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A study on dietary pattern of patients with hypothyroidism

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Abstract
The present study was undertaken to access the dietary pattern of patients with hypothyroidism. The total number of 150 patients taken randomly was covered in the study. The study was carried out on patients (of both sexes and of different age groups) who were previously diagnosed with the help of tests, physical examination and investigations. The data was collected by using questionnaire cum interview schedule. Food frequency method was used to assess the intake of different foods. The study explored that a large percentage of patients were not aware about iodine rich and goitrogenous foods. Majority of the patients did not favour the fact that diet plays a major role in control and progression of disease.

Keywords: hypothyroidism, questionnaire, food frequency

Introduction
Hypothyroidism is a condition in which the body lacks sufficient thyroid hormone. Since the main purpose of thyroid hormone is to run the body's metabolism. Thus, it is understandable that people with this condition will have symptoms associated with a slow metabolism (Kelly. G, 2006) [4]. It occurs in about 1 in 4000 newborns. The mean incidence rate of autoimmune hypothyroidism is upto 4 per 1000 women and 1 per 1000 men. Subclinical hypothyroidism is found in 6% to 8% of women (10% over the age of 60) and 3% of men (Kasper. B, Fauci and Haucer. LJ. 2003) [3]. Autoimmune disease (Hashimoto thyroiditis) is the most common cause of hypothyroidism. It occurs when immune system produces antibodies that attack body's own tissue. The trace mineral iodine found primarily in seafood, seaweed, plants grown in iodine rich soil and iodised salt is essential for the production of thyroid hormones. Halogens like fluorine, chlorine, bromine etc. inhibit thyroid hormone production. Chlorine interferes with proper conversion of the thyroid hormone T_4 to T_3 (the biologically active form of the hormone). Halogens appear in our food as chlorides, bromides and fluorides and they selectively attach to the iodine receptors preventing iodine from working (Malcolm. H, Wheeler and John, HL. 1994) [5]. Deficiency of some nutrients in diet also leads to hypothyroidism. Tyrosine is an essential part of the thyroid hormones and neurotransmitters. This has been found to be deficient in people with hypothyroidism. Iron is essential for the conversion of phenylalanine, an essential amino acid, to tyrosine. The B complex vitamins and copper are vital for tyrosine metabolism. Vitamin A, vitamin B_2, vitamin B_3, vitamin B_6, vitamin C and vitamin E are needed for the synthesis of thyroxine. Copper, selenium and zinc are essential in the production of T_3 from T_4. Thus, deficiency of any of these nutrients plays an active role in causing hypothyroidism (Marsden. P, and Mc Cullagh.AG, 2006) [6].

Methodology
The present study was carried out in Srinagar city. A total number of 150 patients including both men and women were covered for the study. The patients who were diagnosed with the help of tests, physical examination and investigations were included. An oral questionnaire cum interview schedule scientifically designed after a thorough and detailed study of the problem and related review of literature has been used for collecting data in the present study. Food frequency method was used to assess the intake of different foods. The data thus collected was tabled, analysed and interpreted as per the needs of the study.

Results
Consumption of dairy products
The present study found that the majority of subjects, i.e. 60% consumed milk and 50% consumed curd daily. Cheese and curd each were consumed once a week by 30% of subjects. However, butter was consumed by 15% of subjects daily. Cheese and butter were never consumed by 65% and 73% of subjects respectively. This reveals that only milk and curd were consumed in good frequency by majority of subjects as compared to cheese and butter. Iodine nutrition can be assessed by dietary sources of iodine. Milk and dairy products are important iodine sources for children (Zimmermann. MB, Andersson. M, 2012) [7].

