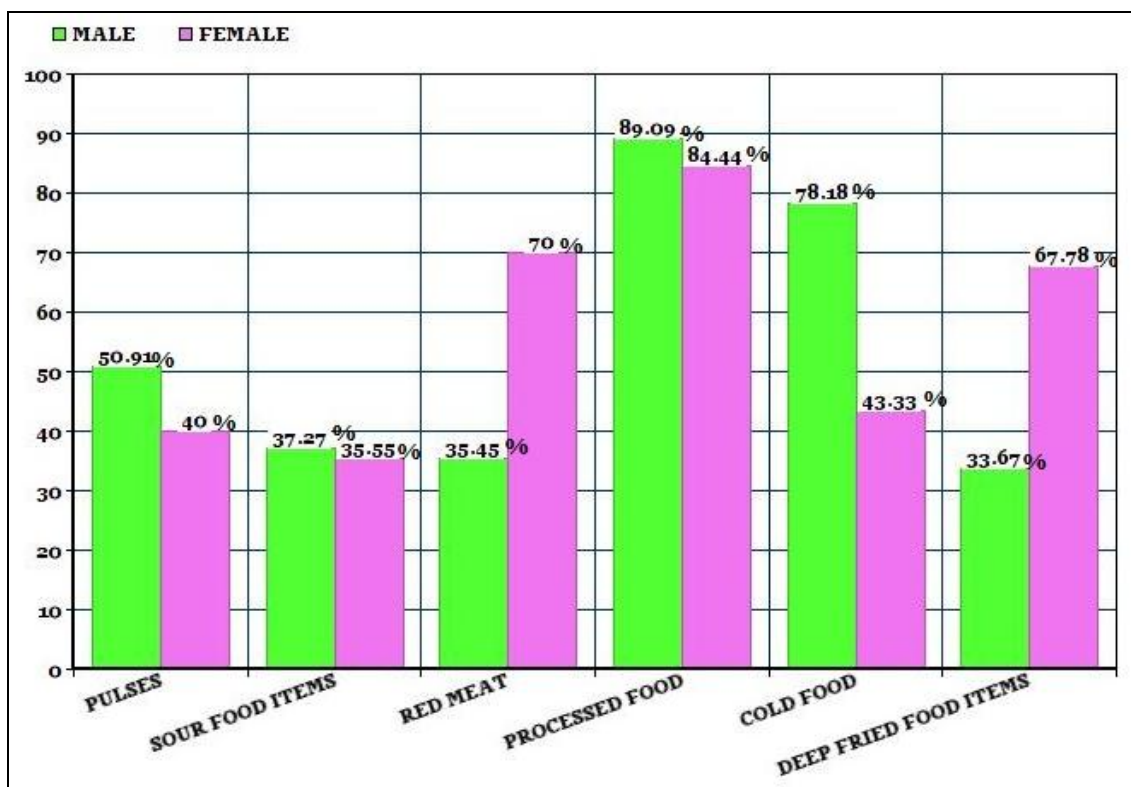

Fig 5: Food items avoided by old age people

Figure-5 provides the information that there are certain food items which are generally avoided by the old age people, like pulses, sour food items, read meat, processed food, cold food; etc. If we consider the old age men respondents, the majority of male elders avoid processed food (89.09%), cold food (78.18%) and pulses (50.91%). In female elders, the majority of them avoid read meat (70%), processed food (84.44%) and deep fried food items (67.78%). Avoidance of restriction of certain food stuffs due to presence of disease especially in gout is also there. Many of the respondents cannot eat meat because of the religious factors. Poor digestion in old age is also a factor.

Table 4: Distribution of old age gout patient according physical activity of daily living

Sr. N.	Variables		Old age people			
			Male		Female	
			Frequency	%	Frequency	%
1	Bathing	Fully Dependence	11	10.00	09	10.00
		Partial Dependence	63	57.27	53	58.89
		Independence	36	32.73	28	31.11
2	Dressing	Fully Dependence	16	14.54	17	18.89
		Partial Dependence	55	50.00	35	38.89
		Independence	39	35.45	38	42.22
3	Toileting	Fully Dependence	10	09.09	08	08.89
		Partial Dependence	41	37.27	33	36.67
		Independence	59	53.64	49	54.44
4	Transfer (getting in and out of bed)	Fully Dependence	11	10.00	27	30.00
		Partial Dependence	71	64.54	51	56.67
		Independence	28	25.45	12	13.33
5	feeding	Fully Dependence	03	02.73	02	02.22
		Partial Dependence	46	41.82	31	34.44
		Independence	61	55.45	57	63.33

Table – 4 revealed the PADL index identifies elderly who are dependent on the five major domains regarding functional health i.e. bathing, dressing, toileting, transfer, and feeding. Few old age people reported full dependence on others for bathing, dressing, toileting, transfer (getting in and out of bed/chair) and feeding. According to the table, majority of the old age people were partially dependent in all the five domains studied. Functionally independent was reported mainly in toileting (53.64% of the older men and 54.44% of the older women) and feeding (55.45% of the older men and 63.33% of the older women).

4. Conclusion
Gout in old age is a disease that affects the physical activity in old age, in present study it was found that overweight is more common in both older men and older women. According to the study finding there is highly significant association was observed between food habits, and preference of familiar food with gender, while nutritional status were not associated with the gender of gout patients (the result were not significant at $p<.05$). The food consumption pattern indicated that most of the old age gout patients consumed rice, wheat, onion and garlic at a very high frequency. In 24 hr recall rice and chapatti are on top of the list. Avoidance of restriction of pulses, red meat, deep fried stuffs due to presence of disease especially in gout is also there. It is also concluded that Majority of the old age gout patient in Muzaffarpur district of Bihar were partially dependent in all the five domains studied i.e. bathing, dressing, toileting, transfer, and feeding.

5. Recommendations
The government should organized training programme to increase awareness about gout especially in old age people.

6. Acknowledgment

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