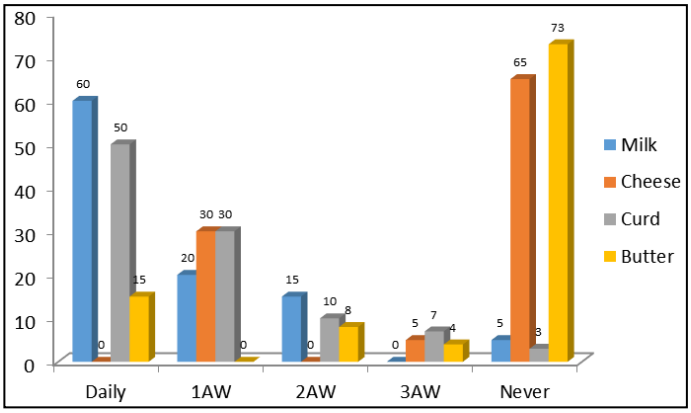

Fig 1: Distribution of subjects according to the frequency of consumption of different dairy products

Consumption of different vegetables

The present study depicts that majority of subjects i.e. 41%consumed green leafy vegetables like kale daily as compared to roots and tubers and other vegetables. Besides that, a good number of subjects i.e. 35% and 40% consumed different vegetables particularly roots and tubers e.g. potato and other vegetables e.g. tomato respectively once in a week. Overall this shows that green leafy vegetables were consumed daily by majority of subjects. Cruciferous vegetables such as broccoli, cauliflower, and cabbage naturally release a compound called goitrin when they're hydrolyzed, or broken down. Goitrin can interfere with the synthesis of thyroid hormones. However, this is usually a concern only when coupled with an iodine deficiency (Institute of Medicine Food and Nutrition Board 2001) [1].

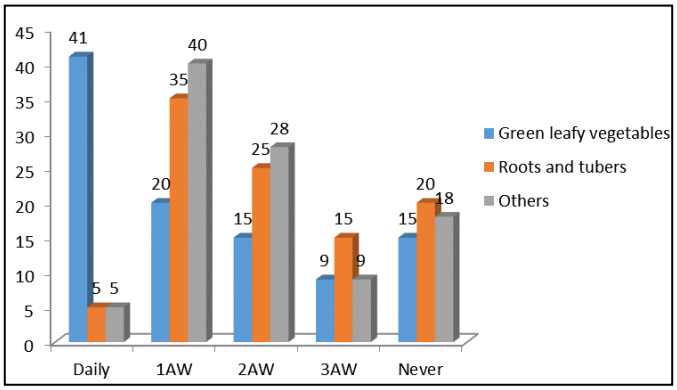

Fig 2: The frequency of consumption of different vegetables by the subjects

Consumption of fruits

Fruits and vegetables are considered in dietary guidance because of their high concentrations of dietary fiber, vitamins, minerals, especially electrolytes; and more recently phytochemicals, especially antioxidants. The present study revealed that, only apple, banana and orange were frequently consumed by most of the subjects as compared to other fruits. Majority of subjects consumed apple, banana, orange and pomegranate once in a week which indicates that the consumption of fruits was less. The frequency of consumption of apple, banana and orange was 20%, 10% and 24% respectively. This depicts that, fruits were not consumed by most of the subjects. Despite an increasing focus on the health benefits of fruits and vegetables, their consumption is below the recommended intake among adults with hypothyroidism (Schneider, M. *et al.* 2007) [2].

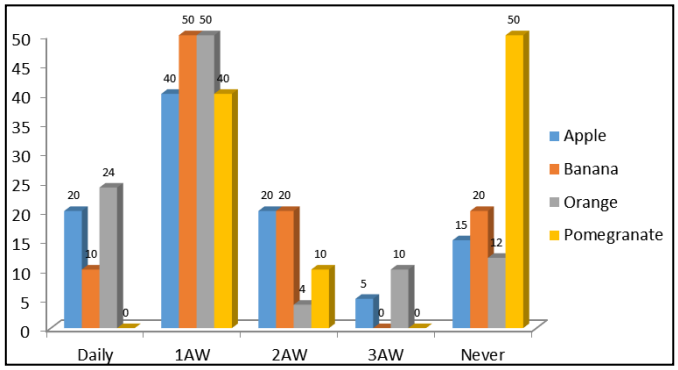

Fig 3: The frequency of consumption of different fruits by subjects

Consumption of Non-vegetarian food items

The present study revealed thatthe daily consumption of mutton, chicken and egg was shown by 25%, 10% and 20% of subjects. A good percentage of subjects consumed all the non-vegetarian foods once and twice in a week. However, fish was never consumed by 70% of subjects. Only chicken was consumed thrice in a week by 20% of subjects but overall, mutton was consumed more than that of chicken. The results thus reveal that, mutton was consumed more frequently than rest of non-vegetarian foods and fish was consumed less frequently by majority of subjects.

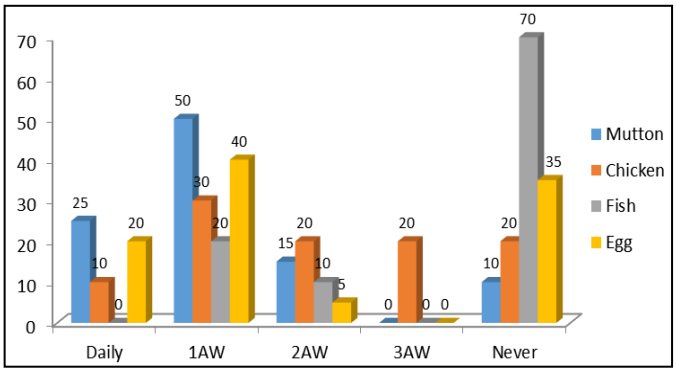

Fig 4: The frequency of consumption of different non-vegetarian food items by the subjects

Consumption of pulses

According to the present study, pulses were consumed once and twice in a week by most of the patients. Bengal gram dhal and Bengal gram whole were consumed by 50% and 40% of subjects respectively once in a week whereas rajmah and soyabean were consumed by 20% and 30% of subjects respectively once in a week. Bengal gram dhal, Bengal gram whole, rajmah and soyabean were consumed by 10%, 20%, 10% and 5% of subjects respectively twice in a week. This shows that, overall pulses were not frequently consumed; still, Bengal gram dhal and Bengal gram whole were consumed more than that of rajmah and soyabean.

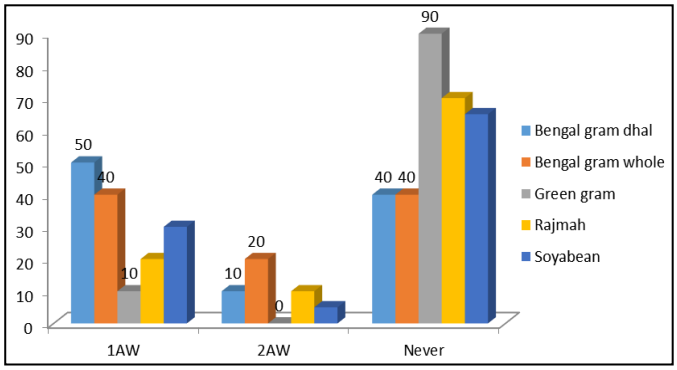

Fig 5: The frequency of consumption of different pulses by subjects

Conclusion

Based on our present study findings from dietary pattern of patients with hypothyroidism it can be inferred that milk and curd were consumed more frequently by majority of patients. Green leafy vegetables were consumed in good frequency whereas fruits were consumed in less frequency by most of the patients. Non-vegetarian food items like fish and egg were frequently consumed by majority of patients as compared to mutton and chicken. Pulses were also consumed in less frequency by most of the patients in comparison to other foods. A large percentage of patients were not aware about iodine rich and goitrogenous foods. Majority of the patients did not favour the fact that diet plays a major role in control and progression of disease.

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